

All the Interviews

by Rudy Rucker

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All the Interviews is my compilation in chronological order of all of the interview questions I've answered by email (with the occasional transcription of a spoken-word interview thrown in as well). The questions (and matching answers) are numbered consecutively. Generally I've recorded the dates of the interviews, also the names, towns, and venues of my interviewers. I don't know why there's a seven year gap at the start. The first thirty-seven Q&A pairs were reprinted in my non-fiction anthology *Seek!* (1999).

Tokyo, 1990	2
Athens, 1997	11
Tokyo, 1997	13
San Francisco, 1997	16
St. Paul, Minnesota, 1999	17
London, 1999	18
Erasmus, Belgium, 1999	20
Novara, Italy, March, 17, 1999	21
New York, July 5, 1999	23
Austin, Texas, July 20, 1999	27
New York, May 22, 2001	30
Paris, June 16, 2001	31
Rome, January 25, 2002	33
Mayville, North Dakota, April 5, 2002	37
Austin, Texas, June 20, 2002	40
Madrid, August 27, 2002	45
Pinole, California March 3, 2003	51
Paris, March 6, 2003	52
Rome, April 9, 2003	53
Warsaw, May 23, 2003	57
San Jose, July 20, 2003	63
San Jose, October 31, 2003	68
San Francisco, March 17, 2004	74
Genoa, November 1, 2004	82
Milano, November 8, 2004	86
Oakland, September 19, 2005	88
San Francisco, November 9, 2005	92
Rome, November 21, 2005	95
Research Triangle Park, North Carolina, January 28, 2005	98
Brighton, United Kingdom, May 29, 2006	102

Brandywine, Maryland, October 10, 2006.....	109
Capetown, South Africa, November 1, 2006.....	115
San Francisco, March 1, 2007.....	123
San Francisco, July 18, 2007	131
San Francisco, January 22, 2008.....	132
Statesboro, GA, and Mobile, AL, January 29, 2008.....	137
Milano, Italy, April 16, 2008	144
Seattle, Washington September 15, 2008	147
Los Angeles, California, February 17, 2009.....	153
San Francisco, California, April 20, 2009	159
Berkeley, California, May 24, 2009.....	161
Edmonton, Canada, July 4, 2009	162
Perth Amboy, New Jersey, July 5, 2009	168
New York, July 20, 2009	171
Los Angeles, November 2, 2010.....	176
Paris, July 27, 2011	181
Barcelona, September 27, 2011	184
Valencia, October 25, 2011	185
London, November 3, 2011	188
New York, January 3, 2012	191
San Francisco, February 8, 2012.....	196
Brazil, September 15, 2012.....	201
Lakeland, Florida, October 27, 2012	206
Berkeley, California, December 12, 2012	210
Oakland, California, May 2, 2013	214
Portland, Oregon, August 4, 2013	226
Durham, North Carolina, December 16, 2014.....	228
Los Angeles, May 12, 2015	233
San Francisco, June 12, 2015.....	239
Seattle, February 29, 2016	242
Hoboken, April 29, 2019	246
North Sandwich, New Hampshire, May 7, 2019	250
Washington DC, June 15, 2019	254
Indiana, Pennsylvania, July 1, 2019.....	254
Portland, Oregon, November 25, 2020	259
Liverpool, England, March 10, 2021	265

Tokyo, 1990

Interviewer: Nozomi Ohmori
For: *Hayakawa SF Magazine*

Q1. First of all, I'd like you to tell us something about how you group your novels. In a letter, you categorize *The Hacker and the Ants* as "transreal autobiography." So, I also want to know whether it makes an

interconnected series along with former three novels (*The Secret of Life*, *White Light* and *The Sex Sphere*).

A1. My eleven or twelve novels thus far break into three groups: the *Ware* tetralogy, the Transreal series, and the Others.

As you mention, *The Hacker and the Ants* is part of the Transreal series which includes *The Secret of Life*, *Spacetime Donuts*, and *White Light*. *The Secret of Life* is about me in high school and college. I was a young beatnik freak punk and the objective correlative for this in the book is that I discover that I am in fact from a flying saucer. *Spacetime Donuts*, the first SF book I wrote, is about my days as a graduate student at Rutgers University in New Brunswick, NJ. Note that the hero, Vernor Maxwell, spends a lot of time in libraries! *White Light* is about when I was a math prof at SUCAS Geneseo in Geneseo, NY. I'll put a little table for you here. I should mention that I didn't write the Transreal books in quite the same temporal order as the periods they describe.

Transreal Series	"My" name	Period of my life.
The Secret of Life	"Conrad Bungler"	63 - 67
Spacetime Donuts	"Vernor Maxwell"	67 - 72
White Light	"Felix Rayman"	72 - 78
The Sex Sphere	"Alwin Bitter"	78 - 80
The Hacker and the Ants	"Jerzy Rugby"	86 - 92
Saucer Wisdom	"Rudy Rucker"	92 - 97

And then there's my other six novels.

Ware Tetralogy.

Software, Wetware, Freeware, Realware.

Other Novels.

Master of Space and Time, The Hollow Earth.

It's hard to use the same period of your life twice; a writer's memories are a precious resource that get used up over the course of his or her career.

The transreal novel gap from 1980 - 1986 corresponds to my years in Lynchburg, Virginia. I did set a number of transreal short stories in Lynchburg — I usually called it "Killeville." And *The Hollow Earth* includes some scenes of Lynchburg as well.

Speaking of Lynchburg, one Lynchburg story I never got around to writing would be called "The Men in the Back Room at the Country Club," and it would be about some men who drink and play cards all day every day in the country club locker room, and each evening the black man who takes care of the locker-room puts the men in the steam bath, and all the juice runs out of their bodies, and they're just leathery skins, and he rolls each skin up and places it overnight to pickle in glass-lined golf club bags filled with whisky that's inside of that man's locker. And

then in the morning the skins go back into the steam bath and swell up, and there's the platypus honking of the men's hale morning voices. The men aren't supposed to be me, mind you, they're just a Lynchburg image that I never used. If I wrote it, I'd probably tell it from the point of view of a teenage caddy. It could perhaps be a little like Phil Dick's wonderful story, "The Father Thing."

At the start of this answer, I said I'd written "eleven or twelve novels" because one might either classify *Saucer Wisdom* as a novel or as some new genre such as "fiction nonfiction." I would be most inclined to say *Saucer Wisdom* really is a transreal novel, but it's written in the form of a nonfiction book about my alleged conversations with a UFO-contactee. It's a novel in somewhat the same sense that Nabokov's *Pale Fire* is a novel. It has non-central elements that tell a story about the narrator. I got so totally transreal with *Saucer Wisdom* that I even called "my" character "Rudy Rucker" instead of making up a different name. I listed all of "my" names in the table up there, just to compare them. As you can see, there's a kind of family resemblance to them.

Q2. When you came to Japan in 1990, you mentioned about the sequel/prequel of *Wetware*, whose working title was *Hardware* or *Limpware*. What is the current situation with your *Ware* series?

A2. My feeling now is that there will only be four *Ware* books, making a tetralogy. I've just now finished writing the last one, which gives us *Software*, *Wetware*, *Freeware*, and *Realware*. It took me nineteen years from the start of *Software* to the end of *Realware*! A long time, but that's how much time it needed for me to grow to the point where I could finally resolve all of the relevant issues. I couldn't have done it any faster.

I quit drinking and smoking pot in mid-1996 and my writing speed seems to be picking up. It had been slowing down. Writing *Freeware* took me two years, from early 1994 to early 1996. *Realware* took the first eight months of 1998.

There was indeed a time when I occasionally spoke of writing a prequel called *Hardware*, but my ideas for that book ended up in *The Hacker and the Ants*. *The Hacker and the Ants* gives a fairly detailed explanation of how we might use Virtual Reality and Artificial Life techniques to get from where we are now to the world of *Software*, with its intelligent autonomous self-reproducing robots. There also happens to be a Hollywood movie called *Hardware*, bearing no relation to my books, which is another reason why that wouldn't be a good name for me to use for a novel.

I never really had any intention of writing a book called *Limpware*, I used to just say that because I didn't want to reveal my actual title too early. In the case of both *Freeware* and *Realware*, I wanted to be sure I could actually finish the book before letting people know the title. *Limpware* is really more of a joke title. Over the years I must have heard

every possible joke suggestion for a Ware title. Silverware, underwear, vaporware, nowhere, everywhere — like that. I think four of them is far enough to push it, and now I'm ready to move on. *Finis coronat opus*.

But you never know. I really like the *Ware* characters and their world, so I might someday get drawn back into it.

Q3. Can you summarize what is in the four *Ware* novels?

A3. I could talk about the characters, which is a story in itself, but this time I think I'll stick to the ideas.

There were two main ideas in *Software*. The first is that we could build some robots which are capable of “reproducing” by building copies of themselves. And if we set a bunch of these robots loose on the moon, evolution could take over, and the self-reproducing robots could evolve to become as intelligent and “conscious” as humans are. The intelligent robots are called “boppers.” When I thought of this idea in 1979 it was a fairly radical notion. We're more comfortable with it than we used to be.

The second idea in *Software* is that if we had intelligent robots it might be possible to extract the “software” of a human being's personality and copy this onto a robot body.

The idea in *Wetware* was to kind of turn the two ideas from *Software* around. Instead of people building robots and putting their minds into robots, the robots build people and put their minds into people. Equality. Break down any human-chauvinistic idea that we're better. The boppers want to prove they're just as powerful as people, so they use “wetware engineering” to build people! And then the boppers find a way to encode their personalities as wetware genetic properties, so that they really can bring into existence a kind of human that has a robot's personality. *Wetware* is probably the most cyberpunk book I ever wrote, it's quite intense.

Nearly ten years of my life went by before I wrote another *Ware* book, and *Software* and *Wetware* were even reissued as a single volume called *Live Robots* (Avon, 1994).

The thing that pulled me back into the *Ware* world was that I kept thinking about something that happened at the end of *Wetware*. The humans exterminate the boppers by means of a biological “chipmold” that ruins their silicon chips. But the boppers had this kind of intelligent plastic for their skins called flickercladding, and the flickercladding became infected with the chipmold and got smarter. I wanted to write more about that stuff.

Freeware starts out in 2053 in Santa Cruz, California. The east and west coasts of the U.S. have a lot of new citizens called moldies. These are pieces of flickercladding that have chipmold living inside them. Some of the chipmold is psychedelic so you can get severely high by hanging out with a moldie. Moldies are also great for sex, but there is the problem that they are likely to stretch out a tendrill up your nose, punch through the

weak spot near the eye and put a “thinking cap” in your head. Nevertheless, there’s a Moldie Citizenship Act that makes them citizens.

One important thing in *Freeware* is the introduction of a universal communication device called an “uvvy.” It’s pronounced soft, as if to rhyme with “love-dovey.” Every SF writer dreams of having one of his or her inventions become “real” — think of Heinlein’s “waldo” or Gibson’s “cyberspace.” I have a certain amount of hope pinned on “uvvy.” A cell-phone is something like an uvvy.

Another big idea in *Freeware* is that aliens travel from planet to planet in the form of cosmic rays. And it turns out that the moldies develop a kind of program that enables them to decrypt the alien personality waves. It’s a little like downloading a compressed file from the Web and then uncompressing the file onto your computer. It doesn’t cost you anything; it’s “freeware.” But it turns out that the alien freeware completely takes over any moldie that decrypts it. In other words, some of the moldies get turned into aliens. There’s some fighting, and all but one of the aliens is killed.

So then I had to write one more *Ware* book to find out what happened to that last alien, whose name is Shimmer. Shimmer decrypts a few more of the alien personality waves, so in *Realware* there’s actually seven of the aliens. They’re all from the same place this time around, a world called “Metamars.” They give the human race this amazing tool called an “alla.” What the alla does is to make whatever object you describe to it. Like if you have a computer and you do a drawing, you can press “Print” and the drawing comes out. But if you have an alla, you specify something and you say “Actualize” and the object appears. It’s realware. At this point I think I reach the ultimate abstraction of reality into information, which is a theme I’ve been aiming at throughout all four *Ware* books.

As well as the play of ideas, there’s some emotional themes that run through the *Ware* books. One of the main themes has to do with how a man comes to terms with his father; and how a father comes to terms with his son. There’s a transreal element to the *Ware* books — especially *Software* — in that there’s a character named Cobb Anderson who’s closely modeled on my father. My father had coronary bypass surgery right before I wrote *Software*, and it had a big effect on his personality — it was almost like he’d gotten a new body. At the end of *Realware* I feel like I’ve finally come to terms with my father, and with our interactions, and with his death from a stroke in 1994. It’s a liberating feeling to have the *Ware* tetralogy all done.

Q4. You have cooperated with various SF writers so far. Generally, how the collaboration is done? Using email or phone? For an example, please tell the story about the process of writing “Big Jelly” with Bruce Sterling.

A4. Each collaboration is different, even with the same guy. My I write something, send a printout and a copy of the file to the other guy, he adds new stuff and doesn't fuck with my part too much, and then he sends me back the new printout and a copy of the new file. In practice the other writer will tend to change my text and I change his, and we write flaming letters about hands off this and that or put this or that back. It's great fun, as usually writing is an extremely isolated activity.

One way that I organize writing with a friend is that each of us is responsible for one character who is a transreal representative of the responsible author. A role the author is playing. And then your character can challenging or running head-trips on your partner's character. That can be another element in an SF collaboration, the trying to amuse or to outrage your partner. And then they turn around and do something that really surprises you, and it's fun.

Q5. When you were young, what kind of science fiction you liked to read? Tell us your growing-up story in SF field. Do you consider yourself as a science fiction writer?

A5. When I was young my favorite science fiction writer was Robert Sheckley. When I was fifteen I was injured when the chain of a swing broke and I ruptured my spleen. I was in the hospital, and my mother brought me *Untouched By Human Hands* by Robert Sheckley. Somewhere Nabokov writes about the "initial push that set the ball rolling down these corridors of years", and for me it was Sheckley's book. I thought it was the coolest thing I'd ever seen, and I knew in my heart of hearts that the greatest thing I could ever become was a science fiction writer. For many years, it seemed like too much to dare hope for.

Q6. How do you want to be called? A writer, a programmer, a mathematician, a mathenaut ☺, or a cultural hero?

A6. A writer. Writing is far and away the most important thing that I do. Over the long run, only the written language matters. Of course "cultural hero" sounds tempting, and it would be nice if I could briefly become one. In his blurb for my memoir *All the Visions*, Lee Ballantine said, "Novelist, scientist, and cult hero Rudy Rucker has emerged as a key figure in the cyberpunk culture that has developed at this century's close."

Q7. It seems that there is a strong relationship between your nonfiction and novels. For instance, *White Light* can be considered as a sort of novelization of *Infinity and the Mind*. Will you explain the relationship for us. And, do you have any plan to write a new nonfiction book?

A7. That's exactly true about *White Light*. And *Infinity and the Mind* also includes the *Software* idea about self-reproducing robots evolving to become intelligent; this is in a section called "Towards Robot Consciousness." The ideas in *The Fourth Dimension* appear in *The Sex Sphere* and again in *Realware*, which has a number of scenes in the fourth dimension. *The Hacker and the Ants* can be thought of the fiction version of the research I carried out to write my software package *Artificial Life Lab*. In the case of *Freeware* and *Realware*, I wrote a fantastic made-up nonfiction work, *Saucer Wisdom*, to introduce the science ideas used. The *Freeware* "uvvy" communication device, the *Realware* "alla" matter controller, the aliens who travel as radio waves — they're all in *Saucer Wisdom*, presented as God's own truth. It's like now I'm reaching a point where even my nonfiction is speculative.

I used to like to say that SF is my laboratory for conducting thought-experiments. But maybe when I said that I was just trying to impress my academic friends. Now that I'm a tenured full professor, I'm more likely to tell the truth. I don't write SF to help my science. If anything, I study science to help my SF! I love SF for the ideas, but more purely I love it simply for the rock'n'roll *feel* of it, the power-chords, the crunch, funk.

My agent has often urged me to write another nonfiction book, as these seem to make more money over the long term than do my novels. But I'm not quite sure if I can do another one. In my books *Infinity and the Mind* and *The Fourth Dimension*, I was laying out the vast knowledge that I had about a field that I had been obsessed with for many years, respectively, mathematical logic and higher dimensions. I absolutely *had* to write those two books — or burst. *Mind Tools* was a little different, it was more of a survey of mathematics as a whole, trying to relate everything to the notion of "information."

Now I've been in Silicon Valley for thirteen years and I know a lot about computers and software engineering; my day job is teaching Software Engineering at San Jose State University. I've been working on successive drafts of a Software Engineering Project textbook with a CD ROM about writing *Windows* programs for simple video games. It has the working title *Software Project: Visualization and Videogames with Windows MFC*. But I don't think of that as a "real" book; it expresses nothing that's deeply important to me, and it'll be totally obsolete seven years after its published, if not sooner. It's simply a chore that I feel I need to finish because there is real short-term need for this book; there isn't any book out there that does what my *Software Project* will do. But a lot of it is just techie *Windows* gobbledy-gook.

At the low level, teaching programming is like teaching automobile repair — just having to explain these random arbitrary things like the part-numbers of the pieces inside some particular model vehicle's carburetor. And you can't just skip over that stuff because the whole point

of programming is to get a nice program that works really well on some specific actual machine.

At a higher level, I've learned a lot about computer stuff like fractals, chaos, cellular automata, complexity, Virtual Reality, and Artificial Life, so it would seem like a good idea to write a book about that. But these topics are very picked over; too many people have written about them. It's like looking for a cigarette butt on the West Point parade ground. Even so, in 1997 I was trying hard to get a contract to write a book like this. I wanted to tie the computer-inspired ideas more closely to immediate perceptions of Nature and to one's own mental experiences. But somehow ended up with a contract to write *Saucer Wisdom*, a book about my fictional encounters with a man who'd been shown the future by some saucer aliens! It's not always easy to predict what book you end up writing. Certainly my work with computers has very much affected the way I see the world, and maybe someday I can figure out a marketable way to write about this.

Q8. You told me that you were considering to write a story based on your experiences visiting Japan. Is there any progress on that project?

A8. Hmm, I had in fact forgotten my reckless promise to write such a story. The thing is, William Gibson has written so much about Japan in his books, and he's done it so well. He's kind of made it his core subject matter. So I'm resisting the notion of writing about Japan. But if I were to write about Japan, I'd write about a lizard I saw in the famous Zen garden in Kyoto. A lizard living under a rock in the most famous Zen garden. How enlightened is that lizard — or *what*? I could have him be a limpware moldie construct inhabited by pay-per-view users.

Q9. Recently I bought some CD ROMS: The *Hugo/Nebula Anthology*, Isaac Asimov's *Ultimate Robots*, Robert Grudin's *BOOK* (Expanded Book version), and so on. How do you think about those multimedia titles? Any plan of making one for yourself?

A9. When I get really old, I want to take everything I've done: all the books, all the journals, all the software — take all that and put in one giant wonderdisk, or chip or S-cube or whatever. But I'm not done doing new stuff yet. And the longer I wait, the better and more together the tech will get. Not that multimedia tech will ever be stable. As someone who's been involved in developing computer software, I've really gotten to hate the impermanence of computer platforms. It's like writing on the water, like pissing in the wind. You knock yourself out creating a CD-ROM, and five years later everyone's switched to DVD. Only writing on paper is for the ages.

Q10. As a question to a philosopher of modern age, do you still believe the Many Worlds Interpretation? In *Mind Tools*, you defined reality as a group of cellular automata, but after that you seem to have changed your opinion. What made you think that reality is more complicated than that?

A10. The Many Worlds Interpretation is a science fictional kind of quantum mechanics view of the universe, and no, I don't think it's true. I think our specific universe exists because there is some intelligence or design that carves it out. I don't think it reasonable to say that our world exists only because every other possible universe exists as well.

The Many Worlds Interpretation is a notion that comes out of quantum mechanics, and I don't have good feelings about quantum mechanics at all. I have the basic layman's response that Quantum Mechanics is a bunch of hand-waving by scientists to cover up the fact that there's something they don't understand at all. Some popular books on quantum mechanics make it sound like we're supposed to be happy and intrigued about the nonsensical aspect of quantum mechanics — about the duality and uncertainty and complementarity stuff. I'm not happy about it at all, I think it sucks. My mathematical training was as a set theorist, and I have this hope that maybe if some day physicists start using actually infinite quantities in their theories then the weirdness of quantum mechanics might be banished.

I have a tendency to think the universe is like whatever I've been recently studying. When I got interested in cellular automata, I started to think the universe is a cellular automaton (CA) — which is a kind of multidimensional grid of little cells that carry out interacting computations in parallel. Of course there's no grid in the real world, so the definition of a CA would have to be changed to make it more like a coral reef. You could have the cells themselves carry the grid, that is, each cell could carry a list of connections to its "neighbors." But granularity is still a problem, that is, why should the world divide into cells of a certain size? That sounds like quantum mechanics, which is just what we don't want! So then I thought maybe the cells could be made of smaller cells, which are made of smaller cells, ad infinitum. This could be a chance to have some infinities. Think of a pattern like a fractal. So this is why, at the end of *Mind Tools*, I said reality is "a fractal CA of inconceivable dimensions." (I use "inconceivable" here in a special technical sense to mean "larger than any finite number that people can name.")

The "inconceivable dimensions" part has to do with the fact that I think that any view of reality should include the mental element as well as physical space and time. And there's a real sense in which our minds inhabit a world of inconceivably many dimensions.

But all the science can easily miss the immediacy of how the world feels. At an immediate level, reality is very gnarly and very novelistic. It's

a supreme work of art, inconceivably rich. And we'll never know any final answers.

Athens, 1997

Interviewer: Alia Skourtsi

For: ZeroOne Monthly Magazine

Q11. Are still mathematics able to help us in exploring ourselves and the universe?

A11. Of course, mathematics is the best forever. Mathematics is the science of form, and everything is form — plus the single divine content of existence.

Q12. Do you really believe that cyberspace is sterile and boring without A-Life organisms wandering in it? In a few years it is going to be overpopulated by people. Why should we fill it with more living organisms?

A12. In this context, I am thinking of graphical representations of cyberspace, such as in for instance the game *Quake* or *Half-Life*. These worlds would be more interesting if there were artificially alive things in them continually changing them. Mold, for instance, or plants, or *ants*.

Q13. Do you still want to create a second self inside a computer? Why? Would you like somebody else to lead your life or are you seeking eternity?

A13. I would still, yes, like to make an interactive multimedia hyperlinked compilation of all my writings. Interacting with the construct would be in some sense like talking to me. This construct would easily be able, for instance, to answer these interview questions.

I want to do this because it is a type of immortality, and like most people I am interested in extending my influence on the world as much as possible. I also happen to think that my information and knowledge is valuable, and that it would be an objectively good thing to have a Rudoid simmie available for the edification of future generations. In *Saucer Wisdom*, I call such a program a “life-box.”

Q14. What do you think is the main disadvantage of the contemporary computers, besides being slow?

A14. They are very hard to program. You can have an idea for a program in an hour but it takes you a year to properly implement it. Of course all art is like this.

Q15. Do you think that the digital revolution will lead us to a more democratic society?

A15. I think politics in every form sucks. The more you think about politics, the more of your energy is siphoned off and turned into garbage.

Well, I'm especially full of cynicism today because I'm so tired of hearing about the idiotic Republicans. Russia got rid of the Communists, why can't the U.S. get rid of the Republicans? It'll be hard to ever get rid of them; as hard as *China* getting rid of the Communists.

But yes, in the sense that people can get better info and make input more easily it would seem that digitizing makes things more democratic. But if there is a whole lot of democratic input it's just going to be ignored the way it is now. The majority of Americans want to get rid of guns, and everyone knows this, but nevertheless the Republicans in Congress are still capable of trying to make assault weapons legal again. It is to weep.

Bottom line: fuck politics, it'll just rip you off and break your heart. Focus on getting your own life in order.

Q16. Why do you prefer the term transrealism more than cyberpunk?

A16. One very practical reason is that when people mention "cyberpunk," they always mention Gibson and Sterling and don't always mention me. I prefer a genre word that applies primarily to me! "Transreal" is my word; I made it up. It has to do with the idea of writing SF about my immediate perceptions, and using real people as models for the characters. This is the way I almost always write. Many of my books are also, of course, cyberpunk.

Q17. Does cyberpunk have an expiration day? If yes, what do you think will follow?

A17. Cyberpunk is a stage in the endless Bohemian subculture that created the beats, the hippies, the punks, and the grungers of today. This type of countercultural sensibility will never go away. But cyberpunk in the sense of writing about computers may someday not be interesting, just as writing about space-flight is not currently interesting. As long as Gibson, Sterling, Shirley and I are writing, cyberpunk will still be around; just as beat writing was still around as long as Kerouac, Ginsberg, and Burroughs were writing. And maybe even longer. Even though Kerouac, Ginsberg, and Burroughs are all dead now, there's still certainly the possibility of others using the "beat" sensibility in their writing.

Q18. Which places in the Net do you visit more often?

A18. Well, ahem, there's my home page <http://www.rudyruker.com>. Not that I myself would go look at it over and over! But if you're interested in computers, I have a lot of free software for you there.

Mostly I just read my email. That in itself uses up a fair amount of my time. I get plenty of email, and that pretty much satisfies my Net hunger. So I don't cruise the Web that much. I don't find it a pleasant way to get information. I don't like waiting for a page to download and then having it be a page I don't want to see. It's like being in a strait-jacket having an overbearing Nurse Ratched feeding you a McDonalds Happy Meal. And she's using a tiny souvenir spoon that has advertising on it.

This said, maybe we have this leftover hominid instinct to stare at something flickering in the evening — like a fire. So either you stare at the TV or at a computer screen, and certainly a computer screen's no worse for you than TV. A computer has the plus of being more interactive, but it has the minus of being less easy to watch with friends.

Q19. What is your wildest dream?

A19. Being able to fly; I dream about this a lot, a couple of times a month.

Q20. Have you ever been to Greece or met Greek people? What is your opinion about our mentality?

A20. I have never been to Greece, although I would like to go there. I've been around Europe a lot, but never made it that far east. I have no particular opinion about Greek mentality; the only Greeks I'm familiar with are the ancient intellectual heroes such as Plato, Euclid and Zeno. I imagine Greeks to be both passionate and logical.

Tokyo, 1997

Interviewer: Michiharu Sakurai

For: "Noise" issue of [relax]

Q21. I think people feel more relieved in some disorderliness than being in perfect order. What lead people feel so?

A21. Complete order is lifeless, and we don't feel safe in a lifeless environment. In a fanatically clean setting, you yourself feel like a piece of dirt which is perhaps going to be cleaned away.

Put differently, noise is an aspect of chaos, and chaotic processes are what we as living organisms are made of.

Q22. Can the “noise” be discussed from the standpoint of the information ideology? What is the position of “noise” in the information ideology?

A22. In the theory of communication, noise is a corruption of a signal you want to send. Noise is like static and clicks in telephone conversation. Shannon’s Theorem says that you can overcome noise by repeating yourself a lot.

In practice we expect people to not correctly receive everything we say, but it is too boring to repeat oneself word for word. Instead you tend to say the same thing again, but in a different way. And perhaps there is some certain kind of noise that makes one way of expressing yourself incomprehensible, but if you express yourself in a new way, then the new way finds a clear gap in the noise spectrum.

In chaos theory, we distinguish between orderly, periodic processes from processes which appear random and noisy. The interesting thing is that certain kinds of deterministic equations can generate time sequences which superficially seem random even though they have a definite rule. The best kinds of chaotic processes will seem to spontaneously fluctuate between orderly and disorderly modes. The disorder appears when the process moves to a different region of its chaotic attractor, and then when the process settles onto a certain region of the attractor for awhile it seems somewhat orderly again.

In understanding what I am saying about a chaotic process, you might think of the branch of a tree blowing in the wind, or of a piece of paper that you are waving with your hand. Sometimes the branch or paper will flutter regularly, but then it can slip into a different mode of oscillation (into a different part of its strange attractor) and oscillate in an unsteady fashion.

In terms of noise and communication, I find it interesting that these words of mine are going to be translated into Japanese, and I will never in fact know what kind of understanding they are going to communicate to my esteemed Japanese readers. Something of my voice and message is preserved, but I have no way of knowing what this Japanese voice of mine sounds like. I hope it sounds like the Japanese voice my translators give me for my SF novels. Really I always say more or less the same thing.

Q23. People tend to find noises in artificial and technological objects, not in natural creatures. How do you see the relations between noises and artifacts?

A23. I would say that nature is also full of noises, such as the sound of rustling leaves or falling rain or chirping birds. Nature is essentially chaotic — it has underlying rules, but the working out of these rules produces patterns that are not simply predictable by a human brain.

The really objectionable noises are indeed from technological objects. As I write this answer, for instance, my neighbor's gardener is using a gasoline-powered leaf-blower to move small bits of dead leaves around this neighbor's yard. I find this noise annoying. What is annoying about the sound of an engine is that the sound is not interestingly chaotic. The sound is just the same power spectrum over and over and over. Even if I change my focus of attention or think about things in a different, the engine keeps going, and eventually it wins back my attention.

The bad kinds of noises are the ones that are not chaotic enough, but are instead very repetitive. These are the kinds of bad noises that machines are likely to make.

Q24. Generally, noises are considered something useless. What are positive elements of noises we should pay more attention?

A24. It is an interesting exercise when you are walking around to try and become fully aware of the sounds around you. If you ever happen to make a tape recording outside, you will be surprised at how many noises there are besides the sound of the voices you are perhaps trying to capture. Becoming aware of the full tapestry of noise around you is a good method to heighten your consciousness and make yourself feel more tightly woven into the undivided fabric of the One World. To get started with this awareness, it may help to close your eyes.

Q25. As seen in samplings in music and uses of ready-made products in artwork, contemporary arts are seemingly moving toward "application," apart from the traditional idea of "creation." What does this tendency reflect in terms of changes in people's consciousness and thoughts?

A25. If you play a tune on the piano you are already in some sense sewing together samples of notes. But instead of pasting in a sound file for the note C, for instance, you are generating the sound file for the note C by pressing the piano key. On the other hand, a good pianist really is doing more than assembling a series of notes. There are in fact many different ways to play the note C and many different ways to segue it from the note before to the note after. The thing is, a piano is extremely responsive to very subtle muscular cues that a person can generate. If you are just pasting in a sound file for the note C, there are only going to be a limited menu of selections about what type of C note you want. The richness of human analog muscle expression goes far beyond any digitized program we yet have.

I think it will continue to be true for a very long time that the subtleties of sounds or colors or phrasings are going to allow a much wider palette of possibilities than will any cut-and-paste computer collaging process. So I would say the process of "creation" rather than

“assemblage” will continue to be the most essential form of artistic expression.

On the other hand, in connection with the notion of noise, it is certainly true that a modern composer has the possibility to paste in a lot of interesting sound structures.

But just pasting things together isn't enough. It may superficially look like a complex work of art, but when you explore it more closely, it doesn't hold up unless the artist has a really close involvement in the work at many levels.

San Francisco, 1997

Interviewer: John Shirley

For: Introduction to HardWired edition of *White Light*

Q26. Is there, in brief, a general overall Rucker Theory of the Motif of the Transreal Books? A linking esthetic?

A26. Oh yes! It's called “A Transrealist Manifesto,” and it appears in my new nonfiction anthology *Seek!* But let me try and summarize it for you.

Transrealism means writing about your immediate perceptions in a fantastic way. The characters in a transreal book should be based on actual people. This has the effect of making the characters be richer and more interesting. One inspiration for me in doing this is Jack Kerouac, who thought of his novels as a single linked chronicle. Though many would just call Kerouac's books autobiographical novels.

My transreal novels aren't exactly autobiographical: I have never really left my body, climbed an infinite mountain, met a sphere from the fourth dimension, infected television with an intelligent virus, etc. But they are autobiographical in that many of the characters are modeled on family and friends — the main person of course being modeled on me. The science fictional ideas in my transreal fiction have a special role. They stand in for essential psychic events.

The quest for infinity, for instance, is nothing other than the soul's quest for God. Or, more mundanely, it represents the individual's quest for meaning. In another sense, a *White Light* at the top of a transfinite mountain stands for the psychedelic experience, which loomed large in those years when *White Light* was written (1978 - 1979). But, again, the whole point of the psychedelic experience, at least from my standpoint, was to see God. Another inspiration for me in pursuing transrealism is Philip K. Dick. His blackly hilarious book *A Scanner Darkly* was a real inspiration for me in forming my ideas about this way of writing. And in fact *Scanner* had a blurb on it describing the book as “transcendental biography,” which was probably the reason I coined the word “transreal.”

In a nutshell, transrealism means writing about reality in an honest and objective way, while using the tools of science fiction to stand for deep psychic constructs.

St. Paul, Minnesota, 1999

Interviewer: Patrick Clark

For: Interference On The Brain Screen

Q27. We were talking about your public image, and I think you mentioned you had something to say about drugs and alcohol?

A27. It's kind of touching how much attitude I used to have. I was pretty desperate to get noticed. To be different.

For a long time I embraced the classic notion that drinking and taking drugs is a bohemian identifier, a legitimate path to enlightenment. As I got to be older than Poe and Kerouac ever were, it became all too evident to me that their "left-hand" path is not a sustainable one. "It just ends in tears," as my mother used to say vis-à-vis almost anything.

I've been clean and sober for almost three years now, which feels like a big and joyful deal to me. I couldn't have done it without group support. The simple act of reaching beyond yourself and asking for help seems to be crucial.

I used to be scared that if I got straight I wouldn't be the same person, that the wild creative part of me would go away. Well, I'm not exactly the same person — but I still feel creative. My bizarre and millennial *Saucer Wisdom* will be out in mid-1999. And I recently finished *Realware*, which is the coda and finale of the *Ware* tetralogy. There is, I would say, as much weirdness in these books as ever.

Regarding enlightenment, it seems humorous to me that I used to think enlightenment was about getting wasted and blasting my brain into nullity. The flash, the pop, the white light. Like it never occurred to me that attaining enlightenment might have something to do with becoming a better person or being more loving to those around me. I've finally started getting some serenity now and then.

"Let go, let God." Brain-dead bumper-sticker or profound truth? Yes, yes, it's the latter, even if you write in Olde English Scripte. There's some good raps about the bumper-sticker/profound truth dichotomy in David Foster Wallace's book *Infinite Jest*. I read that book in early 1996, right before I finally got sober, and it made a real difference to me.

Some people say that *Infinite Jest* is too fat to read, but you have to know how to deal with a book that size, you can't let it boss you around, you have to just dive in there and carve out what you can use. In my case, I tossed out all the parts about prep school tennis matches and read the stuff about recovery and halfway houses, which is still enough for a really big book. The footnotes were good too. And the wheelchair assassins. Wallace is a great man.

Q28. In closing, what book would you like to be published Ace Double “69 style” with?

A28. I already did it! The small press Ocean View put out my transreal rant-memoir *All the Visions* back to back with a book of poems *Space Baltic*, specially selected for the occasion by my favorite poet Anselm Hollo. Check it out, you can actually still order it from Ocean View, like through www.amazon.com, it’s beatnik heaven, with a cover by Robert Williams yet.

London, 1999

Interviewer: Matthias Penzel
For: *Frankfurter Rundschau*

Q29. Unlike with rock’n’roll interviews, the preparation for writers’ interviews is immense (weak excuse, mediocre explanation). Unfortunately I have not managed to read all your books before this interview. Which one (talking about your fiction) would you single out as your masterpiece?

A29. That’s like asking a father which child he likes best. I love them all in different ways. I do feel that as time goes by I get more mastery of my writing, so in that sense I usually think my most recent book is the best. Today that would be *Realware*. As a practical matter, it is in any case better for me to believe that my latest book is my best. I would not want to think that a book I wrote a long time ago is better than a book I can write now. I feel like I am still on the upward part of my trajectory.

Q30. Although having been translated into German by Udo Breger who could probably be regarded as one of the country’s leading translators, your books never quite cracked the German market — is that because they will always only appeal to a smallish cult audience anyway, or is it the matter of language?

A30. Maybe as the years go by, the mass of people will like my books more than they do now. It could be a matter of my being ahead of my time. Or it could be that my books are a little too esoteric for a true mass popularity. I write intellectual, high-literature, counter-cultural science fiction.

It could also be that my style of humor appeals more to Americans than to Germans. But at least one other country likes me: my books seem to be quite popular in Japan, perhaps even more so than in the U.S. I think all my novels are in print in Japan, which still remains an impossible dream for me in the U.S. But I still think my day will come. The trick is to try and have it happen before you die.

I'm sure that Udo Breger did a great job in translating my books into German, he was very meticulous and sent me lists of words he wasn't sure about how to translate, which is something very few translators think of doing. I wish they all would.

In any case, it's not in my interest to take the number of copies sold as my supreme yardstick of success. I'm happy that I'm published at all, and that my books do indeed speak deeply to some individual readers.

Q31. What do you think is your most important activity?

A31. At the personal level, the most important thing I ever did was to father and help raise our three children. At the public level, my most important activity is writing, although maybe in the long run it's my *sensibility* that will have the most lasting influence: my combination of humor, anarchy and scientific engagement.

Q32. Do you listen to your rock'n'roll on vinyl or CD?

A32. CD. I have a large collection of my old vinyl records, most in bad shape from much party use. The sound system I happen to have these days isn't compatible with a turntable so I can't play my vinyl records anymore. They're in boxes in the basement. My children want to inherit them.

Q33. Who do you rate the most important writers of this century?

A33. I'll certainly vote for myself! Otherwise, not to make too long a list, let's say Kerouac, Pynchon, Borges, Burroughs, Kafka, Poe.

Pynchon is really the best of all. He is our James Joyce. The richest language, the deepest feeling. I was so sorry when I was done reading *Mason and Dixon*.

Borges has the best ideas, the fine language also, the dryness. Borges has a phrase that's of comfort to me (he's writing of Melville and Edgar Allan Poe), "Vast populations, towering cities, erroneous and clamorous publicity have conspired to make unknown great men one of America's traditions." Sometimes I like to imagine that's a description of me.

Kerouac and Burroughs are a special case. It's hard to point to many books by them that are really impeccably great. It's more a matter of great passages and of a great vibe, the beatnik vibe that had such an influence on me growing up. Speaking of beat sensibility, I always liked Charles Bukowski a lot as well.

I like to think of cyberpunk as a new kind of beat movement. The beats had Kerouac, Ginsberg, Burroughs, Corso. The cyberpunks had Gibson, Sterling, Rucker, Shirley. Burroughs was the oldest of the beats, and I'm the oldest cyberpunk.

Poe and Kafka are a bit like the beats in that their sensibility has perhaps a greater influence than their individual works. In both cases there are not any fully successful novel-length works, although there are any number of perfect gem-like passages and stories.

Erasmus, Belgium, 1999

Interviewer: Koen Hendrickx

For: *Planet Internet* (ISP) based in Antwerp

Q34. There seems to be a central theme in your science fiction: Artificial Life forms resemble biological life forms because they both reproduce themselves and they both evolve according to the laws of the survival of the fittest?

A34. Yes, this idea was implanted in me by the mathematician Kurt Gödel, who remarked that although it is absolutely impossible to design a machine as intelligent as oneself, it is possible to bring about a situation where such a machine can evolve. Of course at this stage in history, we are still nowhere near the limits of the intelligence of the machines that we actually can design. But in some far future, it will be necessary to use artificial evolution to go beyond what we can design. I might remark that I was a little over-optimistic in setting *Software* in the year 2020, which is now just around the corner.

Q35. In your *Ware* tetralogy, Artificial Life and biological life increasingly coincide. With *Software*, you were way ahead of your time, but writers like Hans Moravec and Kevin Kelly have done much to make your ideas more acceptable in America. Do you think that people distinguish too much between human and machine?

A35. I remember when I was writing *Software*, I was wrestling with the notion of whether a machine can ever be alive like a person. How can chips have soul? But then I hit on the idea that the “soul” is a universal mystical jelly that imbues *everything*. A rock is already alive like a person. This said, of course there is a big difference between a machine and a person. But if machines became soft and wet, that would be a step toward being more like us. That’s why in *Freeware* I liked having the moldies.

Q36. One of the sites in the *Ware* tetralogy is a colony on the moon, built by robots. The Dutch astronaut Wubbo Ockels works on a similar idea in the project Euromoon, but the ultimate goal of Euromoon is human settlement. Is human presence on the moon necessary?

A36. It would certainly be interesting to have a human colony on the moon. I went and looked at that the Euromoon page of Wubbo Ockels — what a wonderful name he has! The page refers to the discovery of ice

at the lunar South Pole; this is indeed something which is very encouraging. As a practical matter it would be easier in the near future to have a human colony on the moon than to have a colony of self-reproducing robots. But a middle path might be the best: to have robots with fairly low level of intelligence that are instructed by the (slow) remote link to people on the Earth. Given that there's a several-second-lag in the communication with Earth, the robots have to be smart enough not to fall off a cliff, and so on. I think this could be a very popular form of entertainment, to rent time running an actual lunar robot, especially if a good Virtual Reality interface were in place.

Q37. Study in *The Hacker and the Ants* is a speaking household robot you can relate to as a friend. Do you think there's a real chance that such a tool will be developed in the next ten or twenty years?

A37. Oh, yes, I think so for sure. Descendants of the Furby. Your robot friend would not really have to be so very intelligent. We humans anthropomorphize relentlessly and can already easily image ourselves to be having a conversation with, say a cat or a dog. Why not a machine?

Novara, Italy, March, 17, 1999

Interviewer: Marco Mocchi

For: IntercoM, <http://www.intercom.publinet.it>

Q38. You often speak about infinity, paradoxes, higher dimensions, and the existence of alternative worlds. Were you influenced by M.C. Escher?

A38. I loved Escher as soon as I first saw his work, which was perhaps in a "Mathematical Games" column by Martin Gardner. Before there were any English editions of his prints, I had a Dutch edition of Escher prints that I looked at a lot. I use a lot of Escher-like constructions in *White Light*. For instance I describe a patio restaurant whose center is infinitely far away because everyone gets smaller as they approach the center; this is similar to Escher's *Smaller and Smaller I*. His *Other World* was an inspiration for a scene in my *Master of Space and Time* where there's a room in which the walls, floor and ceiling are all magic doors to other worlds. Escher liked getting suggestions from mathematicians, he corresponded, for instance, with the higher-dimensional geometer H. S. M. Coxeter. Escher was science-fictional in that he illustrates startling mathematical effects by cleverly arranging familiar things.

Q39. If you take Escher seriously, he seems to suggest that our perceptions are limited, and that our view of reality is partial and incomplete. This notion is also found in the novels of Philip. K. Dick. Do you agree with it?

A39. It seems very likely that there is some other order to reality than what we ordinarily perceive. We are, after all, very specific kinds of biological beings, evolved to live in a specific kind of environment. A deep-sea tube-worm has no inkling of the sky, nor of the birds in the sky, nor of the stars. A creature of the desert knows nothing about rain. It would be preposterously self-centered to believe that humans are in a position to understand everything about the Cosmos. Certainly there are regions of the universe in which space, time, and matter behave differently, and it's reasonable to suppose that these regions are inhabited by various kinds of intelligent minds. What's more intriguing to think about is that there may be different levels of reality right here around us. Perhaps there really are higher dimensions of space. Time of course is a higher dimension, but I'm thinking of a spatial higher dimension here. The physicists who talk about string theory have some crappy little rolled-up higher dimensions they use, but these are curved around to be only the size of an electron. I'd like to see a real, extended higher space dimension distinct from time and from the shrunken "vermin dimensions" of string theory. Or maybe there's some kind of shrinking transformation you could do so as to get inside the vermin dimensions after all. Or maybe the whole notion of space should go out the window and we should be thinking of thoughts that live in a mindscape like fish in the sea. Maybe what I think is "me" is simply a particular "school of fish."

Q40. Do you view our inability to see the higher reality as a problem related only to human perceptions or does it involve our spiritual aspect?

A40. If you pray or meditate, you can sometimes have an experience of being in touch with a higher order of being, whom we might as well call God. Sometimes I have a sensation, for instance, that individual humans are part of a single great spacetime body, that each of us is a kind of "eye" that God uses to look at things with, and that people are like eyestalks on the Mystical Body of Humanity, if you will. Once in a while I have a feeling of timelessness, a sense of looking at the world from outside of spacetime. These sensations are fleeting, and it's hard to force them to come. One might think psychedelic drugs would help, but they seem to help only the first couple of times you use them, and after that they hold you back, ensnaring you in selfishness, paranoia and addiction. Boring as it seems, prayer and meditation are the only long-term methods of enlightenment that I know of. Well, actually, talking and writing about this stuff is a path as well. That's one reason I find it fun to write science-fiction.

Q41. Are the cognitive limitations of present-day man technological, philosophical or epistemological?

A41. It's hard to be sure. I have a physicist friend who dreams of creating some kind of force-field that would in effect put you into a quantum resonance with the objects around you, so that everything would seem alive. But I think he'd end up with more than he bargained for. My sense of the nature of higher reality is that it's closely associated with the concept of a loving, all-powerful God. I think goodness and compassion are part and parcel of higher reality; they live there. You're not likely to get through the temple door if you're carrying a rifle. The various paths that humans take to try and achieve transcendence are perhaps all leading up different faces of the same pyramid — which I imagine as having the great White Light on the top, similar to the traditional image of a blazing eye on top of a pyramid. Science fiction is one possible tool for trying to explore the greater reality. It's a good tool because it tries to start from fresh, bringing in all sorts of new scientific concepts. And it has a irreverent open quality to it. We can forget, at least temporarily, about being serious and religious, we can just play, and ask questions like whether there might be many Gods, what it would be like in their homeland, how many dimensions of space and time they have, and so on. It's a relief sometimes not to strive for spiritual growth and simply to speculate. In the end, as the speculations become part of your worldview, they will have a spiritual meaning anyway.

New York, July 5, 1999

Interviewer: Mark Dery <MarkDery@aol.com>

For: Salon, www.salon.com

Q42. In *Saucer Wisdom*, you—or an alternate-universe doppelganger with the same name—find God. I, for one, was stunned to hear pearls of cosmic wisdom such as “God is love” on the lips of a man who once used pages torn from a Gideon Bible for rolling papers and nearly came to blows with Cal Thomas, then head of Jerry Falwell's Moral Majority. Can you offer any helpful hints for readers trying to reconcile the wiseass, Church of the SubGenius-style skepticism of your earlier works with the wide-eyed mysticism of *Saucer Wisdom*?

A42. I have been interested in mysticism every since I first heard the word in college. Mysticism in the sense of attaining some direct contact with God, or the One, or with the divine nature of the Universe. The eye on the top of the pyramid. The White Light. Any problems I've ever had with organized religion have been caused by political differences rather than religious or theological differences. In and of itself, there's no reason why Christianity should be associated with right-wing politics. Indeed, in the 1960s some of the most dedicated anti-Vietnam-war activists were Roman Catholic priests. So it always grates when one sees

Christ used as a poster-boy for right-wing political interests. It's comparable, in a way, to how Apple has been systematically using pictures of great thinkers to promote their style of machine. There's no intrinsic connection between Einstein and the Macintosh, just as there's no connection between Jesus Christ and the Republican party. This said, I will also grant that, irregardless of anything having to do with politics, I'm more comfortable with religion than I used to be. I've always believed in a Cosmic Absolute, but only recently did I start feeling like it could make sense to pray. I would, by the way, take exception to your knee-jerk characterization of mysticism as "wide-eyed." One can in fact have a quite practical and, if you will, "narrow-eyed" reason for choosing to believe that God is everywhere and that God will help you if you ask: this kind of belief makes it easier to be alive.

Q43. On that note, do you see yourself as part of the tradition of SF mysticism that includes Olaf Stapledon (*The Star Maker*), Arthur C. Clarke (*Childhood's End*), William Gibson (*Neuromancer's* voodoo cosmology), and, most obviously, Philip K. Dick (the *Exegesis*)?

A43. In very many of my books you will find characters trying to break through to the Answer. In my novel *White Light*, they're in fact very specifically trying to climb an infinite mountain to reach God. Science fiction allows us to try and do all sorts of counterfactual things. I used to always wish I could find a good science fiction book about what happens after you die, but I don't think anyone yet has managed to top Dante. Of the authors you mention, certainly my philosophical views are the closest to Stapledon's. But I'd like to think my humor and realism is closer to Philip K. Dick's. Philosophy aside, I'd like my science to be as hard-core and accurate as Clarke's, and I'd like my style to be as lovely as Gibson's.

Q44. I was especially amused to find, among *Saucer Wisdom's* premonitions of "limpware engineering," do-it-yourself transgenic tinkering, and mindfaxing, a savagely funny chronicle of a 1994 *Mondo 2000* party in 1994, with publisher Queen Mu "inaccessible behind starry eyes and rictuslike smile, her voice breathy and brittle, *stay away*." In addition to being a *Pilgrim's Progress* for *Zippy the Pinhead* fans *and* a head-spinning ride into the technological future, *Saucer Wisdom* is a wisecracking eulogy for the cyberculture of the early '90s. Are we well and truly in the age of "post-cool" computer culture, ruled by .com CEO's who've never heard of *Mondo* and who harbor no illusions about the "countercultural" promise of the Digital Revolution(tm)? If so, do you mourn the passing of the cybertopian rhetoric of the early '90s? Or are you happy to be rid of it?

A44. People sometimes talk about an accelerated “Internet time,” in which a month is like a year. I had no idea in the late 80s and early 90s that we were roaring through a Golden Age. Most of the things that people hoped for from the Net have come true. Anyone can publish anything: text, images, music, or video. There’s no censorship, no bottleneck, you can set up your own pirate mind-station as easy as pie. Of course speed and access still need to be improved. Web speed needs to reach a point where jumping from link to link is as easy as turning pages in a magazine. And Web access has to become truly democratic, with everyone able to log on. I think the true countercultural effects of the Web are yet to be felt. The complete disappearance of network television and the establishment press might be things one could expect.

Q45. You were a featured contributor to Bruce Sterling’s canonical cyberpunk anthology, *Mirrorshades*, and critics often discuss your novels in the same breath as Gibson’s and Sterling’s. Even so, your fiction has always struck me as more cyberdelic than cyberpunk. For one thing, it’s Day Glo rather than chrome and gunmetal, flaunting its ‘60s roots in a way that most ‘80s SF did not. For another, it’s unabashedly personal, a fictionalized autobiography in the Kerouac-ian mode. Also, there’s an antic playfulness to your writing that’s in short supply in most SF, a Silly-Putty sense of the absurd that seems to descend from underground comix and pothead humor on one hand and the thought-experiments of physicists like Schrodinger and Feynman on the other. Bubbling underneath it all is a cartoon-y sexuality, somewhere between R. Crumb and Rabelais, that’s conspicuously absent in mainstream SF. Is this a fair characterization? Who are your literary precedents—and descendents—in SF and outside it?

A45. I’ve often said that my work might more accurately be termed transreal than cyberpunk, “transreal” being a word that I coined to mean science-fiction based on one’s immediate life and daily perceptions. But certainly I have a lot of affinity with the cyberpunks. They’re my friends, they’re my favorite SF writers, I collaborate with them, and so on. In self-aggrandizing moments I think of us as an 80s version of the Beats. The Beats were indeed some of my biggest literary influences, also Thomas Pynchon and Jorge Luis Borges. Growing up, my favorite SF writer was Robert Sheckley. He wrote wonderful short stories which were real and funny and had gnarly science twists. And the main characters were often bumbling, flummoxed men whom one sensed were very much like the author himself. I eventually got to meet Sheckley; in 1982 he turned up in a camper van at my house in Lynchburg, Virginia, and lived in our driveway for a week. I can’t remember exactly how he happened to come there, he’d read my *White Light* and he liked me. It was like a miracle to have Sheckley in my driveway, the great SF hero of my youth here in, as it were, his space cruiser. In 1987 Sheckley and I went to visit Tim Leary in L.A. A Venice, CA, screenwriter called Martin Olson had

cooked up the idea that “Ruckella and the Sheck-man” (as he termed us) would start writing a TV show for Dr. Tim. Nothing came of it, but it was a wonderful day.

Q46. The shelves are groaning, these days, with books like Margaret Wertheim’s *_The Pearly Gates of Cyberspace_*, which considers the mythologization of cyberspace as “a technological substitute for the Christian space of Heaven”; Jennifer Cobb’s *_Cybergrace: The Search for God in the Digital World_*, a Teilhard de Chardinian sermon on the “emergent” spirituality of intelligent machines; Jeff Zaleski’s *_The Soul of Cyberspace: How New Technology is Changing Our Spiritual Lives_*; even a Christian book called *_The Soul in Cyberspace_*, by Douglas Groothuis. As someone who shuttles effortlessly between metaphysics and physics, spiritual epiphanies and fractal geometry, what do you make of this stuff? Ironically, your own spirituality seems to spring more from your amazement—and amusement—at the chaos and complexity of the physical universe than any revelations on the other side of the screen.

A46. My first reaction when I see these cyber books is that I wish I’d get around to writing one myself! My second reaction is to look in the index and see if they mention me. A few of them are good, but many don’t have much content. Some books about ideas are what I think of as “Stations of the Cross” books. The author travels around and talks to a bunch of experts, writes down what he or she thinks they said, and then strains for an epiphany, which is normally some very familiar received idea, written in italics. But I just finished reading through Margaret Wertheim’s *_The Pearly Gates of Cyberspace_*, and it was terrific. She, for one, does have a clear, original, provocative idea. She talks about how the invention of perspective in the Renaissance gave people a mental tool for thinking of space as an undivided unity. She points out that once we had the idea of space, it was possible to develop physics. And this had the effect, says Wertheim, of crowding God and the angels out of our physical cosmos. She feels that in modern times we have begun to think of heaven as lying not in physical space but in cyberspace. As an example of this tendency she talks, for instance, about the science-fictional notion of uploading your mind into a computer, as in my *_*Ware_* books. I recently gave a talk at the Public Netbase Project in Vienna in which I extended Wertheim’s thesis a bit to come up with the following analogy. *_Perspective is to Physical Space as Cyberspace is to Mental Space_*. My point is that hyperlinked web pages may serve as a good tool for creating models of how the human mind works. Both the Web and the human mind have a fractal quality; that is, if you start out to go from A to B, you tend to end up detouring into C, and then into D, E, and on beyond Z. Maybe I should write a cyber book about this idea! *_The Dimensionality of Cyberspace_*. Any editors out there reading this?

Austin, Texas, July 20, 1999

Interviewer: Tom Georgoulas <tmgeorgo@cwix.com>

For: Frontwheel Drive, www.rontwheeldrive.com

July 20, 1999

Q47. I've been reading your new nonfiction collection *Seek!*, and I'd like to start with some computer science questions for you. You write about simulated evolution to develop machines that are as intelligent as their creators, yet today's AI research seems farther from reaching the goal of intelligent machines than ever. What do you see as the missing link necessary to bring AI research up to speed with your visions of intelligent machines?

A47. There's a tendency to think that maybe if we can just throw enough hardware at the AI problem, then evolution can take care of the rest. Certainly that's how God went about making us. We evolved inside a planetary-sized round-the-clock simulation over maybe a billion years.

The catch is that there is such a great disparity between a desktop computer and a billion-year planetary analog computation. Even with the biggest imaginable kinds of increases in our computing power, our machines will remain very tiny playpens.

So rather than relying on blind evolution to build our intelligent programs we get into trying to tweak the process. That's what traditional AI is all about, trying to find little top-down tricks to make a program behave more intelligently. But even in this kind of context, there are scads of program parameters that you don't really know the best values for, and this is where simulated evolution can help you.

Another point worth mentioning is that the stuff we are made of has been evolving all along as well. New kinds of organic molecules emerged, for instance. This is analogous to the fact that we are still feeling around for the best kinds of computer architectures, operating systems, and evolution frameworks. The evolution of robots is really happening at a number of levels. And it's not clear that we've really found the best kind of system to try and evolve a mind on top of. Neural nets, cellular automata, a soup of LISP strings — we don't know. We just have to keep trying.

One final, encouraging, thought is that, as our machines become networked into a planetary Web, the collective power of our machines can experience some synergetic increases. Evolution takes a lot of machine cycles, and when we can distribute this kind of search to lots of users, we get a terrific speedup. The trick here is getting people to run your simulation code. In my novel *The Hacker and the Ants*, the evolution code was a kind of virus that took over the chips in everyone's TV sets. What if every time someone hit a particularly juicy porno site, their machine became co-opted into working on evolving intelligent software?

Q48. In your writings about cellular automata (CA), you mention how parallel processing hardware is best suited for running CA simulations. There are many supercomputers designed with parallel architectures, but for the most part engineers keep cranking out more powerful computers based on the von Neumann architecture. What are the final challenges left in designing parallel systems and how can they be overcome so that CA programs can advance even further?

A48. Well, I too wonder what ever happened to the dream of parallel computing. About twenty years ago, the Connection Machine was supposed to be the big new paradigm, but before long they bagged it and got into making standard architecture workstations. I've never had a chance to do anything with parallel hardware. I have of course written a lot of CA code; usually the first thing you do is to set up a dual buffer system so that you can simulate the parallel updates of the arrays. And when you think about a CA rule itself, you are indeed thinking in terms of a parallel computation. If CAs ever found a really killer app, then the industry would be motivated to make parallel hardware to run them. Not that there isn't any such hardware at all, Xilinx of San Jose, for instance, makes some a field programmable gate arrays (FPGA) that are supposed to be good for running CAs. I recently read that a man named Hugo de Garis at Advanced Telecommunications Research (ATR) in Kyoto is trying to use them to evolve an intelligent robot cat called Robokoneko. We'll see what happens. A lot of times projects like this run into the wall of how much runtime it would take to actually evolve something truly interesting. The search spaces are just so superexponentially big. In any case, I've never tried using a FPGA myself. There's kind of a limit to how many new operating systems and hardware configurations you're willing to learn in one lifetime, and I'm getting awfully close to maxxed out.

Q49. The use of computers and programs like Mathematica have rapidly advanced the field of mathematics over the last 20 years, bringing topics such as complexity, chaos, and CA to the front lines. What are some of the newer areas of research in math that have sparked your interest?

A49. My favorites are chaos, fractals, cellular automata, artificial life, and higher dimensions. Anything gnarly. I love that computer science has made mathematics into something like an experimental science. I was never all that good at proving things, but I love doing computer experiments. Makes me feel competent. These days I'm wasting most of my time writing a book with the working title *Live Windows: Games and Graphics with Visual C++ and MFC*. I'd sort of like to just call it *How to Write Cool Windows Programs*, but Bill Gates has sort of uncooled the word "cool," hasn't he? In fact whenever I write a novel, I do a search on the text when I'm done to make sure I didn't slip up and use the word "cool" in it anywhere. But here I am putting down Gates, and I'm writing

a book using the Microsoft Foundation Classes (MFC)? Well, you gotta live in the real world. I want to see gnarly math things on my screen, and hopefully on lots of other people's screens, and the best way to get the things out there is with MFC. After awhile you even get to like it. Kind of a Patty Hearst/Stockholm Syndrome thing, where prisoners get to be fond of their jailers. What the hey, MFC is where it's at. I just hope to God it doesn't fucking disappear before I finish my book.

Q50. Now tell me something about your other new book, *Saucer Wisdom*. Is it a novel?

A50. *Saucer Wisdom* is a cross between a transreal novel and a popular science book of speculations about the future. It's my personal contribution to Millennium madness.

Saucer Wisdom arose from three interests of mine. First of all, I have a lot of ideas about the course of future technology, and wanted to write a book about that. Secondly, I'm very dissatisfied with people's current ways of thinking about UFOs, and I thought it would be worthwhile to write a novel which treats them in a more interesting and amusing fashion. Thirdly, I like to write somewhat autobiographical books that give transreal representations of various periods of my life.

So *Saucer Wisdom* features a main character named "Rudy Rucker." Rudy is approached by a man named Frank Shook who's been frequently abducted by flying saucers. But rather than giving Frank Shook medical exams and lecturing him on world peace, the aliens have been showing Frank all sorts of things about our future. Frank gets Rudy to help work his notes up into a book, a book named *Saucer Wisdom*.

The main areas of future technology described in the book are Communication, Biotechnology, Femtotechnology, and Transhumanity. The material is presented in terms of stories about things that Frank and the aliens looked at. And I enhanced the text with fifty-seven line drawings (supposedly by Frank Shook.)

You might well wonder what "femtotechnology" is. This will be the science of transforming one kind of matter into another; for instance, of making air into gold or chicken soup. One of my motivations in writing any kind of science book is always to develop new things to use in my science fiction, so you can expect to see femtotechnology turning up in my forthcoming SF novel *Realware* (Avon, 2000).

Frank's stories are a grab-bag of sketches and vignettes of little episodes from our future. And overarching these tales is the story of Frank and Rudy's interactions, which are none too serene. At one point Frank breaks into Rudy's house and disappears for two years. Frank and Rudy have their final meeting at . . . where else but the same Devil's Tower made famous by *Close Encounters of the Third Kind*. And after this meeting, Rudy has a dream in which he finally gains true Saucer Wisdom. Check it out.

New York, May 22, 2001

Interviewer: "Michael Tritter" <mtritter@interport.net>

For: Web Site to Promote the Movie AI. www.aimovie.com

Q51. We're positing that, at some point in the future, man will have created robots which are indistinguishable from you or me, and they'll be capable of loving their creators. Do you think that you would be able to love the robots in return, as you would a child?

A51. [Note, my original answer, as printed here, was deemed a little too mocking, and I edited it down for it's actual appearance on the *AI* promo site.]

This feels like an odd question to be answering. It's like I'm being set up to try and guess the plot of the *AI* movie your web site is promoting. There's an odor of Hollywood hokum coming off your use of the word "love" in this context. "Love" as in an ad for safe cars, for instance, or for life-insurance and family-style dining? The subtext of your question suggests that children are comparable to valued possessions. Is there a subliminal message that buying things might in some way be as rewarding as carrying out the ancient and divine imperative to physically give life to new human beings? To acquire machines instead of having children? And you're talking about "love?" You're talking about S.U.V.s, my friend, about oversize attack dogs and monster homes, about P.A. systems turned up too loud, about consumption and greed, about, in short, the zombified coast-to-coast Mall of the Amerikkkan dream.

Flame-mode off. "Can a person love a robot as much as a child?"

People fall in love with all sorts of things, so it's easy to imagine that they might love a robot. As it is, people love animal pets, and many even love their cars. So, sure people can love robots. But might a person love a robot as much as a child?

One's love for a flesh-and-blood child is a very strong kind of love, non-relative and effectively absolute in its intensity. This is no accident, it's something wired into us by biology so that evolution will work. According to one way of looking at things, we are biomachines that our genes use for reproducing themselves. From this point of view there is nothing more precious than a child, which is not only filled with your own genes, but is also much younger than you and therefore likely to live longer. Children are the ticket to genetic survival. As such, their value is wholly incomparable to that of a robot.

Another thing that seems to make robots less valuable than children is that it seems very easy to copy a robot. If the robot using standard hardware, one would imagine that it's simple to make a hardware copy. And one might suppose that the robot's software is readily downloadable for back-ups. So if someone offers me a million dollars to

kill my robot, why wouldn't I just buy a new body for, say, a hundred thousand dollars, hook up some kind of broadband cable to copy my old robot's software and parameter settings to the new robot body, and then cheerfully let the old robot get trashed. I'd have the new one, and it would presumably behave just the same as the one that just died.

Of course, I'd have to steel myself to the piteous screams of the old robot being immolated upon a mound, let's say, of free AOL CDs. But my Ed McMahon million would make up for it. Maybe the new robot would even help me through this little patch of grief, light-heartedly mocking the cries of its dying predecessor.

To make the proposed question have some bite, we'd have to suppose that there was some reason why you couldn't copy your robot. Maybe its architecture is biological or quantum-mechanical or in some other way so intricate that there is in fact no practical way to do a core-dump. In this case you might compare the robot to a laptop computer whose contents you haven't backed up, a laptop which, for whatever reason, has no ports of any kind, no web access, no Ethernet, no floppy disks, and so on. A valuable block of info that you can't copy.

To heighten the drama, suppose that your laptop holds your new screenplay for a savagely tear-jerking movie about a pet robot who's just like a real boy. You've put everything you've got into the script, it expresses the very core uniqueness of you. In addition, your laptop, which has a digital camera attached, has gigabytes of irreplaceable photos of things you find fascinating. Your financial records are on the laptop as well, your journal, the software you've been working on, the music you've been composing, all the most interesting products of your mind. A robot who's your collaborator might be comparable to such a laptop.

Imagine your terror, your horror if you were now required to install a new operating system on this laptop! OS X, say, or perhaps Windows XP or a new Java virtual machine. Your dear robot friend, your simulacrum, your other self doomed to be nibbled to death by cryptic bogosity, to die the death of a thousand incompatibilit

<Unrecoverable context error. Have a nice day.>

Paris, June 16, 2001

Interviewer: "Donatien Garnier" <d.garnier@futur-e-s.com>

For: The French magazine FUTUR(e)S.

Q52. Do you think that there is a spiritual dimension in the internet?

A52. There is a sense in which the Internet is a group mind of human society. The Internet consists of linked peer-to-peer nodes with no central controller (other than the "postmaster" Domain Name Server machines that lookup the routing for a given web address). This structure

is reminiscent of the brain, which consists of linked neurons with no “boss” neuron. Does the Internet think? Maybe, after a fashion. It’s a foolish and distractible as any human. The Internet is thinks a lot about money and sex.

Q53. You have been famous to be one of the first to mention the possibility of being downloaded on the Internet. Is it still something you think about ?

A53. Please, Donatien, the correct word here is *uploaded*. You and I are down here, the Internet is up there. When we offer our data to the Net God, we elevate it and upload it. When we thankfully receive the benisons of the great Planetary Computer, we download data. Today, the only feasible way to upload my personality to the web is to write a lot of stuff and put it up there for others to get in the future. This method doesn’t really need the Internet of course, it’s the same process as book publication. As for actually getting the software, wetware, and hardware out of my brain and putting onto a computer, well, I don’t think that’s really going to happen anytime soon, and maybe never. Uploading oneself is a science fiction idea whose real function is symbolic. Like mythology, science fiction uses fatastic notions to represent archetypal human situations. To upload your mind is a symbol for writing a book, making a painting, recording a song, or even just getting someone to understand what you’re talking about.

Q54. You are also famous to have spoken of cyber flesh. Could explain that concept to me ?

A54. I think you are referring to flickercladding, which is the flesh my soft robots (the moldies) are made of. Flickercladding is a computationally rich plastic with a grainy structure. Each grain acts as a processing unit that repeatedly takes in the states of its neighbors and then updates its own states. What makes this nicer than current-day computers is that the flickercladding is soft, not hard. One can readily suppose that the plastic is actually a “piezoplastic” that can behave like a muscle, so that our flickercladding creature can crawl about. Unlike the uploading of human personalities, I think this is a technology which is actually going to come about within, I’d say, fifty years. First batteries will get soft — right now batteries are one of the biggest things hanging up in robotics. Then wires will become plastic, the chips will become plastic, we’ll get plastic muscles, and the whole thing will merge into a brilliantly colored slug oozing arond on the floor between your toes. Just don’t let one crawl into your nose!

Rome, January 25, 2002

Interviewer: “Luigi Pachi” <luigi.pachi@unisys.com>

For: The Italian zine DELOS SF www.delos.fantascienza.com,

Q55. Let’s talk about *Freeware*, which is about to appear from Urania books in Italy. This time we have to face a Virus that destroyed the Boppers, artificial being able to vie the Human being. What can you say more about this novel to our readers?

A55. *Freeware* is about robots made of soft plastic veined with mold and fungus like a very ripe Gorgonzola. They’re called moldies.

The “Freeware” of the title is the information in the minds or souls of aliens who travel as energetic waves like radio waves or cosmic X-ray bursts. The waves carry the information that is the personality of the alien. In order to become manifest, one of these cosmic “chirps” needs a receiver. And the rich flesh of the moldies is, it so happens, just right for this.

Q56. Is it true that the Boppers is also the name of one of the CAD products you worked on in the past along with John Walker, met at the Hackers conference in 1987?

A56. Yes, that was a deliberate thing on my part, to give this early crude artificial life program of mine the same name as the robots I science-fictionally dream of evolving. The program boppers.exe was part of my book *Artificial Life Lab*, which was published by Waite Group Press, as Autodesk fired me before it was done. The program and book are available for free from my web page.

Q57. In *Freeware*, one of the main character is Randy Tucker, in love with an artificial being. His name sounds really similar to yours. Is it a case, or there is special reason in order to choose it?

A57. I once invented the name Randy Karl Tucker as an alias when a park ranger was asking me my name for bicycling in a forbidden zone. It was a spontaneous thing, although obviously it’s close to my own name.

In English “Randy” also means “wanting to have sex,” which is appropriate for this character. Using his full name, with the middle name, is a thing that makes him sound Southern, sort of like a serial killer you might read about.

Note that Randy Karl is from Louisville, as am I. But in most important ways, he and I are different, I hasten to add.

Q58. What do you like most about *Freeware*?

A58. I think it's very visual and surreal, very spaced-out and trippy, loaded with funny extra little things. Like a Bosch or Bruegel painting.

Q59. In 1982 you won the very first edition of the P.K. Dick award with your novel *Software*. Critics underlined your role as a bridge between earlier innovation in the genre and the most recent experimentation. Do you agree with this view and do you think *Freeware* is part of this ongoing process as well? Or, instead, you picture yourself in a different manner, nowadays?

A59. Oh sure, my writing is absolutely at the cutting edge of what's possible to do in science-fiction. And it's not like a lot of younger writers are following along and doing the same thing as me. I'm still blazing new trails. The mass of science fiction is fairly unimaginative, safe, and unliterary. What I do see happening is a certain number of "straight" literary writers are starting to use science-fiction in their books and in this way are moving closer to what I do. But a "straight" writer who's not from the SF tradition will sometimes be unable to really make the science be hard and rocking.

Speaking of awards, I'd like to mention that I was in Rimini this year to get the Medal of the Italian Senate for my science-fiction writing. This was at a conference sponsored by the Pio Manzù Center. They compared me to Lewis Carroll, which is a different way to think about what I do.

Q60. About your novels, I know that *Software* was under option for 10 years from Phoenix Picture. Then I recently watched *The Sixth Day* and the central idea of taping someone's brain software loading it onto someone else seems coming out from your *Wetware*. Have you been involved in this Schwarzenegger movie, then?

A60. No, I was not consulted. I saw Schwarzenegger walk by once when I was at Phoenix Pictures in Hollywood trying to get them to keep the *Software* option alive. But Phoenix killed my option and released *The Sixth Day*. I do feel that Phoenix ripped off some of my ideas. What really got me angry was that they went so far as to name the villain of *The Sixth Day* after me — I think this might have been an unconscious act of confession. He's called Drucker = Dr. + Rucker. I guess I should sue them, but thinking about suing someone makes me bored and tired. So I keep putting it off.

Q61. SF can be very often the mirror of our reality. After the latest disaster in New York (I am just writing you after the new crash at Queens in NY), how do you think the entire SF community and the SF writers themselves will react to what's going on in the world?

A61. Certainly it makes you think. I prefer writing about basically sunny kinds of futures, and I don't even like to think of the world being enmeshed in endless terrorism and the filth of biological warfare. It's not the future I want to see, and it's not the future I want to write about. I think you will definitely see a wave of downbeat future terrorism books.

As for me, there are so many other things I'd rather think about. I resist having the hyenas and running dogs of the media dictate what I should or shouldn't be thinking about. I have only one life to write in, so why should I have my topics conform to the manias of political propaganda! Who's going to care about the Taliban in fifty years? We'll all be fighting other wars by then. We've always been fighting wars. War isn't a topic that interests me.

I'd rather write about love, about science, about ideas, about art, about creative programming, about the things that make life worth living and worth fighting over.

Q62. What is your view about this terrorist attacks, which strangely happened timely with the economic recession? Perhaps a great mathematician and SF writer like you has a personal theory/view about it...

A62. My impression is that the root cause of the terrorism has to do with demographic trends.

Doctrinaire religious zealots all over the world discourage birth control — you see this in both Christianity and Islam. One of the reasons for this is, in my opinion, economic: any religion wants its adherents to have a lot of children so as to make new members of the religion. Perhaps the leaders don't even consciously realize this. But clearly there are better ways to honor life than to forbid contraception.

In a country like Italy, the women have enough economic power to simply ignore the strictures of the priests and to limit their reproduction rate. Given a choice, women tend not want to have a huge number of children.

But in less well-off countries such as the Arab nations, the women have little power, and no way to get around the religious injunctions to have a lot of children. In the Arab nations, something like half the population is under 20 years old. This makes a natural source of disaffected people prepared to die for terrorism. Young men tend not to really grasp their mortality, and to be more willing to cast their lives away.

A country that has some birth control and in which women have some power is a country unlikely to promote terrorism. Given these fairly obvious facts, it's a little unbelievable that, thanks the Fundamentalist Christian right-wing, the United States does so little to promote birth control world wide.

Q63. Any idea when *Realware* will appear in Italy? I've read that it should be the last of the *Ware* series... Can you still confirm it?

A63. I don't know if or when *Realware* will come out in Italy, you'd have to ask my Italian agent. I have sold a lot of books in Italy of late, so the chances seem good. For now, yes, *Realware* is the last of the *Wares*. It rounds things off nicely. In terms of my career it's also not a good idea to keep piling books onto one series, its better to make fresh new books. But if I live long enough it's likely I would do another *Ware* some day. I do love that universe and the characters in it.

Speaking of Italian publication, I don't know if you are your readers will all be aware of a small book of my non-fiction writings called *Filosopho cyberpunk* (Di Renzo Editore, 2000). This book exists only in Italian, and has a cover painted by me.

Q64. Can you say something about *Spaceland*, your novel which should be published in the US in 2002?

A64. It comes out from Tor in June, 2002. You can read an excerpt of it online at www.infinitematrix.net

Spaceland is about a Silicon Valley manager who travels into the fourth dimension. It's somewhat comic. The title refers to the classic novel by Edwin Abbott, *Flatland*.

My non-SF novel *As Above So Below: A Novel of Peter Bruegel* will come out from Tor books in Fall, 2002.

And my textbook *Software Engineering and Computer Games* will be published by Pearson Educational in Summer, 2002.

Q65. Are you working at a new novel right now? Can you anticipate anything about it? Plan for the future?

A65. I'm working on a novel set in the year 3000 called *Frek and the Elixir*. It's about a world that's been ruined by biotechnology and a young boy's quest for an "elixir" to restore Gaia.

Q66. Will the war against Taliban will be in a certain way speculatively reflected in one of your future SF stories?

A66. I really think that chasing the news is a stupid way to write science fiction. And, as I mentioned above, I prefer not to magnify this kind of thing by writing about it.

If I did for some reason write about the Taliban, certainly I wouldn't want to write any militaristic gung-ho Sylvester Stallone kind of thing. When you see photos of Afghanistan, the heart fills with sympathy and pity. It would be reasonable to include the viewpoint of someone on the "bad" side, that is, the point of view of a young Taliban enlistee.

On the other hand, I've visited the Ground Zero in New York last month, and being there filled me with a much greater sadness than any photo could cause. And the victims there are my own people, I can so easily imagine their lives. So the story would need to include the viewpoint of a terrorist victim. Maybe to make it science fictional you could try fusing the minds of the terrorist and the victim. But that might be too simple, too cheap. The whole situation is so unutterably sad.

Another way to go about it would be to transfer it to an alien world. Sometimes there are things about our own world that we don't allow ourselves to see, but which we can see when we cast it into a fable about aliens. But this, again, might be too cheap. It's all such a bummer, that the little tricks of genre science-fiction seem unequal to the task.

Isn't science-fiction supposed to be escape literature? Maybe expecting SF to express true tragedy is to ask a butterfly to pull a hearse. I'm in no rush to try.

Q67. Finally, can you tell us which SF author, from the new generation, we should keep an eye on, as far as your opinion is concerned. Any titles to underline, in particular?

A67. Writers — at least writers like me — aren't good people to ask about other writers' work. We're too self-centered and too envious of the success of others. I can never give an objective, disinterested answer to a question like this. And, frankly, I don't read much other science fiction as it never seems to measure up to the impossibly high standards of being as good as mine! Among slightly younger writers, I like Marc Laidlaw's work a lot.

Mayville, North Dakota, April 5, 2002

Interviewer: "Mitzi Brunsdale"

<Mitzi_Brunsdale@mail.masu.nodak.edu>

For: *Publisher's Weekly*

Q68. How did you get interested in science fiction?

A68. I love science-fiction's wild play of ideas. And I've always enjoyed the home-grown, colloquial style of science fiction. It's an art form as indigenously American as rock and roll.

Q69. Your new book *Spaceland* is a kind of homage to Edwin Abbott's *Flatland*. What made you decide to do that?

A69. I first read Abbott's *Flatland* as a teenager, and I never really got over it. The book is a tale — not really a novel — about a two dimensional character called A Square and about his difficulties in

understanding the third dimension. Our situation is similar: we're three dimensional creatures trying to understand the fourth dimension. The idea is that we can form useful analogies between A Square and ourselves. Four is to three as three is to two.

Thanks to Abbott, I ended up writing two non-fiction books about the fourth dimension. And now I thought it would be interesting to make the fourth dimension work in a realistic novel. I call my main character Joe Cube. In *Spaceland*, I was particularly interested in working out how things would look if I could travel out into the fourth dimension. Nobody's ever pushed that notion very far before.

Q70. How do you envision the typical reader of today's science fiction?

A70. Freaks, geeks, and students. My people. In *Spaceland* I'm trying to reach a bit beyond the confines of the genre. Joe Cube has a believable emotional life and some painful romance problems with his wife. The book is set in contemporary Silicon Valley.

Q71. What authors have influenced you most?

A71. Robert Sheckley, Philip K. Dick, John Updike, Jorge Luis Borges, Thomas Pynchon and David Foster Wallace.

Q72. Does the average person have the proper background to understand *Spaceland*?

A72. It's meant to be fun and easy. But a disconcertingly large number of people don't want to touch a book that bears the taint of science fiction. What if we were to call *Spaceland* a futuristic novel of ideas rather than calling it SF? A work of techno-magical realism? A fabulation?

Q73. Could you put in layman's terms the mathematical notions you're working with in *Spaceland*?

A73. I don't use "fourth dimension" to mean "time," I use it to mean an unseen direction that you might possibly learn to travel in. The idea is that our universe is embedded in a much larger four-dimensional space that contains two competing races of four-dimensional beings. They're a bit like angels and devils, but it's not quite clear who are the good guys.

Q74. *Spaceland* has some very funny satirical elements. What are the targets of your satire and why?

A74. I live and work in San Jose, California, the very heart of Silicon Valley. It's been a great opportunity for me as a writer: imagine if William Blake had worked in a textile mill. *Spaceland* has a lot of humor at the expense of the dot commers. I don't think it's giving away too much of the plot if I mention that cell phones very nearly destroy our universe.

Q75. What did you enjoy about writing *Spaceland*?

A75. I liked writing from the point of view of a character, Joe Cube, who's non-technical and somewhat clueless. A middle manager. I came to sympathize with him a lot.

Q76. Do you have a pet peeve about today's science fiction market?

A76. For sanity's sake, I can't pay too much attention to the ebb and flow of the market. It's been in crisis every since I started, nearly thirty years ago. You need your own compass if you're going to have an extended career as a professional writer. I just wish I could have all twelve of my SF novels in print at the same time, in a nice uniform edition like the works of Philip K. Dick.

Q77. What directions do you see science fiction taking in the next ten years?

A77. I think we'll see more and more overlap between the mainstream and the SF markets. It's already quite common for mainstream writers to treat SF themes in "futuristic" novels. And there's a lot of SF writers bent upon making their work more literary. Some writers use the phrase "slipstream" for the merger between SF and literature.

Strictly on the SF side, it seems like it's about time for a new literary movement within science fiction. SF was born in the Forties. In the Sixties, the excitement had died down, but then the British-inspired New Wave movement perked things up. In the Eighties, SF had gone stale again, and the cyberpunk SF movement brought life back into the field. Perhaps the Zeroes will bring some new Young Turks.

Q78. What do you consider your strengths as a science fiction author?

A78. I know a lot about science, I have a sense of humor, and I write in a literary fashion. I take a lot of trouble in crafting my books at every scale: I try to pick or invent good words, to make lively believable dialog, to create vivid and visually striking scenes, and to get a nice archetypal flow to the plot.

Q79. Which is your favorite among your science fiction novels, and why?

A79. I always like my latest book the best. It would be depressing not to think I'm still getting better. So I like *Spaceland* the best. It was easier to write than some of my books, it was something I was totally ready to do. It practically wrote itself. I think I got the love interest working better in this one than ever before. And the four dimensional stuff is really wild. It's shows some things I've always wanted to read about, and I ended up having to write it myself.

Q80. Is there advice you might offer to young science/math buffs who want to write science fiction?

A80. For a beginning writer, I recommend using an approach I call "transrealism." This means writing SF about yourself, your friends, and your immediate surroundings — transmuted in some science fictional way. Using real life as a model gives your work a certain literary quality, and it prevents you from falling into the use of boring clichés. Whatever you do, don't model your SF on the crud you see in movies or on TV. Model your SF on reality, not on studio hack stuff. Sometimes people think that because SF is genre literature, they can write it in a condescending style and not try very hard. Wrong. You never succeed in any kind of literature unless you are writing with everything you've got, with every fiber of your being. I have a few more tips on my web site www.rudyruicker.com.

Austin, Texas, June 20, 2002

Interviewer: Tom Georgoulas <tomg@io.com>
For: Frontwheel Drive, www.frontwheeldrive.com
June 20, 2002

Q81. What kinds of gnarly computer research (Cellular Automata, fractals, A-Life, etc.) are you actively doing these days?

A81. I'm about ready to lay down my programming tools. I pretty much shot my wad creating the Pop game framework for my textbook *Software Engineering and Computer Games*. <http://www.mathcs.sjsu.edu/faculty/rucker/videogameprojects.htm> I did more programming on that than I've ever done. Writing science fiction is a lot more fun. You want a frammistat in SF, then all you have to do is describe it once, and if there's a problem with it later on, you just go back and change a few words. Quick revision cycles! The "building a cathedral out of toothpicks" aspect of programming does get old.

At SJSU I'm teaching more graduate courses now and advising more Master's degree theses.

<http://www.mathcs.sjsu.edu/faculty/rucker/msprojects.htm> This means I can try to get students to do the programming work for things I'd like to see. One interesting project I have right now, is that a student named Wyley Dai is extending my Pop game framework to use four space dimensions. He has a four-dimensional Space Invaders working pretty well, and I hope he can get a four-dimensional Pacman. One of these days I want to get a student to add cellular automata to the Pop framework, so we can have surfing on a CA wave. I'd like to see chaos in a game context as well.

Maybe I'll give a talk on some of these notions at the Game Developer's Conference in San Jose next spring. That's my favorite conference these days.

Q82. Now that Stephen Wolfram has released his long awaited book, *A New Kind of Science*, which focuses on complexity and cellular automata, what do you think the net effect of the book is going to be on the CA field?

A82. It should be a real shot in the arm. I was considering writing a jump-on-the-bandwagon book along the lines of *What Wolfram Said*. But I found out it's already too late for that. Which is kind of a relief. All I really want to do these days is write science fiction. As for CAs, I'll just settle for being one of the lesser-known "stations of the cross" for CA popularizers' Sacred Quest.

I read Wolfram's book through once, quickly, and I like it a lot. Many of the ideas are familiar to me from things he said back in the 1980s. But he pushes them a bit further, and he's really done the legwork in terms of checking out examples. I'm (very slowly) working on a longish, detailed review of the book for the Bulletin of the American Mathematical Society, and I hope to use the book as a text in a course I teach at SJSU in Spring, 2003.

To rush and say much more now would be premature. John Updike once compared critics to "pigs at a pastry cart." Here's this mammoth volume that took a genius ten or twenty years to write, and people want to rush out quick-draw sound bites on it? "Gobble, gobble, tastes like prune!"

Q83. Your computer science textbook *Software Engineering and Computer Games* is coming out from Addison Wesley this fall. Are video games a good way to teach computer science?

A83. IMHO, having students do computer games projects is absolutely *the best possible way* to teach programming, graphics, software engineering, object oriented programming, etc.

I used to be into photography, and I managed to get hold of this very nice camera, a Leica M4. And I was constantly shooting pictures with it. And then I wanted another lens, and I went to a store that carried Leica

stuff, and I found out that a lot of people were into *collecting* Leicas, like keeping them in glass cases. To me, a camera is for taking pictures. And a programming tool like Visual Studio or the JDK is for writing programs. Not for collecting different versions of, or for arguing about, or for comparing to other products. It's there to *use*. Writing a game is a nice big problem that makes you program a lot.

To take pictures, you need to have something you like taking pictures of. To learn how to write, you need to have something you want to write about. And to learn programming, you need something you want to program about.

It's very easy for a student to get excited about making a game work.

A second win with teaching games programming is that the homework is very easy to grade. The game works or it doesn't; it's playable or it isn't.

I've been teaching my sections of the Software Engineering course at SJSU this way for about ten years. Over the years I built up the Pop framework so that students can build on it to make games pretty easily. I'm proud of the code, it's been used for about a hundred games now. I have some of the better ones up for download.

<http://www.mathcs.sjsu.edu/faculty/rucker/computergames/halloffame.htm>

The Pop framework is thoroughly OO, basically you just edit one file to overload a few methods and you've got your game: Pac-Man, Asteroids, 3D Defender, Airhockey, Soccer, whatever. I used patterns and UML to try and get the design right. Graphically, I designed it so you can run the game inside a Windows window, instead of taking over the whole screen (which I've always considered to be morally wrong!). You can either use Windows graphics or OpenGL; switching between them is a nice example of using the Bridge pattern. It's all in the book. I don't think I'll ever write a textbook again, though, it's been an insane amount of effort. I do hope the book sells well.

Q84. I just finished reading *Spaceland*, your latest science fiction novel, about a Silicon Valley manager who is invited into the fourth dimension. Not only does the book nail the climate of the dot com boom, the fourth dimension experience is described extremely well and the story is funny to boot. What prompted or influenced you to write *Spaceland*?

A84. The book is inspired by Edwin Abbott's 1884 book, *Flatland*. That book is a tale — not really a novel — about a two dimensional character called A Square and about his difficulties in understanding the third dimension. Our situation is similar: we're three dimensional creatures trying to understand the fourth dimension. The idea is that we can form useful analogies between A Square and ourselves. Four is to three as three is to two.

Thanks to Abbott, I ended up writing two non-fiction books about the fourth dimension. And now I thought it would be interesting to make the fourth dimension work in a realistic novel. I call my main character Joe Cube. In *Spaceland*, I was particularly interested in working out how things would look if I could travel out into the fourth dimension. Nobody's ever pushed that notion very far before.

Flatland is set on December 31, 1999. A Sphere from the higher (third) dimension appears, passing through Flatland. So when that day rolled around in reality, I wanted to have something amazing like that happen, I wanted a 4D creature to enter our world. That's the Y2K event I was really waiting for, and since it didn't happen in fact, I wrote it into reality.

Another thing I wanted to do in *Spaceland* was to depict my native Silicon Valley, kind of like the way I did in *The Hacker and the Ants*. So far *Spaceland* seems to be doing pretty well. Just for fun I went ahead and posted my working notes for it on my page for the book.

<http://www.mathcs.sjsu.edu/faculty/rucker/spaceland.htm>

The Hacker and the Ants will be reissued by Four Walls Eight Windows this winter, by the way, complete with a cover by my daughter Georgia's New York design company, www.pinkdesign.inc.

Q85. Was *Realware* really the final **Ware* book, or can we fans begin quietly speculating on the fifth installment?

A85. Hey, a series is never over till the author dies, and even then it might not be over. I'm as curious as you are about what happens to Cobb Anderson after he leaves Earth in that flying saucer.

But, remember, there were nine years between *Wetware* and *Freeware*, so I'm not severely due for another **Ware* till 2009. And maybe by then the market for a book of that nature will be stronger.

And, no, I'm not telling anyone yet what I would call it. Jinx, you know. Make up all the silly Ware names you like, but you won't get the True Name out of me. Vaporware, Shovelware, Stoneware, Silverware, Underware, Earthenware, Senileware, Noware — I've heard 'em all.

In the near term, I don't plan a sequel partly for reasons having to do with the publishing industry.

Harper Collins, owner of Avon, the publisher of the **Ware* books, was bought by a megacorporation called News Corporation, which is the creation, I believe, of Rupert Murdoch. If you're an author, over the years you find yourself being "bought and sold" a countless number of times. A mid-list author like me isn't exactly the juiciest part of any acquisition; I'm more like a piece of chewing-gum stuck to the bottom of a shoe, something you pick up by accident. The News Corporation is bottom-line-oriented, and I'm not viewed as a strong enough profit-generator. My books earn out, and then some, but I'm no Stephen King.

This means that Avon has been quite resistant to books by me of late; they turned down *Saucer Wisdom*, *Spaceland*, and my forthcoming *As Above, So Below*. All of these were picked up by Tor Books, whom I now consider my primary fiction publisher.

Another bad sign from Avon is that they may be letting my **Ware* books go out of print. I know *Wetware* is out of print, for instance. I find this especially galling, as a guy called Craig Nova recently published an SF novel called *Wetware* that in fact treats my pet themes. (Nova's publisher is owned by the Bertelsmann AG megacorporation, which seems to independent of the News Corporation, so I can't get totally shrill and paranoid here.)

In short, my problem with writing another **Ware* in the next few years would be that I'm not at all sure Avon would want buy another **Ware* just now, and I don't know if Tor would want to publish an "orphaned" series book. And they might both be right. When you drag a series on too long, I think the readership can drop.

Sooner or later, a movie of one of the **Ware* books may get made. And then it would certainly be easy for me to sell another sequel, assuming I'm still alive.

On the film front, Phoenix Pictures had an option on *Software* for about ten years, but that died. I was annoyed when Phoenix turned around and then released a Schwarzenegger movie, *The Sixth Day*, using some of my themes, complete with a yuppie mad scientist called Drucker (as in "Dr. Rucker")! But I'd rather not rant about that.

Even as I type this interview, I'm inking a nice option agreement for *Freeware* with a Seattle outfit called Directed Evolution Networks.

A Brooklyn-based director named Mark Mitchell just optioned *Master of Space and Time* as well.

Hope springs eternal in the human breast.

Q86. Spirituality is on the rise in your later works, while mysticism was more a focus in the earlier stuff. Is this new found relationship with God closely tied with your sobriety, or just another step in the evolution of your religious leanings?

A86. God, that's a minefield of questions.

Yeah, man, I'm a reformed alkie lay-preacher standing waist deep in a river hollering, "Ask God for help and you'll get it!" Veins standing out in my forehead, eyes popping from my head.

Not. Never fear, I'm not going to get all born-again or flakognostic on you.

I'm an Episcopalian; my father was an Episcopal priest. Since my twenties I've been a mystic as well, someone who believes the Universe is One, the One is Unknowable, and the One is right here. An additional belief that I tacked on when I turned fifty is that you can actually ask the

One for help. That's a standard teaching of ordinary religion, of course, but I'd never much tried it before.

It's been my experience that, for whatever reason, asking for help seems to work. I get the help right away, not for things like winning a lottery, but for things like staying sober, being kinder, and feeling less uptight. Maybe there really isn't a God, maybe asking for help just sets off some neurochemical process in my head. Whatever; for me it works.

Some of this experience seeps into my books, but it's not something I would want to make central. I'm well aware that, for very many people, any hint of religion is a turn-off. A science fiction novel is supposed to be entertainment, not a textbook or tract.

Q87. Is there any other projects or novels underway that you want mention before we wrap this up?

A87. I've written a historical novel about the sixteenth-century Flemish painter Peter Bruegel. It's called *As Above, So Below*, and it's coming from Tor Books this fall. I think it's a masterpiece. No SF, though, I didn't want to drag this one in the gutter!

Bruegel has always fascinated me. His early paintings of Hell are somewhat science-fictional, his later paintings of peasants are wonderfully real. He often includes something vulgar, such as someone taking a dump. None of his works ever hung in churches. His landscapes show a profound sense of the cosmic divinity inherent in the world. His technical mastery is fabulous. He's deep and funny. He's one of my main men. His life isn't very well documented, so I got to make up a lot. I used reverse transrealism to deduce his life from his paintings. I'd like to write like Bruegel paints.

Currently I'm working on a longish SF novel with working title *Frek and the Elixir*. It'll take me maybe another year to finish writing it. It's an epic, light-hearted SF novel of biotechnology, suitable for young and old. I imagine flap copy something like the following:

"The year is 3003 and the tweaked plants and animals are quite wonderful — but there's only a few dozen species left. Nature herself has been McDonalds-ized. It's up to Frek Huggins, a lad from dull, sleepy Middleville, to venture out into the galaxy to fetch an elixir to restore Earth's biosphere. At least that's what a friendly alien cuttlefish tells him the elixir will do. But can you really trust aliens?"

For that matter, can you trust me?

Madrid, August 27, 2002

Interviewer: Giulio Prisco <giulio@prisco.info>

For: Transhumanity Magazine, www.transhumanism.com

August 27, 2002

Q88. You have called your literary style “transrealism”. How would you define that?

A88. Broadly speaking, transrealism is writing about your immediate perceptions in a fantastic way. Working day to day reality into your SFictional constructions. I sometimes call it a “magpie approach.” You snatch up the shiny — or stinky — things you see and work them into your nest.

Q89. Is the Jena character of *Spaceland* a former girlfriend?

A89. No. In some of my transreal SF novels I do in fact model the characters on people I know. But in *Spaceland* I invented the characters from whole cloth. I guess they’re inspired of any number of people I’ve casually seen around Silicon Valley. I write a lot in my local coffee shop, the Los Gatos Coffee Roasting, which is good for people-watching.

Q90. Both the uvvy in the **Ware* novels and the mophone in *Spaceland* work as part of a non-hierarchical, distributed P2P network without central servers. In *Spaceland* this network approach saves the company even after giving up the “magic” 4D phones. Could you explain the concept in more details, and are you aware of any real-world implementation?

A90. Astute of you to notice this. It’s kind of a pet idea of mine. My idea is that instead of going off to some central server antenna, your cell phone signal need go only as far as the next closest cell phone, and that it can then hopscotch onwards from there. It’s a little like the way a packet makes its way across the Internet, but with the smarts pushed all the way down, so that there aren’t even any high-level routers. Each individual unit acts as a router. This would assume a goodly amount of processing power in the individual phones.

Unless I’m mistaken, something like this approach was used by the now-defunct Ricochet. Around San Francisco, you can still see Ricochet repeaters mounted on many lampposts and utility poles. As I understand it, the purpose of the repeaters was to pick up the weak signals from any nearby cell phone, and amplify the signals, hoping to hit another Ricochet cell phone nearby.

My son Rudy Jr. and I are in fact working on a science fiction story called “Jenna and Me” which involves Jenna Bush and those slightly sinister repeaters.

Q91. In the “Spaceland Notes” posted on your website, you mention that one editor rejected *Spaceland*. So also established writers get rejections sometimes? What would be your advice to a beginning SF writer?

A91. Selling a book or story has never become absolutely automatic for me. I'm eternally about one editor away from being unpublishable. Thank God for enlightened minds like David Hartwell of Tor, who bought my last three novels.

The hard fact is that not everyone does get published. Advice to beginning SF writers? Write a lot, finish what you write, and when it's done, keep sending it out for quite awhile. Heinlein had a famous dictum like "Leave your material on the market till it sells," and there's a lot to that. I never give up. If all else fails, there's always print or web zines.

Q92. I recommend reading *Infinity and the Mind* for an explanation of Gödel's incompleteness theorem. But for readers who can't wait, what does it say and mean in one sentence?

A92. Suppose that M is a formalized set of axioms incorporating our mathematical knowledge. If (a) M is clearly defined enough so that we can easily tell which sentences A are indeed axioms of M and (b) M doesn't embody any internal contradictions, then (c) there will be some sentences A which we can't prove or disprove from the axioms of M and (d) we will in fact be unable to prove the (true) fact that M embodies no contradictions.

Q93. In *Infinity and the Mind* you recall your meetings with Kurt Gödel. Did he ever say anything on the implications of the incompleteness theorem for machine intelligence?

A93. I discuss this matter in some detail in *Infinity and the Mind*. As I understood him, Gödel said that his theorems prove that you can't in fact specify a formal system whose power is equal to your mind. [Because, if you "know" your mind to be consistent, then when you write down a system M to represent your mind, you "know" that, being like your presumably consistent mind, M embodies no contradictions, but this fact is, by (d) above, something that M can't prove, which then means that you therefore "know" something M can't prove, which in turn implies that system M is weaker than you, so M isn't equivalent to you after all.]

But, added Gödel, there was no reason why we couldn't set up an environment in which robotic minds as good as ours might *evolve*. This teaching was in fact one of the main and immediate inspirations for my novel *Software* which, as well as being an early example of cyberpunk, was a thought-experiment in the philosophy of mathematics. "Y'all ever ate any live brains?"

My detailed thoughts all this can be found in the seldom-read "A Technical Note on Man-Machine Equivalence" at the end of *Infinity and the Mind*.

It's worth mentioning that in his posthumously published papers, Gödel seems to take a slightly different slant on what I'd thought he said. I'm in fact planning to reconsider the matter this fall, working with some philosophers at the University of Leuven near Brussels.

Q94. What do you think of the notion that that consciousness might require quantum effects?

A94. My physicist friend Nick Herbert has developed a highly original theory which he describes in his essay, "Holistic Physics — or — An Introduction to Quantum Tantra," online at <http://www.southerncrossreview.org/16/herbert.essay.htm>.

Nick feels that the brain has a quantum system within it, and this system is the locus of our consciousness. Quantum systems can evolve in two fashions: (I) in a series of discrete Newtonian-style wave-collapses brought on by repeated observations or (II) in a smooth many-universes-style evolution of state according to Schrödinger's Wave Equation. The communicable, standard conscious content is all of type I, and this is the kind of thing we try and mimic with our neural nets that hopefully can be trained or evolved to display emergent intelligence. But Nick points out that type II is closer to how much of our inner mental experience feels. That is, upon introspection, one's consciousness feels smooth and analog, like the evolution of wave upon a drumhead or a lake, let us say.

Nick says that it will require a "new physics" (or perhaps it would be better to say "new psychology") to specify the details of the correspondence between mental phenomena and quantum states.

As a confirmed hylozoist (believer in the thesis that objects are alive), Nick also proposes that the type II consciousness can be found in every physical system, insofar as every system in fact has its own wave state.

He also proposes that one should be able to couple one's own state to the state of another person (or even to the state of another object), and thus attain a unique relationship that he terms "rapprochement." A caveat here is that the link between the two systems should not be of a kind that can leave memory traces, otherwise the link is functioning as an observation that collapses the quantum states of the systems, reducing the consciousness to type I. He speaks of a non-collapsing connection as an "oblivious link."

If you don't remember anything about your rapprochement with someone or something, can it be said to have affected you at all? Oh yes. Your wave state will indeed have changed from the interaction, and when you later go and "observe" your mental state (e.g. by asking yourself questions about what you believe), you will obtain a different probability spectrum of outputs than you would have before the rapprochement.

I love this idea, and it may well find its way into one or more of my works.

Q95. As the co-author of the popular Cellular Automata (CA) software simulator Cell Lab: what do you think of Wolfram's recent book *A New Kind of Science*? Do you agree the bottom layer of reality might be something like a CA?

A95. The notion of "a world made of simple computations" has been around for awhile. It could be that misses something essential that Nick expresses in his notion of type II consciousness. Being conscious and alive in the real world certainly doesn't *feel* like being an emergent will-o-the-wisp ball of marsh gas dancing upon a sea of churning neural net computations. What of the One, what of God Consciousness, what of the great Undivided Divinity within all of us?

In any case, *A New Kind of Science* is a wonderful book, and I'm still absorbing its teachings. The newer idea in the book that I find truly fascinating is Wolfram's *Principle of Computational Equivalence*, which seems to posit, loosely speaking, that a leaf shaking in the wind has all the same richness of inner experience as you or me. I'm going to spending a lot of time this fall trying to really understand this new idea.

Q96. Please give us a comment on the recent case involving the freezing of the corpse of baseball player Ted Williams. What do you think of cryonics in general?

A96. Well, I've been friends with the cryonicist Charles Platt for about twenty years so I've grown a little jaded about this. So I'll go ahead and give you a somewhat obnoxious answer along the lines of what I might say to Charles.

I'd much rather rot in the ground. What's the big problem with dying anyway? I mean, what's so frigging special about my one particular mind? I don't want to be God, I want to be a human with my spark of God Consciousness. Think of a field of daisies: they bloom, they wither, and in the spring they grow again. Who wants to see the same stupid daisy year after year, especially with a bunch of crappy iron-lung-type equipment bolted to it? In my unhumble opinion, you can never really reach any serenity till you fully accept the fundamental fact of your mortality. It's the great Koan that life hands you: Hi, here you are, isn't this great, you're going to die. Deal with it.

This said, can cryonics work? I think dry nanotechnology is probably a dead-end. As I argue in *Saucer Wisdom*, wet nanotechnology, a.k.a. biotech, is where it's going to be at. In other words, if you want a new body five hundred years from now, the way to get one will be to have someone grow one from a clone based on a copy of your DNA, not by trying to retrofit your kilos of frozen meat. The hard part, of course, is replicating your mind — and remember that you have somatic knowledge in your body as well as just in your brain. I have a feeling that copying a

mind from one host to the next will require a totally new breakthrough, perhaps along the lines of Quantum Tantra.

One final jab at cryonics. We already have too many people, so why would any future society every put any significant energy into bringing back the dead? How much energy will the citizens of Year 3000 care to put into producing a brand new Ted Williams? You can rant all you like about contracts and trust funds you set up, but God know it's a simple thing for crooks to screw a dead person out of his or her supposedly inviolate trust fund. Enron took down California for billions last spring, even with a seemingly living chief of state.

Q97. How do you explain the popularity of Luddite and anti-progress views? Perhaps the pro-progress camp does not make its point well enough?

A97. Unfortunately our nation, nay, our world, is run by evil morons. 'Twas ever thus, if that's any consolation. I've recently taken to reading Boswell's *Life of Johnson* in the morning instead of the paper. Why let the politicians' antics ruin each and every day? I do what I can to change things by thinking my own thoughts and writing my books.

Q98. How about distributing your books on the net for free? What if the bad guys scan/OCR them and distribute them on a P2P system? How can you stop them?

A98. You can in fact buy one of my books, *The Secret of Life*, as an electronic book at electricstory.com. At present, however, I don't think the Net is a very good medium for books, books should really be inexpensive lightweight paperbacks you can bang around. Electronic distribution is more of a fall-back strategy for putting out a book that isn't deemed profitable enough to print. You hardly make any money publishing an electronic book.

There's a halfway strategy of print on demand (POD), whereby a distributor can quickly make up a paper copy of each book as it's ordered. Although I can imagine having some of my out-of-print books available this way, I'm not doing it a present. It just doesn't seem worth the trouble. My impression is that people don't buy many POD books. I think you do a lot better if your book is sitting on the shelf in a bookstore and customers can just impulsively pick it up.

My current strategy for making my books available is just to try and convince publishers to put out standard reprint editions. Four Walls Eight Windows has been very good about getting some of my books back into print; my Silicon Valley classic *The Hacker* and the *Ants* will be out from them this fall.

Would I ever be willing to make, say, printable Acrobat files out of my books and post them for free download? Well, you know, I've been

writing for twenty-five years, and I still have this dream of someday being able to quit my day job. Why would I start giving my books away for free? Aside from the financial considerations, giving away my work would effectively say that my work is junk, without value, not worth a cent.

Regarding your other questions, it's hard to believe anyone would go to the trouble of posting pirated editions of my books on the Net. Why? I'm not Microsoft or Metallica, not a monopoly, and not vastly overpaid. I'd like to think that anyone who's that interested in my work would be able to understand that I need to get some money for my writing to be able to continue writing more.

Not that it's at all a realistic possibility, if I were to learn of someone systematically pirating copies of my work in a big way, I would certainly want to do something about it. Legal sanctions would be the obvious route, and if that failed, I like to fantasize that some of my crip, phreak, and hacker-type fans might do a frontier justice number on the pirate's electronic life.

Pinole, California March 3, 2003

Interviewer: "John Shirley" <taoshujs2@netscape.net>

For: The 2003 Readercon book

Q99. What are the three most important events of your life apart from your marriage and children?

A99. That's kind of an unrealistic question, like why important, why three, why should I tell you, etc. But, since you're a friend, I'll complete the exercise. How about these three.

(i) Having a vision on Memorial Day weekend in 1970, hearing God tell me He would always be there and would always love me, His voice close and warm inside my head.

(ii) Meeting Robert Sheckley in the 1980s and finding that my boyhood SF hero was a fellow human perfectly willing to be a friend, and learning that all along Sheckley's science-fiction had actually been about his real life, just like the way I wanted to write.

(iii) Going hiking in Yosemite in 1992 with my son in and realizing that the Universe is held together by Love.

It's all about God or Robert Sheckley...

Q100. What is seminal now?

A100. The last two years I've been writing an epic SF fantasy structured along the lines of the Monomyth stages in Campbell's *Hero with a Thousand Faces*. It's called *Frek and the Elixir*. The hero Frek is twelve and the book is set on a bio-collapsed Earth in 3003 — there only

about ten kinds of animals and plants left. Frek journeys to the center of our galaxy to get a kind of elixir to restore Earth's missing plants and animals.

I was working with a deeper breath in *Frek*, that is, I used longer chapters. With long chapters and fifteen monomyth stages, the novel came out to about 170,000 words, nearly twice as long as most of my others, which is what I wanted. I'd always wanted to write a long novel. I just wrote the last page of the first draft yesterday.

What I write next is totally up in the air. Lately I've been thinking a lot about how to move to a higher level of commercial success. It would be nice to get enough royalties to retire from teaching. I do realize that commercial concerns can become a will 'o the wisp, a distraction. There's no cosmic reason why I necessarily "deserve" the big bucks. I would do well to be content with the level that I've achieved. But still...

I'd dreamed that my historical Peter Bruegel novel *As Above, So Below* would be a cross-over best-seller, and that I would write a follow-up novel about Bosch, but in fact my book's had very few reviews, so I'm not so optimistic on that front anymore.

Frek represents my newest strategy for scoring big in novel market, it's my take on the *Lord of the Rings* and *Harry Potter* route. If *Frek* does well, I'd love to write a sequel. I like Frek's world. But I think I'd want to do something else before I go jump back into it.

The reviews and sales for my last year's novel *Spaceland*, are pretty good. I can easily imagine knocking out another short present-day Silicon Valley novel. I have a couple of ideas.

People sometimes advise me to write a non-fiction science book relating to mathematics or computers. I teach computer science as my day job, and I'm somewhat over-familiar with the material, a bit jaded and lacking in the proper gee-whiz spirit. But I could get excited if I got a huge advance. "This is *important*."

I enjoy writing fiction more than non-fiction. Fiction lets me be more creative; there's a lot of discovery and surprise. And fiction lets me express deeper things than non-fiction can reach; I can put my whole self into it.

Paris, March 6, 2003

Interviewer: "Laurent Clause" <lclause@sciences-et-avenir.com>

For: *l'Ol*, a French computer magazine

Q101. How do you imagine real-life computers and digital technologies in ten years?

A101. The two things I notice about my computer compared to ten years ago are that (a) the hardware is faster and better and (b) the software is bossier and less comfortable to use. It's a shame to see our hardware

advances squandered on bloatware. Like the Soviet-style Communism states, Microsoft and Apple will collapse within ten years.

One change that's still happening is the use of cyberspace. Touted as the next big thing in the 1980s, virtual reality has today taken hold in computer games. Graphics cards have reached a mind-boggling level, with more to come. In ten years, we'll have an intelligent, cooperative 3D user interface.

Two cute applications I foresee quite soon are stunglasses and lifeboxes.

Stunglasses are opaque glasses with small video cameras. The user sees video on the insides of the lenses. The video is realtime filtered and transformed version of the world around. Thus you can turn your world into bright cartoons; it's a way of getting high without drugs.

A lifebox is a device that learns your life story and can imitate you in talking to your descendants. When I retire, I can begin programming my lifebox by telling stories to it. The lifebox interrupts and asks details, I fill in more and more. Then the users can do the same, listen to the lifebox and interrupt at any time. It's a way of storing the fractal that is one's life story.

Q102. Describe some digital futures you've envisioned in your science-fiction tales.

A102. Self-reproducing robots. Intelligent flying cameras the size and shape of dragonflies. People who only have sex with robots. Robot colonies on the moon. Robots fighting wars with humans over oil, which is used to make the plastics they need.

I'm very big on computers that aren't made of silicon and metal. I foresee a time of computers made of what I call piezoplastic, which is like an intelligent plastic mollusk. As does a mollusk, my soft computers will display colors on their skins.

I often write about a universal communication device called an uvvy. It's soft and you wear it on the back of your neck. It has an interface directly to your brain via electromagnetic fields. It's like a cell phone and a wireless web browser in your head, almost like telepathy.

The border between biology and computer science will become ever more permeable. Ultimately we won't have any machines at all; every appliance or tool will be some kind of tweaked organism. Genomics is the true nanotechnology.

Rome, April 9, 2003

Interviewer: Roberto Santoro <storie@tiscali.it>

For: *Storie*, an Italian literary magazine, interview to appear with an excerpt of my journal notes regarding a trip to Rimini and Ravenna.

Q103. Your Rimini is a funfair-like place (it is suggestive of Las Vegas). On the other hand, it is also a space populated by exotic and nostalgic figures (resonances of Fellini's Grand Hotel). Which is the true Italian scenery in your perception?

A103. What is truth? I'm in no position to guess at the "true Italy." There's an Italy for each person there, a thousand Italys per person per day. I wish I could have long intense conversations with every one of the women, have big jolly shouting meals with every one of the men, and go to the carnival and play pinball with every one of the children. A thousand times a day. Not practical. So I write factified fiction and fictionalized fact.

Q104. The Romantics loved to come down to Italy. Goethe's trip is the one coming in our mind now. What are the specific techniques required in the writing of a reportage and is yours too a sort of (postmodern) Grand Tour?

A104. I write a lot in my journal when I'm on the road, as then I typically don't have anyone to talk with. It's sort of like having a conversation, and of course, writing your journal is a terrific tool for self-knowledge. Psychoanalysis for free. My technique is be completely frank and truthful, or at least to pretend to be so. During the day I carry a folded-in-four sheet of paper in my hip pocket and jot things down on it. At night alone in my hotel room, I lie on my back with my laptop on my knees and type in what I saw and thought. And then I revise, and change what I saw and what I thought.

Q105. Your prose is rich of SF similes. Is keeping a journal (a travel one, in this case) a sort of warming-up in view of a most demanding (in terms of planning) narrative trial (i.e. a novel) and what are your writing methods?

A105. A novelist is a magpie, snatching up bright shiny bits to bring back to the nest. It often happens that things I see on my trips find their way into my stories. Reality is stranger than anything one can imagine. It would take too much space to explain my writing methods in detail here, but I have extensive notes about my process in a document called "A Writer's Toolkit" which I keep on my website <http://www.cs.sjsu.edu/faculty/rucker/writersnotes.htm>

Q106. A famous Twilight Zone episode is mentioned in your pages. Thinking about cinema, music and comics: what kind of stories influenced you most?

A106. It never stops.

These days I might disingenuously claim that my biggest influence was a book of paintings by Peter Bruegel which my grandmother gave me when I was thirteen. I say this because I recently achieved my lifelong dream of turning Bruegel's life into a novel, *As Above, So Below*.

While researching that novel I traveled to Naples to see "The Blind Leading the Blind" and "The Misanthrope," and in fact some of the journal notes from that trip ended up in Chapter One of my Bruegel novel.

The movie *The Incredible Shrinking Man* made a big impression on me as a boy. And I read a lot of anthologies of 1940s and early 1950s science-fiction. Robert Sheckley was very important to me, as were, a bit later, Jack Kerouac, William Burroughs, Jorge-Luis Borges and Thomas Pynchon.

Coming back to *The Incredible Shrinking Man*, I had a memorable experience in the eighth grade, Spring, 1959, when the Science teacher at Louisville Country Day let us troop down one by one to look through a 'scope at a big crowd of paramecia from a hay infusion (a hay infusion being what you get if you take some rain water and put grass or leaves in it and let it stand for a few days, producing scads of bacteria and the protozoa that feed upon them). I still remember my astonishment at seeing so many critters, and my intense desire to look at them some more.

Just the other day I finally got a good microscope, a new Leica DM E 'scope with phase contrast, and it's like the ciliates and flagellates and bacilli are my pets. My dawgs. My homies.

I bet I'll write about them soon. There's a rich genre of SF about scientists who fall through microscopes. Alternately, there's a popular pseudoscientific theory that the atmosphere is full of "air protozoa," a fact which the establishment scientists have thus far resisted acknowledging. Kind of a stuzzy idea. The real protists are almost mere water, slight protein sheets and skeins within the fluid, so maybe there could be the same kind of thing in the thinner fluid of air. Yaar.

Q107. Bill Joy, one of the inventors of Java, claims that the robotics, genetics and nano-technology that are fueling the global economy also contain the seeds of our self-destruction. Do you think Joy's thesis is plausible and what are the ethics of cyberpunk?

A107. Having used both C++ and Java a lot, I really dislike the way Sun distributes Java (incompatible new releases every year, refusal to make peace with Microsoft, and the write-once-debug-everywhere problem). This gives me reservations about anything Bill Joy says. My having lost a bit of money on Sun stock in the dot-com bubble does warm my heart to him either. On the other hand, Joy helped bring about Berkeley Unix and the vi editor which are Good Things. And his famous *Wired* article is in fact quite reasonable.

Joy's thesis is that rogue genomics, self-replicating robots, and out-of-control nanotechnology assemblers might wipe out our biosphere.

He feels that we would do well to take it slow on radical new changes. Agreed.

I would say that Joy overestimates the effect that we can have on the world. Having worked as a computer scientist for the last twenty years, I can assure you that our machines and technologies never work as well as we expect them to. (Especially if they're based on Java!)

Mother Nature is vastly more cunning and experienced than we can possibly imagine. The bacilli and protozoa have been waging biological warfare upon each other for billions of years, and there's billions of these critters in your back yard. Gaia is *old and smart*. She can definitely defend herself. You don't think the bacteria can outsmart some cruddy Java-enabled nanotech molecule? You've got to be kidding me.

Monolithic threats never materialize. Nothing ever wins all over the board. The future is going to be an incredible maze of competing things, many of which we can't even imagine. I agree with Joy that it is well for us to be cautious. But I deride the prophetic mantle of high seriousness that he dons. The cyberpunk attitude might be: we can't control it anyway, so why not enjoy the ride? Wave with it, brother. Nice tentacles you've got growing around your mouth.

Even if the worst happens, no disaster ever manages to kill everything. If we seriously screw things up, maybe 99% of us will die, but then Gaia will heal herself in a thousand or ten thousand years, and our mutant descendants will be in a new Garden of Eden. If you take a long enough view, there's absolutely nothing to worry about. Not that I think it'll ever come to this.

The ethics of cyberpunk? That's an oxymoron. For me, cyberpunk was always about being noisy, getting attention, twisting people's minds, making things weird. A protest against consensus reality. I've always felt that if most people believe something it's certainly wrong. Cyberpunk is a tool to warp comfortable pontification into hideous orgasmic pig squeals. Why? I don't know. A kind of protest, maybe. A kind of wild fun.

Q108. Among the participants at Pio Manzù Conference there were John Searle and an aide of Generale Powell. A philosopher and a serviceman. Then, in your opinion, are culture and war the instruments of American supremacy over the world and how do you judge the neoconservatism of Bush administration.

A108. Let me answer this with a question: Must the mass media's current top three topics of the hour dominate every conversation on every occasion everywhere on the planet?

Like many other Americans, I disapprove of George Bush, and even more, of the (probably) criminal puppeteer Dick Cheney, but if I think about them all the time, they're winning. If I obsess about them, and they care not one whit about my opinions, I've given away my soul for nothing.

I would prefer not to care at all about politics. If I do this, am I effete, spoiled and unworldly? I would maintain that it's a legitimate position to refuse the lockstep of mass thought. To tune out. What if they gave a war and nobody watched TV?

This said, I recognize the value of dissent, of street action, and of written propaganda. I marched in the streets of San Francisco with the others. It felt good, even if it didn't stop Bush and Cheney.

This idiosyncratic answer is my own kind of written propaganda. I do what I can, after my own fashion.

But never forget that your own life is more important than anything in politics, more important than anything on the news. Life is too short to waste your days in pondering the limited menu of topics which the media proclaims as being the only important subjects of discussion.

The media is a Spectacle to distract people from their own best interests. The media is, after all, largely driven by the interests of the ruling classes. Certainly big media aren't driven by art, by science, or by spiritual considerations. Small peer-to-peer magazines like *Storie* are excepted, of course!

One of the nicest things about the Web is that it offers people the possibility of creating and reading their own versions of the news. I find it incredible that this medium arose so completely free of the establishments fetters. It gives one hope.

In closing, I'd like to thank the staff of *Storie* for publishing my journal excerpt, and for the interesting interview. And I'd like to shout out a hello to the charming and clever Daniele Brolli, my main SF translator in Italy. I met him in Torino six months after the Rimini trip. But that's another story.

Warsaw, May 23, 2003

Interviewer: Konrad Walewski <konradwalewski@yahoo.com>

For: *Ubik*, a Polish science-fiction magazine

Q109. You have developed successful careers both as a scientist and as a fiction writer. Do you find these activities to be fundamentally different, or do they share underlying affinities?

A109. Recently I've been looking back on my life and trying to draw some conclusions about my various activities. And I find I'm not inclined to force everything onto a monistic one-size-fits-all Procrustean bed. (The Greek bandit Procrustes was said to have a stone bed of a certain fixed length, and if you were too long for it, he'd chop off your feet or your head, and if you were too short he'd stretch you on the rack.) My thinking these days is more along the lines of William James in *A Pluralistic Universe*. Here James argues for pluralism rather than monism — that the world is fundamentally Many things rather than being a single

overarching One. In other words, yes, I think doing science is quite essentially different from writing fiction. In science you wear blinders and work with one very limited set of ideas; in fiction you try and expand your heart and mind so as to fit everything in.

Q110. What has drawn you to writing SF, what was it about that genre that appealed to you?

A110. Sense of wonder, goofs and eyeball kicks, transformation of mundane reality. Very early I picked up the trick of regarding my everyday reality as science-fictional. I'd like to be amused by the daily news, by the things I see in stores, and by the fashions on the streets. Life is only tragic if you get manipulated into taking it seriously.

Q111. Which areas of contemporary mathematics and computer science do you find most stimulating both as a scientist and a SF writer?

A111. I think there's some good material in Stephen Wolfram's book *A New Kind of Science*. I just developed a website about this stuff, you can link to it from my home page www.rudyruicker.com. Certainly there still isn't enough SF about chaos and fractals.

Recently I've been putting a lot of energy into developing a course on programming computer games, see my textbook and downloadable C++ framework at www.rudyruicker.com/computergames/ I think computer games are the most interesting area of CS nowadays. Everything comes together here: artificial intelligence, graphics, simulation, 3D modeling, virtual reality, art, sound. I'm working with some of my Master's degree students to develop games using chaos, fractals, cellular automata, artificial life and other such glorious CS gnarl of the 1990s.

As for writing an SF novel about a computer game — I almost feel like this as been done badly so many times that it's untouchable as a topic. Like painting a sunset. Yet I really did like the recent computer game novel *Lucky Wander Boy*. I guess I could maybe do a game novel some day. My friend Marc Laidlaw is working on one called *God Mode*. I'd like to maybe combine my game novel with something about the Howard Stern show, which strikes me as wonderfully science fictional. *Bug Jack Barron* come to life.

Q112. While reading your *Infinity and the Mind* one could have an impression that modern mathematics is no longer merely an analytical tool but it gravitates towards philosophy...

A112. Yes, when I was writing that book, I used to imagine that Set Theory could serve as an exact theology. Back then I thought everything was mathematics, in particular I thought that everything was an infinite set. But now I'm in my pluralistic non-Procrustean phase, and I

feel like there's very little connection between abstract mathematics and the funky true God that you might find glowing in the chakra just above your prayerful scalp.

Q113. You've had an opportunity to meet Kurt Gödel...

A113. The great logician. Those meetings were a big deal for me, in the early 1970s. I was lucky. Pretty much everything I remember is in *Infinity and the Mind*.

Philosophers always ask me about meeting Gödel. In the Fall of 2003, I was in Brussels for a semester, and when I gave a talk on "The Philosophy of Computer Science," I was billed as "the last man to speak with Kurt Gödel."

Q114. Your *Ware* novels deal with such issues as artificial life-forms or intelligent machines. Do you think that contemporary science is getting any closer to producing them, or combining human tissue with a microchip, nanobot or any other artificial component, and do you think that cyborgization of humans is a likely evolutionary step?

A114. Having recently taught the Artificial Intelligence course in the CS department here at San Jose State University, I currently feel that human-like machines are really quite far away. Present day AI is a random grab-bag of tricks, none of which is able to scale up well to a wide range of large and realistic problems. We have essentially no theory about how the human mind works, not even any tentative ideas for how such a theory would look.

Cyborgian computer enhancements of humans, on the other hand, seem not so difficult. I don't think its inconceivable that in a century you could slap a patch on your neck which would act something like a web browser which overlays its display onto the contents of your retina. Indeed, I often mention such a device in my SF; I call it an "uvvy."

Q115. Unlike the New Wave writers of the 1960's and 70's, who were very pessimistic about the effects of science and technology, in your novels and stories technology and science are rather neutral (neither good nor particularly evil), they are something natural, yet difficult to control like, for instance, in *The Hacker and the Ants*... How do you perceive science and technology nowadays, and do you think that we may lose control over them one day in the future?

A115. I like how you put that, Konrad. "Difficult to control." A dry understatement.

That's the essence of complex systems. It's not so much that they resist being controlled as that it's so difficult to predict the effects of turning a given dial or flipping a certain bit. This property of complex

systems is what Stephen Wolfram calls “irreducibility.” He feels, probably correctly, that pretty much any system that isn’t obviously simple is going to be irreducible in the sense that there’s no superduper shortcut way of predicting what it’ll do when you turn this little knob here. All you can do is turn the knob and watch what happens. And then if I don’t like what I see and quickly turn the knob back, it’s already too late, as the system has evolved into a new state, and is likely to go on and do something even more surprising even though I turned the knob back.

Almost everything interesting is complex and unpredictable: nature, society, other people, machines. We never did have control over any of it.

Q116. Your characters are frequently scientists. To what degree do you draw inspiration from your own career as a scientist when you model your protagonists?

A116. I’m not a very typical scientist. I wouldn’t say that I’ve made much of a mark in science. I’m more of a teacher and maybe a philosopher of science. And I’ve had some fun tinkering with computer programs, making gnarly things for people to look at and think about. As for modeling protagonists, I do often draw on myself or on people I know. That’s an aspect of what I call my “transrealist” approach. To describe immediate reality in a science fictional way. I think Stanislaw Lem did that too. He’s one of my favorite SF writers by the way.

There’s a tradition of great minds from Poland; I’m thinking now of such mathematicians as Banach, Tarski, Mostowski, and above all, Stanislaw Ulam, inventor of the hydrogen bomb, measurable cardinals, and cellular automata. Any chance of me getting a visiting academic position there?

Q117. On the other hand, many of your characters are very human, often weak, or even losers, having to face all sorts of crises. They remind me of Philip K. Dick’s anti-heroes. Has Dick had any influence on your work?

A117. When I first discovered Phil Dick’s work, I was really happy. He often has this very relaxed, unstuffy way about him. Just folks. And I like that his “folks” aren’t good patriotic honest workers, no, they’re neurotics. On the other hand, if I read too much Dick, I get sick of how desperately unhappy his characters are. He’ll set up some really interesting world, and then have chapter after chapter of a guy arguing with his wife about nothing. It’s realistic, but it’s not necessarily what I want from an SF book. I want humor, sense of wonder, eyeball kicks, reality warps, conceptual breaks. Dick can do all of those, but I think sometimes his own demons took over and you’re just getting page after page of purging. Dick

is esteemed, I think, for his sensibility as much as for his particular works, as so few of them are fully successful.

Q118. You have written some stories in collaboration with such writers as Bruce Sterling, Paul Di Filippo, Marc Laidlaw or, more recently, with your own son. What specific advantages does working with another writer have, and have you ever been tempted to write a novel in collaboration with another writer, just like Sterling and Gibson did?

A118. I lack self-esteem when it comes to short stories. I've had so many of my short stories rejected over the years. If I write one, there's no assurance whatsoever that I can sell it, and even if I do sell it, the payment is jack. In terms of my artistic career, writing stories is a pointless activity. I tend to collaborate on them because (a) somebody wants to do it and they goad me into writing a story together, or (b) I think it would be fun to work together with someone as it can be like a long and entertaining conversation, or (c) I figure that if I link my name to someone else there maybe some hope of selling the story. I think the story "Jenna and Me" that I wrote with my son is really cool, but none of the print magazines would dare publish it, as it mocks George Bush. You can read it for free online at www.infinitematrix.net/stories/shorts/jenna_and_me.html. This said, I am right now writing a story alone, it's called "The Men in the Back Room at the Country Club."

As for writing a novel in collaboration, no, I don't think I would do that. I'm able to sell all of my novels without much trouble. Spending that much time collaborating with someone would be too much hassle, it would make it more work.

Q119. Your novel *As Above, So Below* is a fictionalized version of the life of the Flemish painter Peter Bruegel the Elder. What made a mathematician and a science fiction writer to write a historical book?

A119. [Reprised from **A87** and **A100**.] Bruegel has always fascinated me. His early paintings of Hell are somewhat science-fictional, his later paintings of peasants are wonderfully real. He often includes something vulgar, such as someone taking a shit. None of his works ever hung in churches. His landscapes show a profound sense of the cosmic divinity inherent in the world. His technical mastery is fabulous. He's deep and funny. He's one of my main men. His life isn't very well documented, so I got to make up a lot. I used reverse transrealism to deduce his life from his paintings. I'd like to think I write like Bruegel paints.

I think *As Above So Below* came out well, in fact I think it's a masterpiece. I'd dreamed that *As Above, So Below* would be a cross-over best-seller, and that I would write a follow-up novel about Hieronymus

Bosch, but in fact my book's had very few reviews, so I'm not so optimistic on that front anymore.

Q120. What's your latest project?

A120. I just finished writing a long children's novel called *Frek and the Elixir*, and I've sold it to Tor Books for publication in Spring, 2003. Here's some draft for flap copy that I wrote about it for my book website www.rudyrucker.com/frek/. Forgive the hype, but I really would like to see this book do well.

Frek and the Elixir is a profound, playful SF epic. The central theme is human individuality vs. the homogeneity of monoculture.

It's 3003 and the biotech tweaked plants and animals are quite wonderful — but there are only a few dozen of the old species left. Nature has been denatured by the profiteers of NuBioCom. It's up to Frek Huggins, a lad from dull, sleepy Middleville, to venture out into the galaxy to fetch an elixir to restore Earth's lost species. At least that's what a friendly alien cuttlefish tells him the elixir will do. But can you really trust aliens?

Frek finds himself in the midst of a galactic struggle for humanity's freedom, accompanied by his talking dog Wow, the down-home mutant Gibby, and an asteroid-raised girl named Renata. The final liberation depends on freeing Frek's long-lost father from an all-seeing alien known as the Magic Pig.

Frek and the Elixir is an archetypal saga reminiscent of *The Lord of the Rings*, the *Harry Potter* books, and Phillip Pullman's *His Dark Materials* series — enlivened by my (ahem) trademark originality and wit.

In order to give *Frek and the Elixir* a truly mythic feel, I modeled the book on the “monomyth” template described in Joseph Campbell's classic *The Hero with A Thousand Faces* (as George Lucas is said to have done for *Star Wars*.) *Frek and the Elixir* was designed from the ground up to match the monomyth so as to give the book the greatest possible resonance.

Campbell's archetypal myth includes seventeen stages. By combining two pairs of stages, I ended up with fifteen chapters. Here's a little table presenting the my chapter numbers and titles with the corresponding Cambellian stages.

Chap	Title	Monomyth Stage(s)
1	Middleville, 3003	The Call
2	The Thing Under Frek's Bed	Refusal of the Call
3	In the Grulloo Woods	The Helper
4	Stun City	The Threshold
5	Professor Bumby	The Belly of the Whale
6	Yunch!	The Road of Trials

7	Renata	The Goddess
8	Unipusk	The Temptress
9	The Spaceport Bar	Atonement with the Father
10	Orpoly	Apotheosis
11	The Exaplex	The Boon
12	All Hell Breaks Loose	Refusal of the Return, and The Flight
13	The Revolution	Rescue from Without, and The Return Threshold
14	The Shuggoths	Master of Two Worlds
15	The Toons	Freedom to Live

San Jose, July 20, 2003

Interviewer: Gary Singh <gsingh@email.sjsu.edu>

For: *Metro*, a free weekly newspaper

Q121. You've said that working in Silicon Valley has been a great opportunity for you as a writer, as if William Blake had worked in a textile mill. Explain.

A121. We just went through a revolution here as big as the Industrial Revolution. It's been nice to get in on it and not be frowning at it from the outside. Nice to know it from the inside as a programmer, a teacher, a consumer, as a guy walking around seeing the Silicon Valley types. Nice to ride the wave of change, yet at the same time to feel cozy and at home in the midst of it. I think Y2K Silicon Valley is a culture that will people will always be curious about, like Paris in the Twenties or Pharaonic Egypt, and I was fortunate to be here to see it happen.

Q122. In the new updated version of *The Hacker and the Ants*, you said that you made the main character of Jerzy Rugby a "more pleasant person and gave him a more coherent emotional life." Why? Are you getting more PC in your old age, or is it just that you, yourself, are more pleasant and coherent these days? You also completely changed the ending.

A122. I thought it would be funny to change the ending. Like it's just a computer program. Walt Whitman kept changing *Leaves of Grass* for his whole life.

And yeah, I'm mellower, a bit more serene, less bitter and angry, not as much of a punk. I'm leading a cleaner life than I used to, also I've gotten a certain measure of worldly success. I really only changed one thing about the ending, I had Jerzy get back together with his wife, whereas before he was getting divorced, and was chasing after a young

girl. But I want my readers to like Jerzy, and I think the idea of him dating a young girl just seems too desperate and gnarly. And I am in fact with my same wife Sylvia of 36 years, and it seems more realistic to have Jerzy end up with his wife too. Maybe fixing the ending this way is a kind of valentine to her.

Q123. There's one scene where Jerzy is in a pay phone in the Fairmont Hotel, calling a Vietnamese restaurant near the corner of Tenth Street and Taylor. Then he goes through San Jose State, south past the dorms (which are no longer there), and makes it over to where Super Taqueria is and then finds the Vietnamese restaurant. But this is Tenth & William, not Tenth & Taylor. What gives? Have you ever gotten a local street or place wrong and had someone call you on it? Or, since this is all so transreal — it's fiction, of course — does it even matter if the streets are right?

A123. Well, I'm glad you care enough to notice this. I wish I'd gotten it right. Usually I look at a map when I write this kind of scene, but as the SJSU campus area is so familiar to me, I omitted this customary step. It would be cool if someday there were like literary walking tours of San Jose and Los Gatos. Dude, I can be like Steinbeck for Monterey! We'll tear down the Knight Ridder building and put up an aquarium! Sell inflatable Rudy Rucker dolls!

Q124. Why ants? Why not cockroaches? There's all this fuss about the fact that cockroaches can last longer than anything else—that they can supposedly survive radiation and/or gamma rays, etc. What do you think would happen if cockroaches started using computers?

A124. Ants are cute, cockroaches aren't. Also I happen to know a lot more about ants, I read these E. O. Wilson books about them. The fact that ants are so highly social is a big thing, too, and I'm not sure if cockroaches have the same kind of intricate colony thing going on. And, hey, the ants are in fact “using” the computers in *The Hacker and the Ants*, that's what the book's about!

Q125. In *Hacker and the Ants*, Bety Byte and Vanna live in one of the shoddy apartment complexes on San Salvador Street, right across from San Jose State University. You've said that the city will no doubt tear down those apartments one of these days, which brings us to the next question. Downtown San Jose is a place where things are constantly being constructed right next to things that are being torn down. Places are going out of business right next to new ones opening up. It's been that way for the last 30 years. The neighborhood is constantly changing, but never actually goes anywhere. Would you say that San Jose's redevelopment strategy for Downtown is functioning like cellular automaton?

A125. It would be fun to imagine zooming out and looking down at San Jose and watching the changes in the grid. You could assign a color to each block and then have an update rule where a block's contents next year is a function of its neighboring blocks this year. But you'd see that there isn't a local CA rule that is in fact emulating San Jose's redevelopment. The reason is that higher authorities keep reaching in and poking this or that cell. Instead of letting it evolve in organic concert with its neighbors.

We're in such a rush to have our fair city get it together. When I moved here, I read the hype, and I bought it, and I thought San Jose would soon bloom. And it's nice to go there sometimes. But usually it's so deserted. Certainly it's never going to turn into San Francisco. What's the solution? Convincing a whole lot of people to live downtown seems important. It's kind of hot and flat and loud there, though. Lots and lots of big trees and greenery might help, if we can get the water. Less low-flying planes. A lot more awnings and shaded colonnades. Narrower streets. I think turning the Cargill salt ponds back into wetlands will make a difference, make the air that much sweeter.

Q126. San Jose seems to be a place forever searching for an identity. Now that the dot-com hysteria is finally over, who or what do you think can possibly put San Jose on the map?

A126. Well, I think all we've got is the capital of Silicon Valley thing. But that's kind of diffuse. Don't forget we used to be a big Hells Angels town. And now we've got a fair number of ethnic gangs.

I've learned to enjoy our San Ho just for being what she is. I walk the streets near the SJSU campus and I dig it. Sunny, dusty, dry. An exact balance of Hispanics, Asians, and whites walking around. Palm trees. Messy yards, old cars, a certain amount of trash on the sidewalks. A few homeless people and nuts. Peace. It beats the hell out of being in a mall. I enjoy the sleepy, frayed quality. It feels free.

Q127. I recently spoke with Carroll Spinney, the guy who's played Big Bird for the last 34 years. Wherever he goes in public—without the costume—no one knows who he is. He claims to be the most famous unknown person in the world. Do you ever feel like the most famous unknown person in San Jose?

A127. Yes, I think that sometimes. I never get invited to rich people's houses or anything, no patrons of the arts. Nobody reads, nobody reads science fiction, and especially nobody read far-out literary science fiction. It doesn't bother me. I have a peaceful life. I'm in no rush. America has a tradition of unknown great men.

Q128. D.H. Lawrence infuriated several acquaintances in his hometown of Eastwood, Nottinghamshire, England by unfavorably mentioning them in his books. Have you ever pissed off anyone around here by using him or her as a character?

A128. It's important to make clear that I don't really use people I know as characters. The transrealist method is to model my characters on real people I've seen. But these are only models, who end up behaving very differently from my acquaintances. It's fiction, words on paper. This said, people usually like it if they can recognize some bit of themselves in one of my characters. It's a touch of free immortality. My officemate Jon Pearce is proud that the character Ben Brie talks like him.

The character Roger Coolidge in *The Hacker and the Ants* was inspired by my former boss at Autodesk, John Walker. And John didn't like it that "his" character dies at the end. So he wrote an alternate ending where his character not only lives, but gets to give Jerzy a lecture about how dumb he is!

Q129. Lastly, what's on tap next for Rudy Rucker? Your novel *Frek and the Elixir* is coming out next year. What's after that? Do you want to concentrate more on writing or programming or teaching or all of the above?

A129. I'm trying to sell a proposal for a nonfiction book about computers and the mind. I keep changing the working title. Today it's *The Lifebox, the Seashell, and the Soul: Computation and Reality*.

I'm eager to write this book. I've been here in Silicon Valley for almost twenty years and its high time to try and sort out the ways in which computers have changed the way I see the world. Time for William Blake to come out of that textile mill, dust himself off, and tell us what he saw.

I might even be able to use the book in our Introduction to Computers course at SJSU. But in any case, I'll keep teaching for a few more years. This Fall, 2003, term I'll be teaching computer graphics and two sections of our new course on programming computer games.

Q130. It's been said that any real city should have a local bard who fictionalizes the place in several novels, and that sometimes a city isn't a great city *until* that happens. Do you want to do for Silicon Valley what Tennessee Williams did for New Orleans, what Paul Bowles did for Tangier, or what Naguib Mahfouz did for Cairo?

A130. That has a nice sound to it, sure. And I certainly plan to set more novels in and around San Jose. But San Jose and Silicon Valley are too big a job for any one bard. San Jose's already a real city, anyway. It's what it is, not what anyone wants it to be. Life isn't about control.

Q131. The whole, gosh-darned dot-com bubble. It's on everyone's minds these days. At least around here. How did it all start? How did the bust happen? Who do you blame it on? What can we learn from it all?

A131. The bubble was basically caused by how easy it is to make a solid-looking web page. Instead of making something, a company could get by with HTML, Java and bullshit. A web page is almost literally like a bubble. Shiny, pretty, light. But with a few bitmaps and some shading, you can make a web page look like it's made of metal. Play a recording of a heavy *thunk*, and you've got the safe at Fort Knox!

Everyone could go look at the web pages for themselves. That made a big impression. People kind of confused viewing a website with going to inspect an Intel chip fab or an Arco refinery. Show me some animated graphs with a positive slope and, hey, where do I send my money?

What to learn? I don't know if we really can learn. We're dogs, lemmings, gnats. I'd always remembered that story about the financier in 1929 saying that he knew it was time to get out of the market when a shoeshine boy asked him for stock tips. But when everybody was talking about stock in early 2001, even though I remembered the shoeshine boy, I went ahead I bought into the top of the bubble. Got some Sun right before it set. It was just so hard to resist seeing those numbers going up, with my boring savings account pulling in like one percent.

I think the Y2K mania played into the dot-com bubble too. We had this feeling that the world was fundamentally going to change when all those nines rolled over. Things weren't going to be the same. We were free of history. I remember having that same feeling in 1969, not about finance, but about society. That we'd somehow come free of all the old rules. Remember *Wired* magazine's cover story on "The Long Boom"? And then *Wired* themselves started marketing a mutual fund? So much hype, so much con. Maybe Metro should start a fund. Be sure to include pho parlors. One of these days pho is going to be so big.

As for blame, I'm not sure there really has to be blame. Dot com gave the Valley more visibility, and ramped up the electronic infrastructure.

Certainly a lot of us lost some money. Where the heck *did* that money go? Who got it? Who actually made money off the bubble? That's a question for the journalists to figure out. If I had to blame anyone for California's downturn, I'd certainly want to point a finger at Enron. They took our whole surplus in like three weeks. And of course you can't forget 9-11 and all the terrible things spinning out of that.

Q132. What is the future wave of Silicon Valley, now that the hysteria has subsided and the traffic has dwindled somewhat? Will there be more people walking around with Ruckeresque notions of the world?

A132. Silicon Valley has a bright future. We make interesting stuff that everyone wants. Nobody knows how to get as crazy as Californians. Nobody knows as much about computers as we do, they'll never catch us. In another year or two, everyone's nice new machines are finally going to start wearing out. Downloadable movies are a huge killer app just over the bandwidth horizon. Computer games are huge, and growing. Wireless interactive movies/games could be big.

As for Ruckeresque notions, my next project is to write that nonfiction book to explain exactly what these are. And there's a couple of movie options for my books that could spread the word far and wide. But you never know with movie options. Sometimes it takes a really long time to finally hit.

One important thing about computers is to realize that at some point you can let go of them. The actual world is more interesting than any machine can ever be. Nature, face-to-face conversations with real people, enjoying the sensations of your physical body. My feeling is that the real value of computers is in giving you a bunch of metaphors for better appreciating daily life. Turn off the buzz and go outside. It's a nice day. It's always a nice day here. Even when it rains.

San Jose, October 31, 2003

Interviewer: <shubin@math.sjsu.edu> Tatiana Shubin
For: *Math Horizons* magazine.

Q 133. To me, mathematics and SF have one essential thing in common: they both grow from the big "What if?" question. What's your take on this?

A 133. One thing we do in mathematics is to investigate the consequences of constraints or assumptions. You might, for instance, add a new axiom of set theory and then see if any nice theorems come out of this. Or you might make a definition, such as "an Archimedean solid has regular polygons for its faces (not necessarily all the same) and has the same arrangement of polygons meeting at each vertex," and then carry out a search, partly empirical and partly theoretical, to characterize the objects satisfying your definition.

Science-fiction can be carried out in this vein. Thus I might ask what would happen if people had "femtotechnology" wands that would turn dirt or air into whatever kinds of objects they wanted. Or what would happen if people could make hundreds of copies of themselves. Or what it would be like if we had a mountain as tall as all the transfinite ordinals.

Science fiction can be thought of as a laboratory for carrying out thought experiments. The bare idea of a femtotechnology wand doesn't tell you much. You need to do some work to investigate the consequences. In effect, you have to carry out a simulation of a society with your additional assumption. This is in some ways similar to what we do in mathematics.

Note that just *thinking* about a question often isn't enough. You need to write something down. The paper does part of the work, that is, the act of writing elicits further ideas and fills in details, regardless of whether you're writing literature or math.

Something I learned from mathematics was to never turn back from an idea just because it seems too counterintuitive. Logic can take you to some very strange places.

All this said, I need to point out that science-fiction is also quite different from mathematics. SF is a form of literature, after all, and literature involves creating realistic human characters and using words to capture one's sensations and emotions. Personal human experience isn't something that mathematics directly deals with.

Q 134. In your short story "A New Golden Age" you speak of mathematics being translated into music in order to make its beauty apparent to non-mathematicians. Isn't this defeating the purpose of mathematics? Could it be that the beauty of math appeals to special "taste buds", to a special sense that needs and deserves special cultivation?

A 134. Most people do indeed have mathematical taste buds, if only in an untrained form. But of course they'll run screaming from the room if you show them an equation. So how do you get them to appreciate math? If you look at "A New Golden Age" again, you'll see that my idea was not at all to turn mathematics into music. My idea was to tape or simulate the brain activity of some mathematicians and project these thought patterns into people's brains so that they would feel what it's like to do math.

The punch-line of my story is that, just as people tend not to like the most intellectual music, they might tend not to like the most elegant math. The public at large could prefer a somewhat shallow and self-important work to a profound and modest one. They might like, say, G. Spencer Brown's *Laws of Form* better than Paul J. Cohen's *Set Theory and the Continuum Hypothesis*.

Q 135. Speaking of the beauty of math, I distinctly remember the very first moment when it struck me with an intensity that was almost painful. It happened in an undergraduate linear algebra lecture on the Cayley-Hamilton theorem, which asserts that a linear operator satisfies its own characteristic polynomial. What are your favorite examples of beautiful theorems?

A 135. There are different kinds of mathematical beauty. The result you mention is maybe a kind of "fixed point" situation where you find the answer inside the question. A higher-order language wraps around to the standard level of discourse. Gödel's wonderful incompleteness

theorem is like this in that it's based on a sentence G which means " G is not provable."

It's also nice when mathematics establishes objective truths about external reality, such as Plato's proof that there are only five regular solids. In this context, I also think of the Frenet formulas using curvature and torsion to express the derivatives of the moving trihedron of a space curve.

Still another form of mathematical beauty involves discovering that two seemingly quite distinct concepts turn out to be the same. A classic example is the proof using Taylor series that $e^{i\pi} + 1$ is zero.

It's also beautiful to discover interesting features in previously unheard-of territory. Here I think of Cantor's proof of the uncountability of the continuum and Mandelbrot's work on the gorgeously gnarly Mandelbrot set.

Q 136. Your mathematical training was as a set theorist. Do you have a favorite set theory SF story?

A 136. My novel *White Light* is my favorite tale about set theory. Its subtitle is in fact taken from the title of a paper by Kurt Gödel: "What is Cantor's Continuum Problem?" In my novel, a disgruntled math professor with a bad job at a state college in upstate New York leaves his body and visits an afterworld where all of the infinities of set theory are real.

As chance would have it, I wrote this novel after losing my job at SUCAS Geneseo. But Mother Mathematics provided for me, I obtained a Humboldt fellowship to visit the University of Heidelberg. (I might mention as an aside that I didn't manage to get tenure until I was fifty, so take heart, all you unemployed young mathematicians.)

In Heidelberg I'd hoped to make some formal, mathematical progress on the continuum problem, but instead I wrote a novel about an unsuccessful math professor who meets Cantor and discovers that continuous objects in our physical world have aleph-two "aether" particles each.

In other words, my novel became a thought experiment demonstrating that the continuum hypothesis is false! For me, writing science fiction is a lot easier than proving results in set theory.

Q 137. To quote from a blurb on the back of *Spaceland*, "Rucker gives us a tour of higher mathematics". Could you elaborate on this statement: what particular sort of mathematics, and how much of it?

A 137. *Spaceland* is primarily about four-dimensional space, and it's an exaggeration to say it's a tour of higher mathematics. I don't have much control over what my publishers put on my covers.

If you read Edwin Abbott Abbott's *Flatland* closely, you'll notice that it's set on December 31, 1999. So I thought I should write a one-dimension-higher version of the book set in my present-day Silicon Valley. My character, Joe Cube, travels into a four-dimensional space called the All, and visits two lands there called Klupdom and Dronia.

Of course there are a number of standard things one expects in a story of this type: getting past a wall by hopping over it in a higher dimension, reaching into a person's body without crossing their skin, flipping over and becoming one's own mirror image, unexpected attacks from unseen higher-dimensional beings, and so on. Abbott and the SF writers of the 1950s treated all of these.

A fresh topic that intrigued me was what I would actually see if I were in four-dimensional space. Using analogies to Abbott's hero A Square, I convinced myself that the only way to see properly in hyperspace is to be equipped with a four-dimensional eye. So I gave Joe Cube an eyestalk sticking out into hyperspace from the center of his brain.

Q 138. Did you use any computer simulations to help you to visualize the All, four-dimensional space, and its three-dimensional cross-sections as seen by Joe Cube?

A 138. The first hyperspace simulation I used was in the 1970s. It was a set of eighty-one colored paper cubes which I made, following the instructions of the 19th century mathematician Charles Howard Hinton. These cubes were a kind of "Rubik's" version of a hypercube (because $3^4=81$). I edited a Dover collection of Hinton's writings. He was quite a character. He was convicted of bigamy, fled to Japan with his two wives, then ended up on the faculty at Princeton, where he invented a baseball gun so the Princeton players could experience really fast pitches during their practices. He wrote some science fiction, too.

In the 1980s I met Tom Banchoff of Brown University. He showed me the first computer simulations of four-dimensional space. They made a powerful impression on me.

When I worked at the graphics company Autodesk in the 1990s, we were building a virtual reality platform, and I wrote some code so that I could look at tumbling solid hypercubes through the VR goggles.

Here at San Jose State in the 2000s, I've had some computer science Master's degree students do thesis projects involving creating programs to display four-dimensional polytopes.

By now, I don't find these programs all that useful. Certainly they're suggestive, and they get the mental ball rolling. But they don't show you a full four-dimensional world, which is what I was trying to visualize in *Spaceland*. They only show a few simple polytopes.

I would very much like to see a good four-dimensional virtual reality simulation. It's a problem that hasn't been properly attacked. Most efforts in virtual reality are, quite reasonably, focused on building

computer games, so I think what's needed is a good four-dimensional computer game. My student Wyley Dai did create a good four-dimensional Space Invaders game. But what I want is a whole reality with naturalistic forms resembling hyperdimensional plants, animals, and geological formations.

Q 139. You once said: "To take pictures, you need to have something you like taking pictures of. To learn how to write, you need to have something you want to write about. And to learn programming, you need something you want to program about". What about applying this principle to learning mathematics? What does it sound like?

A 139. You only learn mathematics by applying it to something that matters to you. Learning based on drill has a very short half-life. Each person has to find things that catch their fancy, say, squaring numbers on a calculator and looking at the digit patterns, or maybe trying out possible arrangements of regular tiles.

I remember once I was riding in a car with a friend and he wondered how many ways there are to fold a map. And I told him there's a little branch of mathematics devoted to that problem. He thought I was kidding.

The good teachers come up with intriguing problems that students really want to know the answer to.

Q 140. In one of your interviews you said that you want to be called a writer since "writing is far and away the most important thing that I do. Over the long run, only the written language matters". Isn't mathematics a highly evolved language?

A 140. Certainly my books are more important than whatever I've done in mathematics or computer science. Of course this says more about my relative abilities as a mathematician and as a writer than about the absolute significance of mathematics.

It's not a contest, anyway. One thing doesn't have to be more important than another.

I do believe that the language of mathematics is less widely applicable than, say, English. Certainly there are things you can say in English that are much clearer in mathematics. But mathematics doesn't talk about how it feels to be alive. Yes, we can contrive clever chains of reasoning to try and quantify sensations and emotions — but these models come far after the fact. Ordinarily language, on the other hand, can capture human experience on the fly.

Q 141. Once you said: "My work with computers has very much affected the way I see the world". Could you explain what you meant? Also, has your work in math had a comparable effect?

A 141. My background in math and computer science has a tremendous influence on the way I see the world and on how I write.

For instance I think about the writing process itself as a fractal. I have the big arc of plot, the short-story-like chapters, the scenes within the chapter, the actions that make up the scenes, the nicely formed sentences to describe the actions, the carefully chosen words in the sentence. And hidden beneath each word is another fractal, the entire language with all my ramifying mental associations.

I see computer science as experimental mathematics. Of course people can use computers for other kinds of things, but what I've been doing for the last twenty years or so is exploring ways of bringing mathematics to life.

Over the years, I've adopted a variety of mathematics-influenced views about the nature of reality. As a series of personal thought experiments, I've thought of the world as made of infinite sets, of curved space, of fractals, of cellular automata, and of computations.

These days I just think reality is a whole lot of things at once, and that there aren't any simple answers. I'm accepting —and savoring —the fact that the world is rich and complicated. Mathematics and computer science have taught me something about the range of possibilities.

The waving of the branches of a tree in the wind, for instance — it's wonderful to think of them in terms of chaotic oscillations, and then you have the coupling of the branches to think about as well. Or the air around us — it's mind-boggling to think of the complexity of the flow fields. If we could see the air, we'd be amazed. Though, come to think of it, we can see clouds, which also happen to be, of course, fractals.

If there were only one spot on Earth where clouds formed, people would be unbelievably excited about traveling there to see them. It would be like whale watching. Lying on your back looking at clouds is a deeply satisfying experience.

Q 142. Are you familiar with two recent papers by John H. Conway and Juan Pablo Rossetti, "Describing the Platycosms," and "Hearing the Platycosms"? Conway explains that they proposed the term platycosm for the 3-dimensional analogues of the torus and Klein bottle, and in these papers they discuss, in particular, what you'd see if you lived in one of these "flat 3-manifolds without boundary". Sounds rather science fictional, doesn't it?

A 142. This sounds like a nice mathematical SF idea, I'll have to look into it. Platycosm is a wonderful word. John Conway is a great man.

I'm proud to say that I've occasionally exchanged email with him. When I was working on my novel *Freeware*, I was interested in higher-dimensional non-repeating tilings of hyperspace, similar to Penrose's Perplexing Poultry. And Conway helped me a little. *Freeware* ended up

including some devices I called “stunglasses.” You wear them for fun; they tessellate the images of your surroundings into three-dimensional Perplexing Poultry. Peck!

Another contact I had with Conway was when, after carrying out some computer experiments, I formulated the notion that the stitch on a baseball matches the space curve defined by saying it has constant curvature and torsion that varies as the sine of its arc length. It’s a closed curve that at least *looks* like the baseball stitch.

And Conway wrote me, “I have a principle that whenever someone thinks they’ve discovered the formula for the baseball stitch curve, they’re wrong.” Eventually my colleague Roger Alperin proved my curve doesn’t actually lie on a sphere. And then some further research revealed the actual baseball stitch curve to be based on some hand-made trial-and-error drawings!

Q 143. Would you agree with the proposition that mathematics is to all other intellectual endeavors as poetry is to the rest of literature?

A 143. I think poetry tries to capture emotional states by unexpected juxtapositions of words. There is nothing at all scientific about it. We don’t understand ourselves well enough to turn our poetry into science, and I don’t think we ever will. At the highest levels of human creativity, we’re doing something more complicated than anything that we can roll up into an algorithm. You can’t simulate yourself writing poetry.

In the early stages of creation, a mathematician tries to capture some aspect of the world’s structure by an unexpected juxtaposition of concepts. Mathematics starts with images, and once the mathematician has formed some interesting sequence of associations, the images can be converted into compact mathematical notation. This process also transcends any humanly conceivable algorithm.

You might say that poetry and mathematics resemble each other in their conciseness. I used to write poetry, and then I learned to write novels. If you’re writing well, a novel has poetic passages in it. There’s also novel-length mathematics; we have a lot of long math books. The poetic parts of a math book are the definitions and the surprising results. The story part is perhaps the applications.

I could go on trying to make comparisons, but really I do think literature is very different from mathematics. I love them both. I’ve been fortunate to be able to work in both fields. I’m a Sunday painter, too, and that’s different from both math and from writing. The world is big and beautiful.

San Francisco, March 17, 2004

Interviewer: <lorenmea@pacbell.net> Loren Means

For: *Ylem*, Journal of Artists Using Scientists and Technology.

Q 144. I ran across the interview Charles Platt did with you in Lynchburg in 1984 for *Fantasy & Science Fiction* (actually, I got the magazine out of the free bin in front of Green Apple Books, where it had been placed by a black guy with dreadlocks and a priest's collar). I felt sympathetic toward the old you — you'd lost your teaching job and obviously hated Lynchburg. Do you still feel as alienated as you did back in Lynchburg?

A 144. I've been here in California for eighteen years now. It's felt like home from the start. Today at the supermarket, I was thinking how back in Lynchburg the men would talk about it for a week if they saw anyone like the blonde, buffed, shades-wearing women we got all over the place out here. It's a good deal.

In February my wife and I were up in the Sierras near Carson Pass, man, there was seven, eight feet of snow. Beautiful back-country skiing, alone in the woods, the snow-capped knobs like giant mounds of whipped cream. And if I'm sore from the skiing today, and I go to yoga class down in the village where I live. California.

I have an interesting job teaching computer science at San Jose State, and the locals here respect me for working at their city's university — that's another thing about the Lynchburg days, I was unemployed. I'm the opposite of alienated anymore. I looked up Kit Carson of Carson Pass on the Web today, he was born in Kentucky, just like me. We made it to the coast.

This said, I occasionally miss the dawdling small-town pace of Lynchburg. Linoleum. Space heaters. Oddly enough, my social life there was richer than it is out here. Everyone lived only a few blocks away. It was kind of fun being as wild as I was back then, too — at least it seems that way in rosy retrospect — though in fact I know it was often a living hell. But I had some good times with the bad. The day Platt came to interview me was fun. It made me feel like I'd finally arrived.

Q 145.. Last Monday I saw an interview with Dr. Cynthia Brezeal, the head of the Robotics Project at MIT. She says that robots can't make viable decisions without emotions, but that robot emotions might not be the same as human emotions, any more than dolphin emotions would be. Your reaction?

A 145 One of the ideas in AI is that emotions can be viewed as weights that you assign to certain situations. In the simplest model, you'd just have a single I_LIKE function that returns values ranging from, say, minus ten to plus ten. And then when you're planning what to do next, you might simulate a half dozen alternative courses of action, evaluate the I_LIKE function on each of the possible scenarios' outcomes, and then pick the course of action that leads to the situation with the highest "I_LIKE" rating. You execute that course of action — klik, whirr, buzz —

then look ahead your new situation and simulate a half dozen follow-up scenarios and so on. The catch is that although we can call the I_LIKE function an “emotion,” it seems like a dry computation without all the visceral hormonal gut feel that goes with a human being’s liking something.

I_LIKE(You), but do YOU_LIKE(Me)?

I sometimes think that whole logical way of trying to do AI is hopelessly wrong. AI never really seems to get anywhere, and the actually existing robots can’t do much. There’s a persistent tendency for us to very seriously underestimate how much design has gone into our brains in the course of our beloved Gaia’s yottaflop parallel computation running on a quintillion processors for several billion years.

Q 146. Creativity is induced in computers through the use of randomness, which you discuss in your Wolfram review. But humans have an unconscious which contributes to creativity, and I don’t think that’s quite the same thing as randomness. Dreams, for instance, probably have a random neuronal component, but then they are associated with the dreamer’s unconscious memories and desires and fantasies. Is the unconscious an element of your conception of robots?

A 146. Why do you keep asking about robots?

Frankly I’m a lot more interested in mollusks from the fourth dimension. That was a theme in last year’s *Spaceland*, and there’s a space cuttlefish in my new galaxy-spanning epic, *Frek and the Elixir*, just coming out from Tor Books.

But, all right, these days I actually have been pondering that hoary old chestnut, that road apple, that war horse, that battle axe, that turd in a punchbowl, that zit on the butt, that oxymoronic category mistake, that glistening gallstone, viz., can computers think? I’m back in this picked-over union hall sweeping together a non-fiction book on computers and reality, *The Lifebox, the Seashell, and the Soul*. The mighty fruit of my decades of labor in the dark satanic mills of Silicon Valley.

Yes, I think any machine intelligence would have what you might call an unconscious component. But what is the unconscious? You might think of it as the endless spinning out of computational variants from your known data. Like a cellular automaton rule scrolling down the brain-screen.

What seems random in your mind isn’t really random, it’s merely complex. Computers have access to the same kinds of computational complexity, so in principle a machine could be acting like a person.

But I don’t think we can build such a machine. Programs are writ by fools like me, but only God can make a tree.

Q 147. John Searle says that we can't simulate consciousness in computers because we don't know what consciousness is. What do you think?

A 147. John Searle is a likable fellow, but his classic Chinese Room argument against computational consciousness is dead wrong. It's just wishful thinking to prop up a foregone and fondly held conclusion — it's like he's imagining Earth to be the center of the universe, or denying that humans evolved from the apes, or pretending he's not gonna die.

Two years ago I spent a few days with John Searle in Fellini's home town of Rimini, on the Adriatic coast in northern Italy. We were there to get awards from the Italian government, which was amazing and wonderful. I never got around to arguing with John about his pet ideas. He's a hard guy to interrupt.

I have to admit that the remark you quote has a certain kick to it, though maybe not in the sense Searle hopes. I think we soon might in fact have a good theory of consciousness, and once we can clearly describe it, we will indeed figure out how to simulate it.

(Thesis) The slowly advancing work in AI seems to indicate that any clearly described human behavior can be emulated by a machine — if not by an actually constructible machine, then at least by a theoretically possible machine.

(Antithesis) Upon introspection we feel there is a mental residue that isn't captured by any scientific system; we feel ourselves to be quite unlike machines. This is the sense of having a soul.

(Antonio Damasio's Synthesis) The "soul" or "I am" can be given a scientific meaning as one's immediate perception of oneself watching one's self-symbol watching a movie-in-the-brain containing models of the objects in the world plus a special self-symbol standing for oneself. See his book, *The Feeling of What Happens*.

(Nick Herbert's Synthesis) Or we might think of the "soul" as one's immediate perception of one's uncollapsed wave function, particularly as it is entangled with the uncollapsed universal wave function of the cosmos. See Herbert's brilliant piece on "Quantum Tantra," www.southerncrossreview.org/16/herbert.essay.htm.

(Stephen Wolfram's Synthesis) Having a soul is simply a matter of being a gnarly and unpredictable computation.

Being a hylozoist universal automatist, I believe all three syntheses!

And now, really, that's enough science. Let's talk about writing.

Q 148. One way that Science Fiction tends to differ from the Mystery genre is that Mystery writers often tend to write about the same protagonist from novel to novel (and sometimes have recurring villains). Science Fiction writers tend not to do this. Why is that? I'm thinking about Chandler's Philip Marlowe, Robert Parker's Spenser and Hawk, etc.

A 148. You're right, I can't think of many science fiction series about the same character. Unless you count the Star Trek novelizations? In Germany there's a series called Perry Rhodan, they say that every possible SF idea eventually appears in a Perry Rhodan novel. Spider Robinson has his Callahan's Bar series.

One reason it's hard to continue a series of adventures about science fiction is that very often the result of a novel is that the world at the end is quite different from the world at the beginning. So it's hard to do a reset.

Certainly my *Ware* novels are a series but, horrors, the characters change and age and grow, so it's not quite what you have in mind.

Generally I like to avoid repeating myself, although once in a while, it feels good to redo a theme just to try and bring it to a new level.

I have written a certain number of transreal novels about characters something like me, though I tend to always give my heroes different names. I haven't done a transreal book since *Saucer Wisdom* — where the main character was called Rudy Rucker. Nick Herbert was in *Saucer Wisdom*, too, he was one-third of Frank Shook.

I could maybe do something transreal next time out, I'm thinking of a novel inspired by my experiences among mathematicians and computer scientists, both in grad school, and then out in the teaching world. A kind of life story of two characters who keep ending up together. Give it an SF spin — which is the “trans” part of transrealism. Set part one at Rutgers in New Jersey in the 1970s, part two in the far future with aliens, and maybe in part three one of them is an aging computer science professor in Y2K Silicon Valley.

Q 149. I love the way Berenice and Emul address each other in *Wetware*, and I'm taken with the way you float between tenses in the first chapter of *White Light*. Do you intend to continue with such language experiments?

A 149. I always have fun with the language. People don't always realize how great Jack Kerouac was at playing with words — I learned a lot of that from his work. Often as not, my aliens sound like beatniks. But not in a gauche kind of way, you don't want to just ape a few obvious mannerisms. To make it wild and fun, you have to channel some outré spirit, get yourself into a whole different frame of mind.

When I was writing Emul's speeches, I'd in fact flip through a copy of like *Visions of Cody* by Kerouac, getting that rhythm going. I enjoy the style of high academic parlance as well, that's fun to do. And old-fashioned literary style. When I was writing Berenice's lines I was flipping through the works of Edgar Allen Poe.

Some of my computer science students don't speak English very well, and that's another great input for making characters talk in novel

ways. I love any new kind of youth slang that I can pick up on, though that's harder now with the kids grown and moved out. When I'm out on the sidewalks, I'm all ears.

Picking the person and tense to write a book in is always a big decision. The easiest default option is first person past tense, which is easy to write and to read. I wanted to write my Bruegel novel third person in the present tense, like narrating a movie, but my editors didn't like the idea. Pynchon's *Mason and Dixon* uses that mode, he gets away with it, in the supreme master's hands an odd style doesn't obtrude. I may still try and do it myself.

Q 150. Speaking of style, I sometimes think of you as your writing as "degree zero." It's transparent, almost artless.

A 150. That's an effect I try for. It might relate to the fact that I write non-fiction as well; I like to explain things as simply as possible. I like for my writing to be absolutely clear. I rewrite a lot, sometimes it's like a programmer cleaning up his code.

Not that I don't like to go for the occasional purple patch or deranged farrago. As you will have noticed in the course of this interview!

Q 151. In your new *Frek and the Elixir*, you postulate a universal dark matter throughout the universe called "kenner" that can be crafted by certain individuals by persuading the dark matter to manifest itself and assume certain characteristics. I find this conception fascinating. Could you elaborate on it?

A 151. In SF there's a tradition of drawing on little-known new physical phenomena for special effects. In the 1940s it was radiation and radio. In the 1980s I myself used quarks a lot. These days dark matter is what's strange. While I was writing *Frek*, I read an article in *Science* saying that only about five percent of the mass in our universe is garden-variety matter, and all the rest is the so-called dark matter and dark energy. I was talking this over with my man Nick Herbert, and he said, "Maybe the dark matter is consciousness." And then it hit me that, yeah, I could use dark matter to provide a parascientific justification for giving my characters the useful ability to make something out of nothing.

I used the name "kenner" because I have an old friend called Kenny Turan, and I automatically smile whenever I think of his name. He was my roommate in college, he was the first Kenny I'd met. Actually, in high-school, my friends and I for some reason thought of Kenny as a very strange name, it was a word we'd shout out of car windows when we were, like, mooning people. "Kennah!" or "Kennah Bone!" The longer version came from a Little Richard song where he yells "skin and bone," and it sounds like "Kennah Bone!" There's the Ken and Barbie vibe too — you might remember that in *Wetware* I had this evil robot-controlled

human character called Ken Doll. Also, of course, Kenner is the name of a toy manufacturer, which fits in with cosmic superstuff that you can playfully craft into anything you want.

Face it, dark matter kenner sets off a richer chain of associations than does a phallic magic wand — although, come to think of it, I have wand-like things called “allas” in my books *Saucer Wisdom* and *Realware*. The alla-wands work via something I call femtotechnology. By turning neutrons into protons or vice-versa, they can transmute matter and turn, like, straw into gold. But crafting kenner is better — you don’t even need any regular matter to start with. Instead you’re rotating the invisible dark matter through a higher dimension to make it real.

I’m an SF writer, and part of my game is to always have some kind of cock-eyed science explanation, no matter what I do. And always remember that B.S., M.S., and Ph. D. stand for “bullsh*t,” “more sh*t,” and “piled high and deep!”

You know, it’s funny how I keep quoting Nick Herbert in this interview — I guess he’s one of the few people I know who says unexpected things. How rare that is, really. We imagine that we’re creative and original, but most of the time we’re just picking, like, Opinion (K) on Issue (3) from the media-mediated monocultural menu. If I don’t watch myself, I do it too. The deadness of monoculture is one of my big themes in *Frek and the Elixir*. I’m hoping that young people will read the book and love it and maybe absorb a little of that message.

Q 152. In his *Trillion Year Spree* (1986), Brian Aldiss calls you “a former cartoonist.” Is there any truth in that?

A 152. I’m surprised he would have mentioned me, so that’s nice to hear. I’ve been an outsider for so long that I always imagine nobody’s heard of me.

In the 1970s, I thought being an underground cartoonist was the coolest thing anyone could ever be. I couldn’t believe how great the Zap Comix were, they were simply the funniest, most relevant, most liberating literature I’d ever seen. I read them over and over, memorizing every frame.

And when I couldn’t get my hands on new comix fast enough, I was inspired to get some Rapidograph pens and begin drawing an occasional strip of my own called “Wheelie Willie”. It used to appear in the student newspaper at Rutgers, *The Daily Targum*. Sex, politics, drugs, and infinity. Some of the staff didn’t want to print it, but I wouldn’t let up until they did. My career in a nutshell.

Wheelie Willie has a cameo appearance as a character in my novel *The Sex Sphere*, and he even works as a science popularizer in two full-page spreads I put into my non-fiction book *Infinity and the Mind*.

One of these days I might scan all those old strips and make a zine — or maybe just put them on-line. No wait, one of these days someone

should *pay* me to do that. The web is a black hole where I end up doing too much work for free.

Q 153. In your recent interview for the *San Jose Metro*, you say “I’m trying to sell a proposal for a nonfiction book about computers and the mind...Today it’s *The Lifebox, the Seashell, and the Soul*.” How is that project going?

A 153. I’m almost half done writing *The Lifebox, the Seashell and the Soul*, and it’s going very well. I’m folding in a lot of my older ideas, but also I keep coming up with interesting new stuff that surprises me — which is what I always hope for when I write non-fiction book. To have the feeling that I’m finally figuring out how things work.

The book is under contract to Four Walls Eight Windows, a medium-sized press who published my essay and story collections *Seek!* and *Gnar!* I got a fairly nice deal with them, although it wasn’t anything like the kind of deal I’d been dreaming of.

In my vanity, I’d figured that since (a) I’m such an expert on computation and reality, and (b) Everyone loves my writing, and (c) The notion of reality as a computation is such a vitally important topic, that (d) I would pull in a huge advance and I’d be able to pay off my mortgage and retire from teaching. I even switched to a new agent, John Brockman, to make the deal. He’s like a specialist at getting big advances for science books.

But none of the big houses wanted to publish my book at all, let alone drop a couple of hundred K on me. I still don’t fully understand that — it doesn’t fit at all with my model of how the world is supposed to be!

Maybe my proposal was too complicated. Maybe I’m like this robot running out of a hole in the wall and my voice is a scary high chirp like the sound of a furious bird or a hysterical insect, and meanwhile I’m imagining that I’m coming on all reassuring and philosophical. Waving my byte-stained pincers and feelers. Proffering filthy pictures of cellular automata. And the thirty-something English-major yuppie-hipster corporate publishing types are, like, backing out the door. “He’s *old*, isn’t he? And *crazy*. What the hell was that even *about*?”

Four Walls Eight Windows has the great virtue of not being part of a conglomerate. It’s owned and run by one guy, John Oakes, who, long may he prosper, thinks I’m an important writer.

And I do think *The Lifebox, the Seashell and the Soul* is going to be an important book. Maybe the proposal was hard to understand, but that’s because of my working methods. In all honesty, I have a lot of trouble figuring out in advance what I’m going to say. My books gestate, they grow, they emerge. I’ll be done with *Lifebox* in about a year. It’s probably going to be the last non-fiction science book I write, and I’m trying to make it really fun and interesting and full of amazing ideas.

Putting in all the wild stuff I learned and saw over these last twenty years in Califormee.

And when that's done, I'm going to write another SF book, maybe that transreal thing about crazy mathematicians and computer scientists with time travel and intergalactic aliens thrown in to crunk up the mix. And if *Frek* sells well I could do a sequel to it. We'll see. I'm hoping to keep writing until I can't remember any more, um, you know — words.

Genoa, November 1, 2004

Interviewer: <aridag@nomads.it> Arianna Dagnino

For: *L'Espresso* magazine.

Q 154. I'm interested in the notion of recording a person's lifelong sensory impressions on an implanted chip. Let's also suppose that the chip is equipped with a program that interviews the individual and records their internal monologue about these recorded events. Do you think this is a possible technology?

A 154. This is a good topic to ask me about, as I've often written about this concept in my science-fiction — I first presented the idea in my 1986 short story, "Soft Death." I use the word "lifebox" to describe the kind of life-recording device you're talking about. It's a notion I'm still thinking about; in fact, I just finished writing a long nonfiction book called *The Lifebox, the Seashell, and the Soul*. I also have quite a bit about lifeboxes in my 1999 futurological novel *Saucer Wisdom*.

To begin with, I think we need to be clear that using implanted chip technology for a lifebox is out of the question. The implanted chip is a metaphor, a visual symbol that a director might use to represent a lifebox in a movie. But in practice, there will never be a successful industry based on putting brittle hardware into people's bodies. A chip in your body would lead to computer virus attacks, a complete loss of privacy, and endless breakdowns and upgrades. Nobody is that stupid. This said, I do very strongly feel that we will soon see non-invasive lifebox technology.

A feasible near-term realization of an image-oriented lifebox would be to wear a tiny head-mounted video camera capable of uploading sounds and images to a high-volume database. The camera could be in, for instance, the frame of your glasses. A less intense approach is to use the camera in your cell phone, and to take photographs that are uploaded to a database.

Images alone don't tell your eventual audience enough. A lifebox needs to preserve some of your words, as words are so good at expressing your thoughts. As well as comments on images, you'd want to record long blocks of independent text describing your memories, ideas and fantasies.

One approach for preserving text is to record voice messages. But written messages are easier to absorb; a reader can scan through text very quickly. In either case, a cell-phone or computer-based lifebox device

could assist you with this by using some rudimentary AI to ask you relevant questions. Such as this email interview.

Q 155. When do you foresee the lifebox to become a mass phenomenon, with hundreds of thousands of digital personalities? Who will care about them?

A 155. I think it's already happening in the form of blogs. Blogging is a mass phenomenon. A blog is a kind of lifebox: a digital model of the author's actions and thoughts.

Note that blogs contain both images and words — which are carefully arranged. People might like to imagine that they could create a lifebox model of themselves just by taking a hundred pictures a day or by wearing a video camera. But they'd be wrong. The pen is as mighty as the camera. And editing is essential. Without editing, the Venus de Milo is a block of marble.

The blog or the lifebox is a form of art, a kind of self-expression. Most of us aren't blessed with the ability to create art with broad appeal. Nearly everybody writes and photographs a little, but only a few get published or appear on museum walls. Why would it be any different with the lifeboxes?

If you don't analyze the situation very deeply, you might imagine that a lifeboxing tool could be so well-automated that it produces a gripping biography of anyone's life. But the production of art is an unsolvable programming program!

Part of the problem is that art is a moving target. As soon as something becomes easy, we expect more. We only have the time and energy to look at a very limited number of works by other people. This leads us to your second question, "Who will care about these lifeboxes?" Hardly anyone.

Most lifeboxes are going to be viewed only by the authors' friends and family. But this is still enough to produce a mass market for lifeboxing software and hardware. If your grandchildren can know a little more about you, then maybe you've accomplished enough.

After all, it's very common for retired people to want to write a little memoir so that their family can remember them better. Having a little cell-phone-sized device which asks you questions would be a pleasant way to carry out such a project.

Q 156. Will the use of the lifebox affect the way we make experiences so as to have memories to cherish? And what about the bad experiences, the ones we desperately want to forget?

Q 156. Let me invent a very short story.

A guy on a business trip goes to a prostitute. He uses his cell phone to take a picture of them having sex. She charges him a little extra for that,

but otherwise she doesn't care. For her it's free advertising. Now the guy is originally planning to save the picture just for himself, to gloat over, but he can't resist forwarding a copy of the file to his best friend Luigi back home. But Luigi forwards the picture to the guy's wife! And then Luigi goes to visit the wife in person. The wife is so mad at her husband that she has sex with Luigi, and cell-phones her husband a photo of them in action.

This cautionary tale gives you an idea of why nobody would want an implanted lifebox. You could never be a hundred percent sure that it wasn't recording something you'd rather not publicize. It's best to keep your most personal memories in one place only: the intimate tangles of your neurons.

Q 157. The next obvious step will be to try to recreate on a digital support all our personality to have a cyber self that could live and interact with the living even after our death. Is this the first step to reach our quest for immortality through digital technology?

A 157. Part of the appeal of a lifebox model of yourself is indeed that it can survive indefinitely. This is a project I actually think about carrying out during my declining years.

My idea would be to create a website with a large data base containing the full text of all my books, all my journals, and a connective guide/memoir — with the whole thing annotated and hyperlinked. And I'd throw in a bunch of photographs — I've taken thousands over the years.

The tricky part is to endow the lifebox with interactive abilities so that people can ask it questions and have it answer with appropriate links and words. But this doesn't seem impossibly difficult; a first approximation would simply to be use a search engine. And if the answers aren't always quite relevant — well, talking to a person is like that.

The result could be a construct that's within hailing distance of being a simulacrum of the lifebox's author. So, yes, the lifebox is a form of immortality.

Q 158. Then the final leap: uploading all our mind on a digital support. What about consciousness? Shall we still be able to recognize ourselves even if we will be nothing more than bits, perhaps encapsulated into a robot body, as you wrote in *Software*?

A 158. We have two related issues here. The first is whether a computer program or a robot will ever be conscious in the same sense that a person is. And the second is whether a conscious copy of me would be in some sense the same as me.

Regarding the first question, I think robots could indeed become conscious in the usual sense of the word, but that this won't happen for at least a hundred years. Building hardware that's roughly as powerful as a human brain isn't so hard, but designing the architecture and software for

a thinking brain is very difficult. Our own brains arose only as the result of millions of years of evolution. It may be that the only way to design conscious machines is to simulate a race's evolution, and this will take awhile.

As for the second question, if pressed, I feel that the essential core of each human is the same, a droplet of God, a spark of White Light, the ability to say "I am." So in this sense, yes, a robot copy of me would be the same as me. I might not find this news very comforting if some friendly robot doctors were about to extract my software by running my brain through a food processor.

And it may also be that to talk about a software copy is overlooking something. First of all, a person is a complex flesh and blood body as well as a brain. And secondly, it could be that a person does have a specific immortal soul. Nothing is out of the question. Our conception of reality is always subject to change.

Q 159. There's a branch of science looking at developments that nowadays might look as futuristic as the uploading option in the direction of a biological life-extension, towards quasi-immortality. Would achievements in this field overcome the longing for a transfer of minds on a chip?

A 159. Biological life extension is much more likely in the near term than digital immortality. Computer science might in fact be a red herring, a false trail. Biology is in many ways more attractive. Who wants, after all, to be bits on a chip? I much prefer the wet funky flow of Mother Nature. A fluttering leaf is more interesting than a video game. The emphasis of computers and nanotechnology over biology is the result, I'd say, of a fear of the female principle.

Another point regarding life extension: why would anyone want to live so very long? At some point, enough's enough. The old trees need to fall down and rot so that the fresh young saplings can grow into the light.

Q 160. We humans used to think of ourselves as the key players on stage. And we want to stay at the centre of it: we've been using children and/or works of art and science to grasp a sense of immortality, of life that still goes on after our death. But maybe one day the human race will simply disappear to be replaced by more intelligent beings (robots?). Is there any hope for us in the long run — at least as a race, if not as individuals? What is a human being going to look like a hundred or a thousand years down the line?

A 160. As you say, even if an individual achieve personal immortality, there's social sorts of immortality. Your genes may survive in your descendants, and your ideas may survive in the minds of others. A

society has a kind of hive mind which we all participate in, and the hive mind is potentially immortal.

I think it's very unlikely that we would be replaced by purely mechanical robots. Biology is vastly superior to mechanics — for instance, unlike machines, biological organisms have homeostasis, that is, an ability to repair themselves. But what could happen is that, on the one hand, we begin to tinker with the genome, altering our biological make up and, on the other hand, we create mechanical devices to augment our bodies. Certainly in a thousand years we can expect to be cyborgs, that is, genomically tailored biological beings with mechanical add-ons.

Amputees are already using very high-tech artificial limbs. And I don't think a brain prosthesis is out of the question. I often write of a device that I call an "uvvy" for "universal viewer." It's a soft wireless computing device that rests on the nape of your neck and gives you instant cell phone abilities, internet browsing, and access to your lifebox database. At some point a person without an uvvy might not be considered a whole person at all.

But even though our bodies will be upgraded in various ways, I don't think human nature won't change very much. When I wrote my novel about the age of Peter Brueghel, it was borne in upon me how similar the people I see on the street are to the people in Bruegel's paintings. My prediction is that people won't change very much, and the overarching hive-mind of human society will also remain much the same.

We are close to having the uvvy, what with our increasingly powerful wireless devices. Cell phones have already greatly changed the details, if not the essence, of social dynamics.

What's still missing is a seamless user interface. Actually inserting wires into one's brain is something that people will, quite correctly, never be willing to do. But perhaps we might be able to create tightly focused magnetic fields capable of interacting with the neurons in the brain stem. More realistically, we might wear what I call "stunglasses," which combine a heads-up display with the user's surroundings. Lightweight sensor-equipped fingerless gloves might allow someone to "type" simply by twitching their fingers. Everyone will have an uvvy within a hundred years. Cyberspace will ooze out of the machines to permeate every aspect of daily life.

But, even so, we'll still be the same kinds of people: lustful and greedy, noble and inspired.

Milano, November 8, 2004

Interviewer: <ebrocardo@condenast.it> Enrica Brocardo
For: Italian edition of *Vanity Fair* magazine.

Q 161. Uploading our mind, are we able to reach a sort of immortality?

A 161. Uploading your mind into any kind of more permanent form would be a kind of immortality. The big questions about this is how much of my mind can I actually upload. Sights, memories, feelings, thoughts, personality, soul...?

The memories are like a data base, while the feelings and personality is more like the operating system. But I don't think the operating system is very complicated. So I think that, if we could upload enough memories and (big if) we could build a "human consciousness operating system," then the upload would be a good model of your mind.

The feelings and personality are quite closely related to the physical connections and biochemistry of the brain. You might think you'd almost need to make a model of the actual brain. But my guess is that in fact there are only a few basic kinds of personality types, akin to the phlegmatic, sanguine, bilious, and choleric categories of the Middle Ages. So then, you just add a person's memories to, say, a standard choleric operating system, and they're back. A lot of what we view as our "self" really just has to do with the brain observing a model of itself observing itself. And this can be emulated.

Q 162. Do you think it will be possible? In this case, when?

A 162. To a limited degree its already possible to upload your ideas to society's information network — this is what we do in creating books or paintings. In the next ten years it will be possible for even non-artistic people to record fairly exhaustive memoirs about themselves by using a little device that I call a lifebox. The lifebox is like a cell phone that asks you lots of questions.

Q 163. Which are the most interesting experiments in this field?

A 163. This is a time-relative answer.

As of Fall, 2004. Microsoft has conducted an experiment called MyLifeBits

<http://research.microsoft.com/barc/mediapresence/MyLifeBits.aspx>

in which a researcher named Gordon Bell has digitally stored all of the paper memoirs accumulated during his life.

The cell phone company Nokia is preparing to market a system called Lifeblog

<http://www.nokia.com/nokia/0,1522,,00.html?orig=/lifeblog>

in which a person can link and record all of their daily activities by using a cell phone. This is quite similar to what I call a lifebox.

A student named Tripp Millican at USC is writing a thesis about an interface for a filmed life blog. <http://interactive.usc.edu/members/tripp/>

Q 164. If our mind could be uploaded, what could happen? We could store it forever (but, why?) or transplant it into another body. Or what?

A 164. I like that you ask “why?” Why indeed! There’s enough people anyway!

But, still, most people would enjoy being able to talk to some kind of simulacrum of their ancestors. This would be a useful thing for ones sense of personal identity and continuity.

And, yes, the ultimate dream is that someone might provide your stored mind with a fresh robot body to use. You’d be back in action then.

I think this can happen. I would suggest, however, that machines are going to vanish and that biotechnology will take over, as in my novel *Frek and the Elixir*. So you would be copying your stored mind not onto a brittle robot, but onto a tank-grown clone of your (or perhaps of someone else’s) body. This could happen in about a hundred years. It’ll be like getting new clothes. Fashion magazines can market new-body styles.

Q 165. Maybe, could we learn a lot of things just downloading files like a computer?

A 165. I think you’re suggesting that it might be nice to reverse the flow and simply download files directly into the brain without having to laboriously read them. Like the old dream of learning something by putting the book under your pillow. Or by playing a recording of the book while you sleep.

Once we understand the biochemical basis of memory it could be possible to implant memories. The bad thing is that some powerful person might become a disease that other people catch. Like, a Republican sneezes on me, and I start thinking I’m George Bush?!?

Oakland, September 19, 2005

Interviewer: Lori White <pbwriter@pacbell.net>

For: *Flatland* article for Strange Horizons webzine.

Q 166. What’s your personal experience with the book *Flatland*?

A 166. When I was in high-school, perhaps the tenth grade, my best friend and next-door neighbor Niles Schoening told me about this odd book he’d found in the Louisville Public Library. About characters who were squares and triangles and lines. I was intrigued, and I read the book.

On the first reading, the book confused me. Even though I’d read some Golden Age science fiction stories about the fourth dimension, I didn’t initially understand that *Flatland* contains a series of analogies intended to help us visualize the fourth dimension. At the time I wasn’t yet

aware that the fourth dimension is something solid and precise that it's possible to actually understand. And, on a first reading, the satirical aspects of *Flatland* threw me off as well. The hero A Square is kind of a Victorian Everyman, not all that bright, and full of dumb received ideas about social class.

When my parents took me to begin Swarthmore College in the fall of 1963, my father bought me a paperback edition of *Flatland* in the little town drugstore. He himself was interested in the book; he'd recently become ordained as an Episcopal priest, and he saw the main character A Square's experiences in the third dimension as an analogy to the spiritual life. I dipped into the book several times in the coming four years, but still didn't get very passionate about it. I was too busy being a college student.

My interest finally came to a boil in 1970. I was at Rutgers University working on my doctorate in mathematics, and all sorts of things about mathematics were becoming clear to me, ranging all the way from the meaning of infinity and logical proof down to how carrying and borrowing work in pencil-and-paper arithmetic. Finally I began to understand what *Flatland* was getting at.

I was also getting interested in relativity theory, and one problem that nagged at me was how the geometric fourth dimension suggested by *Flatland* relates to the fourth dimension as used in relativity theory to represent the axis of time.

I was married by then, and we'd had our first child Georgia, and there was this one weekend when my wife had taken the baby to go visit her parents at the Watergate hotel in D. C. I was listening to a great new vinyl Frank Zappa album, *Chunga's Revenge*, smoking pot, and thinking about the fourth dimension. I was also into underground cartooning then, I was drawing a strip called *Wheelie Willie* for the Rutgers *Daily Targum*. On this one magical evening alone with my speakers propped up the desk playing "The Nancy and Mary Music," I started making Rapidograph drawings of A Square and of the spacetime diagrams of relativity theory, working them into an explanatory narrative, with captions and little bits of connective text. One of the nice things about the *Flatland* characters is that they're very easy to draw!

A few weeks later my father was visiting our apartment and I showed my work to him — I had maybe a dozen pages done by now — and he was interested but a little baffled that I'd become *that* interested in the ideas of *Flatland*. "Where are you going with this?" Where I was going was into my career as a science and science fiction writer. But I didn't know this at the time.

My friends in grad-school even began teasing me about my interest in *Flatland* a little bit. I was carrying around Dionys Burger's Flatlandesque book *Sphereland*, and an English major friend asked me, "So is your career goal to write, like, *Tubeland*?"

My first teaching job was at what's now called SUNY Geneseo in upstate New York and I took over a course called *Foundations of*

Geometry. I was supposed to be focusing on axiomatic approaches to geometry, and I covered Euclid, but most of my course was focused on the fourth dimension. I wrote up some lecture notes that I mimeographed for the students; the notes were initially called *Geometry and Reality* and they grew into my first book, *Geometry, Relativity and the Fourth Dimension* (Dover Publications, New York 1977).

In my first book I invented some further adventures for A Square. And my 1983 story collection *The Fifty-Seventh Franz Kafka* included several science-fiction stories involving the fourth dimension, including “Message Found In A Copy of Flatland,” and “The Indian Rope Trick Explained,” both of which include drawings of good old A Square.

I also took another crack at a non-fiction book about fourth dimension: *The Fourth Dimension* (Houghton Mifflin, Boston 1984.) In the course of this book I describe events in an imaginary book called *The Further Adventures of A Square*. I tell about A Square having affair with the Flatlander A Hexagon’s wife Una — I really enjoyed copying the style of *Flatland* — which was already archaic at the time that Abbott wrote the book, remember that he was, among other things, a Shakespearean scholar.

At the very end of writing my *Fourth Dimension* book, I hadn’t tied up one last loose end, I’d left A Square cornered by an angry A Hexagon. And I had a dream of A Square down in Flatland, chirping up at me for help. So that went into my book too, at the very end, another excerpt from *The Further Adventures of A Square*. Here’s a quote from *The Fourth Dimension* (pp. 202-203).

I felt myself as but a Thought, a baseless
fragment of some recurrent Dream. All around me I
sensed my Dreamer’s mind. Mustering my courage,
I cried out my plaint.

I: Can you hear me, my Lord?

Dreamer: And how! What time is it?

I: There is no Time — so says the Sphere.

Dreamer: Well, yeah. Not for you, anyway.

I: Return me to my fellows, oh my Author.

Grant that the Hexagon forgives me.

Dreamer: I can do that. And thanks, I’ve
enjoyed being with you. I hate to say good-bye.

I: But surely you will always be with me? Is
not my World a fragment of your Mind?

Dreamer: It’s not my mind, really. I’m just
filling in. Who knows who’ll dream you next.
You’re the real immortal, Square, not me. You’re
an eternal Form.

For an instant I could see it All: the
boundless Truth, the many Dreamers, and my own
life's passionate play.

What I was getting at there is that when you write about a shared world, like *Flatland*, or the Star Wars universe, or for that matter human history, you're describing characters who in transcend any individual author. And that's kind of awesome.

Q 167. Could you say more about your impetus in writing *Spaceland*?

A 167. To begin with, let me recycle and expand some of the answers I've given before in these interviews.

I'd been away from *Flatland* and the fourth dimension for a number of years, and, as the much-ballyhooed Y2K approached, I recalled that the crucial scene of *Flatland*'s action is actually set to take place on the New Year's Eve of 1999. Specifically at the beginning of Part II, Section 15, where A Square gets his visit from the third dimension we find: "It was the last day of the 1999th year of our era."

So far as I know, I'm the only person on Earth in 1999 who was aware of and excited about this momentous fact! So I seized the opportunity and wrote my *Spaceland* — "Spaceland" is in fact a word that A Square uses to describe the 3D world. I think this is as close as I'll come to the *Tubeland* my grad-school friend was kidding me about!

You can find my working notes for the novel at
<http://www.mathcs.sjsu.edu/faculty/rucker/spaceland.htm>

In my novel, our universe is embedded in a much larger four-dimensional space that contains two competing races of four-dimensional beings. They're a bit like angels and devils, but it's not quite clear who are the good guys.

Of course there are a number of standard things one expects in a story of this type: getting past a wall by hopping over it in a higher dimension, reaching into a person's body without crossing their skin, flipping over and becoming one's own mirror image, unexpected attacks from unseen higher-dimensional beings, and so on. Abbott and the SF writers of the 1950s treated all of these.

A fresh topic that intrigued me was what I would actually see if I were in four-dimensional space. Using analogies to Abbott's hero A Square, I convinced myself that the only way to see properly in hyperspace is to be equipped with a four-dimensional eye. So I gave Joe Cube an eyestalk sticking out into hyperspace from the center of his brain.

And, just as Abbott used a somewhat unaware A Square character, I wrote from the point of view of a character, Joe Cube, who's non-technical and somewhat clueless. A middle manager, the ultimate boob relative to how programmers see the world. I came to sympathize with

him a lot, although some of my reviewers didn't seem to get the satirical element, and wondered why I'd chosen such a simpleton for a hero. But each of us is a hero, if only in our own life story.

Another thing I wanted to do in *Spaceland* was to depict my native Silicon Valley, kind of like the way I did in *The Hacker and the Ants*, just as Abbott's *Flatland* was to some extent a satire of his times. Abbott's A Square is, for instance, very sexist. But in point of fact Abbott himself was an enlightened man, and he encouraged and supported his daughter Mary in attending from college, which was unusual for the times. On the other hand, after two years of college he got her to come home and tend to him during his "terminal" illness, which lasted 36 years!

I just gleaned that last nugget from an essay by Thomas Banchoff at <http://www.acmsonline.org/Banchoff-The%204th%20dimention.pdf>; see also Banchoff's site <http://www.math.brown.edu/~banchoff/abbott/>. I first met Banchoff in 1979, he was one of the first people to make computer graphical demos of the fourth dimension, and for many years he taught a very popular course at Brown University about the fourth dimension and Flatland. To some minor extent, I modeled the hero of my story, "Message Found In A Copy of Flatland" on Banchoff; my hero teaches at Gray University!

On the topic of 4D computer graphics, while I was teaching at SJSU, I had one of my students do a master's thesis project where he developed a four-dimensional Space Invaders game, see the "Hyperspace Invaders" link at <http://www.mathcs.sjsu.edu/faculty/rucker/hypercube.htm>.

San Francisco, November 9, 2005

Interviewer: <lorenmea@pacbell.net> Loren Means

For: [Ylem](#), Journal of Artists Using Scientists and Technology.

Q 168. I'm back, Rudy, I interviewed you twenty months ago for my art magazine, *Ylem*, and I'm getting ready to publish our interview. I want to bring it up to date with some follow-up questions. What became of that nonfiction book you were talking about, *The Lifebox, the Seashell, and the Soul*?

A 168. The *Lifebox* came out last month to my customary blizzard of zero publicity (other than the web page I made for it at www.rudyrucker.com/lifebox). It's a very nice-looking well-produced book with lots of great illos, and I said everything I wanted to about the meaning of computation. But I'm not seeing many reviews of it yet, and I haven't seen it for sale in many stores, and I'm anxious about it's reception.

I have a sense that the market for science books these days is geared towards books having precisely one idea, which is then buttressed with water-cooler-level discussions of pre-digested news stories that have

been fed to us by the media. The recent best-seller *Blink* is a self-reflexive example of this: *Blink* says that your very first and most shallow idea on any topic is correct. You don't even have to read it! Just put it on your shelf. Got it. Like a white-on-white painting with maybe one red dot. No time wasted. And I'm also up against Ray Kurzweil's snake-oil-sales-pitch *The Singularity is Near*, which pretty much says, "Buy my book and you'll live forever." The guy even sells vitamins.

The Lifebox, the Seashell, and the Soul: What Gnarly Computation Taught Me About Ultimate Reality, the Meaning of Life, and How to Be Happy is ruminative and dialectic in approach; I weigh opposing views of reality and come up with a synthesis or, if that's not possible, consider holding both views simultaneously. Also I commit the high crime of joking around rather than being deadly serious.

The title itself is a dialectic triad, by the way. The *Lifebox* thesis is that there can be computer models of human minds, the *Soul* antithesis is that I feel myself to be a vibrant energy-filled being and not a machine, the *Seashell* synthesis is that the computational patterns found on cone shells are examples of the gnarly deterministic-but-unpredictable computations that could indeed inhabit my skull.

My book is profound and deeply human, but it's not very blink at all. Stephen Wolfram likes it in any case, he says it's more important book than my publishers or I realize.

Q 169. And you said that after the *Lifebox* book you were going to write a novel about two crazy mathematicians?

A 169. Yes, *Mathematicians in Love*. I just finished making the final revisions. It'll be out from Tor Books in, I suppose, summer or fall of 2006.

I had fun with this novel. For one thing, it gives sfictional life to some of the ideas in my *Lifebox* tome. For instance I have my two guys making universal paracomputers out of naturally occurring things like candle flames and vibrating drumheads. Now, in *Lifebox* I argued that most naturally occurring processes are, although deterministic, impossible to effectively predict by dint of being gnarly computations. But, just for kicks, I set most of *Mathematicians in Love* in a world where this isn't the case, and it is actually possible to build a device that predicts the weather, the stock market, other people's decisions and so on.

Another thing I do in *Mathematicians in Love* is to satirize our current government, and to have my characters bring it crashing down. President Joe Doakes goes to jail. I found that very satisfying.

Yet another angle is that I use a notion about parallel worlds which I developed in *The Lifebox, the Seashell, and the Soul*; my idea is that reality might be a series of parallel universe which are linearly ordered, with each one slightly better than the one before, like successive drafts of a novel.

Like most of my novels, this one is somewhat humorous, which sometimes blinds readers to the fact that in many ways I'm dead serious. I sometimes get the feeling that, rather than reading things *into* my work, certain SF critics read things *out*.

One thing that might pep up my career would be if Michel "The Eternal Sunshine of the Spotless Mind" Gondry actually makes his movie of my novel *Master of Space and Time*. He's had the option for two years and is presently working on a script with Dan "Ghost World" Clowes. Michel says he'd like to cast Jim Carrey and Jack Black as the book's two mad scientist pals.

Q 170. What's next?

A 170. I'm not sure. I'm not up for another big project yet, what with my would-be-earthshaking tome being ignored, and with the long haul of my latest novel just ended. Call it post-partum blues.

Right now I'm writing some short stories. With a couple more, I'll have enough for a new story anthology. So that'd be an easy book to get out. This summer I read Charles Stross's great *Accelerando*, and that got me interested in tackling the Singularity head on; I'm writing two stories about the Singularity right now, and I already sold one of them to *Asimov's*.

I've been cleaning out my basement this week and putting all my old boxes of papers in one specified corner. Maybe that means I'm getting ready to write a memoir. I'd sort of like to take on that project, but the publishers I've mentioned it to aren't very interested. I also have a few hundred thousand words of journals that could perhaps be published in some form.

The other possibility is, of course, that I write a new novel. I'd been thinking of doing a sequel to *Frek and the Elixir*, but I don't have a killer idea for that yet. For *Frek* itself, I used Campbell's monomyth structure, one stage per chapter, which gave the book a nice form, but it sort of makes the book a finished whole, so I'm not exactly sure how to do a sequel. Or I could do a fifth *Ware* book, not that the first four are flying off the shelves anymore.

Another thought is to drop writing for awhile, and wait for the world to catch up with me. I enjoy painting; maybe I could pick up a few bucks doing that. One result of cleaning out the basement is that I'll have room for a metal rack on which to store all of my family's accumulated paintings — we're all artists. With a place to store the accumulated works, I'd be a step closer to painting a bit more (see <http://www.cs.sjsu.edu/faculty/rucker/links.htm>). One thing I might do soon is to start selling posters of my paintings on the web. That'd be more painless than trying to get a show.

I piss away a lot time blogging, see www.rudyruicker.com/blog. I see it as an art form, I like for each entry to be a nicely balanced

combination of words and pictures. I shoot a lot of pictures with my digital camera now. I've even gotten into podcasting, that is, posting my lectures and spoken interviews online at <http://www.gigadial.net/public/station/17434>. In my own diffuse and unpredictable fashion, I seem to be creating an electronic lifebox copy of my mind.

Rome, November 21, 2005

Interviewer: Carmine Treanni <carminetreanni@interfree.it>

For: [*Quaderni D'Altra Tempi*](#)

Q 171. You are considered to be among the founders of the Cyberpunk, together with William Gibson and Bruce Sterling. After twenty years from the birth of the movement, which are, in your opinion, the traces left by the movement in and out of the science fiction?

A 171. The whole style of dark, glittering, noir Hollywood films running from *Blade Runner* through the *Terminator* to the *Matrix* might be thought of as coming out of the cyberpunk sensibility. One topic beloved of cyberpunk was the fusion between humans and machines, and this is something you see in all these films. We were, if you will, the canaries in the coal mine, noticing the first fumes of mankind's accelerating roboticization.

Films, however, miss the druggy, antiestablishment satire that lies at the core of cyberpunk. But other writers have picked up the torch of nihilistic humor and apocalyptic speculation. I think of, for instance, Charles Stross's *Accelerando* of 2005.

Q 172. With your four novels belonging to the *Ware* series, you gave birth to a real revolution in the robot concept of science fiction. How do you think that robotic technology will develop in the human future?

A 172. When I visit a lab and see the actual state of cutting-edge robotics, I'm always a bit disappointed. It's still so flaky and cobbled together. I think it could be a hundred years until we get seriously good humanoid robots. There's also the question of whether we really *need* the humanoid robots so beloved in SF. After all, we already have too many people, and people cost next to nothing to bring into being. But it's work to be around other people, and some geeks dream of being able to get machines that do all the useful things that humans do without including the troublesome things such as: making you feel empathy and sympathy and pity for them; possibly becoming annoyed or even rebellious; not being something you simply turn off and throw away when you're done.

Laid out like this, we can see how really screwed-up is our desire for robot slaves! In my *Ware* books, of course, as soon as the robots got as smart as people, they were as much trouble as people.

In terms of actual technology, I've always been fascinated by the notion of piezoplastic, that is plastic that flexes like muscles. Brittle gear-and-spring robots seem so unnatural. Putting it quite baldly: What good is a humanoid robot who you wouldn't want to have sex with? I really get into that in my book *Freeware*, where there's people sexually obsessed with soft robots.

An alternative to smart-plastic robots may be biotechnology. If you talk about a biotech robot, you really bring the fundamental contradiction into relief: geeks want to make a person that is a "robot" in the sense of not having a soul or deserving any empathy. Sometimes SF movies have treated this theme, with the underclass being clones. But, again, with overpopulation, this exercise is fundamentally pointless. Humans already know about enslaving each other, and we already know it doesn't work out as a good thing.

In a more practical vein, I think we will see better and better AI in our appliances. Certainly the self-driving car will come into being, assuming there's away around the crippling law-suits that will ensue when the vehicles occasionally malfunction. Certainly our computers will learn to speak, to understand speech, and to fake something like a human personality in conversation.

One of the best ways to have a program imitate a human is simply to give it an enormous database of texts that one person has written or said. In this case, a good search engine can replace having to create real AI. The program simply looks up an appropriate answer. I call this kind of device a "lifebox."

Q 173. Could you, please, talk about your new nonfiction book, *The Lifebox, the Seashell, and the Soul*?

A 173. I might mention that the subtitle is *What Gnarly Computation Taught Me About Ultimate Reality, the Meaning Of Life , and How To Be Happy*. You can find out more about the book on my website www.rudyrucker.com/lifebox

I think we're presently in the midst of a third intellectual revolution. The first came with Newton: the planets obey physical laws. The second came with Darwin: biology obeys genetic laws. In today's third revolution, we're coming to realize that even minds and societies emerge from interacting laws that can be regarded as computations. Everything is a computation.

Does this, then, mean that the world is dull? Far from it. The naturally occurring computations that surround us are richly complex. A tree's growth, the changes in the weather, the flow of daily news, a person's ever-changing moods — all of these computations share the

crucial property of being gnarly. Although lawlike and deterministic, gnarly computations are — and this is a key point — inherently unpredictable. The world's mystery is preserved.

I mixed together anecdotes, graphics, and fables, in the book to tease out the implications of this new worldview, which I call “universal automatism.” Looking at reality as a bunch of computations reveals some startling aspects of the everyday world, touching upon such topics as chaos, the internet, fame, free will, and the pursuit of happiness.

I tried to make this tome more than a popular science book, a philosophical entertainment that teaches us how to enjoy our daily lives to the fullest possible extent.

Q 174. What is your definition of science fiction? How do you consider and see the current status and the prospects of science fiction?

A 174. Science fiction is writing that analyzes some fast-changing aspect of society by extrapolating current trends into the future or into an alternate world. Traditionally science fiction has certain standard tropes that it uses, but new ones are being developed all the time — I'm thinking of things like blaster guns, spaceships, time machines, aliens, telepathy, flying saucers, warped space, faster-than-light travel, holograms, immersive virtual reality, robots, teleportation, endless shrinking, levitation, antigravity, generation starships, ecodisaster, blowing up Earth, pleasure-center zappers, mind viruses, the attack of the giant ants, and the fourth dimension. I call these our “power chords,” analogous to the heavy chords that rock bands use.

When a writer uses an SF power chord, there's an implicit understanding with the informed readers that this is indeed familiar ground. And it's expected the writer will do something fresh with the trope.

This implicit contract isn't honored by mainstream writers who dip a toe into “speculative fiction”. These cosseted mandarins tend not be aware of just how familiar are the chords they strum. To have seen a single episode of *Star Trek* twenty years ago is sufficient SF research for them! And their running-dog lickspittle lackey mainstream critics are certainly not going to call their club-members to task over failing to create original SF. After all (think they), science-fiction writers and readers are subnormal cretins who cannot possibly have made any significant advances over the most superficial and well-known representations, and we should only be grateful when a real writer stoops to filch bespattered icons from our filthy wattle huts.

I'm exaggerating for comic effect. Really, SF is doing quite well, although of late it seems as if fantasy is eating our lunch. But I've been hearing gloom-and-doom for my whole career as an SF writer. I'm just happy I continue being published and read. Maybe someday they'll start making movies of my books and I'll get the big money.

Q 175. Please tell me something about the writing process when elaborating a new novel.

A 175. When I start, I always have in mind a few crucial situations or devices that I'm eager to explore and depict. These ideas arise to some extent spontaneously, and to some extent from thinking about scientific and social ideas that interest me.

Once I have a vague idea of the book's theme, I begin working on figuring out the characters, the geography, the society, the tone, the point of view, the story arc, the physics, and, above all, the plot outline.

I write about all these ideas in a notes document that I develop in concert with my novel; usually my notes documents end up nearly as long as my books. I post each of the notes documents online when the corresponding book is published.

The virtue of having a notes document is that then there's something I can work on when I don't quite feel ready to write the novel.

When a book's going well, I can average about a thousand words a day. When I get my thousand words, I print it and go to the coffee shop and reread it and mark it up, then type it in again and repeat the process. I might cycle through a given section three times in a day, and the next day maybe one more time and then I move into the next section.

I tend to be somewhat anxious when I work, worrying I won't be able to get things to come out right. In general, I worry too much.

Research Triangle Park, North Carolina, January 28, 2005

Interviewer: Greg Ross <gross@amsci.org>

For: [American Scientist Online](http://www.american-scientist.org)

Q 176. Could you tell us a bit about yourself?

A 176. I'm a writer, a mathematician and a computer scientist — in that order. I've been in Silicon Valley for the last twenty years, and I recently retired from my CS professorship at San Jose State University. I've published twenty-six books, primarily science-fiction and popular science. My most recent book is nonfiction, *The Lifebox, the Seashell, and the Soul: What Gnarly Computation Taught Me About Ultimate Reality, the Meaning of Life and How to Be Happy*, (Thunder's Mouth Press, Fall, 2005.) Readers can learn much more about me by poking around my websites, accessible at www.rudyruicker.com.

Q 177. What books are you currently reading (or have you just finished reading) for your work or for pleasure? Why did you choose them, and what do you think of them?

A 177. I'll mention a science-fiction book, a science book, and a work of mainstream literature.

For several years now, science-fiction writers have been concerned about a possible future event known as the Singularity (with a capital S). The idea is that if at some future time computers become as intelligent as us, then they can set to work designing still-more-intelligent devices, bringing about an explosive feedback process that will leave us in the dust. It's a bit hard to write about the Singularity and its aftermath, but in his linked series of stories, *Accelerando* (Ace Books 2005), Scottish SF writer Charles Stross goes after the task with wonderful humor and zest.

Brian Goodwin's, *How the Leopard Changed Its Spots* (Princeton University Press, 1994), argues that the major features of plants and animals are generic forms which arise naturally in three-dimensional tissues made up of cells. I find this relevant to the current "Intelligent Design" discussion of how it is that the blind workings of evolution manage to hit upon such pleasing and efficient forms. Goodwin's thesis is that the kinds of forms we see in plants and animals are not at all rare or obscure; these forms are, rather, things that nature likes to do, as ubiquitous and readily made as the vortex-pairs that appear in the wake of an object moving through a fluid.

A recent high-literature success, David Mitchell's *Cloud Atlas* (Random House 2004), is at the same time somewhat science-fictional — something one sees more and more often these days. The novel consists of six long short stories arranged in an onion-like way, that is, five of them are cut in half and nested, so that the book's structure is: 1a 2a 3a 4a 5a 6 5b 4b 3b 2b 1b. Each story takes place a few years later than the one before, and my the fifth story, "An Orison of Sonmi-451," we're well into the future. This tale is presented as being a kind of video of a testimony by a condemned rebel clone slave named Sonmi; the number at the end of her name indicates that there have been 450 previous instances of her. She works in a future fast-food place that has a "beloved logoman" called Papa Song; he's a hologram who stands on a plinth and gives exhortatory morning sermons to the workers. Papa Song also entertains the customers, for instance by pretending to surf on waves of noodles. The tale is a rich science-fictional satire, that is to say, a serious extrapolation from our current time into a future or alternate world.

Q 178. When and where do you usually read (specific location, time of day, etc.)?

A 178. Typically I read lying on the couch in the living-room in the evening, with my wife doing the same thing on the other couch, or possibly knitting. I may read a bit more when I get into bed.

In the mornings I just read the paper, although last year I got so tired of the news that for a few months I was reading *The Letters of*

Kingsley Amis (Hyperion 2001) every morning. It's a mammoth tome by an enjoyably curmudgeonly modern British writer.

Q 179. Who are your favorite writers (fiction, nonfiction or poetry)? Why?

A 179. Thomas Pynchon is the James Joyce of our time; he uses the richest language and he plumbs the deepest feelings. For a science-writer Pynchon is rather congenial as he has a nice way of integrating scientific modes of thought into his texts.

Jorge Luis Borges has wonderful ideas, fine language and a bracing dryness. Borges has a phrase that's of comfort to all struggling writers (he's writing of Melville and Edgar Allan Poe), "Vast populations, towering cities, erroneous and clamorous publicity have conspired to make unknown great men one of America's traditions."

When I was young my favorite science-fiction writer was Robert Sheckley. When I was fifteen I was injured when the chain of a swing broke and I ruptured my spleen. I was in the hospital, and my mother brought me *Untouched By Human Hands* by Robert Sheckley. Somewhere Nabokov writes about the "initial push that set the ball rolling down these corridors of years", and for me it was Sheckley's book. I thought it was the coolest thing I'd ever seen, and I knew in my heart of hearts that the greatest thing I could ever become was a science-fiction writer. For many years, it seemed like too much to dare hope for. I've been lucky; not only am I an SF writer, I am a science writer as well.

Q 180. What are the three best books you've ever read? Explain.

A 180. Thomas Pynchon's *Gravity's Rainbow* gave me a real sense of how the world works; a feeling that life is an ongoing mysterious adventure. I recently reread the book, and it's still my all-time favorite. Edwin Abbott's *Flatland* is unequalled in its combination of social satire and explication of profound mathematical ideas. And I might as well mention the funniest book I've ever read, Beat author William Burroughs's *The Yage Letters* (City Lights Press, 1963).

Q 181. What book has influenced you most? Explain how.

A 181. Stephen Wolfram, *A New Kind of Science* (Wolfram Media, 2002). Really, it was meeting Wolfram in 1984 and reading his papers that influenced me, but this wonderful book includes all of his relevant ideas. It was thanks to Wolfram that I moved to California and found a job teaching computer science. I wanted to be able to program his style of cellular automata simulations for myself.

Q 182. Name three books you want to read but haven't gotten to yet.

A 182. I just ordered David Skrbina, *Panpsychism in the West*, (MIT Press, 2005). "Panpsychism" is the notion that everything is in some sense conscious. Certainly it's the case that ordinary objects are carrying out complex computations. Wolfram convincingly argues that most of these computations are in fact universal, and are thus (at least in principle) capable of simulating something like a conscious human mind.

I'm looking forward to reading Paul DiFilippo, *The Emperor of Gondwanaland and Other Stories* (Thunder's Mouth Press, 2005). Paul is perhaps the leading contemporary master of the science-fiction story; it'll be fun to see what he gets up to in his latest anthology.

I'm also eager to see the cosmological hi-jinks in Lisa Randall, *Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions* (Ecco, 2005).

Q 183. What book recommendations do you have for young readers?

A 183. I'd recommend my fat SF-epic children's book, *Frek and the Elixir* (Tor 2004), a fun transgalactic romp featuring a twelve-year-old boy who saves Earth's ecology.

For younger children, Beverly Cleary's books are wonderful (even though they have nothing to do with science). I grew up on these books and so did our three children. The earlier ones about the character Ramona are particularly wonderful. Beverly Cleary had an amazing ability to describe the way that children actually think. I had a chance to ask her about this once; she said it wasn't so much that she'd observed her own children, but rather that she had a very good memory.

For a high-schooler interested in math and logic, you can do no better than to get hold of one of the beloved math-writer Martin Gardner's compendiums. *The Colossal Book of Mathematics* (W. W. Norton, 2001) is a fine print collection, and the full 4,500 page run of his columns for the *Scientific American* are available as *Martin Gardner's Mathematical Games* on CD Rom (Mathematical Association of America, 2005).

Q 184. What science book recommendations do you have for nonscientists?

A 184. I always recommend my own book, *The Fourth Dimension* (Houghton Mifflin, 1984). The notion of the fourth dimension has a wonderfully rich set of links to human intellectual history: mathematics, physics, mysticism, spiritualism, religion, and, of course, science-fiction. And my treatment has yet to be improved upon. In recent years, it's

seemed as if cosmologists are getting more and more committed to immersing our world into large-scale higher dimensions of space, so the study of the basics is particularly relevant.

A more recent science book I liked a lot was David Deutsch's *The Fabric of Reality* (Penguin 1997). Deutsch has a very nice way of thinking about quantum computation as a process that spreads across multiple parallel worlds, and he makes a valiant effort to couch all this in layman's terms.

Philip Ball, *The Self-Made Tapestry* (Oxford University Press, 1999) is a fascinating and detailed discussion about instances where natural systems behave very much like computations. What makes this book particularly valuable is that Ball pushes past the superficial observance of similarities to analyze exactly how well the correspondences hold up. The science gets a bit heavy at times, but there are several illustrations on nearly every page.

Q 185. Name one book in your discipline that you would recommend for scientists outside your field. Explain your choice.

A 185. I think my single most beloved book of mathematics popularization is David Hilbert and S. Cohn-Vossen, *Geometry and the Imagination* (Chelsea 1999). The book is so offbeat and unexpected, coming at geometry from all sorts of new angles. Certain of the sections shade into being technical, but a lot of the material is very simple and visual.

Brighton, United Kingdom, May 29, 2006

Interviewer: Jose Garcia <jollyspaniard@yahoo.com>

For: [Meme Therapy](#)

Q 186. Can you give us an overview of how *The Lifebox*, *the Seashell*, and *the Soul* evolved as a project?

A 186. I wrote four popular mathematics books before this one: (1) *Geometry, Relativity and the Fourth Dimension*, (2) *Infinity and the Mind*, (3) *The Fourth Dimension*, and (4) *Mind Tools*. You can guess what the first three are about from their titles. *Mind Tools* was about the idea of viewing mathematics in terms information. I was sort of getting ready to think about computers, even though I wasn't there yet. I moved to Silicon Valley twenty years ago, in 1986, for a job teaching computer science at San Jose State. I expected to rapidly write a popular book about the meaning of computers. But in fact it took me nearly twenty years. As I say in the introduction, "I went native on the story."

One reason I wanted to move out here and do computers was because I met Stephen Wolfram in maybe 1984, and I got very interested

in his way of looking at the world as being made of unpredictable computations. I also fell in with the cellular automata researchers at MIT and the Boston area: Tom Toffoli, Norman Margolus, and Charles Bennett. I was excited to see the birth of something like experimental mathematics.

So in California I got obsessed with programming cellular automata, and then with programming other kinds of things: chaos, fractals, artificial life, videogames. I was having fun, and it never seemed quite like time to try and describe what I was doing at length. One issue in writing about computers is that they're always changing. This is something that happens when you try and write science fiction about the postsingularity world — you can't just settle down and have a status quo, like some one kind of spaceship that everyone knows how to fly. We're living in accelerating times.

Another reason I was holding off on writing my computer tome was that I kept waiting for Wolfram to write his big book, *A New Kind of Science*, which came out ten or fifteen years late than I'd originally expected it. But after that came out in 2002, it was time to go for it. That fall, I had a great gig teaching a course on the Philosophy of Computation at the University of Leuven in Belgium. So I read Wolfram's book very closely — I think I'm one of the few people who wrote a strongly positive review of it! — and I began working up my own variations on his ideas as lecture notes for my class. At first I called the notes "Early Geek Philosophy," the joke being that this whole science of computation is only starting, and we're the *early* geeks.

I imagined that I might be able to get a whopping big advance for my tome, and I got the hotshot science agent John Brockman to represent it, but in the end I got a solid but not stunning advance, and the book came out from a friendly publisher who'd put out a number of my books already: John Oakes of Four Walls Eight Windows Books, which ahs mutated into the Thunder's Mouth Press imprint of Avalon Books.

Brockman advised me not to put the word "computation" in my title, so I ended up calling it *The Lifebox, the Seashell, and the Soul*, which is a dialectic triad of the form thesis, synthesis, antithesis. "Lifebox" is a science-fictional word I made up to stand for a hand-held wireless device that can converse more or less like you, it's something like a smart, audio-based blog. The Soul is the sense that I'm more than just a smart cell-phone. And the synthesizing seashell in question is the cone shell, which is Wolfram's mascot to represent unpredictable one-dimensional cellular automata.

The subtitle of the book is *What Gnarly Computation Taught Me About Ultimate Reality, the Meaning Of Life, and How To Be Happy*. I'd noticed a lot of science books have long subtitles these days. More seriously, my intention in writing this book really was to take my best shot at answering some heavy philosophical questions, or at least to find answers that satisfy me, and I feel I did. I use "gnarly" in a specific

technical sense, by the way, meaning a process which is on the one hand deterministic and on the other hand very complicated and unpredictable, like a water in a brook, or a campfire, or clouds. My model examples of gnarly computations are the kinds of cellular automata rules that make patterns like you see on a cone shell.

I wrote the book fairly rapidly, it took about a year. The whole time I was unsure of whether or not I believe that everything is a computation. My idea was to write as if I did believe the idea, and see how far I could push it, and see where I ended up. I was tired when I got near the end of the last chapter, and then I briefly backed off from the idea and wrote that reality is richer than any computation could be. And then I showed what I'd written to Wolfram, and he gave me this pep talk not to lose faith.

When the book was in proof, I relaxed and took a dive trip to Micronesia with my big brother, and I had this big flash that nature really can be as gnarly as we like and our minds as complicated as we think they are, and even so everything can be a computation. So in the end, I came back to the fold and added some more material to the last chapter. I'm comfortable with the idea that the world is made of computations. There might not be one master computation, there might just be computations at lots of levels.

By the way you can read much more about the gestation of the book in the sixty thousand word *Writing Notes for Lifebox* that I posted at the book's website, www.rudyruicker.com/lifebox. That's something I generally do for my novels as well nowadays, that is, create a longish writing notes document and post it when I'm done, you kind find links to them all at www.rudyruicker.com/writing.

Q 187. In *The Lifebox*, *the Seashell*, and *the Soul* you describe viewing reality as a computation as being a third revolution on a par with the way Newton and Darwin changed our view of the world. Do you think this is going to deeply penetrate the public consciousness?

A 187. I've learned not to overestimate the success of my attempts to penetrate public consciousness. I mean, maybe the schools of thought I believe in are penetrating, but it takes so much longer than I expect, like decades instead of months. There were a certain set of ideas I was pushing when I wrote my novel *Software* in 1982, like notions of the mind as software, of the body as something that might be programmable, and the idea that computer people could be weird druggies instead of humorless nerds. And these ideas have kind of entered our culture, but it's like the "telephone" game where people whisper some phrase from person to person, and when it gets to the end of the line, it's warped and different from what you meant for it to be. I think people will begin thinking of everything as a computation, but they may not consciously realize this is what they believe.

Q 188. You do some pretty gnarly gear shifting with your writing. Do you see 21st century books being intrinsically different than 20th century books?

A 188. I'd like to think that the form of a novel as a longish linear text of words will hang around for quite a bit longer. Like classical music. Movies are big, of course, and videogames, but the novel remains.

But as paper fades away a bit with more electronics coming on line, certainly we can expect to be adding in more goodies, like footnotes, pictures, movies, voice, links. I blog a lot, and that's a nice mixed form where everything goes in, www.rudyrucker.com/blog. But a blog isn't a novel, at least not now, but in principle you could write a novel in the form of a blog, like a novel that's in the form of a journal or a series of letters. I think some people are already doing this, but I haven't heard of anyone really creating something great in the form. It's something I might try; although to really make it like a blog, it kind of has to be free and online, and then you don't get paid for it. A blog text in a printed book seems kind of weak, doesn't it? I mean you need the color pictures and the links that work and the search box to find things in the text.

Ted Nelson and his Xanadu hypertext project had this idea that the web should be set up so writers got paid per word read; it's too bad that isn't working out. I'll be damned if I'm going to let my site run automatically selected ads, which is currently the only business model for getting money off your online posts. I tried it, but it felt like being a whore who has to cozy up to whoever comes to the door. I was running automatic Amazon ads on my blog for awhile, but then I saw an ad for a right-wing political blog and I was outta there, ad-wise I don't need the money that badly.

I've been working on a novel called *Postsingular* where some of the characters are what I call metanovelists. Everyone has the internet in their head all the time, thanks to ubiquitous nanomachines. I call it the orphidnet. And you also have an endless amount of extra memory you can access, along with smart agents to take over certain kinds of thoughts such as simulating scenarios.

In considering the metanovel, think of how Northwest Native American art changed when the European traders introduced steel axes. Until then, the Native American totems had been hand-held items, carved of black stone. But once the tribes had axes, they set to work making totems from whole trees. Of course with the axe came alcohol and smallpox; the era of totem poles would prove to be pitifully short.

Working on *Postsingular* in my head in an open boat in rough seas off Grand Turk Island this spring, I was thinking how it would be to have the orphidnet and have access to my text. And that seemed kind of dull, like too much bringing my work with me.

Better than writing, if I had that kind of access, would be to lay down visualizations of the scenes. More like directing a movie. I wouldn't have to fill in all the architectural details of, like, some character's whipped Victorian house. The agents could patch the details in, collaging them from a real house and, where necessary, bending the collaged reality bits to fit.

I'd go back to the metanovel over and over, layering on detail, just as I do now. But it would be more like a movie. You'd store it as a waking dream, as a VR, as a game? I thought of a few oddball new ways to write a novel.

Lifebox. A metanovel that feels like a person's whole remembered life. The art of a lifebox novel is to tweak it so that the life is a bit more interesting than your own. A lifebox novel will normally be a temporal interval of a life, possibly the whole thing.

Inventory. I think of Charles Simmons's 1978 book *Wrinkles*, where he goes over his experiences with various ordinary kinds of things, like a water chapter, a frying-pan chapter, a vagina chapter, a freckles chapter. Hats, tongues, bicycles, dogs, trees, drugs, food, cars, clothes, teaching, voice, fish, wind, kites, airplanes.... Or instead of themes, you could organize the metanovel around locations, like by telling everything that happened in each important location in your life.

Multithread. A metanovel that's like a movie, but with complete mental records of everyone in it. Possibly have it really be like a movie, and have the offscreen records as well. Fake a lot of the internals on a need-to-know basis, like the way you could make an infinite VR by having the landscape be created on the fly.

Simworld. An ever-changing artificial world, where you set up characters driven by certain programmed-in drives — compare to a flocking program where simulated birds obey drives and the wheeling flock emerges. In addition, suppose that the world gloms a user's appearance and automatically puts them in. So your life is partly in the sim.

I had a bunch more ideas like this on my blog, just search for "metanovel" in the blog Search box.

Q 189 Have you had to make sacrifices in your personal life for your writing?

A 189. Well, generally, I'd rather be writing than almost anything else, so it's not a sacrifice. I had to make sacrifices to earn a living, e.g., to work as a professor. But writing is what I like to do. It's what makes me happy. Having a job or cleaning the house is a sacrifice because it's not writing.

Q 190. Some writers claim to have dialogues with their characters. Do you hear voices when you're working on a novel?

A 190. I try to hear the voice, I work on that. If I don't hear the voice, then all the characters end up sounding like me or, ugh, like characters in movies or TV shows or other books. It's important, I think, to get my voices from actual living people that I've observed. Sometimes I can work up fake people by combining bits I've observed. And when I get a good mental model of the character's personality, then, yeah, they might say unexpected things, and that's wonderful. I hate books where everything everyone says is obvious. Real people aren't like that.

When I finish a book, I'm sad to leave the characters. I liked the movie *Big Fish* about a father who always told stories to his son, and at the father's funeral, all the characters showed up. That tore me up. I'm expecting Sta Hi Mooney to be at my funeral, and Frank Shook, and Vernor Maxwell and Bela Kis and Fern Beller and Thuy Nguyen and Randy Karl Tucker — *hell, yeah*, they'll all be there, and I'll be with them forever in Paradise.

Q 191. How do you know when a novel you're working on is finished?

A 191. People who aren't commercial novelists are sometimes surprised to find out that we do something so crass as keep track of the number of words, and to guide the book so that it comes in at a specific target length. For novels these days, ninety-five thousand words is the sweet spot. The publishers would really prefer that you didn't go up to a hundred and fifty thousand words, as they're gonna make less money on a book that length; it uses more ink and paper, and it's not long enough to justify jacking up the cover price, or if they do jack up the price, then the bookstores won't want to order it as they find they can't easily sell books that cost more than the standard price. And if you only hit eighty-five thousand words, readers are gonna feel they're getting short weight, although some writers do manage to move short weight and leave the crowd yelling for more.

I think about the word count every day that I write; if I do a thousand words, I've had a good day. And I look ahead and see how many words I still have to write, and revise my notions of how much more action the book needs.

This said, in certain books I'll have a really strong story line that runs out past any expected minimum length; *Frek and the Elixir*, for instance, was a hundred and sixty thousand words, which may have hurt the sales, for the reasons mentioned above. So in *Postsingular* I'm working to bring it in at under a hundred thousand words, and, hey, if there's more to say, that can go into a sequel, which is of course commercially a good thing. I hope to do a sequel to *Frek* as well, by the way, but here again, I'll try not to have the length be too long.

Q 192. What aspects of writing do you enjoy the most?

A 192. I like leaving the daily world and going to another world, a world that I had a hand in designing. You'll notice that in most of my novels, the main character in fact leaves the world where I start him out and goes to another world. Another planet, another dimension, another sheet of reality. It's an objective correlative for what I'm doing when I leave this mundane world and go into the world of my novel.

Writing is so much work. Every part of writing a novel is hard. The planning, the sitting down and creating, the revising. I guess the most fun part is when it seems to pour out and I'm having a good day. When I'm doing that, I stop worrying for a while, I forget myself and I'm happy and proud and even exalted and amazed to see what's coming down or going up.

More precisely, that fun part is "the narcotic moment of creative bliss." I just heard John Malkovich deliver that phrase, playing the role of an artist/art prof in *Art School Confidential*. That's very right on; the operative word is "narcotic," it's definitely something you get addicted to over the years. Really I go to all this trouble writing a novel day after day month after month because, in a way, I'm trying to get high. Or see God. Or make love to the Muse. Waiting for *the narcotic moment of creative bliss*.

Q 193. What books of yours are coming out next?

A 193. I'll have two books out this winter, a novel called *Mathematicians in Love* (Tor Books) and a story collection called *Mad Professor* (Thunder's Mouth Press).

Mathematicians in Love is about a couple of crazy mathematicians, grad students from Berkeley. They fall in love with the same woman, and find a way to go to a parallel worlds. One of them tries to change the world so he gets the woman, and ends up killing her in the process by accident, so then they go to a third world. The science is based on a lot of the ideas from *Lifebox*, that is, that natural phenomena are gnarly computations that can in principle be predicted. One of the guys starts a punk-metal rock band called Washer Drop, which I really got off on. Also they overthrow their evil right-wing government, which made me happy. The book picked up a lot of good blurbs from other writers, I think it'll do well, the site is www.rudyruicker.com/mathematiciansinlove.

One really funny thing I did was to have the same cone shells I talk about in the *Lifebox* tome, except now they're aliens that eat people. The cone shells are in fact mathematicians as well, so my heroes make friends with them. If you had to think of something you could talk about with aliens, mathematics might be a good way to go.

Brandywine, Maryland, October 10, 2006

Interviewer: Ernest Lilley <editor@sfrevu.com>

For: [SFRevu](http://sfrevu.com)

Q 194. You said (to *Locus*) that “People rarely write books that are that far out, so it might be interesting to try to write one, but no one will want to read it.” Has that actually stopped you from writing far out SF? Or to put it another way, “What? You mean *Mathematicians in Love* is mainstream?” What would you consider far out?

A 194. Even though my books may seem far out to you, from where I stand, they’re fairly obvious extrapolations, all but inevitable conclusions. I have to be careful not to outsmart myself that way, and not push on to a less obvious idea which is, however, savagely incomprehensible to the average reader. Being widely read is more important than being far out.

I was rereading Franz Kafka’s “The Metamorphosis” this week. And here’s poor Gregor Samsa, he’s turned into a giant cockroach and can’t even get out of bed in his parents apartment because his little legs are waving uselessly in the air, and his boss shows up at the apartment and is yelling through the door, and Gregor offers this very long and heartfelt explanation, but all that the boss and his parents hear through the door is guttural twittering.

To be really far out, you turn into a giant cockroach and make noises that don’t even sound like a human language. Actually John Shirley’s been urging me to write a story like that with him. Maybe. I’m between books now, and if I write something totally unpublishable I can always put it into my webzine Flurb (www.flurb.net).

Speaking of cockroaches, I was really happy to put cockroach mathematicians in *Mathematicians in Love*. I always figured that math is one thing that we’re likely to be able to talk about with aliens.

Q 195. Okay, I’ve read your 1983 “Transrealist Manifesto” (<http://www.rudyrucker.com/pdf/transrealistmanifesto.pdf>), where you describe a style of writing in which you take people you actually know, including yourself, and run them through a maze of crucial plot points to get realistic behavior out of them. Isn’t this what all authors do unconsciously, that is, use characters as surrogates for them and people they know?

A 195. Well, there’s a whole continuum of sources that writers might use for their characters and situations: personal experience, stories overheard, books, movies, TV. Transrealism advocates using the personal end of the spectrum as much as possible. In other words, transrealism would be at the polar opposite of a fan writing about Harry Potter or Yoda or the X-Men. “Not that there’s anything wrong with that.”

Practicing transrealism takes a bit of vigilance on the writer's part. It's easy to slip into modeling one of your characters on someone else's artistic construct. But then your work gets a second-hand, lifeless feel. "No more second-hand God," as we used to say in the Sixties, meaning that it's better to seek our own vision of the Absolute than to be reading words out of someone else's dusty prayer-book.

My sense is that, when I commit to transrealism, the world helps me out. The right sorts of events pop up in daily life. Events that I didn't realize were important come back to me and I'm able to transmute them into science fiction. And that makes my own life seem more interesting to me.

Q 196. The notes for the plotting of *Mathematicians in Love* are quite exhaustive. I liked being able to see where the book diverged from the original concept. Do you feel like the storyline fights you for control, or do you make conscious decisions about where to go next? Does all this planning mean that it's not a transrealist novel, since you've noted that "a transrealist novel is written in obscurity, and without an outline."

A 196. I wouldn't call *Mathematicians in Love* a strongly transrealist novel, in that the events don't have a strong connection to my actual life. My fully transreal novels like *White Light*, *The Sex Sphere*, *The Secret of Life* or *Saucer Wisdom* are in some sense autobiographical. This said, I certainly drew on my life experience for *Mathematicians in Love*. I've hung around with a lot of mathematicians over the years, and I love them.

As for whether I'm currently obeying every detail of I may have said in a manifesto I wrote twenty-three years ago at the start of my writing career—well, you need to take a young writer's manifesto with a grain of salt. Writers have a way of arguing that the One True Path just so happens to be whatever their current literary practice is.

I used to look down on outlines because I didn't use them. Therefore they were bad! I think I was so eager to start writing I was too impatient to outline. Or maybe I was worried that systematizing my process might take away the magic. I used to think that using an outline means that you draw up this detailed outline and then rigorously adhere to it.

But now for each novel I write a novel-length notes document in parallel, and the notes include a detailed scene-by-scene outline. A good thing about a notes document is that you can write in it when you're not quite in the right mental space to write on the novel itself. And the thing about outlines—I've come to understand that you don't have to adhere to your outline at all. It's just a way of kicking ideas around to promote your flow of thought. I back and rewrite my outline dozens of times while I'm writing any given novel. The only reason the outline looks so accurate in my final notes document is that as I'm writing each chapter I keep revising

the outline to match what I actually did. In other words it's an interactive process.

I still don't believe that a good book can adhere to a definite advance outline, as a good book takes on a life of it's own and even the author can't fully predict how it will unfurl, no more than a pool player knows where all the balls will go after the break. When you work at the limits of your artistic abilities, the outcomes are necessarily unpredictable. If they're predictable, then you're not out there on the edge.

Q 197. Your taste in art, whether it's written or visual, all goes to the surreal. I like that, because it's fun to be bombarded by loud colors and noises and ideas...but is it necessary? Does reality have to be distorted in order to be seen clearly?

A 197. All reality is distorted by one's ideas. An endless torrent of lies and propaganda emanates from every form of mass media. These lies are frequently designed to get you to see the world in certain ways which are advantageous to those who wish to exploit you. Keep in mind that historically, Surrealism was a political movement spawned by a young generation's disgust with the Great Wars their leaders were killing them in. I took a lot of satisfaction in describing the ouster of a corrupt and evil President in *Mathematicians in Love*.

Q 198. As I mention in my review of *Mathematicians in Love*, I'm something of a math wannabe. I get that it's cool, beautiful and powerful as all get out to divine the meaning of everything from "first principles," but when I look at math problems in books (anything beyond basic algebra and trig anyway) all I can think is — would a hammer help reduce this to more manageable terms? Do you have any thoughts on why some people have a facility for math and others bounce off?

A 198. I know what you mean and I feel your pain. I'm the same way about electricity, economics, geology, and music. I simply can't begin to absorb the explanations of what's supposed to be going on. Weather maps too. It's like there's some underlying basic assumptions that I missed hearing about. People's minds are different.

As a writer, one of my goals in *Mathematicians in Love* was to try and create the experience of doing higher math for those who can't actually do it. So that led to those visual "morphons" the guy is weaving together for his these, all the morphons taken from *The Cat in the Hat*. Fish, rake, teapot, dish, cake.

Q 199. I gather that determinism is getting a second wind as more and more powerful methods of computation are conceived. Didn't God's playing with quantum dice kill that off — or am I off the mark? What's

causing the renewed faith in a prediction? Are we going to have to deal with predestination again?

A 199. I'm so sick of quantum mechanics getting a free ride. It's an intellectually bankrupt edifice, a false front with nothing behind it. They used to be able to get away with saying, "ah, reality is stranger than we can know," but I think a lot of us have had it with that line of mystery mongering. Our brains are made of the same quantum mechanical matter as everything else in the world, so if there's an explanation to be had, there's no reason we can't understand it. The foundations of quantum mechanics suffer from a complete and utter bankruptcy of new ideas.

According to a newer new line of thought — I'm thinking of people like Stephen Wolfram, Lee Smolin, and John Cramer — there could well be a deterministic subdimensional physics below quantum mechanics. Quantum mechanics is like mist over the landscape of the crisp underlying reality.

You mention predestination, which is a way of broaching the question, "If the future is determined, does that mean I don't have free will?" Maybe we don't have free will, but in practice this isn't so bad because, at least in the world we live in, the future is computationally unpredictable. Turns out there's a distinction we didn't use to be aware of. The future can pre-exist in an idealized kind of way, but it may well be that it is even in principle impossible to predict it. This is widely believed to be the case in our world.

In *Mathematicians in Love*, they start out in a world in which the world's computation is in fact simple enough that they can make a device to predict the future, but they end up in our rich and gnarly world, where prediction is a practical impossibility. I also discuss these ideas in my nonfiction book, *The Lifebox, the Seashell and the Soul*.

Q 200. So here I am, having climbed to the top of Everest to ask questions of you — and what I really want to know is: Read any good books lately? And what sort of stuff did you read when you were a kid?

A 200. Early favorites include Robert Heinlein's juveniles, everything by Robert Sheckley, William Burroughs's *Yage Letters*, Jean-Paul Sartre's *Nausea*, Thomas Pynchon's *Gravity's Rainbow*. Charles Stross's *Accelerando* had a big effect on me last year, it actually sparked my writing a novel called *Postsingular* on some of the same themes. Last month I finished writing *Postsingular* and sent it to my editor David Harwell at Tor. If all goes well, this book could turn into a trilogy. I'm writing a few more SF stories of late, and I find it useful to read the *Year's Best SF* to see the lay of the land. A non-genre book I liked a lot last year was David Mitchell's *Cloud Atlas*. It has a very cool construction; it's an onion of stories nested inside each other. I love Alice Munro's book, *Lives*

of *Girls and Women*, which I just got around to reading. I'm planning to read Geoff Ryman's *Air* and Kelly Link's *Magic for Beginners*.

Q 201. In your mass compilation (<http://www.rudyrucker.com/pdf/interviewsposted.pdf>) of every email interview you've answered, you mention that while your books haven't broken the German market, they do quite well in Japan, perhaps better than in the US. How have you caught on in other world markets? What country do you think "gets" your writing the best — and what country turns you on the most?

A 201. The U.S. is my home and my market and I think I'm slowly catching on. Being a popular writer is a very long haul. I think of SF as being in some ways an American art form like blues or jazz. Though maybe I'm provincial to say that.

My overseas markets come in waves. Some country will get hot and translate a number of my books in just a few years. I'm pretty much dead in Japan and Germany right now. Italy has been good to me lately. France is picking up a bit, also Spain. Korea is very big on my work right now, so far they're the only ones to buy translation rights for my historical novel about Peter Bruegel, *As Above, So Below*. Go figure.

Q 202. You got off drugs and alcohol in 1996 because it seemed to be interfering with your writing and whatnot. How's that working for you? Has your laptop replaced drugs?

A 202. I've been sober for a little over ten years now. So far so good. I'm happier this way, and I'm writing as well as ever. But nothing really replaces a sensual joy like smoking pot, and certainly not a laptop! Pot and beer are like a country where I used to live and now I'm exiled from there. On any given day, I can still wish I were drinking and getting high, but thanks to a lot of work on myself, I'm always able to remember that it wouldn't in fact be very much fun.

My goal is to have some serenity. There was a *Seinfeld* episode where George's father kept screaming "Serenity now!" and that kind of undermined the word in the average person's mind, but serenity is a real concept. Serenity is about feeling comfortable in your own skin. Like enlightenment, but with less metaphysical baggage.

Q 203. I just got back from the *Wired* NEXTFEST in New York, where I got to interact with quite a few robots. The ones I found it easiest to anthropomorphize weren't human looking at all, but a pair of industrial arms spinning records against phonograph needles. The ones that could do human expressions were just plain creepy. Has robotics and AI come along as quickly as you expected or is it hobbled by us asking the wrong questions? Are we the only ones with consciousness? And — I might as

well ask — is there such a thing as a soul, and could that set us apart from bots?

A 203. I think we still don't have quite the right idea about how to do AI. I taught AI courses a few times at San Jose State, and when I looked behind the curtain, I was surprised to see what cheap tricks artificial intelligence depends on. What makes the situation particularly troublesome is that there may not even be any simple magic insight about how to do "real" AI.

The thing is, you're born with, I don't know, maybe ninety percent of your mental abilities already hardwired into the wetware of your brain. It's not like a baby is a petabyte petaflop Dell computer with an empty hard drive. A baby comes loaded with all this incredible wiring. Speech recognition, pattern recognition, balance, the ability to move and to see, empathy — all the hard stuff is built in. Actually we don't learn squat in school.

How does all that smart stuff get into the baby? It's the result of millions of years of evolution of billions of individuals in a planet-sized space. We're not going to be able mimic that evolution on a desktop machine. But maybe, just maybe, if we use the entire global network of computers and let it crunch like mad, we can slowly evolve something like really intelligent wares.

As for consciousness, I'm a panpsychic by preference. I think God is in everything. I think everything is conscious. You drop a rock, it knows to fall down. It's conscious! The universal rain moistens all creatures; the cosmic light shines through every pane of the world's rose window. As soon as any machine can act like a person, sure it'll be like us. Consciousness is a gimmie. This said, human-style consciousness has to do with having a mental image of yourself having experiences, and this would in fact be easy enough to emulate if you already knew how to build a machine that could walk to the store and buy some chewing-gum and not fall down on the way home, which is all very far from our present technological capacities. Again I refer you to my tome *The Lifebox, the Seashell and the Soul*.

Oh, and what about the soul? I've always meant to come back and write more SF about the after life. My first novel *White Light* took on that theme. It is tempting to speculate that there might be another order of being. My friend Nick Herbert says maybe dark matter is consciousness. I like that kind of idea.

Q 204. By the way, your [blog](#) is addictive. I stopped by to try and snag some question ideas and found myself reading further and further back. I noticed that your bio was last updated when the blog began. Is bloggism the death of history?

A 204. I like working on my blog, it's a cross between a journal and a repository for notes of things that I might want to remember. A model of myself and an extension of my brain. Not that I work on the blog as much as I used to. I do feel a little bad that I'm not accumulating written journals at the same rate as I used to. The blog eats up a lot of that energy. There's the uneasy feeling that, given the usual digital bit rot, it would be very hard to read my early Y2K blog entries in ten or twenty years. Like they say, digital storage lasts forever or for seven years, whichever comes first.

But fortunately some digital info does percolate forward. If you want a really thorough bio note on me, I put my *Contemporary Authors* autobio online. Just Google for it or check the link in my Wikipedia listing.

Q 205. What's your second favorite word? I mean, after "gnarly".

A 205. I already mentioned serenity, so let's say peace. I don't mean this in the political sense, as I well know that's unattainable, and there's no point wishing for the moon. Certainly I'm willing to turn out for peace marches and of course I vote and donate to my political party and try and raise people's consciousness with my fiction. But given human nature, we'll never see peace. We've changed so little over the centuries.

Politics makes me uptight; I have so little control over it. It's like forever being in high school with rah-rah idiots in charge. In true fact, the Big Doings in DC don't regularly impact my daily life. As I said before, all news is a form of mind control. "They" want you to think about politics, but it's a con.

Anyway, my point is that when I say peace, I'm talking about inner peace. Being in the moment. Seeing the world in itself. Looking up at the leaves dancing in the wind. Having empathy with those around you. It's a lifelong quest. Peace!

Capetown, South Africa, November 1, 2006

Interviewer: Nick Gevers <vermouliau@yahoo.com>

For: Science Fiction Weekly Interview, at scifi.com

Q 206. Your new novel, *Mathematicians in Love*, is, like most of your work, full of mathematical humor. This is natural—you're a mathematician. But why, in your view, does math lend itself so readily to farce and comic allegory? Is the zaniness inherent in the subject matter, or more in the way math is interpreted and misunderstood by subjective human minds?

A 206. Mathematical modes of expression can provide shockingly simple explanations for the forms we find us in the natural world. Light,

electricity and magnetism compress down to Maxwell's Equations on a T-shirt. Zebra stripes and leopard spots grow from trivial cellular automata rules. Books sales rigorously follow inverse power laws. Perhaps it makes us uneasy to see the Great Conjuror's tricks explained, and we feel a mixture of surprise and fear. So we release the tension with a laugh.

When I give readings or speak in groups, people tend to laugh at what I say, often a little more than I'd like them to. It's been that way my whole life, even before I studied math. People think I'm joking when I'm just pointing out the truth as I see it.

Math has a way of pushing to bizarre extremes, quite oblivious of any sensible considerations. Infinitely spiky fractals, higher dimensional hyperspaces, incredibly intricate proofs — all very odd. I love these things and feel comfortable with them, and I want others to enjoy them too. Laughing about math is a way to get comfortable with it. And then, once you've relaxed, math can eat your brain.

Q 207. The hero of *MiL*, Bela Kis, and his closest friend, Paul Bridge, are both math grad students, and their careers seem a wild mixture of pure inspiration and downright despair. How close is this to life—back when you were a student, and now?

A 207. Academia has rigorous status levels and pecking orders. Grad students are at the bottom of the totem pole, and professors at lower-ranking institutions aren't much higher up. To some extent, mathematical greatness is objective, like a chess ranking. But once you move a bit down from the summit, the field seethes with cliques and fashions like any other human enterprise.

Writing my Ph. D. thesis on the theory of infinite sets was somewhat nerve-racking. Often I'd think I'd proved a really good result, only to find a hole in the proof a little later. My mathematical mentor Gaisi Takeuti advised me to knock off for the day whenever I thought I'd proved a big theorem, and then I could have at least one evening of happiness. Takeuti was at the Institute for Advanced Study at Princeton while I was writing my thesis at Rutgers University in nearby New Brunswick, New Jersey. It was partly thanks to him that I met the supreme mathematician Kurt Gödel.

Takeuti was like a surrogate thesis adviser to me, as I didn't get along all that well with my actual thesis adviser, Erik Ellentuck. My adviser was maybe a little paranoid, although nothing like Bela's adviser Roland Haut. By the way, that story about Haut not wanting to sign off on Bela's thesis unless Bela helps Haut break out of the psych ward is in fact a legend that I heard from a math friend about a now-deceased professor at Berkeley.

Q 208. The love triangle which complicates the friendship of Bela and Paul in *MiL*, their galvanizing shared obsession with the beautiful

Alma Ziff—does this accurately reflect how some mathematicians become inspired to achieve breakthroughs in their field?

A 208. I don't think it would be accurate to say that Bela and Paul are working on their math problems because of Alma. Usually mathematicians are working on things because they're obsessed with them. That's true for most kinds of creative endeavor, I think. It's pretty rare when you have this Lara's theme moment where a woman awakes in an ice-crystal palace to find that her lover has poured his soul into a poem about her. Math in particular isn't very amenable to representing human emotions. That's one reason I prefer writing novels, as a matter of fact. In a novel, I can incorporate and come to understand my own emotional life.

Q 209. The sensibility of *MiL* is countercultural, decidedly so. Does your work still consciously embody the influence of the Beats, whom you've often cited as your central inspiration? And have any subsequent cultural waves affected your work to a similar degree?

A 209. I never really got over the fact that in 1967 my government wanted to send me to die for nothing in Vietnam. I read the Beats a lot when I was in high school and college, but maybe the underground comix of the late 60s and early 70s years were an even bigger influence on me than the Beats. The Beats led the way, but the hippies were my crowd. And of course I loved the punk thing, too.

A basic principle of counterculture is that if most people believe something, it's probably not true. The news is a snare and a delusion. Live your own life; find God in your back yard and in your loved ones.

Q 210. Bela's involvement in rock music in *MiL*—any allusions there to actual bands, actual musical trends?

A 210. Well, I was the lead singer for a short-lived punk band called the Dead Pigs in 1982. It was exciting, a real high point. In Lynchburg, Virginia, of all places, Jerry Falwell's home town. The Dead Pigs is where I picked up a lot of those vibes for the book, not that we ever reached the level of Bela's band Washer Drop.

The story about how Bela's band got their name is supposedly true: apparently in the late 80s or early 90s some Berkeley students threw a washing-machine off the roof of the Barrington co-op onto a complaint-prone neighbor's parked car.

The kinds of sounds I'm thinking about as models for Washer Drop are the West Coast punk groups NOFX and Rancid. And clearly the Scorpions are the model for Jutta Schreck's band AntiCrystal. That song they sing, "Crying Chainsaw Clown," it's so heavy-metal-as-written-by-non-native-English-speakers. I worship Jutta Schreck. I like the way she calls Bela "hound" instead of "dog," which is a joke off the fact that "dog"

in German is “hund.” Whenever I stick in German things, it’s kind of an homage to Phil Dick, too. “*Leise*, man,” as Baxter says. “Means ‘be cool’ in German.” In *MiL*, I had them do that line in Polish.

By the way, I hope to see Rancid in San Francisco next month with my fellow Dark Lord of Cyberpunk, John Shirley. The first time I saw Rancid play was a free concert during lunch hour outside the student union at San Jose State around 1995; it was an unexpected joy to learn that punk is not only alive, but better than ever.

Q 211. *MiL* is an alternate worlds novel, set mainly in three fairly similar versions of California; one difference is that Berkeley is known as Humelocke in Bela Kis’s home reality, and as Klownetowne in another... Why Locke and Hume? And why (on the basis of your close knowledge of Berkeley) Klownetowne?

A 211. Locke, Hume, and Berkeley were the British empiricists. So why not name the town after the first two guys instead of the third? I don’t actually know their philosophy all that well; most of what I know is at second-hand from Jorge Luis Borges’s essay, “A New Refutation of Time.”

Klownetown, yeah, that’s a riff off the wacky Bezerkely image. I liked claiming the name comes from early pioneer Willem Klowne. Towns do in fact pick up very odd and arbitrary names. Kind of like freezing the shape of a water droplet in flight. Whatever was in someone’s head at one particular moment gets canonized as forever the name of a given place.

Q 212. *MiL* proposes two sorts of universe: docile ones, predictable by mathematical means, and ones like our timeline, which is “fierce, non-docile, and gnarlier”. Bela prefers the second kind, calling our Earth “the best of all possible worlds”, because it permits existential freedom. Is he being naïve? Given the actual state of our world?

A 212. I’m glad you mention the distinction between fierce and docile worlds, it’s kind of subtle. It’s not a distinction that anyone would have thought of ten years ago. It has to do with Stephen Wolfram’s philosophy of computation, as further expounded by me in *The Lifebox, the Seashell and the Soul*, my non-fiction tome which has, aha, a picture of a South Pacific textile cone shell snail on the cover, these beasties being a prominent kind of alien in *MiL*.

Suppose our world is in fact a giant deterministic computation and that we can discover the underlying computational rule, and quantum mechanics be damned. Does this mean that the future is in practice predictable? Not necessarily. In a *fierce* world (such as ours almost certainly is), it would be, even in principle, impossible to actually carry out a future-predicting computation fast enough to arrive at a result before

the future actually rolls around. But in a *docile* world, like the first two worlds in my novel, it could just so happen that the world's computational rule is a so butt-simple that it allows for some efficient short-cut methods. And in these worlds you would be able to predict the future.

We're lucky to be in a fierce world. But, despite what you imply in your question, I still feel that our world may be deterministic, so we don't strictly speaking have the kind of "existential freedom" that would involve making utterly random choices. But it *feels* as if we do, because it's impractical to predict what will happen. Although we may well be deterministic, we are not in practice predictable.

Another subtle distinction there. I wrote about these issues at length in *The Lifebox, the Seashell and the Soul*. To some extent both *Mathematicians in Love* and my current project *Postsingular* are novelistic thought experiments which unfold the theoretical ideas described in the *Lifebox* tome. This is one of those times when I've worked out brand new scientific ideas for my novels before writing them. IMHO, that's something that sets my work apart. "This isn't just some silly-ass SF book. This is philosophy of science!"

Regarding your naïve remark about Bela sounding naïve, I can do no better than to quote the ending of *MiL*: "There's still bad news in the paper, of course, and sometimes I quarrel with Alma. But that's in the nature of things. A rapidly flowing stream has ripples; chaotic motions have sharp turns; societies have pockets of pain; your moods change unpredictably; the old die to make room for the young; whaddaya, whaddaya. We've got it good."

I mean, face it, people are always gonna die, no matter what. If everyone lived forever, the world would suck. We'd have, like, George Bush as president for a hundred million years.

Q 213. The branch of mathematics Bela and Paul explore in *MiL* is called "universal dynamics"; through it, they discover ways of modeling reality with alarming predictive accuracy. To what extent is universal dynamics rooted in actual mathematical thinking, discredited or otherwise?

A 213. Every now and then some mathematicians come up with a concept that's touted as being able to explain everything. Four big ones in my lifetime have been catastrophes, chaos, complexity, and Wolfram's "new kind of science." I think "universal dynamics" may be an actual phrase that you'll find in papers on chaos theory.

I love this stuff, it really changes how you see the world, even if, in the end, it turns out to be more a source of metaphor than of accurate quantitative prediction. The ideas tend to be a little hard to get across, particularly as asides in the context of a fast-paced science fiction novel, so I hit upon the notion of describing universal dynamics in terms of

making models of things using objects found in Dr. Seuss's *The Cat in the Hat*. There I go, being "zany" again.

I'm not all that crazy about that word, by the way. To me "zany" sounds like someone who's trying too hard. If you're really funny, the humor seems organic and effortless.

Q 214. In *MiL* you describe a kind of higher-universal crossroads called La Hampa, a remarkably imagined paradise and birthplace of worlds. What does "La Hampa" mean, and what helped inspire it? Brane theory? Modern art? Psychodelia?

A 214. Regarding the name, originally I was thinking about the underworld, like in Greek mythology, with an Orpheus-and-Eurydice riff. And then it struck me that this place should have a Spanish name, as do so many locations in California. Googling in an English-Spanish dictionary, I found "la hampa," which turns out to mean underworld in the sense of a criminal milieu. Like "gangland." By the way, although some of the Spanish language references decline the word as "el hampa," which is more typical for a world ending in a vowel, the majority of the Google hits call it "la hampa."

As for what the place is like, I'd recently been on a memorable diving trip to Micronesia with my big brother Embry. So I modeled the Nanonesia level of La Hampa pretty closely on the islands around Palau. And then I had the idea of putting island worlds in the sky, and then the idea of having the sky be the inside of a bubble which is a floating island world in a bigger bubble, and so on, up and down forever, as we mathematicians like to do.

For years I'd wanted to have a good reason to introduce "alien cockroach mathematicians from galaxy Z." It seems like if you did meet aliens, math might be one topic you'd be able to talk about. And in point of fact, high-powered mathematicians often are such odd people as to seem somewhat extraterrestrial.

Q 215. In Bela's home timeline and its immediate successor, America's main political parties are the Common Grounders and the Heritagists, which resemble Democrats and Republicans. The Heritagist President, Joe Doakes, and his Vice President, Ramirez...any resemblance to actual politicians, actual ideological trends?

A 215. Yes, absolutely, Joe Doakes is modeled on our current President Bush. I knew *MiL* would come out with two years of Bush's term still to run, and I'm hoping my book can help give people the strength to stand firm against him. As an artist, it's my duty to speak up in these dark times. It's my mission to give my companions strength, just like the underground comic artists did during the Vietnam War. Sure, I'm laughing, but I'm deadly serious. It's satire, not humor.

I particularly enjoyed writing the “Hundred Percent Heritagist” speech that Doakes delivers on the radio. Every time I mention Doakes, I find a different way of remarking that he’s angry. Testy, peevish, like that.

Sometimes it takes the lens of science fiction for people to step back and see what’s actually going down. A personal high point of the book for me is when Washer Drop and AntiCrystal are jamming together at the San Francisco baseball stadium concert, playing their anti-Heritagist song “Hundred Percent Asshole,” and, by God, they bring down the regime. That’s what I’d *really* like to see *MiL* do!

Q 216. Your portrayal of vlogging—video blogging—in *MiL* is very funny, but has a serious undertone, concern with universal surveillance, etc. Are we yet close to the vlogging culture your novel describes?

A 216. I’m proud that I put in vlogging, I got in ahead of the curve. What with You Tube catching on, it’s not gonna be long before a lot of people are doing full-time video blogs of their lives. The vlogging culture is happening right now.

As for worries about universal surveillance, to some extent that’s a paper tiger, a spook-house bugaboo. Once it’s here, it’ll be, like, so what. Big deal if the cops can watch me having sex or taking a dump. I can watch them right back. We’re all the same. Actually, the novel I’m just finishing now, *Postsingular*, pushes universal surveillance to a total extreme. Every object on earth is blanketed with a mesh of nanomachines, so anyone can hear or see anything anywhere in the world.

Q 217. Recently, you started your own SF webzine, *Flurb* (www.flurb.net), whose first issue featured some rather good stories. What led to your decision to found the zine, and how do you expect it to develop in the future?

A 217. Frankly I did it for expediency. As you know, I had written a story with Paul Di Filippo called, “Elves of the Subdimensions,” and I wanted to put it into my January, 2007 collection *Mad Professor*. So there wasn’t time to place it in a print magazine before my collection came out. So Paul and I sent the story to a couple of online webzines and they had the nerve to turn us down. So I was, like, fuck it, I’ll start my own webzine.

I took the funny-sounding name “flurb” from a word Paul had made up in our story. Turns out the word has some arcane computer-programming meaning, so flurb.com was taken and I registered the site as flurb.net.

To fill out the first issue, I asked some of my writer friends to send me unsold pieces they had kicking around. What about the second issue? I think I’m selfish and lazy enough to hold off issue two until I have another

story I can't sell. But, knowing that I can get anything whatsoever into *Flurb* is kind of liberating, it gets my zany countercultural juices flowing. It'd be nice to have a *Flurb* #2 by the end of January, 2007, making it a quarterly.

There's still a few writer friends I might tap for issue #2, and maybe for #3 in the spring open it up to submissions, although that seems like it could be a lot of work and stressful to boot. After a lifetime as a struggling writer, I'd hate to be in the position of shooting down other authors. Writing those letters that begin, "Alas..." Also, being a writer, I know how ungrateful and demanding we mean wretches are. It's not like an editor gets a lot of strokes and gratitude from his or her authors. Just whining and complaints. Maybe I'd need a co-editor to help with the dirty work.

Q 218. What's your next big writing project? You've had a couple of very interesting linked stories in *Asimov's* recently, "Chu and the Nants" and "Postsingular," which seem to be leading up to a novel...

A 218. Yes, that's the novel *Postsingular* that I mentioned above. I finished the first draft in September and I'm currently implementing some suggestions from my editor at Tor, David Hartwell. I see the novel as the first of a trilogy.

My inspiration for *Postsingular* was Charles Stross's fix-up novel *Accelerando*. For several years, SF writers have been pissing and moaning and saying, "Gosh, we really can't see past the Singularity." And then Stross just goes in there and plows ahead. Machines as smart as gods? Why not. Hell, even the Greeks knew how to write about gods. You just do it.

At first I'd thought I might write *Postsingular* as a series of stories, just as Charlie did with *Accelerando*. But that took him three years, and I wanted to finish *Postsingular* in a year. So I sold the first two chunks of the book as stories, but then I got into novelistic overdrive and the following pieces weren't well-demarcated enough to sell as separate stories. I was particularly glad to have the story called "Postsingular" in *Asimov's* because, at least to me, the title seems so obviously great that I wanted to claim it before anyone else.

There are two elements of *Accelerando* that particularly inspired me. One is the notion that it might be a reasonable idea to smash Earth into a huppagooobawazillion nanocomputers, fan those suckers into a Dyson sphere around the sun, and port all of Earth's former denizens into a gorgeous virtual reality supported by the network of nanocomputers. My novel *Postsingular* is about some people who are trying very hard to prevent this from happening.

A second thing in *Accelerando* that whetted my interest was Charlie's passing remark about "running a timing channel attack on the computational ultrastructure of spacetime itself, trying to break through to

whatever's underneath." Even though I'm a former computer science professor, I had to look on the Web to find out what a timing channel attack is, but then I ended up having some of my characters use it as a method for learning the jump-code that'll take us from our familiar "Lobrane" world to a parallel universe called the Hibrane.

Something really weird occurs at the end of *Postsingular*, it's like the whole world wakes up. I've always been partial to panpsychism, the notion that every object is conscious and in some sense alive. And in *Postsingular* I found a reasonably logical way to make this come true. I'm eager to get started on volume two to see how it shakes out, although first I'll probably take a break and write some stories.

San Francisco, March 1, 2007

Interviewer: R. U. Sirius

For: For MondoGlobo and [Ten Zen Monkeys](#)

(This interview was originally done as a recorded spoken interview for podcast. R. U. later had it transcribed, and I edited it a bit more.)

Q 219. Here's an early quote from *Mathematicians in Love*: "The key new insight is that any given dynamical system can be precisely modeled by a wide range of other dynamical systems." And that seems to be central to the mechanism of your novel.

A 219. Yeah. That's a sort of dream of mathematics that emerges every few years. It's emerged as the idea of catastrophe theory. And then again as chaos theory. And then as dynamical systems theory, as complexity theory, and as Wolfram's *A New Kind of Science*.

The idea is always that there are only a few possible forms that underlie the things that are happening in the world. And the feeling is that if I can sort of strip something like the weather down to its rawest mathematical form, I can then look at that form and I can find another system that actually shares the same pattern. Because if there's only a few little patterns and yet there's so many diverse things in the world — lots of things are actually going to have the same pattern.

So, for instance, a cup of tea can be a perfectly good model for a hurricane. And then, to predict what the hurricane's going to do, all you have to do is prepare your cup of tea so it's in the same state as the hurricane. Then you watch it for a minute and read out where the hurricane's going to be. So you begin to use nature as a kind of computing system. And that's the key idea in the novel. The characters take this gimmick and they're able to make a device that perfectly predicts the future.

Q 220. As I understand it, the idea is basically that computation is implicit in everything. And we learn how to use that.

A 220. Yeah. A lot of the ideas in my recent novels come from Stephen Wolfram's work. My *The Lifebox, the Seashell, and the Soul* was largely about his work. The basic idea is that any natural process can be regarded as a computation. We define computation in a fairly broad sense to mean any deterministic system that obeys definite laws. And it doesn't have to be digital.

The digital thing is sort of a red herring. We have this idea that being a computer is about being digital. But computers aren't actually digital, OK? They're made of a bunch of electrons. And the electrons are fuzzy analog wave functions.

So you can look at a brook or an air current and you can say, "That's doing something complex." And if you look at the natural world, there are four kinds of things that you see. Where something is sort of stable — not changing — it's static. Or else it's doing something periodic. Or it's completely fuzzy and like totally scuzzy and screwed up. Or it's in the interface zone — which is what I call the gnarly zone — the zone between being periodic and being completely scuzzy.

Life is gnarly. Plants are gnarly. Air currents are gnarly. Water currents are gnarly. Fire is gnarly. In Wolfram's view, every one of these actually embodies a universal computation, similar to a universal Turing Machine or a personal computer, and in principle they can compute anything that you want it to. I agree with him.

Q 221. I've never really been quite able to understand Wolfram's stuff. But I've heard that he shows that there can be types of evolution that differ from Darwinian evolution.

A 221. He does talk about evolution a little bit. People will say, "How could a butterfly have evolved that precise pattern on its wings? Or how could we evolve the exact shape of our body." And he makes the point that natural systems are actually fairly robust computations. They like to do things like make spots on butterfly wings or grow limbs from animals. The genetic code doesn't have to be as finely tweaked as people sometimes imagine. You could actually perturb it quite a bit and you would still get plants and animals that look pretty similar to the way we look now. So it's not so much that things evolve to perfection. They just get to a level of functioning well enough. In fact, we aren't tuned to complete optimality.

Q 222. Functioning "well enough" plays into your novel. There's the development of a technology that makes the lead character mathematician's theory into something that's usable as a prediction machine. And the guy who's marketing this machine — his attitude is good enough is good enough. And he starts putting it out there.

A 222. That's right. Computer scientists proved that all sorts of things are impossible to do. And then someone backs off and says, "Well can't I get something working reasonably well?" And it turns out not to be such a difficult problem.

Q 223. I'd venture to say that this novel is even more playful than your last one, *Frek and the Elixir*. Both books are satirical and there are recognizable dark forces based on current culture. But with this one, your main characters are pretty much consistently fun and they seem to exist in a somewhat more pleasant universe. Would you agree with that?

A 223. Yeah, although the book actually starts in one universe, and then the characters are in a second universe, and then in a final third universe, which is our universe. I've described it as being like different drafts of a novel. If you're a novelist, you think, "Why wouldn't God do successive drafts of the universe?" And once he's finished one version, that draft would still exist and there'd be people living in it.

Q 224. Like your giant jellyfish goddess in the novel. This sort-of parallel universe or metaverse is important in the story.

A 224. There's sort of control room that's based on Micronesia — it looks a little like Micronesia. It's called La Hampa, which is Spanish for "the underworld." But it's not underworld in the sense of Hades. It's more underworld in the sense of gangland.

And the idea is — if you're going to meet people from all over the galaxy, the one way that you might be able to talk to them would be with math. Mathematicians, at least, like to believe that mathematics would be the same pretty much everywhere. Though if you delve deep enough, you can call that into question.

Anyway, in La Hampa, the cockroaches are oriented towards logic. And there are giant slime creatures that are oriented towards studying infinity. The lizards are into analysis, and there are these cone shell snails. This would dovetail with some of your interests, RU...

Q 225. Conotoxins! I'm searching around for a source.

A 225. The cover of *The Lifebox, the Seashell, and the Soul*. is a picture of a textile cone shell. I did that because of Wolfram's work with cellular automata. There are these interesting, gnarly, irregular patterns that form upon textile cone shells. It looks like this space-time track of a one-dimensional cellular automaton. It's a lot of little triangles. So I thought I should have giant cone shell snails as the aliens in my next science fiction book.

Sometimes you get one of these gifts from the gods that happens when you're writing — something appears that's exactly what you need.

In this case, I discovered an article in the *Scientific American* about these innocent-looking sea slug type snails that are actually very vicious. They send out this long snout with this little tiny tooth that's filled with this very potent venom called a conotoxin. And some scientists recently found a way to start using those conotoxins on humans. It's the ultimate painkiller. But it's such a powerful drug that you can't inject it. It has to be dripped directly into your spinal column. If it gets into your bloodstream, you have a heart attack. And as a side effect, people start hallucinating so much they have to be kept in straitjackets. It's not a light recreational drug, by any means.

But at one point in the novel, my main character thinks he might have snorted some. It's going around.

Q 226. There's been some talk about parallel universes within the context of science and math and so forth. And I'm sure you have some thoughts and can tell us a little bit about how people have thought about this in the actual world.

A 226. There are a number of theories. A theory that I've drawn on recently comes from a scientist named Lisa Randall. She wrote an interesting book called *Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions*. There's this problem in physics with the fact that gravity is weaker than the other kinds of natural forces. Its basic intensity is dialed down really low. And physicists wonder — why isn't it similar? And she has this explanation. Maybe there's this other brane, as they call it — that is, a parallel membrane of spacetime — and part of reality is over there. And somehow it's siphoning off some of our gravity.

I like that particular kind of parallel universe. It's sort of a specialized physics use of the parallel universe idea. I don't like so much the notion of parallel universe that occurs more commonly in fiction, that is, the old quantum mechanical notion that whenever something could randomly go this way or that way, maybe it goes both ways, and then both the universes exist.

Q 227. It keeps on splitting off.

A 227. Yeah. But I don't want every possible universe to exist because then nothing matters. You know? It's like you say, "I want a sculpture" and they give you the block of marble and they say, OK, the Venus de Milo's in there. Big fucking deal.

Q 228. Do you think we're in an infinite universe; or an approximately infinite universe; or a quite finite universe?

A 228. I think there's a finite number of parallel universes. I think these are successive drafts of the universe that have been worked on. And they're getting better.

Q 229. And in *Mathematicians in Love*, the jellyfish god is designing the successive drafts.

A 229. Yeah. And, coming back to the question of whether our universe has an infinite spatial extent — it's interesting — fifteen years ago it seemed like the physicists had it all wrapped up — you know, we had a big bang, our universe is so-and-so large. It's going to collapse back. It's a hypersphere. End of story. Now, all their theories are going down the toilet. Supposedly 70% of the mass in the universe is dark energy, 25% is dark matter, and only a lousy five percent of the universe is the ordinary matter that we can see.

They have some notions about what dark matter what be, but they don't know what dark energy is at all. They invented dark energy to explain the recent observation that our universe is expanding faster all the time. Apparently our universe is never going to collapse back on itself at all. And supposedly this means that our universe has been infinite all along, oddly enough. That's interesting. The big bang was infinitely large. Like a whole infinite plane lighting up with fire at once.

It's worth noting that if the universe is physically infinite, you sort of don't need those endlessly many parallel universes that quantum mechanics hawks. Because if you say there's infinitely many stars, then you can get into a law of probability kind of thing. If you go far enough, you'll find another zone that looks exactly like our present visible universe but maybe with one significant alteration. Maybe your social security number will be slightly different.

How far do you have to go? I did some calculations in the preface to the second edition of *Infinity and the Mind*, and I estimate that with 99.99% probability you'll find a copy of our zone within the following numbers of meters: ten octillion times googolplex to the quintillionth power. Big, yes, complex, yes, but if the universe is really infinite, no prob.

Q 230. Sometimes I suspect that other dimensions are leaking into ours and that's where some strange, unexplained experiences come from.

A 230. I'm amenable to the idea of there being different levels of reality. I've always liked that idea.

Q 231. Moving on... let's not forget that this book has sex, drugs, math and rock and roll.

A 231. If I'm writing a novel, my hero might as well have more fun than I do. (Laughter) So he's a guitarist in a sort-of punk rock band but in this world they're called dreggers. And he knows how to surf.

Q 232. I love the way the main, young character in your book keeps on getting into more complicated and difficult and weird and life-threatening situations. But he pretty much keeps on grooving. He keeps on grooving on the mathematics of things. It seems sort of like his way out of pain and depression.

A 232. Yeah. That's my life story.

Q 233. Let's talk briefly about the politics of the novel. These guys are mathematicians. They have a powerful concept. And they have to decide, on graduating from college, about getting gigs and dealing with a particular corporation that turns out to be deeply tied into a political organization that is sort of a mirror world for the Bush administration.

A 233. That's right. People often said cyberpunk was political, but I've really been putting more politics in my books in the last four years or so, because I feel that it's such a dark time in American politics. We have this completely illegitimate government. Bush didn't even really get elected. And it's doing such harm every day.

In the sixties, when the Vietnam War was raging, we had underground comics to cheer us up. So I want to write science fiction that support people and gives them more hope about the future. So I have an evil President called Joe Doakes who is with the Heritagist party, and a much more evil vice president named Frank Ramirez. And one of the highpoints for me, in writing the book, is when they do this giant punk-metal rock concert at this baseball stadium in San Francisco that has recently been renamed Heritagist Park, because the Heritage Party has bought the naming rights. And they manage to bring down the regime with that concert, which is sort of cool.

Q 234. Talk a little bit about the role of vlogging in the novel.

A 234. Yeah, I myself blog a lot. And I'm interested in the idea of vlogging — video blogging. I put a lot about it into *Mathematicians in Love*. And this is one of those times where I was a little bit ahead of the future curve because in the year that it took for the book to come out, YouTube got big and vlogging really caught on. I push it a little further in the novel. There are people that are wearing a kind of camera called a vlog ring. You just wear this thing all day long, and it basically uploads everything you're doing, 24/7. And people compete over whose life is the most interesting. It's sort of like an "American Idol" thing.

Q 235. It's called "One in a Million." (Laughs)

A 235. And they're giving the vlog rings away at McDonalds so everybody will join. And, of course the Heritagists are combing through the data and using it.

Q 236. Right. People are doing the NSA's job for them.

A 236. Yeah! The better to manipulate us.

Q 237. So tell us a bit about your SF webzine *Flurb*. What motivated you to start a science fiction webzine?

A 237. Well, now and then I'll write a short story and I'll think, "Where can I publish this?" There aren't a huge number of short fiction markets in SF. There are three or four mainstream magazines. In the States, there's *Asimov's*, *Analog*, and *F&SF*. And in England, there's *Interzone*. And then there are also some online zines. The print zines only pay a couple of hundred bucks, and most of the online zines don't pay anything at all. And it takes a long time to send stories to one after another, and often I write stories that aren't a good fit for the mainstream markets.

So I thought it would make my life easier to start my own online zine. I gather some stories that are to my taste, stories from my old friends and colleagues; and I've been reaching out to some new people as well. I've done two issues of *Flurb*, and I think I'll shoot for three or four issues a year—basically whenever I have a new story that's going to be too hard to sell, I'll want to duck the hassle and put out a new issue of *Flurb*.

In a way, having *Flurb* is liberating for me, it means I can write anything at all that I want to. In the latest issue, *Flurb* #2, I have a seriously demented and radical tale called "The Third Bomb," a story I wouldn't even bother trying to send to other zines. But it's a good story, and thanks to *Flurb*, I was free to write it, and now it's out there to be read.

Q 238. On John Brockman's webzine *Edge*, they asked a bunch of famous scientists and thinkers and digerati types a question: "What are you optimistic about and why?" And a lot of people answered that they were optimistic because people were giving up on the idea of god — "the God delusion" as Richard Dawkins says. And your answer popped out at me because it was completely different and very much the opposite of what many people were saying.

A 238. At the time I wasn't actually feeling optimistic. But I'm usually optimistic about my science fiction. So the ideas that I described in my answer are things that are going into some novels that I'm working on

now. Universal telepathy and hylozoism—which is the notion of every object the world being alive. It follows from Wolfram’s notions of computation, provided we can unfurl the eighth dimension to provide a ubiquitous memory upgrade. Like that.

Q 239. So I think Richard Dawkins and the Amazing Randi are right now having telepathic communication about how to shut up Rudy Rucker! Those were pretty risky statements to make in a forum full of major science heads.

A 239. (Laughs) Well, yeah. The thing is — I think of myself as a science fiction writer now. So I no longer feel that I have to be reputable or responsible in what I say. (Laughs) You know? A lot of times, when people are asked to speculate about the future, they’ll simply repeat the ideas that are in the air. It’s like sheep standing in their stable, and they’re urinating on the floor. And then they’re lapping up the urine. And they’re saying, “Gee, this sure tastes like piss, doesn’t it?”

Q 240. (Laughs) A colorful image. I want to ask you one more question. Your thought processes in your material is very science fiction-y. What novels outside of the science fiction genre do you read, and what do you really love?

A 240. Well, recently I was re-reading some of the stories by Luis Borges. He’s maybe my favorite writer of all. Just this week I was reading a book by Charles Portis called *Gringos*. It came out in the nineties, a fun read. A bunch of hippies go down to Mexico for a harmonic convergence and they expect to see some saucers are landing. The usual kind of thing. Portis has this very jaded, dry tone. But I would say that the ending of the book disappoints a bit. It just peters out. And, of course, I’m also reading Pynchon’s new book, *Against the Light*. I’d say it represents a slight drop-off in quality for Pynchon. But it’s still fascinating.

Q 241. Did you read *Gravity’s Rainbow* as soon as it came out?

A 242. I did. I read it — I read it for about five years. I kept re-reading it. It had a huge influence on me. I learned a lot about writing from reading Pynchon. He’s such a beautiful stylist.

Q 243. I found it very difficult to get started with it. I started it about four or five times before actually reading it all the way through. And I found that I had to make notes to read the entire book.

A 243. Yeah. In a way it reproduced the experience of how you find out about things when you’re growing up. You get a piece here, a

piece there, and it takes a while to fit it all together into the whole narrative.

Q 244. It figures you would love puzzle novels.

A 244. Up to a point I like puzzles, but I also like a story that keeps you turning the pages. Stories that kick ass. I don't like to get too arty.

San Francisco, July 18, 2007

Interviewer: Katia Menegon.

For: For Forbes.com

Q 245. What's one thing you were sure would happen, but didn't?

A 245. Flying cars. I grew up in the 1950s, and all the popular visions of 21st century cities included flying cars.

To some extent the car defined how Americans thought about themselves in the postwar years. Mobility. Personal autonomy. Populuxe fins. What could be more joyous than taking our cars into the air!

Why hasn't it happened? Simple engineering constraints have a lot to do with it: rolling on wheels is energy efficient; flying through the air isn't.

Safety and litigation is another big issue. It seems like there'd be a lot of fatal flying-car accidents. And the cars could dive-bomb into random people's homes. Small personal aircraft are so dangerous that, as I understand it, suppliers are scared to even *sell* fully assembled ultralight aircraft; instead they sell kits, so that you crash, it's legally your fault for building the thing.

Noise pollution is a third and, to my way of thinking, definitive objection to flying cars. It would truly be unbearable to have someone's flying car racketing over my house. Stay home, dude. Use your email. The occasional traffic helicopter is bad enough.

Q 246. What's something that happened and totally surprised you?

A 246. The internet. Futurists used to imagine having a universal library that could answer any question, but it didn't seem like we'd have this anytime soon. But we got the universal library almost overnight, and in an unexpected fashion: rather than basing it on one central supermind, we have the distributed contributions of millions of internet users.

One might have thought this could only lead to chaos, but we're discovering that social networks work better than we realized. Really, this shouldn't come as such a surprise; after all, spoken language evolves via a social network with no top authority prescribing grammar and vocabulary.

And, to a large extent, economic systems are also unregulated free markets with no top control either.

Another thing about the internet that surprises me is that it's so unregulated and inexpensive. Pretty much anyone can afford to post pretty much anything they want, and it's visible to pretty much everyone in the world. Who would have expected such a cornucopia of free speech! It's almost too good to be true.

It's a kind of miracle that government and business didn't manage to take over the internet. It grew while they weren't watching. I just hope the public won't ever be bullied or bamboozled into letting the bosses bottle up the genie. That's something we need to keep an eye on.

San Francisco, January 22, 2008

Interviewer: Erin Weinstock.

For: [For Buck Rogers in the 26th Century](#)

Q 246. Did you start writing *Frek and the Elixir* back in 1999? I'm asking this because of eras being referred to as Y2K and Y3K.

A 246. I started writing *Frek* in June of 2001, and it took me two years to finish it. The phrase Y2K was indeed fresh in my mind, so it seemed natural to think about Y3K. You'll notice that *Frek* is set in 3003, which is like an "upgraded" version of 2002, a year during which I was working on the book.

Q 247. You painted some interesting visions of the future in *Postsingular* and *Frek and the Elixir*. Would you ever like to see any of the tech or newbio made a reality?

A 247. *Frek* is about a maximally biotech future in which there's no more machines at all. I used to read my children a book called *The Fur Family*, in which a little family of furry creatures lives inside a hollow oak tree, complete with windows and a little red door. I've always thought it would be nice to live in a house like that, so that's where I put Frek's family. I get sick of machines, so the *Frek* world is a happy dream.

In *Postsingular*, I pushed the other way, looking at worlds that are as mechanical as possible—the ultimate is when nanomachines eat Earth and everyone becomes a simulation in a virtual reality. I would despise living in that kind of world, it represents the aspects of modern life that I find the most boring and dehumanizing. In *Postsingular*, my characters are fighting against some planet-devouring nanomachines called nants. And at the end, as in *Frek*, all the machines go away. But in the *Postsingular* world, it's not biotech that takes over. Instead every object in the world

becomes intelligent and alive. This is such a strange idea that people are having trouble grasping that I'm saying it.

Q 248. In the sequel, *Hylozoic*, will we find out why, in *Postsingular*, the painting on the magic harp looked like it had Thuy and Jayjay on it?

A 248. You bet. I wrote that scene today, as a matter of fact. It's in Chapter Seven of *Hylozoic*. Thuy and Jayjay end up hanging out with Hieronymus Bosch, who happens to have that particular magic harp visiting in his house, and Bosch uses them as models for a pair of lovers he paints onto it. When I put the magic harp into *Postsingular*, I didn't really know what she was, and it's taken me most of *Hylozoic* to figure that out. But that's typical for epic and fantastic trilogies. You just have to proceed on nerve and throw down some really weird events in the early volumes and trust that you'll find good explanations for them later on.

Q 249. When Thuy uses "incantatory programming" to break Jil of her sudocoke addiction in *Postsingular*, she says, "*Love cycles useless rain in the tea. Stun rays squeeze the claws of Flippy-Flop the goose mouse. Caterwaul hello, dark drooping centaur dicks. Are you good to go-go, gooey goob? Able elbow boogie brew for two in the battered porches of thine ears, Jungle Jil. Comb out and pray. Pug sniff the cretin hop lollipop of me and you, meow and moo.*" Did you use a board loaded with poetry magnets to come up with the wording?

A 249. This is Dada beat poetry, and no set of poetry magnets would be big enough to hold all the words teeming in my mind! It's less random than it looks. I have private associations for most of the phrases. And it's also about the music of the sounds.

I'll try and explain it to you, what the heck. The first sentence begins with "Love," because that's what's going to save Jil. And then it becomes a riff off a haiku by Jack Kerouac: "Useless, useless, / the heavy rain / Driving into the sea."

"Stun rays" is a variant of "sun rays" and "sting rays." I'm not sure where "Flippy-Flop the goose mouse" comes from, but it's a phrase I like a lot, and I was saying it out loud in a weird falsetto voice for a couple of days. Sometimes I'm almost like a Tourette's Syndrome person.

Maybe "centaur dicks" is a nod to John Updike who wrote *The Centaur*. Also I was thinking of Alfred Stieglitz's 1923 black and white photo *Spiritual America*, which is a close up of the belly of a castrated work horse.

The next sentence merges "good to go" and "Wake Me Up Before You Go-Go." I like the word "goob," a lot, I use it to mean an uninformed person, a hick, a noob. I used it in *Frek*, too, remember the Goob Dolls?

In the sentence after that, I'm playing with sounds able/elbow boogie/brew/two, and I have the Shakespeare thing of "porches of thine ears" set in contrast to the mass culture vibe of "Jungle Jil," which sounds like the name of a comic strip.

"Comb out and pray," is the kind of pun that James Joyce uses in *Finnegan's Wake*, it's like "come out and play," but it's also telling Jil to comb the nanomachines out of her neurons and to pray for help.

In the last sentence, "cretin hop" is there in honor of the Ramones, and "lollipop" is for my fellow cyberpunk John Shirley, whose books were called "lollipops of pain" by a hostile reviewer. And the hop/lollipop is a rhyme of course. The end of the sentence is kind of rhyme between "me and you" and "meow and moo." And the rhyme is kind of saying, "we seem like separate people, but we can make friendly noises and be like peaceful animals together." The "Pug sniff" at the start is maybe to have a god echoing the cat at the end, but it's more about the sound of "pug," so short and abrupt, and matching hop and pop. Oh, and I used to read Dr. Seuss's *Hop on Pop* to my kids, too.

It all meshes, it's not random at all, it's just a deeper level of meaning. But if you write a whole page like that, nobody's gonna read it.

Q 250. Have you ever been to Easter Island?

A 250. I've wanted to go there my whole life, ever since I read *Kon-Tiki* by Thor Heyerdahl fifty years ago. I hope I make it. It's a long way from anywhere, but if you could combine it with a visit to Chile or Tahiti.

Q 251. Do you believe there are real higher planes of existence?

A 251. I'm agnostic on this. As an SF writer, I very often write about higher planes or alternate realities. For me, in a transreal sense, these alternate worlds are in fact the novels that I write.

But in actual sure-enough reality, yeah, I'd be surprised if there weren't some other levels. Something huge and staggering that we don't know about yet. I mean, it seems very unlikely that the whole story is this particular worldview that we monkeys happen to have come up with more or less as a result of a series of historical accidents. It's as if paramecia were talking to each other and laying down a theory that the universe is a drop of water with algae in it, and that's all.

SF is a way to crack your head open a little so some light can shine in.

Q 252. If you wrote a sequel to *Frek and the Elixir* what might you put in it?

A 252. I was thinking of launching right into the sequel after *Frek*, but I didn't get paid all that much for *Frek*, considering how long it was. And although it did quite respectably and it wasn't a *Harry Potter* type best-seller like I'd imagined it might be. So I was a little disappointed, also I was tired of doing the young boy's voice and of being all sweet and good.

So I wrote *Mathematicians in Love*, which is about a character who's closer to being like I am as an adult. And then I got interested in the idea of the Singularity, and I wrote a short story, "Chu and the Nants," that ended up dragging me into this whole psipunk trilogy of *Postsingular*, *Hylozoic* and (maybe) *Transfinite*, which is about people a little badder than me. In these books I'm being wicked again—like in my *Ware* tetralogy—with plenty of sex and drugs.

But everything goes up and down, and I'm beginning to want to go back to *Frek* and his world. Frek is me, too, only twelve years old.

I wouldn't necessarily put the word "Frek" in the title of the sequel, but for the purpose of discussion, I'll refer to it as *Frek 2* here. I talked it over with my editor, David Hartwell awhile back. Hartwell said a *Frek 2* should have both Frek and Renata, also a lot about the Grulloos. Maybe we don't have a galactic quest in *Frek 2*, we just set it all on Earth, some people said they'd wished I'd just stayed on that biotech Earth. Possibly I write some of the chapters from Renata's point of view, instead of always just from Frek's point of view.

I'd probably hold back on heating up the possible love/sex thing between Frek and Renata. They'd keep being close friends with just a touch of romance. Hartwell points that that among young adolescents, perhaps half are uncomfortable with sex, and half do want to hear about it—but the ones who read fantasy and SF are all, natch, from the "uncomfortable with sex" camp.

Perhaps I'd find a way to bring Gibby back to life; a lot of people were really bummed that he died. If you're writing science fiction, there's *always* a way! At first Gibby's son will be Frek's enemy, but after Frek brings back Gibby, they'll be friend.

One possibility for the action of *Frek 2* might be a conflict with the toons, kind of a replay of the real vs. virtual reality conflict that I had in *Postsingular*. Or maybe some toons become incarnated in flesh to see what it's like. Or maybe their software is invading animals and plants.

Possibly there's a civil war between the humans and the Grulloos; maybe the Grulloos throw in their lot with the toons. Perhaps the toons and Grulloos are being egged on by some aliens from a non-biotech world.

There might be some bad consequences of opening up the biome again and releasing all those old organisms. Maybe the house trees catch oak-blight; they're dying and falling over, roots pulling out of the ground. In that case, Frek and his family might be blamed.

Maybe some unemployed "counselors" (remember, they were the dumb, vicious stooges who worked as agents for the evil government that

toppled at the end of *Frek I*) would come after Frek's family, and they'd have to flee to Stun City under assumed names. And maybe they'd be tracked down and have to move on to a misty ocean-port city, something like Seattle or Vancouver—call it Mistport—where vaalships (whale-based krittters) are bringing in odd things.

And one of the things will play a key role in blocking the burgeoning Grulloo-toon-alien-counselor revolution! And Frek wins the Grulloos back over to the good side. Yaar.

Q 253. When inventing the different species of krittters and aliens for *Frek and the Elixir*, did you come up with them on the fly when needed during writing, or all at once before starting the book?

A 253. Both. I work out some things before I start a book, but a lot of it I invent as I go along. I'll finish a scene and see that I need new stuff for the next scene, and then I'll work on my notes for awhile to try and figure it out. I post these huge Notes documents as PDF files on my writing page, www.rudyrucker.com/writing. There's a Notes document for each of my Novels. Lately the Notes is longer than the Novel. You can go to that site and study the Notes if you really want to try and figure out my process. Let a thousand theses bloom!

Q 254. Do you think there are leaders out there as corrupt as Dick Dibbs in *Postsingular* and Gov in *Frek and the Elixir*?

A 254. I also have evil leaders in *Mathematicians in Love* and in *Hylozoic*. All these books were written during the years 2000-2008. Hmm. Does that suggest anything to you?

I think that our country is suffering through a very dark time. We're being run by people who have contempt for the average person's intelligence. They think we're little pawns to be lied to and used. The tide is gonna turn pretty soon. As an author I've been doing what I can to raise the public's consciousness. We can have our freedom back if we want it.

Q 255. Cuttlefish come up in both novels and I remember you saying in a podcast you like them. What do you find special about them?

A 255. I like the name; it sounds like "scuttle." And they're not fish at all, they're really just short, fat squid. I love their tentacles, and the hula skirt around their fat butts, and the way they can change colors and even pattern themselves, and the fact that they're all soft and gooshy except for this scary parrot-beak in the middle of the tentacles. They don't live in the ocean around where I live, but now and then I go visit them in the aquarium. I ate some cuttlefish sushi in Japan recently, it's terrible, it tastes like white plastic, they just slip it into your order to save money. H.

P. Lovecraft's famous evil alien Cthulhu has a face that resembles a cuttlefish. Gotta love someone whose face is covered with tentacles!

Statesboro, GA, and Mobile, AL, January 29, 2008

Interviewer: Steve Hooley and Cris Hollingsworth

For: For *The Spaces of Wonderland*, edited by Cris Hollingsworth
for the [University of Iowa Press](#).

Q 256. [Begin Steve Hooley's questions.] Lewis Carroll's odd vision still appeals to new readers after all these years, but a great deal of his purpose was social satire, and many of his jokes and situations refer to current events long forgotten. Today his work is still prized for its imagination and humor, but the casual reader generally sees only the surface. Why is there a Lewis Carroll influence in your work, out of all the things you've read and internalized?

Q 256. Like many people, I first read the *Alice* books before I was old enough to appreciate them. I had the clear sense that there were a lot of jokes and mental games that I wasn't getting. But I liked the books anyway for being so prickly, strange and hyperactive. Over the years, I reread *Alice* many times; I had a nice boxed set of *Wonderland* and *Looking-Glass* with the Tenniel illustrations in color, Random House, 1946. More than sixty years later, I still have these copies sitting beside my desk.

When I was a young teenager, I came across Martin Gardner's *Annotated Alice*, and I loved finally finding out about all the little gimmicks and tricks that were embedded in the books. I was by then a regular reader of Gardner's "Mathematical Games" column in the *Scientific American*, and he often related mathematical and logical puzzles to things found in Carroll's work.

I am especially drawn to the transreal or autobiographical elements of Carroll's oeuvre. I feel an affinity to the man; we're both soft-spoken, scribbling mathematician with a wild sense of humor. I, too, am capable of spending hours talking to children and telling them tales. And I love how Carroll blends mathematics and logic with whimsy and madness.

The cultural referents to *Alice* that have affected me are not so much the primary British ones, but rather the secondary American ones. I saw the 1951 Disney version of *Alice* when it came out—I would have been five or six years old, and this was certainly one of the first feature-length cartoons (or feature-length movies of any kind) that I ever saw. I particularly liked the scenes when Alice was lost in the forest and encountered strange-looking creatures, such a glasses-wearing pencil stub who walks on two legs. Just last month I finally got around to using that talking pencil stub as a character in a science fiction story, "Jack and the

Aktuals.” (He plays the role of a mathematician from a world of higher infinities.)

I was sent back to Carroll’s work in 1966 by seeing a clip of the Disney cartoon as part of a psychedelic light show backing up the Jefferson Airplane, who were playing a concert at Swarthmore College, where I was then a student. The clip was a loop showing Alice endlessly falling down the rabbit hole. I’d always longed to directly experience Alice’s worlds, and for a brief time I imagined that mind-blowing drugs might be a way to get there.

This was a common notion of that time; it was certainly suggestive that Carroll had written of a hookah-smoking caterpillar sitting on a mushroom. In a way, psychedelicism is a form of orientalism. It’s all about finding a way to get out of your strait-laced normal scene. In my own life, I found I didn’t have the stamina for repeated doses powerful psychedelics; instead I learned to get my kicks from imagination and math—just like Carroll.

Q 257. An obvious parallel between your work and Carroll’s is the way you send your protagonists searching for new worlds into places like the *Hollow Earth*, the caves and tunnels in *White Light*, the higher dimensions of *Spaceland*, or sideways into mirrored braneworlds as in *Postsingular*—rather than always out into space.

A 257. Realistic space travel has never interested me as a theme, although I do get excited when I see giant pictures of Jupiter or even of Earth. But I don’t like the group-think that comes with large team missions; I prefer forms of alternate world travel that are accessible to quirky individuals. Another problem with real space travel is that it’s so slow—unless of course you use some form of faster than light drive, like I do in my galaxy-spanning space epic, *Frek and the Elixir*. Of course, once you have FTL, it’s really the same as magic doors to other worlds, like in *Master of Space and Time*.

Alice’s looking-glass is a wonderful paradigm for a door to another world, even better than the wardrobe in the Narnia books—although that’s a pretty great image as well. The looking-glass is like an Einstein-Rosen bridge, if you will. I love that when Alice pushes against the mirror, it’s soft like taffy—and then she slowly pops through. There’s kind of birth thing going on there.

The Carrollian notion of changing one’s size has interested me from my earliest years, it may well have been his work that first set me to thinking along these lines. I remember that as a very young boy, I had a variety of mind games I liked to play before going to sleep. One of them was imagining what I’d do if I could fly, and another was imagining what it would be like to shrink to a tiny size.

As well as *Alice*, another early influence on this front was the movie, *The Incredible Shrinking Man*. My first novel, *Spacetime Donuts*

is, in some sense, *The Incredible Shrinking Man* written on a roller towel. That is, my characters shrink down so far that they re-emerge on the same Earth that they shrank down into. The scale proves to be circular.

Georg Cantor's discovery of the transfinite levels of infinity only happened near the end of Carroll's life, but Carroll would have loved the transfinite, not to mention fractals. In some ways my novel, *White Light*, is a very Lewis Carroll book. We both like to turn the knob up to eleven.

In the mid 1980s I felt a little lost—I had just been fired from a somewhat Carrollian job as a professor of mathematics at a woman's college—and I consoled myself by reading Carroll's diaries. Something that I found very encouraging was the fact that, at the end of 1863, the very year that he'd written *Alice in Wonderland*, he wrote in his diary that he'd accomplished nothing of any importance that year! You never know when you're doing your best work.

During this same period, I read Carroll's two books on logic, bound as one under the title, *Symbolic Logic And The Game Of Logic*. I describe some of his ideas in the "Logic" chapter of my nonfiction book *Mind Tools* (Houghton Mifflin 1987). He made up these wonderfully mad syllogisms to illustrate modes of logical reasoning. The syllogisms are almost like haiku, where the restriction is that the three lines must represent a rigorously logical argument about three properties of things: if you accept the first two premises, you are logically obliged to grant the correctness of the third.

In 1985 I myself wrote a series of transreal Carrollian syllogisms, each illustrating a distinct mode of reasoning, and each of them crafted them to express something about my personal life. I'll give four of them here, taken from pp. 203-204 of *Mind Tools*, each preceded by a sentence of explanation.

I was living in Lynchburg, Virginia, the home town of evangelist Jerry Falwell.

No beggar is honest;
All evangelists are beggars.
No evangelist is honest.

I had been dismissed from my teaching job due to faculty politics, even though I was in fact a popular teacher.

No teachers are enthusiastic;
You are enthusiastic.
You are not a teacher.

Ronald Reagan was president.

No president is a moron;
Some illiterates are morons.
Some illiterates are not president.

As always, I was terminally out of step with mass culture.

Everything he likes is esoteric;
No esoteric things are on TV.
Nothing on TV is what he likes.

Q 258. Alice, in *Wonderland*, is a rather passive observer and commenter. Rudy in *Wonderlands* is a different proposition. Your viewpoint characters pry and poke and taste, even without the “eat me” signs, and even while running from the Devil. Do you feel this difference reflects a modern viewpoint or perhaps the difference in the character’s sex?

A 258. Over the years I’ve learned to make my characters more dynamic and active. Passive characters are a common weakness for beginning authors, perhaps because authors are often somewhat shy and retiring people. I goad myself to make my characters take charge and do things.

But I don’t remember Alice as being all that passive. She’s a somewhat willful little girl, and I think she kicks or breaks a few things in the stories. Carroll reports that the real-life Alice once said to her governess, “Nurse, let’s pretend I’m a hungry hyena and you’re a bone.” I used to quote this to my own children, and we’d laugh and laugh.

By the way, another Carroll line that my kids and I loved was from “The Wasp in the Wig,” an omitted chapter of *Through the Looking Glass*. “And every time they see me, they shout and call me pig.” What a wonderful man to write a thing like that in a children’s book! I still like quoting that line in a surprised, abashed, elderly tone.

Back to your question, I’d almost say that Alice has been a role model for some of my women characters, such as Darla Starr in *Wetware* and her twin daughters, Yoke and Joke, in *Freeware*, not to mention Thuy Nguyen in the *Postsingular* series. I specifically remember one scene when the evil robots have implanted a zombie box on Darla’s neck, and she’s being forced to run through a long tunnel that goes from the human city beneath the surface of the Moon to the robot-occupied zone.

“The corridor stretched on and on, mile after mile. With her legs numb and out of her control, Darla soon began to feel that she was falling down and down the light-striped hallway, endlessly down some evil rat’s hole. *Rat*, thought Darla bleakly, I wonder of that’s what they’re taking me for, to get a rat [permanent robotic controller] in my skull. How ever will that feel?”

— Rudy Rucker, *Wetware*, Avon Books, 1988, p. 114.

Q 259. Would it be correct to say that you intend your books as mind-expanding adventures à la *Flatland*, rather than as a social commentary like Carroll intended?

A 259. Indeed it’s true that both these authors’ work informs mine. And you open an interesting topic by trying to benchmark Carroll, Abbott, and me on the adventure vs. commentary axis.

But I would quibble a bit with two of the assumptions implicit in your question. First of all, it's not obvious that these modes are in fact opposed. Firstly, *Flatland* is very much a social commentary; the book lampoons sexism, prejudice against the handicapped, classism, and organized religion. Secondly, at least as I read the *Alice* books, they're focused upon logical sleight of hand, space warping, and word games rather than upon social issues.

This said, I'll grant that *Alice* has more social realism than does *Flatland*. The *Alice* books give us telling sketches, or at least caricatures, of types drawn from various strata of society. In this sense *Alice* has a richer feel than *Flatland*. Rather than having his characters be conceptual placeholders—like Abbott's High Priest—Carroll's characters are extremely detailed and idiosyncratic—think of the Red Queen.

I do to some extent identify with Abbott's A Square. He talks about higher dimensions all the time, and people think he's crazy. But A Square wasn't crazy, and neither am I. It's just that we see things more deeply than most people do. I think harder, and I have the tools of mathematics to help me dig.

In my fiction I try to achieve a synthesis of the two modes you describe—to have both the adventure and the social realism. On the one hand, I like to have a series of mind-boggling thought-experiments and *jeux d'esprit* at the core of my tales. But at the same time, I like for my characters to be realistic and warty, like Bruegelian sketches from life.

My angle on satire tends to be oblique and non-standard. Sometimes I depict characters who are so alienated, so entrenched in their rebellion, that they don't mention social issues at all. It's not so much that they're unaware of society's problems, as that they've turned their backs on consensus reality. Their radicalism goes without saying. They're looking for a different path to the core. In this context, "No more second-hand God," is a relevant slogan.

A 260. There are a few events or characters in your work, for instance the elevator-operating shrimp and Mad Tea Party with Cantor, Hilbert, and Einstein in *White Light*, which seem intended to recall Carroll. Do you plan to put them in, or are they improvisations? ("Hmm, needs shrimp.")

A 260. I think that Carroll's images have permanently infested my mind, and that they pop out unexpectedly.

One Carroll bit that I've used a few times is his description of how the elixir in the "Drink Me" bottle tastes: "a sort of mixed flavour of cherry-tart, custard, pine-apple, roast turkey, toffy, and hot buttered toast." I give the addictive and empowering grolly fungus that kind of flavor in *Spaceland*, and I think merge in *Wetware* has that kind of smell. I believe I include red wine, roast turkey, and orange marmalade in this idealized flavor.

I know I have some characters like Tweedledum and Tweedledee in one of my novels, saying “Nohow,” and “Contrariwise.” I love that pair; they reduce logic to its barest minimum. And I love Humpty-Dumpty talking about the words he uses coming by “for to get paid.”

In my novel *Freeware* I have some tiny soft toy robots called Silly Putters, and they’re modeled on the beasts in Carroll’s “Jabberwocky” poem, which is presented and then analyzed in the course of *Through the Looking Glass*. Thus I wrote about a jubjub bird, a slithy tove, a mome rath, and a bandersnatch. The rath and the jubjub bird are always furiously fighting. That hyperactive Carroll thing. I laughed so much when I was writing about them.

And I couldn’t resist giving the bandersnatch a penchant for lifting up girls’ skirts. The unknowable nature of Carroll’s sexuality adds a fillip of humanity to his work.

One thing I want to mention is Carroll’s propensity for having objects that talk. There’s a philosophical doctrine known as hylozoism that says everything is alive. I’ve always been attracted to this idea.

I drew very specifically on the Carrollian notion of talking objects near the end of my autobiographical novel, *The Secret of Life*. At the end of *Through the Looking Glass*, Alice is at a dinner, and the ham on the table stands up, bows, and says something. I have very much the same thing happening at the end of *The Secret of Life*.

“Hello,” said the ham. “I see you are on your fourth [magical] power. We weren’t sure you’d be able to take it this far.” It spoke in a precise, hammy tenor.

— Rudy Rucker, *The Secret of Life*, Blue Jay Books 1995, p. 242.

I find the end of *Through the Looking Glass* very sad, if only because that’s the end of the Alice’s wonderful adventures. I loved my world of *The Secret of Life* very much as well, and I was correspondingly sad when I finished writing about it.

I recently finished writing a novel that’s called *Hylozoic*; it’s about a near-future Earth in which all of our objects are alive. I probably wouldn’t have reached the point of writing this book if I hadn’t been weaned on Carroll. His animals talk, his furniture talks, his food talks. In a deep sense, this is a correct and reasonable way to see the world. Everything is alive. Everything talks.

Q. 261. [Begin Cris Hollingsworth’s questions.] In your July 5, 1999 *Salon* interview you talk about Margaret Wertheim’s idea that single-point perspective gave human beings a “mental tool for thinking of space as an undivided unity,” which in turn made it “possible to develop physics.” You extend Wertheim’s thought with this analogy: “Cyberspace is to Mental Space as Perspective is to Physical Space.” What sort of space

does Carroll's Wonderland establish, and what kind of unique mental operations and experiences do this space make possible?

A 261. Okay, if you adopt the Renaissance notion of visual perspective, it lets you bundle our physical space into a single compact image with a vanishing point. And if you say that your mental life resembles the Internet, then you have a unified cyberspace in which to arrange the world of ideas.

For Carroll, there's not a crisp distinction between the physical world and the mental world. Alice walks around in her dreams. So it's easy for things to change size, or for characters to hop great distances.

Q 262. In the Introduction to your short-story anthology, *Mad Professor*, you describe your fiction as having four qualities: thought experiments, power chords, gnarliness, and wit. It appears to me that you use Carroll's Wonderland not only as a source for power chord riffs, but also as a larger imaginative pattern—call it a myth. What is the Alice myth and what accounts for its success across cultures and media?

A 262. One point to make about Alice in the books is that she's never frightened, she takes all these odd things as a matter of course. She goes down the rabbit hole and begins falling several miles, and she's not sweating it at all, she's just chirping and talking to herself and looking around. This is, I would say, a myth of invulnerability, as in : "The pure shall inherit the Earth."

Having invulnerable, unperturbed characters is a general stylistic trick that's useful in science fiction or fantasy. It can be boring to have your characters shriek, "Oh my God! I can't believe this! How can this be happening!" To my way of thinking, it's more amusing to simply have them accept the strangeness and deal with it.

Imperturbability is a common mythic pattern in fairy tales, and we might well say that the Alice stories are reality-based fairy tales. That is, strange things happen, but Alice is surrounded with the brick-a-brack of ordinary life, while things turn curiouiser and curiouiser. This again connects to the fact that the Wonderland tales are very much like waking dreams.

Q 263. You define gnarl as a "process that is complex and unpredictable" in the context of prose style. Please explain more about literary gnarl, its relationship with Stephen Wolfram's thought, and your identification of William Burroughs as "master of the gnarl." Is Lewis Carroll another such master?

A 263. I've been under the influence of the philosopher of science Stephen Wolfram ever since I met him in Princeton in 1984. I'm very

taken with his notion that our reality consists of lawlike processes that we might as well call computations.

The interesting point is that even if reality is a completely deterministic computational system, we can't predict or foresee what's going to happen. Why not? Because the reality-generating computations are so vast and complex that there's no short-cut way to summarize them. In essence, the fastest way to generate tomorrow is to let Earth's natural processes run on unmolested for another twenty-four hours. There aren't any short-cuts. Reality is incompressible.

When I wrote about this in my non-fiction tome, *The Lifebox, the Seashell, and the Soul*, I made the point that a literary creation too, can be both deterministic and unpredictable. How so? I am in some sense preprogrammed to create the kinds of stories that I do—but I'm unable to guess in advance the exact details of what I'll come up with.

It's like cooking. You have your list of ingredients and your recipe steps. But the exact taste and texture of the finished dish is something that only emerges during the cooking process.

Something I've always liked about William Burroughs is that he is very loose in his style; he'll switch into something completely unexpected without a word of apology. He lets the deep structure of his story percolate upward. And I think Carroll has some of this same freedom. He doesn't worry overly much about whether a particular scene fits in—he just goes with it. And, by going with it, he accesses some potentially deeper truths.

Q 264. If culture is an organism and Carroll's Alice works are cultural genes, what does the Alice information undergird, direct, or enable?

A 264. As I said earlier, I think of the Alice tales as waking dreams. Carroll's work represents a turning point between traditional fairy tales and the scary-dream narratives of Kafka and Borges.

Animated cartoon films have done much to make waking dreams more plausible than before. But even in the context of cartoons, the reality shifts in the Alice tales remain radical and surprising.

The tendency in any commercial adaptation of Alice is often to water down the surrealism, and to smooth out the ragged plot. Fortunately, the desktop computer revolution also makes it possible for dedicated artists to make very faithful films of Alice—and for this reason, the Alice stories continue to celebrate the gnarliness and unpredictability of the individual mind.

Milano, Italy, April 16, 2008

Interviewer: Bertram Niessen

For: [Digimag](#)

Q 265. Your last novel *Postsingular* has been released both as a Tor hardback and as a free Creative Commons e-book version on the Web. Why have you decided to do that?

A 265. It's all the fault of my young SF writer friends Cory Doctorow and Charles Stross. They've been doing this kind of double release of their novels, and they get really good sales. The idea is that the free e-book version generates enough buzz and sales to make up for whatever sales you lose with the people who might have bought the book, but who read it free online instead. The overlap between people who buy hardbacks and people who read free e-books is perhaps not very large. The hope is that those who read your free e-book will talk about it and blog about it, generating interest of those who actually buy books.

I'm not sure yet if this has helped my sales or not. It may be that Doctorow and Stross sell better than me because they're more in tune with public tastes. Possibly their success has nothing to do with the free e-books.

It's too early to judge how the gambit affected my hardback sales for *Postsingular*. In any case, about 30,000 copies of the free *Postsingular* e-book have been downloaded (though one never knows if they read the whole thing — one hope is they start the book, get sick of reading off a computer screen and buy a hardback)

I got some nice emails from people who read the whole thing, a number of them were engineers who read the book (on the sly) on their office machine at work. A couple of ultrageeks even read the book on their cell phone or Blackberry.

By the way, my publishers have tried *selling* some of my books as e-books, but the sales are on the order of dozens, not even hundreds. At this point, people just won't buy e-books. Possibly this changes in five years if Kindle-like readers drop from \$400 to \$50.

Q 266. Let's talk about *Flurb*. Why do you started this project? Wasn't there enough space on traditional SF media?

A 266. What happened was that Paul DiFilippo and I co-authored an excellent story called "Elves of the Subdimension," and we were in a rush to get it published in a magazine or webzine before it appeared in my anthology *Mad Professor*. And I sent it to some webzine, I think it was *Strange Horizons*, and the guy turned us down, rather coldly I thought, and I was, like, who needs this? I can do graphics, I know other writers, my son runs an ISP, why not start my own webzine?

There's an iron-clad rule in publishing: the less they pay you, the worse they treat you. When you descend to the lowest levels, you're often judged by fan trolls who treat you like a noob fan writer, or who even take pleasure in cold-cocking a pro. If I write something that I know I can't sell

to a top market like *Asimov's* or *Tor.com* or a special anthology, then I'm better off publishing it myself.

I got the name for *Flurb* from a line of Paul DiFilippo's in that story of ours that started all this. Some subdimensional elves are discussing how odd things are up in the human world, and one of them incredulously exclaims, "Of flurbbing, they know not!"

I love that line. I guess I might define "flurb" as a verb meaning "to carry out a complex, non-commercial artistic activity," and as a noun it means "a gnarly artwork that's incomprehensible to the average person."

Later I searched on the Web and found in the Urban Dictionary that "flurb" has also been claimed to mean "a person obsessed with fannish role-playing games," "home made crack cocaine," or "to alter or to tweak." And I think programmers use the word to mean a change or fix to a program.

Q 267. In *Flurb* we can read a good selection of the best post-cyberpunk authors. It seems that there is something like a scene going on. It is true?

A 267. A scene? Well, I do tend to get the same friends to write for *Flurb* over and over—Marc Laidlaw, John Shirley, Charlie Jane Anders, and Richard Kadrey in particular. Shirley, Anders, and Kadrey live in San Francisco, so I physically see them now and then, but almost never all at once, so it's not like a hanging-out-together scene. But I guess it is a little bit of a virtual scene. Laidlaw even got some of us to write a group story—by Gustav Flurbert—but that didn't really work out that well. I don't think anyone but Marc and I bothered to read the whole thing.

At least in my case, having *Flurb* as an outlet has freed me up to write some stories that are so quirky and non-commercial that I wouldn't have written them otherwise—I think in particular of "The Third Bomb" and "Tangiers Routines."

Q 268. It seems that your interest in math drives the readers of your books to a constant loss of confidence. Do you think it's a paradox?

A 268. If all you know about math is adding and subtracting, you imagine that math is very safe and tame. But the stuff that mathematicians are actively working with is far out and confusing. They're investigating consistent worlds that are unreal and wildly unfamiliar. Kind of like science fiction.

Q 269. Do you know other contemporary writers that use to play with math in the same way you do?

A 269. Nobody else does exactly what I do, but there's a guy called Alex Kasman who maintains a very complete and up-to-date [Web list of mathematical SF tales](http://math.cofc.edu/kasman/MATHFICT/): <http://math.cofc.edu/kasman/MATHFICT/>

Seattle, Washington September 15, 2008

Interviewer: Nisi Shawl

For: *The Seventh Week* (Clarion West newsletter)

Q 270. You created a literary technique you call transrealism, which seems to combine the truism that for a writer everything is material with Emily Dickinson's injunction to "Tell the truth, but tell it slant." Is that right? Is there anything you'd like to add to what you wrote in your 1983 "Transrealist Manifesto"?

A 270. First let me mention that "Transrealist Manifesto" is online at my site, www.rudyrucker.com/writing, along with some other essays about writing, my writing notes for my individual novels, my collected interviews, and *A Writer's Toolkit*, my ever-expanding treatise on how to write.

I like the Emily Dickinson quote. But is transrealism a truism? Some might think so, but very few writers use a transrealist approach. There's a tendency to avoid writing about actual life and to write instead about things you've seen in movies or read about in books. And I think this lamentable practice is especially common among genre writers. Even if you're writing so disreputable a work as a science fiction story, it's possible to create high literary art. And one way to create art is to write about your real thoughts, the actual people you know, and the things you see every day—but to make them new.

Q 271. You keep detailed notes on the process of writing your books—notes that sometimes outstrip the books themselves in length. How do these notes help you write? Are they useful to you when the books are finished?

A 271. Yes, these days I almost always start out by writing notes for my novels before I start the novel itself. I keep two separate files for the notes and the novel, with names like, respectively "Notes for Hylozoic" and "Hylozoic."

The notes document serves a number of functions for me. Sometimes I don't feel together enough or inspired enough to work directly on my novel, but I want to write anyway. So then I write in my notes document.

I keep various kinds of things in the notes document. One thing is simply a journal, where I can write whatever I happen to be thinking about the project that day. And I write down impressions or ideas that might be

useful for the novel later one. Or maybe I make a verbal sketch of something I'm looking at.

Another use for the notes is a spot where I can dump sections that I delete from the novel. As a writer, you hate to throw away something you've written, and sometimes you get hung up over whether you can really remove a passage from your novel. Often as not, removing the passage is a good idea, either because this will make novel flow faster, or because the passage is some personal-opinion rant that nobody else will want to read. Moving a passage into the "Unused Material" part of my notes document is psychologically easier than utterly deleting it.

What many people might imagine to be the key part of a notes document is the *outline*. And certainly I do write something like an outline for my novels before I get very far into the book. But outlining is a fractal process, that is, you do it at various levels, from high to low. At the top level, you might simply decide what you want the book to be about, or what technical problems you want to play with. Below that, you've got the story arc. And then you can get into a one sentence summary of each chapter. And then you might list the scenes of the next chapter that you actually need to write.

I'm by no means bound by the initial outline that I write. I continually revise my outline as I go along. In particular, when I finish a chapter, I almost always revise my outline of the remaining chapters. It would be folly to suppose that I can predict all the details of my book's plot on the day that I start writing it.

When I'm done with a novel, I turn the notes into a PDF file and post it for my readers to enjoy, as an aid for other writers, and as source material for the scholars who will (I like to imagine) be writing dissertations on my work when I'm gone.

Occasionally, but not often, I'll look back into the notes of an earlier novel to remind myself of how I did something, or what my underlying theory was. Or if I'm discouraged, I might cheer myself up by looking back at past notes to see that I've been just as discouraged before.

Q 272. Your 2005 nonfiction tome *The Lifebox, the Seashell, and the Soul* deals with universal automatism—the idea that everything that exists can be seen as a form of computation. Can you talk about how this idea has impacted your recent novels?

A 272. Indeed the ideas from *The Lifebox, the Seashell, and the Soul* underlie my last three novels: *Mathematicians in Love*, *Postsingular* and the forthcoming *Hylozoic*.

If everything is a computation, then we're all made of the same stuff. So a computer doesn't have to be made of wires and silicon chips in a box. A running water tap or a candle flame might be viewed as a computer. This is the basis of *Mathematicians in Love*, where vibrating membranes become supercomputers.

Computer scientists believe that if a process is sufficiently gnarly or complex, then it's universal, in the sense that the process can emulate any other computation. So a leaf fluttering in the breeze can, in principle, emulate the workings of my brain. This is the idea at the core of *Postsingular*, where nanomachine computers spread across Earth.

If a fluttering leaf can emulate my brain, then the leaf itself can be conscious. And from this you get to my novel *Hylozoism*, a sequel to *Postsingular*. "Hylozoism" is a legitimate Wikipedia-listed word that means, "the doctrine that every object is alive."

Q 273. In your notes on writing *Postsingular*, you address the difficulty of writing from your character Thuy Nguyen's point of view, as you aren't Vietnamese. And then you remark that instead of making her race her defining characteristic, you can find an experiential point of identification with her: you're both novelists. What are some of the issues that come up with including/excluding people of a different race, different age, or different economic status than yours?

A 273. Given that I'm a white old Californian, if I'm totally transreal, then I'm going to be writing about white old Californians. But that's exclusionary and, maybe worse than that, dull. So maybe I have to let go of transrealism a little bit—or pay really close attention to the diverse people whom I encounter. The whole trick is learning to see other kinds of people from the inside.

Of course even writing about women can be hard for a man, and vice-versa. For me, it helps that I've been married for a long time and that I have two daughters. I think over the years I've gotten better at writing women characters.

Given that most people who read SF are at the younger end of the age spectrum, it seems like commercial suicide to write about old people. I tend to cast my characters as being in their thirties. It helps that I have three children, and that I was a professor for a long time, working on programming projects with young people.

This said, the protean Vernor Vinge seems to have gotten away with having old characters in *Rainbow's End*. I'm thinking I might put an old man in my next book, just to see if I can. But right away I start thinking I'd better have him be reminiscing about his youth!

As for including different races, being a professor at San Jose State also gave me lots of quality time with non-white students, so that helps me a little with creating diverse characters—I can imagine these people whom I spent time hanging out with.

In reality, almost anyone you meet is unusual and unique beyond any differences at the superficial level. When I want to imagine extraterrestrial aliens, I only have to think about meeting human strangers.

Q 274. In a 2003 interview with Konrad Walewski for the Polish magazine *Ubik*, you remark that your lack of confidence in your ability to write short stories is one of the reasons you sometimes collaborate on them. What methods have you used for collaboration? What about collaborations with non-writers—are those of interest?

A 274. It's not so much that I lack confidence in the ability to write short stories, as I lack confidence in my ability to sell them. I have a peculiar set of interests and a somewhat idiosyncratic approach, and this doesn't always translate into something that SF editors will go for. This said, I have been doing pretty well with story sales lately, but nothing is ever a sure thing.

Generally I find it easier to sell an idea for a novel and then go off and work on the novel for a year or two. I only have to make the one sale then—as opposed to writing eight or ten stories and having to individually market them. There really aren't all that many places to sell SF stories anyway, so if you write a lot of them, you almost run out of markets.

I do like the way I can just jump on a story and get it done in a week or two. Terry Bisson has a clever comparison here. He says writing stories is like working in an auto shop where a car comes in with, say, a smashed fender, and you fix it and you're done. But, continues Terry, writing novels is like being a farmer, and you're out in the fields every day, month after month, hoping for good weather, laboring and sweating and you hardly even know when you're done.

Writing stories is something I do between novels, and I'm doing it not so much for money or publicity as for fun. And collaborating is a way of having fun. It's social, I'm involved with another writer instead of working all alone.

How do I collaborate? In principle, it's fairly simple. I'll email or talk face to face about some story ideas with my partner. More often than not, I write the lead. So I send my partner the first thousand words of a story as a document attached to an email, they edit my part and add another thousand words and email it back as an attachment, I edit the existing part some more and add another thousand words and send it back, and so on till we're done.

In practice, of course, you might not be adding exactly a thousand words each time—and sometimes a collaborator will get into a savage editor mode and start hacking out lots of stuff that I wrote. Or sometimes we'll get into revision wars where we're changing some little scene back and forth over and over. And then it stops being fun, and the collaboration to some extent loses its point.

But, even if a particular collaboration is difficult, it can mean that the story ends up with that much more texture to it, so at some level it's all good.

You ask about collaborating with non-writers—I guess you mean a situation where someone will say, like, can you write a few thousand

words to go with my art exhibit or with my opera? Screenwriting is of course an extreme version of this.

If I get paid for collaborating with a non-writer, I'm willing to do it, but it's not a kind of work that I seek out. The problem is that non-writers tend not to grasp that a writer puts a lot of time and emotion into their work—so there's a danger of them totally cutting what you wrote, or trying to renege on the deal, or making unreasonable rewrite demands. Better not to go there unless the money is guaranteed, and even then, think twice. Some of the screenwriters I know are bitter and unhappy. But they're rich.

Q 275. You began your online magazine *Flurb* in 2006 as a way to publish stories of your own that you thought other magazines might not buy, and you included work by your friends. *Flurb* is still going as of September, 2008, with issue #6. Have the methods and reasons for putting issues together changed over time? Is publishing it a lot of work, and does this detract from your writing or does it help somehow?

A 275. The way *Flurb* started was that I'd written a story with Paul Di Filippo, and I needed to publish it quickly as I wanted to put it into my forthcoming anthology of my stories, *Mad Professor*—but when I sent this story to some SF webzine, they turned it down. And I thought, screw this, I'll just start my own webzine.

If there's no money and no fame, why not just do it yourself, so at least it's easy to get published! As I always say: Let a thousand *Flurbs* bloom.

I know a certain amount about design and web pages, and I know a fair number of other writers, so I've been able to make *Flurb* work. The site gets something like 40,000 visits per issue, which is good.

I like having *Flurb* as an outlet because this way I'm free to write some stories that I wouldn't dream of trying to send to an SF zine, and I don't have to get into the dreary slog of going hat-in-hand to the small-press zines.

It is possible to email me an unsolicited manuscript for *Flurb*, but only at certain times of the year, that is, during the month when I'm putting out the next issue—if you nose around in the site's comments page you can find out about all this.

I'm not quite sure how long I'll keep it up. I like seeing the issues, and I enjoy the contacts with my writers. I wouldn't want to be reading a very large number of submissions, as it would take up too much time and emotion. But so far I only get a few stories emailed in, so it's manageable, and every now and then I find a gem.

You ask if this distracts me from writing? In a way, all that a writer ever *does* is look for distractions from writing. Eventually I miss writing enough to want to do it again.

Q 276. In addition to writing, you paint and take photographs, and you were the lead singer for a short-lived punk band called the Dead Pigs in 1982. Does one sort of creative outlet help with another?

A 276. Well, let me make a few remarks comparing painting to writing.

In painting I make a quick sketch with broad brush, then polish it. In writing I try and write a rough version of the section pretty quickly, then go over it and tune it. In both cases, there are difficult spots that don't work that I have to keep redoing.

In painting, whenever there is a part I'm confused about, the surface ends up all bumpy and crafty. But in writing, it's not necessarily true that a rewritten patch to feel kludgy.

In a painting, I sometimes think that if only I could take the time to fully visualize the difficult area then I'd be able to get it clean and right the first time. But often it just seems too hard to think, and I'll go ahead and paint it wrong, just so I can have something to work off of. In writing I think that if only I could fully think a scene through I can write it much more effectively. But many times it's just too hard to think the whole scene through, I feel like being active, in touch with the medium, so I go ahead and write even though I'm not sure what I'm doing. And then I have something to work on. And if there's random zigzags, maybe they're good for the mix.

In painting and writing, it's not a realistic style that matters so much. It's having something to say.

I like photography a lot. It's instant transrealism. I'm taking something in my immediate surroundings and turning it into a loaded, fantastic image. I've been taking photos for fifty years, and I'm still learning.

As for the Dead Pigs...the most interesting thing can I say is that you can search YouTube for Dead Pigs and find two short videos of us in action. The glory days of cyberpunk!

Q 277. For twenty years you taught computer science at San Jose State. Have you taught creative writing as well? What's the correlation between teaching these two different subjects?

A 277. I taught a creative writing workshop at the Naropa Institute in Boulder, Colorado, in 2004, and that was a lot of fun. I got each of my students to write a transreal story, and I myself wrote a transreal story that was about a guy taking a writers' workshop at Naropa. His penis snaps off and he falls into the Hollow Earth. It was great reading that story to the crowd.

Teaching writing is of course quite different from teaching computer science. But I did used to teach a software projects course where I'd have people write videogame programs, and that is remotely similar. In

either case, I explain certain basic principles, talk about things that I do in my own practice of the craft, and encourage people to express themselves and to let go of preconceived notions about what they're supposed to do.

And whenever you're teaching anything, a lot of the process is about forming a personal connection with the students so that they'll want to listen to you.

Q 278. Can art change reality, as the band Washer Drop does in *Mathematicians in Love*? Does it help if that's what the artist is trying to do?

Q 278. Yes, in that novel, my mathematician hero is in a punk-rock band that manages to bring down an evil U. S. President. In a way, I really do dream that my writing might have that kind of effect on society. I'm showing people that there is a different way to see things, and that you don't have to believe everything you read in the papers or see on TV.

Freedom is here if you want it.

Los Angeles, California, February 17, 2009

Interviewer: Henry Baum

For: *Self-Publishing Review*, www.selfpublishingreview.com

Q 279. Tell us about some of the ways in which you've been getting involved in non-traditional forms of publishing.

A 279. For a number of years now, I've been posting documents online in the Acrobat PDF format on my Writing page, <http://www.rudyruker.com/writing/>. I've posted a book-length collection of my collected interviews, and book-length writing notes for each of my last seven books. Recently it's gotten to the point where my writing notes are longer than the novels that I'm working on.

In an idealized writer's paradise, I'd be able to publish and sell these books of writing notes to fans and devoted scholars, but in this real world, I'm happy to just give them away—although I do put copyright notices on them. Publishing my real books is hard enough, without trying to find commercial publishers for my notes!

Recently I decided to get two of my earlier novels back in print, *The Sex Sphere* and *Spacetime Donuts*. I'd hoped that Tor Books might reissue them under their Orb imprint, but they didn't feel this was a commercially viable option—and I didn't find much small press interest either.

I started doing some research on POD (print on demand) books, and ebooks, and I began thinking about possibly publishing my reprints in these formats myself. If you're handy with a computer, it's not particularly difficult or expensive to do this, and, if you buy an ISBN (book ID

number) and put the ebook into a certain format, you can get your title listed on Amazon.

The one thing that hung me up in terms of reprinting my two old novels was that I didn't have them in electronic form, and I had the impression that scanning them through some OCR (optical character recognition) software would be fairly painful and time-consuming. So I arranged for the company E-Reads to put *The Sex Sphere* and *Spacetime Donuts* into POD and ebook form, including the Amazon Kindle format. To make the E-Reads editions look nice, I made a painting for each of them, and I got my daughter Georgia Rucker to incorporate these paintings into covers. Georgia is a professional graphic designer, and the books look great—you can find links to them on Amazon or on the E-Reads site.

The process hasn't been entirely smooth, as E-Reads has had some trouble arranging for the proper printing of the covers in the POD edition, but I think that will be ironed out quite soon.

Working with E-Reads, I didn't have quite as much control over the book's appearance as I would have liked, and I still had a yen to create a book all by myself. So I went ahead and designed a book of my paintings called *Better Worlds*, and I made it available in POD format on the Lulu site at <http://www.lulu.com/content/5353188>. I haven't actually purchased an ISBN for *Better Worlds* yet, but I might still do that so I can get it listed on Amazon.

Q 280. Why did you choose to self-publish your art book, *Better Worlds*, rather than looking for a publisher of art books? You're an established writer, so you're in a better position than most.

A 280. Although I'm a well-known writer, I have zero reputation as a painter, and I was daunted by the prospect of trying to approach serious art world publishers. Also I liked the idea of very rapidly getting the book all designed and, in some sense, into print. Those who've put together photo books as gifts know how this feels.

By the way, I didn't actually use the Lulu photo book templates to design my art book because these templates insist on cropping your pictures to certain fixed aspect ratios. And my paintings are in all kinds of different width-to-height ratios. Perhaps some other sites have more flexible photo book formats, I don't know.

What I did instead was simply to design the paintings book in Microsoft Word, and to save this file as a PDF file, taking some pains to ensure that the images got saved at a (non-default) high resolution of 400 pixels per inch. And then I uploaded the PDF to Lulu, and that's the book, designed exactly the way I want.

A nice thing about this set-up is that every now and then I can redesign the book and add all my most recent paintings!

Q 281. Why did you choose Lulu over iUniverse, BookSurge, Wordclay or other print-on-demand outfits? Are you pleased with the process and outcome?

A 281. I did a fair amount of online research into the various do-it-yourself POD publishers, and I put up a long blog post about what I learned, <http://www.rudyruicker.com/blog/2008/03/27/pod-and-ebooks/>.

One thing that's not so well known is that pretty much all of the different POD publishers use the same printer, which is Lightning Source, owned, I believe, by the Ingram Book Group, who distribute most standard paper books into bookstores. If you get serious about producing a POD book on your own, I think it's possible to declare yourself to be a publisher, and cut a deal with Lightning Source yourself.

My impression is that most of the user-friendly POD publishing companies are fairly similar in terms of services and costs, although some of them seem slanted towards selling expensive editing and promotion packages to the aspiring author—which can easily turn into a vanity-press-style rip-off.

Promoting a self-published book is indeed a problem, but I think one needs to come up with original solutions. My angle is that over a lifetime of publishing, I've managed to build up a "brand" around my name. And I have a blog which gets quite a few readers. Not that this works all that well, even for me. I blogged about *Better Worlds*, and the superblog BoingBoing picked up my post and mentioned it, and even so, I've only sold about ten copies of *Better Worlds* to date—sold, that is, to people other than me.

I myself bought a few for Christmas gifts, which was, come to think of it, my original motivation for the project. But I also think of using the books as promotional devices for getting myself some gallery shows. Not that I've gotten around to trying this. For now, I just paint for fun, and I'm not eager to open up a fresh source of the kind of worry and heartache that writing for commerce brings.

Something I want to make clear is that it costs nothing, that is \$0, to make your book available in POD on Lulu...they make their money by taking a small cut of each POD copy they sell. For \$100, Lulu will get you an official book barcode and have the book listed on Amazon...but I think you can actually do this yourself for less. The point is: self-publishers no longer need to hand over thousands or tens of thousands of dollars to predatory vanity presses...even though there are POD publishers who still try to follow the old vanity press model of selling their authors multiple "editing, distribution, and promotion" packages.

Q 282. What's your relationship to painting versus writing fiction? It's great to see the cross-pollination of the painting *The Sex Sphere* on the cover of the novel of the same name, but I notice a much different style in your painting than in your novels. Like *Welcome to Mars* can be described

as a kind of childlike utopia and your novels don't really fit that description.

A 282. In my own head, my paintings look very much like the scenes in my novels. Since I'm known as a cyberpunk, people sometimes imagine that my novels are dark and full of machines, but that's not the kind of book I'm writing these days. In recent years I've become interested in scenarios where the machines have withered away and been replaced by bio-tweaked plants and animals, or futures where our computational devices have migrated down into the very quantum vibrations of the atoms around us. And this leads to a world that does in some ways resembles a utopian fantasy landscape.

Q 283. You offer your novel, *Postsingular*, for free online as a Creative Commons download. What's your experience been with people downloading that book compared to people buying other novels through ebook distributors?

A 283. Well, it was Corey Doctorow who talked me into this. Corey posts all of his novels as free ebooks, that is, as Creative Commons downloads in PDF, HTML, text and other formats—and he does this as soon as the novels come out in print. He argues that the free ebook release creates enough buzz and reader interest to outweigh any attrition in sales. And certainly Corey's books do sell very well.

So I got my publisher, Tor Books, to give me permission to try this out with *Postsingular*. I posted some free ebook versions of the book online at my Postsingular website, <http://www.rudyrucker.com/postsingular/> a couple of weeks after Tor printed the hardcover.

This did create some buzz, and I got some interesting fan email. Like one guy said, "I just read your novel on my phone," and another said, "I read it on my screen in my cubicle at work." As for the book's actual sales, they were, I think, slightly better than my usual average, but not radically better, although we haven't yet seen any numbers for the trade paperback edition, which just now came out.

So far as I know, Tor doesn't want me to release a free ebook version of the forthcoming *Hylozoic*, which is a sequel to *Postsingular*. I wouldn't mind doing one—after all, writers want first and foremost to be read—but there's also an argument along the lines of, "We hooked them with a freebie, now let's make them pay." In any case, the hardback of *Hylozoic* comes out at the beginning of June, 2009, and by then we'll have decided about any possible free ebook edition.

By the way, in addition to those reprints I was talking about, a couple of my novels are available as commercial ebooks to buy, and we really haven't seen jack in sales—we're selling *dozens* of ebooks, not *thousands*. At least until recently, most people have been utterly unwilling

to buy ebooks, although plenty of people are happy to read free ebooks. Of course it could be that with devices like the Kindle, this is going to change.

Q 284. You're a visionary who writes incredibly inventive tales about how technology might inform our lives in the future. What do you think self-publishing might be like in the near and distant future? Are we at the beginning of a radically different future for publishing?

A 284. First let me say something about magazines, and then about books.

For the last couple of years I've been editing and publishing an SF ezine called *FLURB* at www.flurb.net. I enjoy doing this, but it's strictly a non-commercial labor of love on my part, and on the part of my obliging authors.

Originally I started my ezine because I had a story rejected by some stuffy ezine editor, and I was like, "Screw this, why not do it myself?" The self-publisher's mantra. As it turns out, *FLURB* has done pretty well—there weren't any other SF ezines with quite my kind of sensibility.

The upside of a ezine is that there's virtually no expense for the publisher, the downside is that there's no income. The upside of no income is that there's no bookkeeping, the downside is that I can't pay money to extract more commercial efforts from my authors. But the upside of being non-commercial is that I'm closer to the realm of revolutionary art, which is a place that I like to be.

The commercial models for ezines are sidebar ads, pay-per-view, paid subscriptions, or begging the readers for spare change. The downsides of these approaches is that you might block out a large number of casual readers or that you might not (in the case of ads or begging) make enough money to make it worthwhile degrading the experience of the ezine. And, as I mentioned, if you do have a tiny trickle of income, then you have to figure out how to share it with the authors.

By the way, I once tried having sidebar ads on my blog, and, because I sometimes discuss philosophical topics, I was getting ads from born-again evangelists and right-wing pundits, which really wasn't worth the income of, like, nineteen cents a day. At some point, taking sidebar ads can feel like being a very cheap prostitute. But the sidebar-ad model *does* work for massively trafficked sites like BoingBoing.

Okay, so what about books?

For an author, the value-added for going to a traditional paper publisher has been (a) they pay you an advance, (b) they edit and design the book, (c) they distribute the book, and (d) they promote it.

But now suppose that you're dealing with a publisher who plans to produce your books only in POD and ebook formats. And for sure there will be more and more publishers like this in the years to come.

As I mentioned above, a reasonably computer-literate person can form their own “press” and publish POD and ebook formats themselves. In this case, (a) the author gets no advance, but gets a bigger cut of any profits down the line, (b) edits and designs the book on his or her own, possibly with the help of friends, (c) distributes it through exactly the same channels as the publisher would have, and (d) tries to promote it.

Really, the biggest hang-ups are no advance and no promotion.

Even if only for the advances, there will always be a place for publishers. Although self-publishing might theoretically earn you more money in the long run, there’s nothing like getting a substantial check soon after finishing your book. It often takes five years or longer before an author’s royalties earn out the amount of the advance. And it’s not unusual for a publisher to advance an author more money than the book ends up earning (and, no, the author doesn’t have to pay back the money from an overly generous advance). Advances are a big deal.

Re. promotion, for mid-list writers like me, promotional media advertising isn’t really a factor. My publishers mention each of my novels in a multi-book ad in the SF trade zine *Locus*, and that’s about it. But they do send out review copies.

Of course a self-publisher can send out ebook review copies for no cost—but this is really a mass spam ad. And reviewers are, of necessity, adept at ignoring spam. Having a commercial publisher lends credibility. That is, if my book comes out under the aegis of a familiar publisher, people feel assured that the work is of professional quality—as opposed to being the maunderings of a senile madman.

Over time, it could be that a highly respected social network arises, a place where certain self-published books can be given a stamp of approval. But here, of course you’re again faced with the problem of promoting your book to the people who use this network. It’s a tricky problem, and the inevitable mathematical fact is that the little guys get very few sales.

The thing is, there’s so many books, and so little time to read, that people are very harsh in pruning down. For awhile people had this utopian belief in a “long tail” model, under which even the most arcane and niche-oriented book would sell a few copies. But this was only speculation. It might turn out that, starting at a certain point not all that far out along the tail, the only self-published book sales are to the authors’ friends and relatives. Which isn’t a complete disaster. If the people you hang around with have all gotten a copy of your book—well, that’s not so bad.

Back in the realm of commerce, one area where POD and ebook publication really seems to make sense to me is when I’m talking about a book that for whatever reason is not feasible to publish in print.

Suppose, for instance, that I wanted to publish my cumulative journals, written in electronic form over the last twenty years. This would weigh in at maybe half a million words, and if printed, might run to seven volumes. I’d be lucky to sell a few hundred of these sets. But if I

published the journals as an ebook, I can see people electronically flipping through it as a casual entertainment. They might use it as a book of divination, like the *I Ching*!

Another thought. I'm a dedicated blogger, see <http://www.rudyruicker.com/blog>, and over the last few years, my blog has replaced my journal in my life. The difference is that my blog is profusely illustrated, and it contains a lot of hyperlinks. I could see eventually publishing my cumulative blog as an ebook as well.

Blogging is, in and of itself, already a form of self-publishing. Maybe we're going to slowly let go of the notion that to "publish" something is to have it pass through the hands of an office in a skyscraper in a big city. Maybe publishing doesn't really have an unbreakable connection with commerce. Maybe it's like rain, your words and images pelting down on the world, sending out their little circles and fading away.

My blog already *is* a hyperlinked ebook, in that you can access all of it online. But with bandwidth still not as high as it needs to be, I think it would have a different feel if I wrapped it up into a single file that you could dip into offline. And the big win would be that I could make the pictures larger and with photo-quality resolution, so the blog would take on more the quality of an art book.

As for the external links in my cumulative blog—it is possible to preserve hyperlinks in, say, a PDF document. I think that, in the future, most ebooks will be likely to have hyperlink tendrils reaching into the broader world.

San Francisco, California, April 20, 2009

Interviewer: Charlie Jane Anders

For: *io9* SF webzine, www.io9.com

Q 285. Do you think your writing changed when you started painting a lot?

A 285. All along, I've made little pen and paper drawings of my scenes before writing them, but now I enjoy the more heavy-duty process of breaking out my kit of acrylic paints. I took up painting when I was writing my historical novel about the painter Peter Bruegel, and I started using paintings for pre-visualization while I wrote *Frek and the Elixir*. A painting takes longer than a drawing, and I get more deeply into it. My sense is that I'm using a different part of my brain when I paint a picture—as opposed to when I'm revising my written outline. It's like visiting a different muse. I get tired of thinking all the time, and when I don't know what to put into an upcoming scene, it's nice to just get out the paints and see what happens. Whether I'm writing or painting, I don't necessarily know exactly what I'm going to come up—but painting gives me a different way being surprised. Painting has taught me a few practical

things about writing as well. When I'm doing a painting, for instance, it's not unusual to completely paint over some screwed-up some bit of it and start over. I think this has made me feel more relaxed about revising my fiction. And I've also noticed that the details that I haven't yet visualized are the ones that give me the most trouble—but that the only way to proceed is to put it down wrong, and then keep changing it until it works.

Q 286. Do you think that working as an artist helps your writing to be more visual? Do you think it helps you have an eye for the telling detail or the vivid description? You've always had really surreal imagery in your books, but do you think it's gotten more visual and less cerebral with books like *Postsingular*?

A 286. I've always sought to provoke the reader with a steady flow of powerful images. And, at the same time, I like to keep things moving with action, dialog, and the stream of consciousness of the main character. Absorbing a story is quite different from looking at a painting. With a painting you have a synoptic view, that is, you can overview the whole scene at once. But in reading a story, you have to build the scene in your head by processing a linear sequence of descriptions. I don't like to overdo the visual description in the "fine writing" sense, which can be a pain for the reader. My goal is to put in just enough description so that when the reader looks back on the scene, they have a mental image similar to the one I started with. I don't mean that I want to be stark or minimalist, what I mean is that I like the conciseness of poetry—where you line up exactly the right words and phrases to set off the intended response.

Q 287. Is the visual a big part of "world building" for you? Do you visualize your settings and scenes as images before you start to think of them as places where stuff occurs?

A 287. All along, I've had a visual imagination. For me writing is a little like dreaming while I'm awake. That is, I see the scene in my mind's eye before I write it. Sometimes I'll nurse an image of a place or a situation for quite some time before I write about it, in fact I sometimes write a book simply to be able to mentally visit certain locales that I've dreamed up. I pretty much can't write a novel unless I have an image of a fabulous place where I want to go. By writing about these scenes, I make them more real to myself. And painting is another way to layer on more details.

Q 288. When you're dealing with a fantastical topic, like a post-singularity world or robots on the moon, do you think having a strong visual sense is one way to ground the narrative and make it feel more real?

A 288. Oh yeah, everything has to be visual. I think I learned that from Robert Sheckley and Jorge Luis Borges. Ideas are important, but what you want in a novel is an objective correlative for the idea. You don't want to go on and on about your bogus scientific explanations, you want to show the reader some weird little physical device. Imagine, say, a wriggly green horseshoe with antennae on it, call it a jinker—and when you point your jinker at some object, the target object becomes weightless and the size of a matchbox and you can carry it off in your pocket. Maybe the jinker talks to you telepathically, maybe pairs of jinkers like to get together and mate, and while they're doing it, all the objects in your house are floating around and changing size. That's all much more interesting than talking about spatial metrics and gravity tensors!

Berkeley, California, May 24, 2009

Interviewer: Anneli Rufus

For: *East Bay Express*

Q 289. Were you already a fan of Hieronymus Bosch before you conceived *Hylozoic*?

A 289. I've been a fan of Bosch ever since high-school, when my big brother showed me a book of his paintings. Given my bent towards science fiction, surrealism, and fantastical worlds, Bosch is a natural for me. I've often wondered what kind of person Bosch was—some passages in his pictures seem rather cruel, in other spots you pick up a feeling of ecstasy, and then again there's often a feeling of mockery and satire. I enjoyed trying to combine these hints into a character in *Hylozoic*—where he comes across as a genius, a devoted artist, somewhat sarcastic, a mystic, and something of a prick.

Q 290. I know everyone asks you this, but I'm asking from writer to writer: How and where do you get your ideas? Do you isolate yourself meditation-style or retreat-style and say, "Okay, now I need to think" ... or do these amazingly original scenes and people spring into your mind in the course of an average day? (If it's the latter, I so envy you.)

A 290. The ideas trickle in unpredictably. Often I'll push for an idea, focusing on a story situation and trying to imagine what comes next. When I'm brainstorming like this, it helps to be taking notes, either on a scrap of paper, or by actually typing into my laptop. Making little drawings helps, too. But I don't always get the full insight that I need while I'm pushing. The search seems to continue in my subconscious, and maybe a few hours or even days later I'll get an "aha" moment about what I need to do. That's what we call the muse.

Q 291. What did your research for *Hylozoic* entail? Travel?

A 291. I did make a trip to Hieronymus Bosch's home town, s'Hertogenbosch in the Netherlands. I used that visit a lot, it was rich. My wife and I lived for week in a flophouse on Valencia Street in San Francisco, and I picked up some local color there. I read this scholarly book by David Skrbina, *Panpsychism in the West*, about the history of the idea that objects might be able to think. And always I'm cruising the web, watching movies, reading...looking for clues everywhere.

Q 292. Tell me a little about how painting works into your writing process.

A 292. It's not pleasant or productive to sit at my computer trying to write all day. If I do that, I start feeling sorry for myself, like a shut-in. And, really, I tend get at most two hours of full-tilt writing per day. So it's good to do something else. Painting is totally unlike using a computer. I smear things around, I drool over the pretty colors, and nothing is perfectly neat. My level of manual control is low enough that I tend to surprise myself with what I end up painting. Sometimes these surprises show me things that are a good fit for my current novel or story—you might say that I'm channeling information from another part of my brain. But it's fine if I don't use the images in my fiction. The main thing is that I'm feeding my soul and getting into the moment and, if I'm lucky, turning off my inner monologue.

Q 293. Let's more to a completely different topic—scavenging for free stuff! Tell me about the role of scavenging in the worlds of in *Postsingular* and *Hylozoic*.

A 293. My idea is that if everyone has a telepathic ability to see things at a distance, then the physical world becomes like the Internet. Instead of searching websites, you can search your neighbors' garages and basements for things to borrow. Like—why buy an electric hedge trimmer when you only trim once a year? In my world, people become willing to lend things out because they're able to keep telepathic track of where the stuff goes and how its treated. Borrowers and lenders acquire ratings, just like the people who currently buy and sell things online. In principle we could already implement this—imagine a resource-sharing website called something like Our Garage. But in reality things never work as well as they do in SF novels.

Edmonton, Canada, July 4, 2009

Interviewer: Mike Perschon

For: [Steampunk Scholar](#)

[Mike Perschon, who is writing a thesis on Steampunk SF literature, recorded an interview with me at the Eaton Conference, Riverside, California, on May 1, 2009. This is my edit of his transcript.]

Q 294. People started using the term steampunk around 1985 or '86, beginning with an offhand comment by K. W. Jeter in *Locus*. You've mentioned to me that you have some reservations about the term steampunk, especially in relation to your novel, *The Hollow Earth*. Give me some of your impressions about the birth of steampunk.

A 294. At the time, Tim Powers and James Blaylock were writing books that were kind of retro, and I think they were what you might call core steampunk authors. The subgenre really got some traction when Bill Gibson and Bruce Sterling wrote *The Difference Engine*. Because Gibson and Sterling were famous for cyberpunk, it was an obvious move to just affix the word "punk" to whatever they were doing. And they did in fact have steam engines in *The Difference Engine*, and some politics, so you could make a case for calling that book steampunk. But I still feel that it's kind of stupid to put the name steampunk on any book that's set somehow in the past and that is science fictional. But, there it is, people get a label, and they find it useful. And some people stick it on my novel, *The Hollow Earth*.

Q 295. Do you think the recent reprint of *The Hollow Earth* by Monkeybrains Books has something to do with the current increased interest in steampunk?

A 295. I think the reprint of *The Hollow Earth* was a personal decision by Chris Roberson, the author who runs Monkeybrains Books. He enjoys reading and writing historical SF.

It's true that in recent times I've been hearing the word steampunk more—I mean, I didn't hear it at all during the last five or ten years. But it isn't totally clear to me what people mean by steampunk these days. I'm not sure what recent book you would point at and call steampunk. My impression is that the current use of the word has to do with fashion, specifically of fashions relating to Victorian England.

It's worth noting that a lot of the books that came to be thought of as steampunk were set in Victorian England—a standout is Neal Stephenson's *The Diamond Age*. Of course Blaylock's *Digging Leviathan* was set in the U.S, as was, of course, *The Hollow Earth*. Not to be dissing any specific writers, I have to say that Victorian stuff bores the shit out of me. I don't want to write about England. I'm an American writer.

Q 296. That is one of the things I really enjoyed about *The Hollow Earth*, was that it was decidedly an American setting. It seemed to have a sort of Huck Finn, Mark Twain sort of beginning to it.

A 296. Well, that's what I was looking for—the idea of the boy setting out on a journey. I was indeed thinking a little bit about Huck Finn when I wrote *The Hollow Earth*, and how Huck runs off with a slave. And I liked the idea of the quintessential American author, Edgar Allan Poe, being a main character.

Often when people write about Poe he tends to be somewhat of a caricature—a parody of himself. I got the collected works of Poe and I read just about everything in there. I was living in Virginia and I came to indentify very much with Poe. I saw him as a tortured writer like I was at that time, a person who always does the wrong thing at the wrong time, and fucks everything up, and is s unappreciated—even now I can relate to all of that. One thing about Poe, though—he's such a windbag, and a braggart at times, that you get sort of sick of him—and I had some fun by tormenting him in my book.

Q 297. It's a very satisfying read in that way, since not only do you torment Poe, but he and the main character don't always get along. Now, you said you identified with Poe. Is this a bit of your transrealism here, writing yourself into the book? I mean, Jungian psychoanalysts would have a field day with *The Hollow Earth*.

A 297. Whether *The Hollow Earth* is transreal, or autobiographical—in some ways, yes. There are elements of my personality that I wrote into the boy and into Poe, and there's certain parts of my life story that match the story in the novel. I grew up in the sticks, if not actually on a farm. And there were times when my father drank a lot. A little transreal joke of mine is that the end of *The Hollow Earth*, the main character and his wife get on a ship bound for California, and the ship is called *The Purple Whale*. Right at this time, my family and I were moving from Virginia to California, and we were driving an old maroon station wagon that was purple, and that we called the purple whale.

As for the psychoanalytic elements—I didn't have them consciously in mind at the start. It often happens to me that when I'm working on a novel, I'll discover some deeper resonances. I didn't initially understand why I was so interested in the *Hollow Earth*. And then I realized that maybe it has to do with a return to the womb or with, more simply, getting laid. I mean, we've got Mother Earth, and we go down to her southern hole, and we go inside there, and it's warm.

Another symbolic resonance is that the *Hollow Earth* is like a skull, you're going inside your own head.

In a completely different vein, there's a technical scientific point I was eager to make in *The Hollow Earth*. We have an earth that's like a

tennis ball—a hollow spherical shell. The point I wanted to make is that inside a hollow shell like this, the gravitational forces cancel out and you're weightless, in free fall. Most people sort of glaze over when I try to discuss this point with them—but it's important, and it's true, and it's been known since the time of Isaac Newton.

Science fiction writers often don't know much about science, and I think it's actually the case that my Hollow Earth novel is the *only one* that takes into account the fact that you're going to be weightless inside the Hollow Earth. People think, "I'm walking on the outside, I'll go over the lip and I'll walk around on the inside." That's what's going on in all the *Pellucidar* stories, but that's not the way that gravity works. You can do the math, it's not particularly difficult, it's just an elementary calculus problem—inside a hollow shell, the forces balances out exactly, the pull from what's under your feet, and the pull from what's over your head.

The weightlessness is one of the things which really appealed to me about the Hollow Earth environment. You can go to outer space and be weightless, but you can't breathe out there. In the Hollow Earth you're able to fly around and be weightless and you *can* breathe, so it's a nice combination.

Q 298. I thought the reversals at the end of the novel were particularly clever. I teach intro English and so I'm always looking for something more fun for the students. The reversal where they ended up being black...it was not something I anticipated, very bizarre. It's an issue I could see raising in teaching *The Hollow Earth*, saying "Let's talk about whether or not Rucker is being racist here, or just writing about the times, or saying something more."

A 298. Yeah, I was trying to flip things over, to have Poe be a black person on the other side. That's a Poe thing—the theme of the double—so they go to a mirror-Earth and they meet a mirror-Poe—but on the way my characters have turned black. I wanted to write about race for a number of reasons. For one thing, in the years before I wrote *The Hollow Earth*, I was living in Lynchburg, Virginia, which is a rather small town and there were a lot of black people living there, and a substantial number of them have the surname Rucker. And I even went to traffic school with a black guy called Otha Rucker. Often I would ride my bike around town and I would get sort of a feel for the black neighborhoods. So I had a fairly clear picture in my mind of what a black community would be like, in the center of the Hollow Earth. Another model for the chief down there, by the way, was Bo Diddley, who is a musician that I love a lot.

Q 299. Was the inclusion of the Rucker River another transreal touch?

A 299. Well, there actually is a Rucker River. The way *The Hollow Earth* really started is that my family, the Ruckers, originally came to Virginia in 1690, and they lived in this town not far from Lynchburg called Hardware, and they were farmers and they had a few slaves. They weren't particularly successful, it's not like they had a plantation, and then one of them moved down to Georgia, and my line came down through that. And of course the fact that my ancestors owned slaves plays a role in why I needed to write about this theme and find a way to come to terms with it.

The Rucker who lived near Lynchburg invented a certain kind of boat, called a bateau, which they used to travel down the James River to bring their tobacco to Richmond. You see, the James River is quite shallow and rocky, so it has to be a boat where it's got a very strong bottom and you can just get out and push it over the rough spots.

The last year before we left Lynchburg, which was in 1985 or 86, somebody had the idea to have a bateau race from Lynchburg to Richmond, and crews. I got together with some guys—I didn't do much of the work—but they built a boat, and we entered it in the race, and I helped pole or row it down the river. And I was already thinking about *The Hollow Earth* then, and I was calling my friend next to me, "Otha," and that was perfect for me to go on that trip, it was deeply transreal.

Q 300. One of the ideas I've had, as I've been doing my research, is that the "punk" in steampunk is related to the idea of edgier characters – characters who have an oppositional point of view. It seemed to me like all the main characters in *The Hollow Earth* were pretty edgy.

A 300. Back to one of my pet peeves—edginess is something you lose when you set your books in Victorian England! When you're writing in a historical setting, it's very easy to fall into a pastiche with prefab characters. What I always want to do in my novels is to write about real-seeming characters with desperate problems.

Q 301. I liked the inclusion of poems embedded directly into the text throughout. A lot of people write books about poets and then never include any poetry. I like Poe's poetry better than his prose myself.

A 301. Yeah, that was a nice touch to use his poems — I put in *To Helen*, *The Conqueror Worm*, *The City Beneath the Sea*. Those poems of Poe's, they're so wonderfully creepy and evocative.

As for Poe's fiction, you have to grant that the *Narrative of Arthur Gordon Pym* is a very cool book. What happens at the end—and once again this isn't widely realized—what happens is that the main character is seeing the hole that leads into the Hollow Earth. He talks about seeing a cataract along the horizon and he doesn't really explain why he's seeing it or what it is. Poe, he's just so weird that he doesn't bother explaining

things to people. He's like, "Fuck you, I don't care if you understand, because I'm a genius and you're a fool."

But that's how an entrance to the Hollow Earth could look, if you were sailing along the ocean, and there was an immense maelstrom hole in the ocean, a hole that's maybe 500 miles across. You'd see across the hole to the far edge, and that far edge would look like this distant cataract, and you'd be confused – you'd think the cataract was in the sky, because it would seem to be above the false horizon of the near edge, and as you got closer, you'd be tilting down, and the far edge would seem to get higher and higher. It took me twenty years to fully understand what Poe was doing here—I only got the full picture when I wrote about a giant maelstrom in recent novel *Hylozoic*. Yes, Poe was a genius.

Q 302. Going from Poe's journey to the South Pole, to another, could you comment on the Lovecraftian elements you played with in *The Hollow Earth*? You made your Great Old Ones a lot less malevolent than Lovecraft's. More benign.

A 302. I was thinking a lot about Lovecraft's novella, "At the Mountains of Madness"—I even gave a chapter that title, it's when they're riding a balloon across an Antarctic mountain range, and my main character is watching the balloon shadow crawl over the mountains, and he knows he's never going to come back. I mean, *really* never come back, because he's going to come out in another earth.

In Lovecraft's "At the Mountains of Madness," they find an underground city and explore it, and they find the Great Old Ones, who Lovecraft calls radiolarians, but who I see as being basically sea cucumbers. The Lovecraft Great Old Ones want to eat us, or to destroy our souls, but I had my Great Old Ones be more like what you'd want a god to be like. They're timeless and sort of gentle, and kind of indifferent to us.

Poe's and Lovecraft's works are very rich sources, they're like nothing you read before them. Poe and especially Lovecraft can bleed over into this sort of purple prose, and sometimes that doesn't work, but when it does, it really gets to you.

Q 303. You've said that what draws you to writing SF is a sense of wonder, and you've written quite a bit about mysticism at your website. Yesterday in the panel, there was a discussion about the "death of science fiction," and you mentioned just "inserting a door to another dimension," a literal door, when you run out of ideas. Do you think there's a place in science fiction for that kind of wonder, a sort of turn to a spiritual, mystical mode within science fiction?

A 303. I think there's still a lot of room of all kinds inside science fiction. My genre's house has many mansions.

The field isn't very old when you think about it—I'm only like the second generation of science fiction writers, next in line after Fred Pohl. But already you have to be careful not to repeat the old things. I don't want it to be like I'm throwing down standardized cards that say, like, time machine, spaceship, robot. And I don't want to write SF that's parodistically or self-mocking. If the ideas become juiceless tropes, that's not interesting. As an extreme of this, in certain comedic SF books I feel like the authors are saying "Oh let's just be silly—SF is all silly garbage, let's be silly together." It degenerates into fan fiction where, again, you're just throwing down picture cards and laughing at them. That's not a route I want to take.

It's all about making up new tropes, or using the old ones in fresh ways. There's always more cool new stuff we can work with, and the future is coming faster than people can absorb. We don't want to fall back on recycling whatever Heinlein and Asimov did, anymore than a contemporary musician wants to emulate Sinatra or even the Beatles. That's over, it doesn't speak to our time.

I'm particularly leery of using things that I see on TV or in the movies...that crap is so watered down, it's written by fifteen people, it's completely under the establishment's control. *Star Trek* is another way for the government to grind its boot into your face, another way for the rulers to indoctrinate the masses with lies about society.

I like to think of science fiction as an edgy literature, like the beatniks or the punks, where we're turning our backs on the bullshit, we're trying to make a new world, we're trying to look at things with fresh eyes. And it's always possible to look at things with fresh eyes. It's never been easy to do that, but it's not any harder now than it ever was.

I think it's exciting when you have science fiction where you don't depend on your characters working in a government lab. If you just need to have an arbitrary door to another world, then let's do it. I mean, there's been so many surprises in the history of science, why would we think we couldn't still have something really surprising happen?

And if it's mysticism—fine. We really have no idea what's really going on.

Perth Amboy, New Jersey, July 5, 2009

Interviewer: John Joseph Adams

For: *Tor.com*

Q 304. Please talk about the genesis of *Hylozoic*, that is, how you came to write it and where the inspiration came from.

A 304. I've always been fascinated by the old philosophical notion that all objects are in some sense alive. The technical name of this belief is hylozoism. I wanted to put this idea into an SF setting. In recent years I

did some research into the foundations of computer science and I came across the notion that essentially any physical object is capable of computation—and that these physical computations could, at least in principle, be used to emulate something like a human mind. So then I was off to the races.

Q 305. Tell us about the plot and the characters.

A 305. Nanocomputers reach the point where programmable computation leaks out into the activities of ordinary matter. Everyone and everything becomes sentient and telepathic. Two races of aliens notice our upgrade and invade Earth. A newlywed couple and an autistic boy stave off the invasion.

The main characters are the couple, named Thuy and Jayjay, and the boy, named Chu. Thuy Nguyen is an ethnically Vietnamese California girl. She's childlike, greedy, avid, likes to look sharp but only owns one good outfit. She's dreamy, ambitious, lazy, distractible, likes being caressed, likes bathroom humor, and is uninterested in money. She doesn't like to wash, likes to brush out her hair straight but wears it in a ponytail, likes to dance, likes to sing nonsense syllables, is scared of dogs, scared of being cooped up, likes sweets, is lithe, has oily skin, and likes to sleep. She's a Singularity-enhanced *metanovelist*, who telepathically writes novels that are a thousand times as long as the old-style novels.

Thuy's husband Jayjay Jiminez likes to stare at patterns, at things in nature, he's open to natural paracomputation. He's twenty-seven, a Latino Californian. He'd like to be a physicist, but doesn't have the discipline. He smart and figures things out on his own—he's a kind of rogue scientist, in fact he invents teleportation. His weakness is that he likes to get high and he doesn't know what to do with his life.

Chu is fourteen, a high-functioning autistic. A born mathematician or programmer. Not much sense of humor, but he's kind of funny anyway. I mean you can laugh at him, but it's more of an admiring laugh than a mocking laugh. He's just so much *himself*. He's self-centered, and has a chestnut cap of hair. He has a fierce crush on Thuy.

Q 306. Did the writing of this book present you with any significant challenges? What kind of research did you do?

A 306. The fact that *Hylozoic* is a sequel to my novel *Postsingular* made it harder than usual to plot the book, as I had so many pre-existing characters and situations to fit into the story. Also I was trying to do something entirely new in terms of the science gimmicks—I had the idea of some aliens who are leeching off the computations intrinsic to Earth's matter.

I have two kinds of aliens, so I had to think about their home worlds. One of the alien races lives in a kind of asteroid belt that's made

up of floating balls of water. The others live on a world that only has three or four species. And I had and alternate universes to deal with as well. I also got into thinking about some beings that live at the smallest possible scale—which I call the subdimensions.

Yet another complicating factor was that I wanted to work my painter-hero Hieronymus Bosch into the book, so I had to find out more about his life and times. And, in order to get to Bosch, I added some time travel elements with the loops in time.

I almost have a feeling that I overdid it this time around—to some, *Hylozoic* might feel like an prolonged blast of demented speed-metal—like Ministry’s “Jesus Built my Hotrod,” maybe. But it does rock, and it’s a page-turner, and if you get really confused about the science ideas, you can always delve into my writing notes for the novel, which are free online at www.rudyruicker.com/writing.

As for the research, my computer science ideas stem from a fat book about the philosophy of computer science that I published a few years ago: *The Lifebox, the Seashell and the Soul*, summarizing a lot of what’s been thought about the notion of matter as a computing medium. And I read up on the history of the philosophical notion of hylozoism. For the Bosch material, I actually made a trip to his home town Den Bosch in the Netherlands.

Q 307. Most authors say all their stories are personal. If that’s true for you, in what way was this story personal to you?

A 307. In some ways, yes, the characters in *Hylozoic* reflect aspects of my personality. Like Thuy, I’m a writer. Like Jayjay I’m somewhat undisciplined, I like to think about science, and I enjoy ecstatic insights. Like Chu, I’m not all that good at talking to people. And my experiences as a married man helped me craft some of the romantic tangles that my characters get into.

Q 308. Do you plan a third book in the series started by *Postsingular* and *Hylozoic*?

A 308. I’d planned to dive right into a third volume of this series, but *Hylozoic* is so intense and gnarly that I didn’t want to try and top that anytime soon. Just to fully wrap things up, at the very end of *Hylozoic*, I have Thuy Nguyen basically tell the readers all the ideas that I’d had for a possible third volume.

Right now I’m working on a standalone novel called *Jim and the Flims*, which deals with a man’s experiences in a science fictional afterworld. But if there’s sufficient interest I might eventually come back and do a third novel in the universe of *Postsingular* and *Hylozoic*—probably I’d jump forward in time and have it be something of a space opera, perhaps starring the daughter of my characters Thuy and Jayjay.

New York, July 20, 2009

Interviewer: Heath Row

For: *The National Fantasy Fan*

Q 309. The singularity, which we might call new-school posthumanism, appears in your last two novels, *Postsingular* and *Hylozoic*. What role does the singularity play in contemporary science fiction at large? Is it really going to happen?

A 309. We notice that our computers keep getting faster, and have bigger memories and better software. So there's a dream that at some point, artificial intelligence will progress to the point where computers have minds as powerful and creative as ours. And then we jack up the computers with faster chips and extra RAM and we have superminds.

There's also a sense that biotechnology might be on the point of big breakthroughs—perhaps we'll be able to custom-design organisms, and maybe we'll be able to make biological things that are in some sense like digital computers. Nanotechnology is a related front where we feel that we might be approaching some great leap forward, such as self-replicating machines. My feeling, by the way, is that the actual nanotechnology we develop will really be a type of biotechnology, that is, our nanomachines will be things like tweaked bacteria or redesigned biological viruses.

Anyway, with all this dreamy technology on the horizon, there's a sense that if any or all of it comes to fruition, then the pace of technological change might speed up even more, dragging us past a historical turning-point that Vernor Vinge dubbed “the singularity” in his prescient talk of 1993.

For a time, science fiction writers resisted writing about postsingular worlds, but by now we're getting used to these new futures. Earlier SF writers learned to write about starships, telepathy, robots, and aliens—and it's really no different for us to be writing about worlds where your toothpick might be as smart as Albert Einstein. It just takes a straight face and a little practice.

Whether the singularity is really going to happen isn't so obvious. Some would say that we're already in a technological singularity, some might even say that history is *always* singular, in that new things have always been happening, and the human race is perennially surprised and unprepared. Saying that there's something unique about our situation is, in my opinion, a kind of self-aggrandizement.

Okay, but I'm dodging the question people that people really want an answer to: *are the machines going to get as smart as us?* Short term answer: no. We don't know squat about how our minds work, and contemporary artificial intelligence is nothing more than a grab-bag of

cheap tricks and illusions. Longer term answer: yes, but. That is, *yes* we'll be creating intelligent things, *but* these things are not going to be chip-based digital computers, any more than they'll be boxes stuffed with gears and springs. They might not even be very much like machines, that is, they might be more biological.

Q 310. There seem to be two general approaches to science fiction. In one, the frontier is outer space, and humans are freed from the physical and mental confines to explore the outer reaches of the universe. In the other, the frontier is more local, more native, perhaps even "inner space." This seems to be your approach in this two recent novels, and was your approach in the *Ware* series as well. What's alluring to you about the local or native version of science fiction?

A 310. That's a good question. I can pinpoint when I turned against space travel as being an interesting thing to write about: it was exactly forty years ago today, when men first walked on the moon. The astronauts were, for all their bravery, disappointingly inarticulate men, and having the government in charge of the mission pretty well drained out all the juice. I dislike the whole convention of having spaceships be like ships of the navy—with a rigid chain of command and a Captain in charge. The military and large companies bore me. I'm much more interested in individual mad scientists who make wild discoveries on their own or with a couple of friends.

Of course this leaves open the possibility of writing about small groups of independent-minded beings who master space travel on their own. But I have tended to set most of my stories and novels right here on Earth. To my way of thinking, space travel is in some sense too obvious a way to get somewhere new. I'm more interested in finding a magic door or a stargate, or in shrinking down to a tiny size, or in hopping into a higher dimension, or in altering the behavior of Earth-based matter so as to utterly change our world.

A less obvious reason for setting my tales on Earth is that I don't want to encourage the notion that our planet is just some piece of crap for us to burn through so that we can get down to the "serious" business of exploring other worlds. Life right here is incalculably rich and strange—all we have to do is to find new ways to notice this.

Q 311. *Postsingular* and *Hylozoic* novels also address the threat of commercial sameness, of a chain-store world where everything is ordinary and lacking in what you like to call "gnarl." Where do you go to seek or replenish gnarl? Do you think computers are dialing down the gnarl, or might they be introducing more gnarl into the system?

A 311. For me, nature is always the place to go for replenishment. In earlier times, human dwellings were hand-crafted, and they took on

some of the complexity and interest of a natural object. With the coming of the industrial revolution, however, we found ways to produce houses more cheaply, by using mass-produced, standardized components arranged in generic kinds of architectures. And the whole notion of architectural ornament has largely fallen away.

Computers can work in either way—on the one hand, using computers makes it ever easier to produce totally generic and uninteresting architecture and design. On the other hand, with just a little more effort, we can use your computers to produce unusual and organic designs such as, for instance, the buildings of Frank Gehry. And when we couple these designs to computer-automated fabrication tools, it becomes commercially feasible to be marketing things with unusual and individually customized shapes.

So there's a dream that, in time, computers can help make the world a lot gnarlier. But that's only going to happen if individual people demand this, and do their best to resist centralized control. I don't think the situation is hopeless—the Web's anarchic freedom and lack of control gives me a lot of hope. Anyone at all can put up a web page, and everyone can see it—without any authorities ever getting involved. Really, I never would have predicted that things would turn out this well.

Q 312. In *Hylozoic*, the orphidnet reality soap opera *Founders* posits a potential path for the future of media. What needs to happen for the current world of Twitter, blogs, and online video to more closely approach that scenario?

A 312. We are indeed on the verge of what you might call “me-shows.” A person broadcasts their whole life in real time, and people watch it—unless I'm mistaken, I think some people are already doing this.

The catch is that most people won't watch a me-show, I mean why would you? Most of us are only interested in our own ongoing me-show. The whole trick of art is to somehow get people to devote a couple of hours to soaking up your own personal view of things.

This said, at any given time, there are always a couple of celebrities who obsess the public to the point where a me-show on them would attract viewers. What could happen is that there are indeed me-shows, but with a fairly rapid turn-over in terms of who they showed. And now and then, some off-the-wall, unknown individual will get interest going in their own me-show, if only for the proverbial fifteen minutes.

Q 313. Interactive fiction and hypertext fiction almost seem quaint relics at this point. Do they still hold any promise for communication, storytelling, and media? What new literary forms might emerge?

A 313. The big problem with a branching, interactive, or hypertextual novel is always that we prefer for the writer to make these

choices for us, and to deliver a single shapely narrative. Probably our intelligence would need to be amplified or augmented for us to have the patience to absorb a novel that has a large number of alternate threads.

One of the minor themes in *Postsingular* and *Hylozoic* novels is that the characters have not only become telepathic, they've all gotten these huge amounts of extra memory connected to their minds. My character Thuy Ngyuen is a writer who takes advantage of this by creating what she called "metanovels," which are perhaps a thousand times as long as today's novels. Rather than writing a metanovel word-by-word, you kind of think it through, and "reading" it is also a somewhat telepathic process.

My private running joke in *Postsingular* and *Hylozoic* was that, during the course of these books, Thuy is writing metanovels called *Wheenk* and *Hive Mind* that in some sense mirror the novels within which she lives.

Q 314. Parts of *Postsingular* were originally published as short stories in *Isaac Asimov's Science Fiction Magazine*. Did you originally have a novel in mind, or did you expand the novel from a series of interconnected stories?

A 314. As you say, I had those two stories, "Chu and the Nants" and "Postsingular" in *Asimov's*. Originally I thought of "Chu and the Nants" as a standalone story. I got the idea for it while I was teaching a course at San Jose State on what I billed as the "Philosophy of Computation." The Chu story was in some sense a rebuke to the transhumanist dream of replacing Earth by a gargantuan computer simulation—which is something I consider to be a really horrible and misguided idea. Just for starters—as anyone who's worked with computers knows—the simulation would inevitably suck.

Anyway, after I sold the Chu story, I kept thinking about it and wondering what would happen next, and considering the ways in which we might have a postsingular world which remains vibrant and interesting—an ultrafuturistic world in which we don't all get steamrolled into two-dimensional Jetsons or Star Trek characters. And that's how I got into the "Postsingular" story, and by then I knew I was going to expand it into a novel or two or three.

Q 315. You taught computer science in Silicon Valley for twenty years. What do you think the most important current trend is in this area?

A 315. There's all sorts of things I could talk about, such as social networking or location-based programs, but for today I'll just focus on cloud computing, the notion of having your computing device be a very bare and simple tool whose programs and data all live up in the "cloud" of servers in cyberspace. The cloud is getting a lot of buzz this year.

The web in general and Google in particular are clouds, so obviously the cloud is a win in some contexts. But I want to remark that cloud computing isn't going to work out as a good idea for every situation. At least for now, I'd prefer not to entrust my writings and my photos solely to servers in cyberspace.

Someone once said: "Digital storage! It lasts for eternity...or for seven years, whichever comes first." The point is that digital storage is very flaky, and you really have to tend to those files that you want to keep alive.

Another issue I have with using the cloud for personal computing is that I don't want to be continually data-mined, I don't want to look at ads when I access my stuff, I don't want to maintain a subscription, and I don't want to lose everything whenever the cloud gets munged by computer viruses.

And I prefer not to use cloud-based software (such as the Google word processor) is because I'd rather not have the tools that I work with being upgraded overnight all the time. "Surprise! New interface!" One big upgrade every few years is painful enough. And, of course, a tool that lives on your local machine is going to run faster.

With all this said—sure, when I'm dead and I'm done changing my stuff, why not put my writings and my photos all in the cloud. That's a type of digital immortality that I sometimes call the lifebox. It's like a pyramid. The Blog of the Pharaohs!

Q 316. Are there any parallels between computer programming and writing fiction?

A 316. There are some rough parallels. For one thing, it's good to have an overall architecture or plan for a program or a book before you start working on it. Another similarity is that the standard design patterns used for software programs serve a purpose like the default literary tropes that we use for our tales.

But really the two activities are completely different. I write with my whole mind, my whole soul—and computer programming is a much narrower kind of task. It can be a huge amount of work to make very simple things happen in a program, but if you're writing, it might only take a few well-chosen words. At this point, programming is an exceedingly brittle and unforgiving art form. Leave out one semicolon, and all you see is a blank screen.

Q 317. Another theme in *Hylozoic* is the tender balance between the value of expanding one's consciousness through chemical and technological means and the potential risks and damage of excess. How do you strive for that balance personally?

A 317. These days I strike the balance by being clean and sober! When I was younger, like so many writers, I liked to think that getting high gave me creative inspiration—and maybe, now and then, it did. At the very least, it brought me into contact with some colorful people. But at some point, the cost began seeming too steep.

What I've found over the recent years is that I don't actually need any kind of chemical input in order to have strange ideas. Come to think of it, I even had unusual ideas when I was an kid. That's just how my mind happens to work—you might say that I'm lucky.

These days if I feel dry or uncreative, it helps to simply do something different. Go on a bike ride, go to the beach, see a movie, talk to people or, if I have the time and the money, take a vacation trip. And even if I don't do anything much, in a day or two the images and ideas come dripping back in. Sometimes it just takes a little patience. So far, the Muse keeps showing up.

Los Angeles, November 2, 2010

Interviewer: Maximus Kim

For: *3 AM Webzine*

Q 318. You dedicated your book *Wetware* to Philip K Dick. Did you know him? What did he mean to you?

A 318. I never got to meet Phil, I was still living in Virginia when he died in 1982. One concrete effect of Phil's death was that the writer Thomas Disch founded an annual award for the best paperback original novel of the year—the Philip K. Dick Award—and I got the award for my novel *Software*, and later on, for the second volume in the series, *Wetware*. I felt that Phil had in some sense blessed me from beyond, and I began thinking of him as a patron saint.

When I read some of Phil's novels in college around 1966—perhaps *Time Out of Joint* was the first—I could hardly believe how different they were from the SF novels I was used to. Later on, in 1979, I read *A Scanner Darkly*, and this became my favorite of his novels.

In 1993, when I was writing my California novel, *The Hacker and the Ants*, I drew on *Scanner Darkly* for the narrative tone. I liked the flat way that Phil could write, really capturing the way that people talk. And his deadpan stoner humor.

Q 319. One of the features of the *Ware Tetralogy* that instantly attracted me was your crunchy and original interpretation of what the art or aesthetics of the future might look like. What is your creative process in dreaming up the culture of the future? Have you been influenced by avant-garde art movements such as Fluxus and Dada?

A 319. I think it's boring if futurist SF focuses on weaponry and politics which are, after all, perhaps the least interesting aspects of life. I disliked history courses in school because they were about ruling elites, with nothing much about art, science and culture. I try and put those things into my SF. The things that matter.

It's quite a task to dream up interesting forms of art for your future societies. One trick is to pay very close attention the latest current trends, and to imagine dialing them up to eleven—or to eleven hundred. An awareness of art history helps as well. Today's taste isn't going to be tomorrow's—all sorts of things cycle in and out of fashion.

Certainly the examples of Dada and Fluxus are instructive, as are Surrealism, Pop, and Minimalism. Of course, recategorizing our theories of art is only one possible technique. It's also instructive to imagine new forms of art that are potentiated by new technology.

Like, what if our minds became upgraded so that we could write and read novels that are a million pages long? And what if these novels were multimedia, like websites? I took off on this idea in my novel *Hylozoic*, where one of my characters is writing these massive "metanovels."

In the recent Tor.com story "Good Night, Moon," that I wrote with Bruce Sterling, we got into the notion of artists who create by recording their dreams. It was a transreal way for us to write about our own experiences as science fiction writers.

Q 320. The *Ware* books were, for me, the first science fiction books that showed explicit erotic scenes coupled with gnarly SF. How did you come to juxtapose sex with high theory?

A 320. I think the first SF novel I read which had sex in it was Norman Spinrad's *Bug Jack Barron*, maybe in 1966. And of course William Burroughs had lots of sex in *Naked Lunch* which is also, in a sense, a science fiction novel. And all of the literary novels I was reading had sex—like Norman Mailer or John Updike's books. And the underground comix I was reading had sex in them. So I went ahead and put some sex into my SF novels too. Why not?

Over time I've learned not to overdo it. There's a danger of coming across as amateurish when you go for a long and detailed description of a lovemaking scene, although you might do your best to make it allusive and poetic. But I still take that risk when it seems important to try and describe how sex actually feels.

Another caveat for a writer is that his or her own sexual turn-ons aren't going to appeal to everyone. You don't want to lose a bunch of readers by grossing them out. Sometimes it's maybe worth doing this for the shock value—and, up to a point, many readers will tolerate it. But a little goes a long way. You have to be aware of what you're doing.

Sometimes I'll think of an obscene scene that I kind of *would* like to put into a given novel because I think it's funny—but I'm also fairly sure that my editor, and any eventual readers, would give me a hard time about it. In that case, I move the section into the "Unused Passages" section of my book-length writing notes for that novel, and eventually I post those notes on my writing site, <http://www.rudyruicker.com/writing>. So nothing has to be totally lost.

Q 321. You said in a previous interview that you quit smoking pot in the mid 90s, and it hasn't changed your writing adversely. Many of my friends are in their late 20s and early 30s; they're at that hinge year where they are deciding to either quit smoking permanently or keep on smoking indefinitely. Can you talk about what marijuana did for your creative practice?

A 321. I don't know about 30 being a hinge year! It's never too late to change, if you want to. Whatever works.

I was a big fan of pot when I was younger. But over time, pot and alcohol got to be more trouble than they were worth, and I got some help and managed to quit using them.

I was rarely high when I was writing—it tended to make the writing seem too hard. But there were times when I might pencil in some revisions while I was high. Or I'd jot down some ideas about my work in progress, if I was high at a concert or walking in the woods, ideas for wacky dialog or bizarre turns of my plot. I'd write them on the piece of paper that I always carry in my back pocket. Some of these ideas would be good, some not.

Artists sometimes fear that they'll lose their inspiration or their edge if they sober up. And I worried a little about that. But over the years since I quit, I've found that I'm just as wild as ever. The weird ideas percolate naturally out of my mind. It was me all along.

The upside of being sober is that I have more energy than before. And I'm much less likely to get into depression and remorse. But I still worry a lot more than I'd like to. That's how I am.

Q 322. What's your take on terraforming planets like Mars and Venus? I know that you've said that you'd rather focus in on the gnarliness of life on our planet, but what about the possibility or promise of gnarly kewl cultures developing on new worlds?

A 322. All but one of the twenty novels I've written are set on Earth and her Moon, or on some alternate layers of reality that are attached to Earth.

In terms of alternate realities, *White Light* and my forthcoming *Jim and the Flims* delve into Earth's afterworld. *Spaceland* goes into the fourth dimension around Earth. *Mathematicians in Love*, *Postsingular* and

Hylozoic all involve travel to alternate versions of Earth. And of course *The Hollow Earth* goes to a world hidden inside our planet.

The only one of my novels that does the space-operatic planet-hopping thing is *Frek and the Elixir*, which ranges across the galaxy. I liked writing *Frek*, and I can imagine doing a book like that again.

Creating a whole planet in a story is an interesting challenge. I can't, however, summon much enthusiasm for novels set on the existing planets and moons of our solar system. Maybe I feel like this subgenre has been worked dry. And it could be that I have some disenchantment with conventional space travel, at least as it's played out thus far.

This said, I really like Charles Stross's Heinlein-inspired novel *Saturn's Children*. When I read it, I started thinking that maybe I could do a book along those lines after all. Charlie is a big inspiration to me—his novel *Accelerando* is what sparked me to write my duology, *Postsingular* and *Hylozoic*.

Q 323. You've written about cellular automata in *The Lifebox, the Seashell and the Soul*, and you've created downloadable CA software like *Cellab* and *Capow*. What are your current thoughts on Stephen Wolfram's 2002 book, *A New Kind of Science*, and the resulting fallout? Is it indeed a new kind of science?

A 323. I've been a Wolfram convert ever since I first met him in the early 1980s. One of the ideas he's promulgating is that even when a system has some very simple underlying rules, its behavior can be wildly unpredictable. The public totally doesn't get that. Whenever something untoward happens, we immediately cast about for the proximate cause. But it's in the nature of trends to jitter up and down, with very drastic jumps mixed in with the smaller ones. Chaos is an intrinsic property of the world. Booms and crashes happen, no matter what people are doing. It's absolutely impossible to reliably predict the world's patterns, no matter how big a computer you build.

Therefore, on the one hand, you might as well relax and go with the flow. And, on the other hand, you should never abandon hope of reshaping society into something more congenial. Change is always possible.

Q 324. I loved your 2009 LitFuckingPunk reading of William Burroughs' lost letters to Ginsberg and Kerouac. Who are you reading these days?

A 324. That's funny you mention that reading, which was organized by John Shirley in San Francisco. I assume you understand that those weren't actual lost letters, those were letters that I made up, for the purposes of a story called "Tangier Routines." The story appeared in my

webzine *Flurb*—which is my outlet for my less commercially acceptable kinds of things.

As it happens, “Tangier Routines” is being incorporated into my novel-in-progress, which has the working title *The Turing Chronicles*. The idea is that the computer pioneer Alan Turing did not in fact commit suicide, but instead went underground, having learned to use biocomputation to change his appearance. He becomes a shapeshifter. And he makes his way to Tangier, and then to the San Francisco of 1955 to hang out with the Beats.

I’m always looking for something to read. I recently read a best-seller, *Freedom* by Jonathan Franzen, and I liked the rich textures of the prose and the personal interactions. I reread a little-known classic, *A Life Full of Holes*, by Driss Ben Hamed Charhadi, translated by Paul Bowles for Grove Press in 1966. It helped me get some insight into what Alan Turing’s life in Tangier might have been like. I’ve been reading *Pink Noises*, a book of interviews with woman electronic musicians and composers done Tara Rodgers. It’s really interesting to start thinking about sounds in a new way. And the other day I started in on Joyce’s *Ulysses* again. If I can stay with it, that’ll keep my head fed for some time to come.

Q 325. At the May 2008 Google Tech Talk you expressed great doubt about the standard sci-fi scenario where a bio/nanotechnology eats everything in the world. So what are you most afraid of?

A 325. I guess you saw the YouTube video of that talk, or listened to my podcast. I put a lot of my talks online these days on Gigadial and Feedburner. It’s cool to have that kind of outreach. The Google event was tough for me because one of the questioners seemed to assume that I’m a sexist, although I’m in fact one of the more inclusive SF writers. It’s hard to undo a person’s false perceptions of you if they haven’t in fact read your work—the more you try, the worse you look.

Anyway, as I said at Google, on a different topic, I really don’t think any humanly created bioform has a strong chance of eating the world. Nature is very old and cunning. At some level, every single living organism is trying to eat the world, and there’s a lot of checks and balances in place. It’s not inconceivable that someone might come up with a plague that eradicates ninety percent of the human race. But this wouldn’t be at all easy.

What I’m most afraid of? Well, it used to be death, but a few years ago I had a brain hemorrhage, and for a few hours I more or less *was* dead. Lights out. No white light, no visions, no dead relatives—just a blank. And now that I’ve been through that I’m not so worried about it anymore. The end comes, and so what? It’s inevitable. I’m just glad I got to live this long, to have an interesting and successful life, and to enjoy my wonderful family.

One of the side-effects of my brush with death was that I finally wrote a full autobiographical memoir. It's called *Nested Scrolls*. It'll be out in a limited edition from PS Publishing early in 2011, and in a trade edition from Tor/Forge Books in the fall of 2011.

Paris, July 27, 2011

Interviewer: Simone Lackerbauer

For: *Master's thesis at the University of Paris*

Q 326. You have been writing mathematics books and SF novels, you have published software packages, and you are a painter. How much of your professional activity is related to formal education, how much was just learning by doing or by observing (as with your recent "Stolen Picasso" painting)? Do you think there is a difference between the value of things we learn by tinkering and experimenting and the things we learn at school or at university?

A 326. Although I have a Ph. D. in mathematics, I never took a course in computer science or in writing. So I am in many ways self-taught.

I would hasten to add that my years of education did make a difference to me, even in the areas in which I never had any formal studies. A liberal education prepares you to study, to learn, and to form ideas of your own. The intense, focused effort of writing a graduate-level dissertation gives you a sense of how to think hard about a single topic over a sustained period of time.

Writing was the craft I wanted to learn the most, and I got my first start at it simply by writing a lot of letters to my college friends. I used a typewriter, just as I imagined professional writers would do. I had an Olivetti portable. Later, after grad school, I got a rose-colored IBM Selectric, a lovely machine, currently enshrined in my basement.

Part of learning to write is a matter of learning to imitate the writers that you admire. I read a lot, and, over the years I imitated Hemingway, Kerouac, Terry Southern, Pynchon, Burroughs, Vonnegut, Phil Dick, Robert Sheckley and many others. Thanks to some fortunate fluke of my mental makeup—and to years of practice—I find it fairly easy to mold words into patterns that I like.

If you read a lot, you develop a large inner library of words and phrases that you love, not to mention a repertoire of story twists, attitudes, and styles of thought. The inside of a working writer's head is like the backstage wardrobe room at a theater. In your apprenticeship you stock the wardrobe room, then you began assembling costumes from it, and perhaps at some point you're designing entirely new garments of your own.

I'm still very much a beginner at the craft of painting, but the process of maturation seems somewhat similar to that of writing. You learn, you copy, you create. I've been going to museums and galleries to look at paintings for forty or fifty years and, as with writing, I have a mental store of effective techniques and imagery that I've observed. Unlike with writing, I'm by no means a natural painter, and creating images that I want is time-consuming. But eventually I can get some things that I like—painting over things, rubbing out false steps, revising the outlines, daubing on new layers to change the shades. The one thing that works to my advantage as an amateur painter is that I have a visual imagination, so I have a good supply of images I want to see.

Touching on another question that you raise—we place the greatest value on the things we discover ourselves. School is really a matter of teaching you how to go about your investigations. The real knowledge consists of the things you find on your own.

Q 327. Someone not familiar with the field of computer science might think it is based on logic and algorithms. Is there anything about computer science that cannot be taught formally? What are the creative aspects of computer science?

A 327. Computer science is a multifarious field—one distinction is between theory and practice. It is in fact possible to write a Ph. D. thesis in computer science without ever writing any substantial programs—a dismissive description of such a thesis is: “proving that two ugly Turing machines are equivalent.” That’s on the pure theory side of things.

I was a CS professor for about twenty years, and I was always more interested in practice than in theory. That is, I enjoyed crafting programs that do things that are in some way interesting. And I based my theoretical notions on these new programs that I’d made.

In particular, I always liked writing what I call gnarly programs. These involve intricate colored shapes on the display screen that may come to life and dance around. I’m thinking of cellular automata, fractals, chaos, artificial life, and videogames.

I often taught a class on software engineering in which I had the students write videogames. It’s very hard to write a lively videogame from scratch—there are exceedingly many technical details that you have to get right. Over the five years, I managed to craft a textbook, *Software Engineering and Computer Games*, with a framework of C++ code that my students could build upon to get their own programs going, with plenty of little critters racing around. The book and the software framework are now online for [free download](#).

I used to tell my software engineering students that learning to program is about learning how to *make mistakes faster*. Hardly any program ever works immediately. There’s always a mistake in it,

something wrong. And you have to find the bug and fix it. And then there's a new bug. And you have to fix that. Faster and faster.

Some textbooks make it sound as if software engineering is a formal process of making out lists of specifications, milestones, and the like, the process is also an experiential hands-on endeavor. You don't ride a bicycle by making out lists of part numbers. You have to get on it and lurch around.

There are any number of ways to be creative in CS. In terms of theory, you might come up with a new higher-level way of thinking about computations. In terms of practice, deciding what kinds of programs to create can be creative. Much creativity (and low cunning) comes into play in finding ways to make one's programs run faster. And designing a program's interface is an artful process as well.

Just as is the case for writers and painters, programmers will often find that their projects are mutating while they work on them. Certain pathways close up, and newer opportunities emerge. At some point it can feel as everything you see all day long is in some way part of the creative process—as if everything is helping you to get the project done. This is known as communing with the Muse. And, make no mistake, there is a Muse of programming as well as there are Muses of writing and painting.

Q 328. How would you personally define “cyberculture” and is it what you thought it would be like twenty or thirty years ago? How has the relationship to personal computers, smartphones and other gadgets changed? In what ways is cyberculture relevant for computer science?

A 328. I feel I should pause here and dispel any idea that I'm primarily a computer scientist. That's not the case. Although I was a professor of computer science from 1986 to 2004, and worked as a software engineer at Autodesk in the late 1990s, these were day jobs for me, that is, ways to make money while I pursued my true career—which is writing science fiction novels and popular science books.

The people with the 1990s magazine *Mondo 2000* were among the first to form a notion of cyberculture. They picked up on the McLuhanesque notion that the spread of computers was changing our culture. William Gibson's novels involving cyberspace were a big influence as well, as was the burgeoning interest in virtual reality, not to mention the spread of the internet.

In cyberculture both our social lives and our personal images are to some extent delocalized. In part, you and your acquaintances *are* your blogs, your web pages, your social network posts, your emails. As long as you have access to computer or a smart phone, you can plug into cyberspace.

These days you feel impaired when you can't access the internet—you feel like a nearsighted person who's misplaced their glasses, like a deaf person without a hearing aid, like a musician wearing heavy gloves.

The full-immersion computer-graphical techniques of virtual reality haven't caught on to the extent that was predicted. People are content with the highly detailed worlds of their videogames. The human mind is so labile that you can in fact project yourself into these worlds without having to wear goggles with video screens.

Here in 2011, we're at an awkward point in terms of our devices—you see people staring at the very tiny screens of their smart phones and tapping on the even tinier keys of their virtual keyboards. Clearly this is a defective interface, which may be replaced by voice recognition techniques or by stick-on sensors that might read the subvocalizations in your throat or possibly the brain waves at the base of your skull.

Certainly it's good for the field of computer science to have our daily reality so fully imbued with cyberspace. There's no end to the problems and applications that arise. At some point we might expect to have every physical object be represented in the internet in one way or another.

And, of course, all of this provides rich fodder for science fiction novels such as my recent duology *Postsingular* and *Hylozoic*. In these books reality is fully subsumed into a telepathic internet, and every object becomes alive. It may happen yet.

Barcelona, September 27, 2011

Interviewer: Daniel R. Caruncho

For: *The Spanish newspaper, ADN*

Q 328. Which definition would you give to infinity?

A 328. Infinity is endless, and it wriggles away from casual attempts at understanding it.

Q 329. Can we make a clear distinction between the mathematical and philosophical aspects of infinity?

A 329. Infinity arises in many different contexts: mathematics, physics, metaphysics, theology, psychology, and even the arts.

Mathematical infinities occur as, for instance, the number of points on a continuous line or the size of the endless natural number sequence 1, 2, 3,...

In metaphysical discussions of the Absolute, we can ask whether an ultimate entity must be infinite, whether lesser things can be infinite as well, and how the infinite relates to our seemingly finite lives.

Q 330. The existence of a real infinity has been very much discussed in the past. How is infinity seen today by scientists?

A 330. In physics, we encounter infinities when we wonder if there might be infinitely many stars, if the universe might last forever, or if matter might be infinitely divisible. Current thinking seems to be that our space might very well be infinite, with an endless number of starts. And a number of scientists also think that there are an infinite number of parallel universes.

For their part, mathematicians are very comfortable with having infinite sets such as the collection of all the points on a line. Mathematicians have been investigating questions about various higher levels of infinity. There are, perhaps unsurprisingly, infinitely many of these so-called transfinite numbers.

Q 331. Do we find a different approach to infinity in Western and Eastern cultures?

A 331. I think the division is not so much between Western and Eastern as it is between rational and mystical. A rationalist says that infinity is inconceivable, although it may be that we can prove certain things about it. A mystic says that, by fully opening one's mind, it's possible to merge into the cosmic whole and thus experience infinity in a direct and personal way. We have rationalists and mystics in both the East and the West.

Q 332. Religion, philosophy and science have discussed infinity. Which area do you think has made the most interesting observations about it?

A 332. I find all the different aspects of infinity interesting. One thinks of the story of the blind men and the elephant. Each group of thinkers sees infinity in a different way.

I was trained as a mathematician, and I do like the intricate games that mathematicians can play with infinity.

The concept that our physical universe might indeed be infinite is of course staggering.

It's pleasant to imagine or to experience a temporary merger with the infinite One mind.

And it's interesting to hear theologians speculate about how a finite, created mind manages to experience an infinite God's love.

Infinity is infinite!

Valencia, October 25, 2011

Interviewer: Eduardo Almiñana

For: *Androide* magazine

Q 333. It's beginning to seem possible that human consciousness can be transferred into a digital format. You predicted this in the eighties in your novels such as *Software*. Back then did you think this was a real possibility?

A 333. I've always been interested in digital immortality. In *Software* they copy the contents of a person's brain by slicing it up, but these days I think about gentler methods. I use the word "lifebox" for a digital simulacrum of a person that perhaps exists as something like a website online.

In a nutshell, my idea for constructing a lifebox is this: (1) Place a very large amount of text online in the form of articles, books, and blog posts, (2) Provide a search box for accessing this data base, and (3) Provide a nice user interface.

Regarding what I expected in the early 1980s, it's true that the web developed sooner than I'd ever imagined, and the computers' speed and memory-sizes have grown faster than I anticipated as well. It really is feasible to make lifeboxes now, and I expect this to be a growing commercial business.

Q 334. Do you think that we will see in the next thirty years machines intellectually superior to humans?

A 334. As I say, you can go a long way towards the illusion of intelligence with a large lifebox-style database and some clever search software. The missing piece, however, is our ability to "animate" a lifebox and put the ghost into the machine. That is, how do we endow the database with creative intelligence?

I used to teach artificial intelligence course at our university, and my impression is that AI is still not as advanced as we'd need it to be in order to create programs that are creative at the human level. We seem to be missing some fundamental insight.

This said, it may be that we simply beat the problem to death by having faster and bigger computers. But remember, when you buy a new computer, it can't actually do anything until you put some programs onto it. And it's the underlying "human AI" program which is still missing.

To some extent we might be okay without obtaining a big insight—the AI method known as neural nets works by letting a machine program learn and get smarter. Given enough time and hardware, it may be that neural nets can bring us to true AI.

But I don't think we'll get there in only thirty years. A century is more like it.

Q 337. Can we expect to see high-quality literary works written by computers?

A 337. Writing a mediocre, parodistic book is something that a computer program could do even now. But of course that's not what we're interested in. We want novels with wit, with empathy, and with rich, allusive language. And I don't see this happening in the foreseeable future.

Mastering natural language is one of the most intractable problems in AI. Any given word has subtle links that, when closely considered, stretch out to vast tracts of the shared human experience. When you write a novel, you're drawing on the full range of your mental abilities—in some sense, it's so hard that you don't consciously know what you're doing.

This is why writers talk about the muse. Because we're trying to solve formally unsolvable problems.

So I think we authors are safe from being replaced by machines.

Q 335. SF literature has often anticipated future developments. But now, the future comes faster and faster. What can today's writer do to imagine things that don't yet exist?

A 335. First of all, it's not a good idea to lean too heavily on existing SF books and movies. Those are a pool of old ideas. For the new ideas, you need to look at the actual world. Pay attention to the things you see in your daily life, and the things you see in the media. If you notice something odd, imagine dialing up the oddity to a still higher level.

It's also good to let go of logic. SF stories are in some ways like fairy tales. Go ahead with any weird, surrealist notion that you have. You can always invent some bogus scientific justification later on!

Q 336. Which priorities should today's actual science focus on?

A 336. Except within the Republican party of the U. S., it goes without saying that science needs to push even harder on the problem of finding non-polluting sources for energy. It still could be that there's some wholly new kind of energy source we've never thought of—perhaps something involving dark matter, string theory or quantum foam. After all, two centuries ago, nobody knew about nuclear power or even electricity.

Biotech or genomics seem like huge new frontiers for science. Just as computer chips have replaced gears, I see tweaked organisms of the future replacing chips. In five hundred years we may not have any machines at all. Everything around us will be, at some low level, alive.

Q 338. I understand that you're publishing an autobiography, *Nested Scrolls*. Tell us a bit about this book.

A 338. I wanted to write my autobiography before I died or became too senile! It's coming out from Tor Books in December.

The thing I like about a novel is that it's not a list of dates and events. Not like an encyclopedia entry. I wanted my autobiography, *Nested Scrolls*, to have a novelistic feeling.

Of course a real life doesn't have a plot that's as clear as a novel's. But, as a writer, I can think about my life's structure, about the story arc. And I'd like to know what my life has been about.

You might say that I searched for ultimate reality, and I found contentment in creativity. I tried to scale the heights of science, and I found my calling in mathematics and in science fiction. As a youth, I was a loner. But then I found love and became a family man. I was a rebel and I became a helpful professor, riding the wave in Silicon Valley. Whatever I did, I never stopped seeing the world in my own special way, and I never stopped looking for new ways to share my thoughts.

London, November 3, 2011

Interviewer: Jonathan Wright

For: *SFX* magazine

Q 339. You're about to publish *Surfing the Gnarl* as a slim volume in the Outspoken Authors series from Berkeley's offbeat PM Press. The series is intriguing in that it gives readers an intro / overview of authors, including an essay by the author, an interview and a couple of stories. How did the format affect the short-story choices that you made?

A 339. My contact at PM Press, the author Terry Bisson, told me that PM is somewhat political in their intentions, and that I should try and find some material that's left-wing, countercultural, or anarchist in its sensibility. Terry also said that I should present my theories about gnarl as being useful in everyday life. So I wrote an essay on gnarl, and for my stories I picked two tales that might best function as thumbs in the eye of the Pig.

Q 340. I was struck by collision of ideas in your story, "The Men in the Back Room At The Country Club"—the final endless summer of youth, scary pig chefs, and the stranger currents of religion. It's a lot to pack into a short story. Where did the story spring from? Was it technically difficult to make it work?

A 340. From the years 1980 through 1986, I lived in Lynchburg, Virginia, which was then the home of the right-wing TV evangelist Jerry Falwell, and the center of his so-called Moral Majority political action group. I was an unemployed freelance writer, a young cyberpunk. One of God's jokes.

I'd also managed to join the inexpensive local country club so that my family and I could use the pool, and so I could play golf with a couple of my wastrel friends. I always noticed a group of zombie-like old men

drinking and playing cards at a table in the men's locker-room. And I developed some odd notions about the true nature of these men. Thus, "The Men in the Back Room At The Country Club."

For years I've been fascinated and repelled by the advertising icon of the pig chef, and in my story I develop a human version of a pig chef. What kind of man would pose proudly with a knife that he uses to butcher his peers? A denizen of Killeville—my transreal name for Lynchburg.

There are some very weird religions in the American Southland, and I remember hearing a radio show in North Carolina where one of the callers was talking about the "Shekinah Glory," using this phrase to mean, I think, a numinous radiation that God might beam down. So this went into my story as well.

To frame the tale, I wanted to cast it as a final-days-of-high-school summer story akin to *American Graffiti* or *Dazed and Confused*.

And, finally, I wanted to depict a dramatic invasion by man-eating UFO aliens, just like in a 1950s film.

Rereading the story it does seem like I squeezed in a more material than is normal for the short form. I mean really it could have been a novel. And maybe it's too much. But there's something to be said for going too far. And I was bursting to write about all these things at once.

This was one of those stories too weird to get into a print magazine, but Eileen Gunn's clear-channel webzine *Infinite Matrix* published it.

Q 341. Regarding your other story in *Surfing the Gnarl*—could you, as a man, cope with becoming pregnant in bizarre circumstances—like the hero of your story "Rapture in Space"?

A 341. For a man, imagining being pregnant is initially like imagining hosting the chest-buster larva from the movie *Alien*. But I'm sure I could get used to the idea. Although certainly there'd be some discomfort in bringing a baby to term in my scrotum.

Q 342. What's your perspective on cyberpunk now? Many of the ideas it explored are now mainstream, yet it seems to me that maybe some of its more difficult ideas have yet to be taken on board outside certain communities.

A 342. I'll never stop being a cyberpunk, not that it's a commercially viable label to use anymore. We started writing cyberpunk because we had a really strong discontent with the status quo in science fiction, and with the state of human society at large.

Two big thematic notions in cyberpunk are, firstly, the blending of human minds with machines, and, secondly, our psychic migration from physical reality into a web-based virtual reality.

You're correct in observing that mainstream thinkers still don't seem comfortable with the notion that digital reality and mental reality are points on a continuum. Another cyberpunk teaching that's not so widely known is that digital things can be squishy, funky, and smooth. Like my moldie robots in *Freeware* that are made of soft, flickering plastic that's infested with smelly mold.

Q 343. British SF, which gained huge confidence with the emergence of China Miéville, Justina Robson et al has seen itself as being in the ascendancy in recent years, perhaps eclipsing the cyberpunk generation. Without wishing to make the liberal arts into a who-can-piss-highest competition, is that how it seems from the USA? (Oh, and who are you reading, SF-wise, at the moment?)

A 343. I don't read a huge amount of SF, and I'm not plugged into Miéville or Robson's work. But I'm glad that your landsmen are feeling ascendant! I do very much admire Charlie Stross, but he's Scottish, not British, so I guess that doesn't count.

What SF am I reading these days? I liked Neal Stephenson's *Anathem*, although I think even Neal can't quite nail the branching universes thing. I'm not sure than anyone can, but I plan to give it a try fairly soon. I like Terry Bisson's weird, Zen-like, post-SF work, and of course I'm always interested to see what my cyberpunk homies William Gibson, Bruce Sterling and John Shirley are up to. Most recently I enjoyed the two novels by the South African writer, Lauren Beukes—*Moxyland* and *Zoo City*.

Q 344. The first time I read about chaos and complexity theory, I remember thinking, yes, that's how the world does seem to work. Did you draw on ideas from this still emerging branch of science as you developed your ideas about the gnarl?

A 344. Oh, definitely. I got into chaos when I helped write a popular science software package that was meant to accompany James Gleick's book *Chaos*. I think the fundamental insight is that you can have a completely deterministic system that, over time, generates outputs that appear really intricate, complex, and gnarly. People used to suppose that if something was orderly and logical, it would have to be boring and predictable. And that anything really interesting would have to involve randomness. But the chaotic zone lies in between the two. The secret is that if a computation takes a considerable amount of time to run, then its output can seem completely surprising—because you can't mentally carry out that amount of computation in a tractable amount of time.

Q 345. As someone who's worked as a cyberpunk author / mathematician / computer scientist, what's your take on the meltdown in

the global economy? I might argue that it's all partly down to flash young men unleashing computer programs they don't really understand. I'd like to say they're unwittingly fooling with scenarios explored in cyberpunk.

A 345. I never really understood the ideas in economics, in fact I almost failed to graduate from college because I couldn't stand going to economics lectures. It's like studying Bible stories or pseudoscience—economics has very little connection to daily reality. For instance, it's completely obvious that companies can't in fact grow forever, year after year, without hitting some debilitating limits. But the so-called value of a company is based on how much they grow from quarter to quarter. Economics as practiced by bankers is complete horseshit, but they've bought out all the politicians, so nothing reasonable ever gets done. In the long run, of course, the situation will resolve itself. Meanwhile I think we may see a resurgence of the dystopic SF novel!

Q 346. Your idea for *The Turing Chronicles* sounds fantastic: a novel featuring a romance between Alan Turing and William Burroughs. How's the book going?

A 346. I finished my Turing/Burroughs novel and now I'm trying to sell it, which can take a few months or even a year. I found this book very easy to write. It's a perfect fit for my niche of being a computer-savvy beatnik SF writer. I also think the book's quite funny in spots. I ran a couple of Burroughs pastiches from the novel in my webzine *Flurb* at www.flurb.net—supposed “lost” letters and journal excerpts describing Bill's bizarre mutational activities with Alan T.

Q 347. What else are you working on these days?

A 347. My autobiography, *Nested Scrolls*, is coming out this year both in England and the U.S. I'm excited about that. I wanted to turn my novelist's eye on my own life story and try and see it as a coherent whole, complete with a story arc.

And we've got this cool little *Surfing the Gnarl* book coming out soon. And right now I'm trying to think of a good story for my next novel. But I'm not rushing into anything just yet. Finishing a novel is like rowing a boat across the Atlantic. You're in no big rush to turn around and cross that particular ocean yet again.

New York, January 3, 2012

Interviewer: Brendan Byrne
For: *BoingBoing*

Q 348. You state in *Nested Scrolls* that, as a kid, you learned a lot about the craft of story-telling from comic books, specifically Carl Barks'

Donald Duck and *Uncle Scrooge*. Soon after, you mention loving the “exultant blare” of a TV show called *Cartoon Circus*.

A 348. Yes, those Carl Barks comics were the first things I ever read that seemed truly unfiltered, with no traces of goody-goody grown-up lecturing mixed in. They were clever stories, really well designed, and Donald Duck was a true anti-hero—selfish, lazy, greedy, irascible and not overly kind to his three nephews. I loved him as a boy, he was the kind of adult I could see myself becoming. And those comics told me it was okay to be like that. When I became a father I got reprints of the Carl Barks comics for our three children—and they of course enjoyed thinking of me as the bumbling Donald Duck, while they were the clever ducklings.

In my own fiction, I’d say that I like writing about characters who aren’t in any way idealized. People whom you can see as being like yourself.

Another important thing about those old-school cartoons is that the characters in them are rubbery—here I’m thinking particularly of the black-and-white 1940s and 1950s toons that I’d see on that weekly *Cartoon Circus* TV show in Louisville.

I’ve always liked things that are curved and soft, as opposed to hard, rectilinear things. So when I began writing science-fiction about robots, I immediately found ways to make them snaky—like Silly Symphony cartoons or like Dali’s melting watches.

As for the “exultant blare,” I’m talking about the wild jazz they play in the background of the really old cartoons. Every now and then one of the characters lets out a yip, but mostly it’s this hyperactive flow of exaggerated music. Nothing too refined. They’re going for it.

Q 349. Another kind of “exultant blare” informs the work of your favorite painter, Pieter Bruegel the Elder.

A 349. Bruegel’s my main man. The one non-SF novel that I’ve published is a novelized version of Bruegel’s life, I called it *As Above, So Below*. That’s the book of mine that I give to, like, friends or relatives who say they can’t possibly read SF. One of these days I’d like to write a life of Bosch as well.

A first thing about Bruegel is that his style is very bright and poster-like. And I like my writing to be like that. Everything clear and easy to see.

A second thing with Bruegel is that the characters in his paintings seem to be modeled on actual people. Nothing is idealized or stereotyped, it all feels real. This shades into a writing practice that I call *transrealism*—where I try and base my fictional characters on people I’ve actually met, sometimes folding several people into one character.

A third aspect of Bruegel is that his pictures evoke a sense of the divine nature of the physical world. Everything is alive. We're in paradise, if only we pay attention.

Q 350. *Nested Scrolls* is very conversational, as is much of your work. You mention how writing letters to friends was an apprenticeship for this style, and your first stab at a novel was composed in this way, mailed back and forth with your friend Gregory Gibson.

A 350. Writing letters was definitely a big deal for me and my friends in our twenties and early thirties. We wrote letters on pieces of paper and put them in envelopes and mailed them—and in a week or so you'd get a letter back. Delayed gratification. Many of us used typewriters. Seems very quaint and archaic now. A lost world.

Not that you can't learn to write with email. One way or another it comes down to corresponding so much that you get your natural speech rhythms into your prose. No stuffiness, no Sunday clothes.

Gregory Gibson was my roommate in my last year at college, and over the years I probably wrote more letters to him than to anyone except my wife. Greg and I both wanted to be writers, and we enjoyed our letters a lot. He was in the Navy while I was in grad school—this was around 1968. Like you mentioned, we got a novel going, mailing the pieces back and forth. It was called *The Snake People* and it was about invisible aliens who wriggle through your brain when you get high. Whenever Greg and I were together in the flesh in those years we'd smoke hash and try to see the snake people. It was fun. Transmuting our lives into SF.

Q 351. Even though you never met Philip K. Dick, and you weren't living in California while he was alive, you have very similar sensibilities, and his "transcendental autobiography" *A Scanner Darkly* was a major influence on your transrealism. You also won the first Philip K. Dick Award, established shortly after his death. Do you still consider him a major influence?

A 351. Sometimes I used to fantasize that weird people I'd meet at parties or in drug dens really *were* Phil Dick, only in disguise. Maybe he didn't really die. Maybe I could be friends with him if he were still around.

My feeling is that Phil wasn't entirely serious about some of the flaky, esoteric trips he was laying down in his later years. To some extent these could have been head trips that he was running for his own amusement. And he kept talking about this weird crap as way of fucking with the minds of the people around him. That can be a type of stoner humor. And a defense mechanism. Like—if they think I'm crazy, they'll leave me alone. And what's your so-called logic ever done for *me*, anyhow?

I recently reread Phil's *Do Androids Dream of Electric Sheep*. This is of course the book they based the movie *Blade Runner* on. As always I was blown away by the subtle humor and the liveliness of Phil's broken-up and interleaved dialog. The harshness of the androids is great. And the clipped coldness with which people just say what's on their minds.

And, as always, I was exasperated by his characters' listlessness and depression, and disturbed by the fixable little plot-glitch holes. Didn't anyone ever edit his manuscripts? Probably not. They were, after all, paperback originals.

I'm forever awed by Phil's flights of philosophical fancy and by his heartfelt concern with the nature of human empathy. And it's wonderfully startling when he flips out of the logical mode and goes into his whole religious vision thing. And he's the grandmaster of ringing changes on the theme of "what is reality?" A broken electric cat that turns out to be real is paired with a miraculous toad that turns out to be a machine. Phil's still an inspiration.

Q 352. While you appeal to a core of intelligent, casual readers of SF, you're not too popular with run-of-the-mill SF fans. But as an early cyberpunk you're familiar with outsider status. Here I'm thinking of a 1985 panel you were on with Shirley and Sterling in Austin, where your cadre was all but shouted down.

A 352. Yes, I have the feeling that I'm not especially popular among hard-core SF-con-going fans. After twenty-one SF novels, I've never been nominated for a Hugo or for a Nebula award.

As you say, it may well be that my main audience lies somewhat outside of the traditional SF zone. Sometimes I'll see my novels on the shelves of cool places like City Lights Books or the St. Mark's Bookshop, and that makes me glad.

Although cyberpunk is now viewed as a successful subgenre of SF, it was indeed controversial when we started. But that's the way we wanted it. If nobody's pissed off, you're not trying hard enough.

Q 353. You have a Ph.D in mathematics, your research focusing on things like the fourth dimension and the higher levels of infinity. Does your work in mathematics inform your SF?

A 353. Oh, sure, math is a great source of cool SF ideas. And the *style* of mathematical thought is good training. Often in math you start out with a particular set of axioms and explore what you can deduce from these laws. Creating an SF world is a similar kind of thought experiment. You make whatever wild and crazy assumptions you like, and then see what follows from them.

But, really, when I'm writing SF, I'm just as likely to work the other way around. That is, I'll start with some cool kind of special effect—

like, let's say, our Earth unfurling to become an infinite plane—and then I'll dream up some relatively plausible hole in physics that makes my scenario possible.

If you're willing to jiggle the laws, you can fit everything together in a logical way—and if you ponder the ensuing logical consequences, you come up with some gnarly extra effects for free.

On the subject of math, it's also worth mentioning that, culturally speaking, mathematicians are about as close to living and breathing aliens as you'll ever see. Weirder than stoners, weirder than computer hackers, weirder than SF fans. My people.

Q 354. You've had a number of other non-SF rabbit holes. You were in Silicon Valley for the second wave of hacker culture and got deep into cellular automata in the mid '80s.

A 354. Yeah. Cellular automata, or CAs for short, aren't as well-known as fractals, but they're equally beautiful. They're like self-generating videos. You can get a CA running on your computer screen and it's like watching a living oriental rug, or an out-of-control lava lamp with little bugs swimming inside. Over the years I spent hundreds or maybe thousands of hours staring at CAs. They ate my brain. A pure software high.

Landing in Silicon Valley in 1986 was a real stroke of luck. I kept on writing, but I got into being a professor of computer science for my day job. And I did some work as a software engineer at a big company. I was riding the wave—surfing those pixels for twenty years, out there in it every day, rain or shine. It was good. But now I'm glad I've retired from programming and from teaching CS.

When I see an old movie, like from the 40s or 50s or 60s, the people look so calm. They don't have smart phones, they're not looking at computer screens, they're taking their time. They'll sit in a chair and just stare off into space. I think some day we'll find our way back to that garden of Eden. The machines will melt away.

First we'll turn our devices into little plants and animals—that's biotech. And then we'll get to what I'm calling *hylotech*. This means that we'll find a way to talk to objects and see that they're quantum-computationally alive. And then it'll be as mellow as the 50s again.

Q 355. *Nested Scrolls* was directly inspired by a 2008 cerebral hemorrhage and is very much a meditation on mortality. Considering both your novels *Postsingular* and *Hylozoic* deal with the singularity, what's your take on the belief that mortality will be abolished?

A 355. Yeah, I nearly died in 2008. An artery in my brain burst. I was out of it for a few days. But then the break healed up and I was okay. It was like coming back from the dead. I decided that if I was ever going

to write my autobio, I'd better do it soon. And at the same time I wrote a novel, *Jim and the Flims*, about a guy who travels into the afterworld. At first the autobio and the novel were the same book. It took me a couple of months to unravel that. I did two rewrites on *Nested Scrolls* over the next two years, sanding it down to be perfectly clear and smooth.

When I was younger I was more attracted to immortality than I am now. I think I was worried there were various things I might not live to do—travel, fatherhood, publishing. But now I'm more accepting of death. Nothing lasts. The petals whirl, the leaves fall, the river flows. Why fight it? You get the one lifetime and it's enough. At some point you have to let go.

I think people who obsess about becoming immortal are on an ego trip. They don't want to accept that the world will go on just the same without them. Certainly, as technology advances, we'll see people living longer. And, at the more SF end of things, you might look for injectable nanobots to repair your body, or the use of fresh tank-grown clone bodies, or the ability to upload your mind into an artificial android body. I wrote about the last of these in my novel *Software*, thirty years ago. But in reality I don't see any of these things happening very soon.

Recently there's been a lot of hype about the singularity. The word means different things to different people. In a way, we're already well past a singularity, which was the coming of the computers. But some people have a feeling that a really big change is coming very soon. And there's a hope that if you can just hang on for, say, another thirty years, then the nanobot or clone-body or digital-upload version of immortality will be available. Note that many of those spreading this promise are also offering to sell you expensive vitamins to help you hang on. They're selling snake oil. It's a con.

The reason I called my recent novel *Postsingular* was because I wanted to leapfrog past the current wave of bullshit—and get out into the raw, energizing zone of all-new cutting-edge SF. There's still a lot of wonderful stuff to explore. We haven't come close to exhausting the riches of this world.

Right now I'm starting to plan for a novel I might call *The Big Aha*. I'm trying to imagine a second psychedelic revolution—one that doesn't involve drugs. Like maybe you use quantum entanglement headsets to tune into the universal wave function. Or maybe it's just a certain kind of sound. Or—who knows? We'll see. All these years, and I'm still looking for the big aha.

San Francisco, February 8, 2012

Interviewer: R. U. Sirius

For: *Acceler8or* webzine

Q 356. So I just read your autobiography, *Nested Scrolls*. This is a pretty laid-back life in the grand scheme of things—no big drama—and yet you manage to make it very entertaining. Do you feel lucky (punk)?

A 356. My life has turned out better than I expected. As a youth I didn't know if I'd be able to publish books, to raise a family, to find a good job, or even to live past forty. I don't know if luck is the right word, though. It's more a matter of me being a certain kind of person and of fate working out the consequences.

Becoming a writer isn't like buying an instant-win lottery ticket. You have to obsess over your writing for years. But, at a meta level, I guess you could say it's a matter of luck to have the kind of personality that makes you work that hard. If you can call that luck!

In her journals, Susan Sontag says that, to be a writer, you need to be a nut and a moron—a nut to have the wit and the endurance, and a moron to persist.

The craft of writing is soothing to me. When I don't write for awhile, I'll start wondering if I actually know how—maybe I've been kidding myself and lying to my friends? But then when I get back into the work, I find that I have a well-honed capability, and it feels good to use it. It's almost like making something with my hands.

Q 357. How is your life similar to cellular automata?

A 357. As I mention in *Nested Scrolls*, seeing cellular automata in 1986 was a trigger that sent me into a metamorphosis—like a full moon that changes a man into a werewolf or a werpig. I moved to California and became a computer hacker.

I need to explain that cellular automata are a type of self-generating computer graphics video. You think of the pixels on your screen as cells. With each tick of the system clock, the cells look at their nearest neighbors and use their tiny programs to decide what to do next. Incredibly rich patterns arise: tapestries, spacetime diagrams, bubble chamber photos, mandalas—and they flow and warp like the shapes inside a lava lamp, never stopping, perennially surprising.

But you're asking me how my life is *similar* to a cellular automata. Well, I suppose I could say that my life, and my mental processes, divide up into specialized cell-like zones. And information flows from zone to zone. I evolve in gnarly and unpredictable ways.

Why unpredictable? One of the biggest teachings that I've taken from my work with computers is that even a system with a simple rule produces unforeseeable outputs if you let it run for a little while. This is particularly true for systems that operate in parallel and which repeatedly munch on the same material. Which is exactly what the human mind does.

It's folly to imagine that you can know exactly what you'll be doing a year from now.

Q 358. What's Embry up to? Did he like *Nested Scrolls*?

A 358. You're talking about my big brother Embry, who I mention numerous times in my autobio. He's five years older than me, and we weren't all that close when we were little, although we did see a lot of each other, living in the same house. In later years we became good friends. The most memorable thing that Embry and I ever did together was to take a month-long scuba diving trip to the remote islands of Micronesia. It was a landmark event, a once in a lifetime thing.

Embry's back to living in Louisville, the town where we were born. It's interesting for me to go revisit the city from time to time. He read *Nested Scrolls*, and he didn't exactly say that he liked it, but he's not nit-picking me or arguing about details, which is a relief. I'm sure that I remember some things differently than Embry does, and that I choose to emphasize different events than the ones he would prefer. But I do think I depict him fondly. And it seems like we're still friends. So I guess I got away with it.

Writing an autobio is kind of risky in terms of how your friends and family members are going to take it. It's wise to think ahead and to be a gentle when you're writing, wise to have some empathy.

Q 359. So did you take some stuff out, thinking better of it? Conversely, as a fiction writer, did you make up part of your life?

A 359. Sure, *Nested Scrolls* is a somewhat cleaned-up version of my life story. This time I wanted to focus more on my intellectual development and on my relations to the people around me. I did however write an earlier memoir that's a more in the "my wild times" mode that you're looking for. This earlier book is *All the Visions*—I wrote it in 1983, when I was thirty-seven. It's a memory dump of tales about wild things I did to seek enlightenment as a younger man, usually in the context of drinking or getting high. I typed it on a single ninety-foot-long piece of paper, fully emulating Jack Kerouac's legendary composition methods. *All the Visions* appeared from a small press and is out of print now, but I plan to republish it as an ebook fairly soon.

Regarding your second question, I wouldn't want to say that *Nested Scrolls* is a tissue of lies. But I'm a story-teller, and I've told many of my anecdotes before. As you tell and re-tell a story, you polish it, work on it, make it funnier, more succinct, more to the point. You edit your memories like you're editing a novel.

Revising my memories felt good. That's one of the pleasures of writing an autobiography. You tweak your life so that things fit—and then the whole thing begins to make sense.

Q 360. You wrote about becoming part of a literary scene, cyberpunk, and about how this felt like being a Beat writer. But as we discussed recently in a conversation, you cyberpunks aren't really close in the way that Ginsberg and Kerouac and Burroughs and Corso were, and you're probably less extreme in how you've lived. Do you agree?

A 360. Lets start with some similarities between the Beats and the cyberpunks as groups. We got publicity in the wider press, we were reviled by establishment, stuffy critics continue to minimize our abilities, we advocated revolutionary views of our society, and our writings ushered in widespread cultural changes. The end of the Eisenhower years in the case of the Beats, the coming of the Web in the case of the cyberpunks.

At one point I got interested in pushing the cyberpunk/Beat analogy as hard I could, and I wrote an essay suggesting these correspondences: William Gibson ~ Jack Kerouac, Bruce Sterling ~ Allen Ginsberg, Rudy Rucker ~ William Burroughs, John Shirley ~ Gregory Corso. Gibson writes like an angel and has best-seller status. Sterling is deeply interested in politics and in changing the world. Rucker, the oldest, has a scientific streak and an antic sense of humor. Shirley speaks and writes without the interference of socially-prescribed mental filters. All of us have an implacable and unrelenting desire to shatter the limits of consensus reality.

Despite what I said to you in conversation, I do feel fairly close to Sterling, Gibson, and Shirley. I've collaborated on seven short stories with Sterling, two stories with Shirley, and Gibson helped me develop the first chapter of my quintessential cyberpunk novel *Wetware*.

I see Shirley a couple of times a year, Sterling about once a year, and Gibson every three or four years. So we are pretty close, but of course it's hard to match the legends of Jack and Neal's visit to Bill Burroughs's farm, or Jack's stays with Bill in Tangier and in Mexico City, or Bill's unrequited crush on Allen, and so on.

And it's also true that my life hasn't been as romantic as the lives of the Beats. Being a heroin addict, hitching back and forth across the country, having hundreds of gay lovers, living in destitution—all these adventures were denied to me. In some ways I wish my life had been that exciting. But then I might not have written anything.

It's possible that to someone on the outside, maybe my life *does* seem exciting. After all, I got to work with R. U. Sirius and Queen Mu at *Mondo 2000*! And one night at the Berzerkistan Mondo house in the 1990s, some people associated with your scene got me so high that I thought I'd been snatched by a time machine and transported to a holographic virtual room in the 2010s to be interviewed by some weird—oh wait, that's actually happening right now, isn't it?

Q 361. I've always felt the voice of Philip Dick in your work, more than maybe I've ever said before. There's a certain whimsy in the way you present your characters reacting to strange situations in ways that are more offbeat than panicky. Does that make sense? Anyway, say a bit about Dick's influence.

A 361. Yes, I've definitely been influenced by Dick's voice, his language-with-a-flat-tire quality. I still think *A Scanner Darkly* is one of the funniest and saddest books I've ever read. Dark oboes playing behind

the stoner grins. I like Phil's California vibe, and, living in the San Francisco Bay Area for the last twenty-five years, I've gotten more and more imbued with his tone.

A few years ago I showed one of my SF novels in manuscript to a younger friend who's a hot quantum physicist. I wanted him to check the quality of my pseudoscience, the plausibility of my con. But he went off on a tangent and started complaining that my characters weren't *surprised* enough when weird things happened. Like a giant cone shell snail would fly in and eat someone, and my characters would be like, "I'm glad the cone shell ate that shithead instead of us," and then they'd go on with whatever insane task they were busy with.

I told that my friend that it would be boring to have my characters continually going, "I can't believe this is happening! Am I dead, drunk or dreaming? How can this be real? Blah, blah, blah." To me, being inside an SF novel is like being inside a surrealist painting, and you don't want to waste time pretending to be shocked by the changes coming down. You want to savor the weirdness and, where possible, keep kicking it up to higher levels.

You want a hero who's a snickering nihilist, not a defender of the status quo. At least to start with. And then of course you put in some routine about coming to terms with your inner demons, finding your sense of empathy, and growing up at last. You need that part for the book to be a novel.

One of the interesting things about Phil Dick is that you can never really tell when he's putting you on. And he doesn't know either. He's working in that gap, where you just say anything—to see how it feels. Does that make sense?

Q 362. Do you have a lifebox?

A 362. Okay, you're talking about my notion that it's possible to make a software model of yourself—a notion which goes back to my first published novel, *Software* of 1982. And then people can have the illusion of talking with you, even after you're dead. I see lifeboxes as becoming a very big consumer technology. A simple design is to have a lot of your personal online as a data base, and to have an interactive search tool for accessing this data base.

My autobiography is a lifebox in an older sense. Moving beyond that, I've set up a primitive but functional lifebox of myself at the www.rudyrucker.com/blog/rudys-lifebox/ website. In principle my lifebox could be answering the questions in this interview, although the interviewer would need to be doing some edit work on the "answers."

Many people are already producing a lot of online data on blogs and social networks. If you follow someone's posts closely enough you can indeed get a feeling of knowing them. And as searching across blogs and social networks becomes simpler and more fluid, we'll effectively be getting lifebox representations of many web users.

What's the appeal of lifeboxes? They make a weak form of immortality accessible to a wide range of people. For most of us writing a book is quite hard. A key difficulty is that you somehow have to flatten the great branching fractal of your thoughts into a long line of words. Writing means converting a hypertext structure into a sequential row — it can be hard even to know where to begin.

If you have an effective search tool as the front end, it's okay if your "memoir" is a disorderly heap of random personal factoids. With the search working, the database becomes an interactive whole. That's really what a living personality is, come to think of it. A mass of brain data with a so-called mind as the front end.

Brazil, September 15, 2012

Interviewer: Nas Hedron

For: *The Turing Centenary*

Q 363. I wonder if you can set the stage for us with reference to Alan Turing, you, and writing. Who was Alan Turing to you before you wrote *Turing & Burroughs: A Beatnik SF Novel*? And what gave you the impulse to write your novel about him?

A 363. In the course of getting my Ph.D. in mathematical logic, I learned the technical details of Turing's theorems about the idealized computers that came to be called Turing machines. I read his epochal 1937 paper "On Computable Numbers" (<http://www.cs.ox.ac.uk/activities/ieg/e-library/sources/tp2-ie.pdf>) numerous times, and I was struck by the clarity and the depth of his thought.

Being interested in the possibilities of intelligent machines, I also studied Turing's 1950 paper, "Computing Machinery and Intelligence," (<http://loebner.net/Prizet/TuringArticle.html>) a non-technical paper in which he proposes the so-called Turing imitation game as a test for true AI: you might say that a program is intelligent if you can't tell it from a human when you're exchanging emails with it. It's worth noting that Turing initially framed his "imitation game" in terms of someone trying to distinguish between a woman and a man.

Later I became interested in using so-called cellular automata programs to simulate the patterns that emerge in the tissues of plants and animals—patterns like the spots on leopards, the markings on butterfly wings, the zigzags on South Pacific cone shells. This is what Turing was working on near the end of his life. In 1952 he published an amazing paper, "The Chemical Basis of Morphogenesis." (<http://hopf.chem.brandeis.edu/yanglingfa/pattern/Turing/The%20Chemical%20Basis%20of%20Morphogenesis.pdf>) In the morphogenesis paper he explains how, by dint of days of hand computation, he emulated a biological cellular automaton process to produce irregular black spots like you might see on the side of a brindle cow.

To me Turing is a heroic and inspiring figure. He worked on deeply fascinating things without getting lost in merely technical mathematics.

The other compelling aspect of the Turing story is that he was openly gay, he was persecuted for it, and that he had a strange and tragic death—which is usually described as a suicide.

Regarding Turing's death by cyanide poisoning, I've always felt there's a real possibility that he was in fact assassinated by agents of the British government. This seems even likelier now that we know Turing was involved in a top-secret code-breaking effort during World War II. In the 1950s, there was a collective hysteria over the possibility of homosexuals being a security risk.

Before I began contemplating my own novel, I'd read some stories and plays about Turing. But I didn't feel that any of these works captured the vibrant image of Turing that I wanted to project. There can be a tendency to write about homosexuality in a lugubrious tone—as if a homosexual is a pathetic person who's afflicted with a lethal disease. But Turing was anything but downcast about his predilections.

In the spring of 2007, I wrote a short story about Turing, "The Imitation Game." And this story later came to be the first chapter of my novel. In the short story, Turing escapes being poisoned by British government agents. And to escape, he swaps appearances with his dead male lover. And here comes the science fiction: Turing grows two new faces by using principles that he described in that paper where he generates the shape of a spot on a black-and-white cow.

As sometimes happens to me, I had difficulty in selling my story. Maybe it wasn't sufficiently solemn and lugubrious—and I was presenting Turing as a gay outsider, heedless of proprieties, and by no means a victim. In any case, in 2008 my story appeared in the British magazine *Interzone* and in 2010 in *The Mammoth Book of Alternate Histories*, edited by Ian Watson and Ian Whates.

Early on, I began wondering if there might be some way to expand my Turing story into a novel. At the end of my story, Turing escapes to Tangier, and I formed the notion that he ought to connect with the Beat writer William Burroughs, who was living there at that time. Two brilliant men, gay, outcast—perhaps they'd hit it off.

I've been a huge Burroughs fan ever since I first came across an excerpt of *Naked Lunch* in the beatnik magazine, *The Evergreen Review*—this would have been back in 1960, when I was fourteen. My big brother had a subscription to the magazine, and I'd leaf through it, looking for smut. Instead I found a literary career.

I particularly admire the irresponsible and laceratingly funny style of the letters Burroughs wrote to his friends from Tangier. And so I decided to write my second Turing story in the form of letters from Burroughs to Kerouac and Ginsberg.

This second story, “Tangier Routines,” was so gleefully scabrous that I didn’t bother sending it to any magazines, science-fictional or otherwise. Instead, in the fall of 2008, I printed it in a webzine *Flurb* that I’d managed to start. And then in 2010 and 2011, I ran two further Turing & Burroughs stories in *Flurb*.

I was still unsure about how to build my tales into a full novel, but in 2010 I finally read *Alan Turing: The Enigma*, the wonderful biography by Andrew Hodges. And here I learned that Turing was everything I could have hoped. Stubborn, unrepentant, impulsive, and with a very warm and human personality.

I discovered that, as part of some psychological therapy he was undergoing, Turing himself made a start at writing a transreal speculative novel late in his life—and this allayed any uneasiness I’d felt about dragging his name into the gutter of science-fiction.

So why did I write a beatnik SF novel about Alan Turing? In short, I’d come to think of him as my friend, and I wanted to give his character a cool place to live.

Q 364. What interested you about bringing the mathematician Alan Turing together with the Beat writer William Burroughs?

A 364. To some extent this was a matter of convenience. I needed Turing to flee England in 1954 to escape assassination by the secret service. Even though Turing has changed his face in my novel, it seemed like he’d feel safer taking trains and ferries than in trying to get on a plane.

From my familiarity with Burroughs, I knew that Tangier was an open city at this time, a good place to take refuge—Burroughs often referred to it as Interzone. And, checking my references, I realized that he was indeed living in Tangier at this time.

Having my two heroes meet seemed perfect. Having them connect also solved a problem I was having in figuring out how to write a gay male character in an effective way.

William Burroughs is a queer writer whom I’ve always found easy to identify with. He has an outspoken zest and a defiant rudeness that make it seem cool and reasonable and entirely desirable to be a homosexual heroin addict.

Even though I myself am merely a punk SF writer, I sometimes feel a certain social opprobrium regarding my esoteric interests, and, over the years, I’ve occasionally girded myself by adopting Burroughsian attitudes and mannerisms. Wearing the old master’s character armor.

One of the challenges in writing a William Burroughs character was that I had to deal with the fact that, a couple of years before the start of my novel, Burroughs had shot and killed his wife Joan in Mexico City. At first I felt like this was too explosive and difficult to write about directly. But then I realized that I had to face the killing.

So my Turing and Burroughs end up going to Mexico City, resurrecting Joan, and letting her run a number on Burroughs. I wanted to give Joan a voice, and to give her a chance to get even.

I wrote the Mexico City chapter from the Burroughs point of view, writing very fast. It was like I was possessed—but in a good way. The experience was heavy and ecstatic. For months I'd been anxious about writing the chapter, and all at once it was done.

I'm always happy when I'm being Bill Burroughs. He didn't give a f*ck what people think. And neither did Alan Turing.

Q 365. Its impossible to read *Turing & Burroughs* without comparing and contrasting Turing's real life with his life in your novel. Two of the simplest ways in which one might develop a story about an outsider's relationship with the world are victory and defeat. In a *victory* story, the outsider transforms the world into something more congenial; in a *defeat* story, the world crushes the outsider.

In Turing's real life, defeat was the way things played out. But throughout much of *The Turing Chronicles*, it looks as though Turing is headed for victory or at least for a rapprochement. He and his allies are turning everyone into shapeshifting mutants like themselves—what you call “skuggers.” But then, at the end of your novel, you return to something closer to Turing's real life, something like defeat. Your Turing character saves the world, and he dies. Did you plan this in advance?

A 365. That's a very interesting question, and I hadn't thought about this so clearly before.

I've always been piqued and annoyed by the defeat aspect of Turing's actual life. Either he was goaded into suicide or he was murdered outright. So, as I mentioned before, In writing *Turing & Burroughs: A Beatnik SF Novel*, I wanted to create a world in which Turing escapes his tragic fate and lives on to have wonderful adventures.

But I knew from the start of my novel that, even though my Turing character has escaped England, he's a marked man. The pigs, the bullies, the scumbag straight-arrows—they're unrelenting in their efforts to bring down our Alan. So my novel takes on the quality of a long chase.

It would have been possible, at least in principle, to write a novel in which Turing manages to convert everyone in the world into a shapeshifting skugger like himself. But fairly early on, we begin to understand that this wouldn't be a pleasant endpoint to reach. We want to be ordinary humans, not skuggers.

So I needed for Turing to somehow undo the mutations—but without killing off all the people who'd become skuggers. And this wasn't going to be easy, with the cops and feds breathing down his neck. So before long, Turing was heading towards a world-redeeming self-sacrifice. But this felt like the most dramatic way to go. Turing as Savior. It's a big, strong ending.

I think one can argue that Turing doesn't truly suffer *defeat* here. He *transcends*. As the Beat writer Jack Kerouac would put it, Alan ends up safe in heaven dead. And in the context of my novel's world, heaven is a real place.

Q 366. In *Turing & Burroughs*, Turing experiments with what one might call computational human flesh. This bears a certain family resemblance to "flickercladding," the soft robot flesh you imagined in the *Ware Tetralogy*, in which each grain of the cladding acts as a processing unit. This particular feature of your work puts me in mind of the effects that director David Cronenberg uses in his movie version of *Naked Lunch*—I'm thinking of his Burroughs character's soft, genitalia-like typewriters. Are you conscious of a reason why you like conflating computation and flesh?

A 366. I've always been bored by the idea of rigid, clunky, machine-like robots. I wanted robots to be funky and wiggly and sexy. I think it's likely that if we ever have really useful and intelligent robots, they're going to be more like tentacled octopi than like brittle ants. Of course thirty years ago, when I started writing about flickercladding and piezoplastic "moldie" robots in my *Ware* novels, this wasn't at all a familiar idea.

Having gotten used to the idea of soft machines, it became natural for me to turn things around—and to have the cellular structure of human flesh become as malleable as the material of a computer display.

In my *Ware* novels there's a drug called "merge" that lets people melt together inside a tub called a love puddle. And in *Turing & Burroughs*, a person who's a skugger can turn into something like giant slug. There's a scene where Turing and another skugger have sex by twisting themselves around each other while hanging from a rafter at Burroughs's parents' house. Mrs. Burroughs throws them out.

Reading a draft of *Turing & Burroughs*, my wife said, "Oh, you're always doing this, having people merge together, it's so icky." And I'm like, "Yeah, but that's sex, isn't it? That's how it is."

We're biological organisms—we're not computers, and we're not machines.

A 367. In your free downloadable book-length *Notes* for the *Turing & Burroughs* novel, you mentioned the possibility of having J. Edgar Hoover be a character. I'm a little disappointed that he didn't make it into the book. I had a hankering to see Turing and Hoover go head to head. What kinds of considerations are important in making decisions about what to leave out and what to put in?

A 367. My sense was that I didn't want to put too many famous people into my book. If you overdo that, then you're name-checking, and it gets to be like a bus tour of the homes of the stars. And the stars dazzle away the reality of the characters whose lives you want to delve into.

If I am going to recreate a historical character, I want it to be an interesting person whom I like. And for sure that's not J. Edgar Hoover! He's a dead horse. Just because I write something in my notes for my novels, doesn't mean I'm really serious about using it. Often in my notes I'm just killing time and goofing around. Waiting for the Muse.

Given that I had Burroughs and Turing in my novel, I did feel that I ought to bring in some other Beats and at least one other scientist. I went for Allen Ginsberg, Neal Cassady, and the mathematician Stanislaw Ulam.

Ulam isn't too well known, but he did a lot of fascinating things. He helped invent the hydrogen bomb, he wrote some of the first interesting computer programs, and he worked with lava-lamp-like continuous cellular automata. His friends thought he was too scattered, too much of a playboy. My kind of guy.

I was happy to have Ginsberg and Cassady show up in a Cadillac. My friend Gregory Gibson read a draft of the novel and he said that scene was like in a circus when you see the wild clowns getting out of a car.

I held back from putting Kerouac into *Turing & Burroughs*, as Jack would have been too much. He would have taken over. Remember that the main Beat I wanted to write about was William Burroughs.

When I was in the middle of writing the novel, I happened to see some video footage of Burroughs at his house in Lawrence, Kansas, taken a year or two before he died. And I knew right away I could use this scenario for the last chapter of my book. So the last chapter is set as a transcript of Burroughs talking to a video camera.

"And now I'm turning off the machine."

That's the book's last sentence, with Burroughs talking. I like that ending. You might say that it captures the theme of the book.

You can turn off the machines and get wiggly. Even if you're Alan Turing. Long may he wave.

Lakeland, Florida, October 27, 2012

Interviewer: Kelly Burnette

For: *Duckter Yezno's* webzine

Q 368. Your entire family seems to be academically or artistically inclined. You say that you discovered Burroughs, for instance, in a copy of the *Evergreen Review* that belonged to your older brother. Can you tell us a little about how your family life shaped your interests, what you do today?

A 368. My brother and I grew up in the 1950s in the countryside near Louisville, Kentucky, and our chief form of entertainment was reading books. Our mother encouraged us to read—every Christmas morning there would be a circle of books around the tree, and a fair number of these were science-fiction. A lot of Heinlein. Not that Mom was an SF fan at all, but she'd get advice from the book shop lady. My

father had a wood business and then he became an Episcopal priest. He was an independent-minded man, and he encouraged my brother and me to be intellectuals. I met my wife at Swarthmore College; among her attractions were her cultured, intelligent and artistic qualities. Our first conversation involved Pop Art and Andy Warhol. All three of our children are creative types, and all three are self-employed. We have a family tradition of not being cogs in the Big Machine—although admittedly my day job for about thirty years as being a state university professor.

Q 369. I was really happy to hear you weren't planning on founding a religion to dominate the world! Oh wait! That might well be a much better world. But to jump ahead a little...Mysticism is a tricky concept. On the one hand, it could just be a fancy name for certain kinds of mental experience. On the other, it could be actual transcendence. You're fascinated with the idea. Can you talk about your take on mysticism within the context of your novel *Turing & Burroughs*? Do you believe we have a soul?

A 369. I'm agnostic on the soul question. Maybe we have an afterlife, maybe we don't. Keep in mind that, whatever its literary qualities, *Turing & Burroughs* is a science-fiction novel, so I don't necessarily think that everything in it is true. For the purposes of the story it was useful to suppose that dead people could in fact reappear as ghosts animated by immortal souls. My novels *White Light* and *Jim and the Flims* touched upon SFictional afterworlds as well. Mysticism is much less intense type of religious belief. It hinges on the notion that you can get a direct perception of the cosmos as a One. An inner light, a big aha, a cozy goo that you can merge into. If you pay close attention to your mental states, this is almost obvious. All is One, the One is ineffable, we can have a direct perception of the One, and Love is all you need. The secrets of the spoken are shouted in the streets. But esoteric philosophy isn't something you want to be talking about in a novel. A novel is supposed to be fun. It's better to talk about ghosts.

Q 370. I noticed some very nice, subtle character descriptions in *Turing & Burroughs* that reflected the individual's personality well. For example, when you first describe Alan's love for vacuum tubes, that definitely had a phallic ring to it. It was sexual subtext on par with D.H. Lawrence. How do you think your prose has improved over the years?

A 370. I don't really see vacuum tubes as penises, but I guess you could. For people of my or Alan Turing's generations, vacuum tubes were a magical part of daily life. They glow, they get warm, they're made of glass, they have lots of little doodads inside them, a zillion weird pins on the bottom, and you used to be able to take them to the drugstore and plug them into a testing machine, possibly buying a replacement tube in a little cardboard box. Even now when I look at a city like New York or Tokyo from the air, I'm reminded of the inside of the vacuum tube radio I had by

my bed as a boy. Regarding my prose, I'd like to think that it's still improving—I polish it a little more than I used to. Five or ten years ago, I read John Gardner's classic how-to book *The Art of Fiction*, and it had a good effect on me. He talks about paying attention to the spoken rhythms of your text, and about working on the prose at various levels: word, sentence, action, paragraph, chapter, and so on.

Q 371. How much fun was it for you to write in Burroughs' voice and did you produce it rather naturally (as he's such an influence), or did you have to work on it, refine it? The letters were a blast to read. Especially the transition from the letter to Jack to the letter to his parents. That was very funny.

A 371. I've read Burroughs's letters many times, particularly the ones in the *Yage Letters* book, and the ones written while he was in Tangier. While I was writing my pastiches of his letters, I was looking through the actual letters, keeping that voice fresh in my mind. As I've mentioned elsewhere, I find Burroughs's bad attitude to be appealing. He's always been such a breath of fresh air in the face of propriety and social constriction. I once got to hear Burroughs give a seminar talk at the Naropa Institute in Boulder, Colorado, and I asked him if he laughed while he was writing. "I might," he said. "If it's funny." I laughed quite a bit while writing my Burroughs routines. But it got serious and heavy when it was time to deal with his slain wife.

Q 372. Road trips are significant for two reasons: they're symbolic of a journey of self-discovery and they're almost immediately identifiable with the Beats. Alan's revelations on the road were significant. Did Alan portend that he was becoming a true Christ typology as opposed to superficially saying it one night in Louisiana? Or – can you take us through the course of Alan's self-discovery while on the road? When did he realize that his greatest gift was sacrifice?

A 372. You *could* compare Alan to Christ, given that, at the end of *Turing & Burroughs*, he sacrifices himself for the good of mankind. And early in the book, Alan does in passing think of himself as Christ with his Apostles. But maybe that was a red herring on my part or even a false step. Really I don't think Turing is coming at his adventures in terms of a Christian framework. The Christians don't own the redemption myth. It's a deeper archetype. More like something from Joseph Campbell's *The Hero With A Thousand Faces*. Alan has brought a potentially destructive elixir into the world, and he does something about it by transcending to a higher level of existence. He doesn't really *want* to die, it's more that he's cornered in a certain situation and makes the best of it—by using the SF toolkit that he's developed as part of his personal growth during the flow of the novel.

Q 373. Is telepathy a correlative for higher consciousness? And is the next step of evolution a conscious one?

A 373. Telepathy is a concept that's fascinated me for as long as I can remember. I call it teep in my novels. These days I don't see teep as being at all like a normal conversation. It's more that you and someone else get onto the same wavelength. Like a talk in bed with a lover, or a deep rap with a pal, or some heavy conceptual play with a mentor. And an outsider is, like, "So what did they tell you?" And maybe you can't verbalize the details, maybe it's easier to talk about how *having had* the conversation makes you feel. Telepathy represents the dream of *being understood*. Telepathy relates to the notion of merging your personality into the broader world, and this is, once again, an aspect of a higher mystical consciousness. It's interesting to wonder, as you suggest, if telepathy is an evolutionary step that we're coming up on. Kind of a *Childhood's End* scenario. It's an interesting SFictional trope, but in reality I don't actually see humanity as making an abrupt change. I suspect that we'll have a whole spectrum of personality types, and some will be evolving towards higher consciousness and some will be devolving away from it just as fast. "The squares you will always have with you," to paraphrase our Lord.

Q 374. Was the *Turing & Burroughs* character Susan Green based on anyone real? Are you yourself into *musique concrète*?

A 374. Even though I call myself a transrealist, I don't always base my characters on actual people. Susan Green was more like a collage of various women I've known. I was looking for a strong and idiosyncratic female character to counterbalance all the men in *Turing & Burroughs*. A woman who's every bit as outspoken and independent as any man. I recalled that Burroughs was very interested in the idea of taping ambient sounds and collaging them together, and I thought it would interesting to have a woman composer who's actually doing this. For research, I read the Tara Rodgers compilation of interviews, *Pink Noises: Women on Electronic Music and Sound*. I'm not in fact a big fan of electronic music, although I do like the idea of it. I made a point of watching the classic SF movie *Forbidden Planet*, which has a great electronic soundtrack created by Bebe Barron and her husband Louis.

Q 375. Can you tell us a little bit about why you chose to allude to Henry Kuttner and C. L. Moore's novel *Fury*? Was it simply because Burroughs also used it in *The Ticket That Exploded*? You remark that it's a seminal urtext. What's the significance for you here?

A 375. Okay, this is all about the Happy Cloak. It's a symbiotic or parasitic alien being, a bit like a coat or a scarf, and it plugs into the nerves in your neck and hangs down your back, and you get into an altered and somewhat ecstatic state of consciousness. Kuttner's 1947 novel introduces this notion, and Burroughs read the novel during one of his drug-kicking

treatments in a Tangier clinic. Later Burroughs incorporated material about the Happy Cloak into his 1962 novel, *The Ticket That Exploded*. As a teenager I also read Brian Aldiss's 1962 fascinating novel, *Hothouse*, where a morel fungus attaches itself to a character's neck and begins helping him while controlling him. I always loved that expression "Happy Cloak" because of the contrast between the bland, childish name, and the rather sinister nature of the being. I included a Happy Cloak in my *Software*, both as an homage to Burroughs and because it was very useful thing to have. A Happy Cloak made of computational plastic attaches itself to my character Sta-Hi's neck on the Moon, and wraps itself around him to function as a space-suit. Happy Cloaks play a part in the later volumes on the *Ware Tetralogy* as well. I'm always looking for chances to talk about them.

Q 376. Is there any one book of yours that you'd really love to see made into a film? Cronenberg comes to mind, but who do you picture directing your film?

A 376. Oh, man—any of my books, any director. The *Hacker and the Ants* would be good as a retro 1980s computer scene movie. The *Wares* could be epic. Hollywood came close to filming them a couple of times. *Master of Space and Time* would be a fun movie, for awhile Michel Gondry was all set to do that. *Mathematicians in Love* would be very cool, with the surfers and the San Francisco scenes and the flying mollusks. *The Hollow Earth* could become a huge, big budget production, complete with Edgar Allan Poe, giant sea cucumbers, and an intense racial theme. *Turing & Burroughs* itself would be a good film, given that there's some interest in movies about the Beats just now. As for directors, Cronenberg did a great job on *Naked Lunch*, but I'm guessing it would be a younger person who'd want to take on one of my books. I used to think that sooner or later the mass market would catch up with me. But maybe I'm on a divergent timeline. And that's okay too. I'm glad I got to write my books.

Berkeley, California, December 12, 2012

Interviewer: Aaron Marcus

For: *UX*, the user experience magazine

Q 377. You and fellow cyberpunk SF author Bruce Sterling were featured guest speakers in my plenary panel at CHI 1992, "Sci-Fi at CHI." We talked about computer-human-interface design ideas in science-fiction. How has the SF scene evolved over the twenty years since then?

A 377. That was a fun con, Bruce and I shared a room. You guys had a reception in the Monterey Bay Aquarium. Bruce and I were so impressed by the tanks of jellyfish that we ended up coauthoring "Big

Jelly,” an SF story about giant flying jellyfish. You can find the story in my recently issued collection, *Complete Stories*, distributed via my publishing company, Transreal Books.

I see the eventual SF default as being a future in which every kind of manufactured object has been replaced by a tweaked plant or animal.

“Big Jelly” was in fact a step towards that future, in that it’s about biotweak tech rather than about silicon machinery. SF writers ought to be writing a lot of stories about biotech these days, but that hasn’t fully kicked in. There’s an atavistic drift back to space operas with giant metal ships. Like writing SF novels about chariots or wooden ships or giant cars.

A different trend is that during the last decade we saw a lot of hype about the so-called Singularity, some of it with a weirdly religious fervor. The concept is that pretty soon AI will strike it rich, and computers will be as smart as humans. And then we’ll beef up the smart computers with more memory and faster chips, and they’ll design even smarter computers—and we’ll get into one of these exponential growth things. True-believing overweight mouse-potatoes will have their arteries cleaned out by nanomachines, and they’ll upload their minds onto robot bodies—which is actually an idea that dates back to my 1982 novel, *Software*.

The rank and file SF writers were baffled and uneasy about the Singularity, and for awhile they were leery of writing about it. But then Charles Stross rose to the challenge in his trail-blazing novel, *Accelerando*, and the rest of us piled on. I even wrote a novel called *Postsingular*, just to leapfrog over the whole thing. The singularity is SF. We’re telling plausible lies.

Q 378. How has your own work changed in terms of user-experience issues, that is, novel ways in which computer-based communication and interaction are imagined and/or described?

Q 378. For a number of years I’ve been writing about an interface device that I call an “uvvy,” which is pronounced to rhyme with “lovey-dovey.” It’s made of piezoplastic, that is a soft computational plastic. Thomas Pynchon had a substance like this in his novel, *Gravity’s Rainbow*—he called it imipolex, and I use this word in, for instance, my novel *Freeware*, which is a part of the *Ware Tetralogy*, now available in a free Creative Commons edition.

An uvvy sits on the back of your neck and interfaces with your brain via electromagnetic waves interacting with the spinal cord—most users will want to stay away from interface probes that stick into them like wires. The uvvy functions like a smart phone, but it’s activated by subvocal speech and mental commands. It sends sounds and images into your brain.

Q 379. What do you think about how SF movies and television convey user-experience innovations?

Q 379. The hoariest media cliché for user interfaces is the “face on the wall,” that is, a TV-screen-like image that’s talking to you. But even with Skype and FaceTime, people don’t really seem to very interested in videophone communication.

A rich voice signal is more intimate and expresses more. Speaking of voice, I think the greatest weakness in the current digital smartphone standard is that digital voice isn’t anywhere nearly as rich as analog voice. Often, to save channel capacity, the signal drops when you’re not talking. I feel the digital audio channel needs to be made several bytes fatter, and it needs to be a continuous connection so that you hear the stage-setting buzz of the background noise and—also very important—the sound of the other person’s breath.

You often see 3D hologram displays being used in movie visualizations, and these can be fun, although they don’t tend to age well. My favorite media interface scenes are in the 1995 movie *Johnny Mnemonic*, based on a William Gibson story of the same name. Keanu Reeves does these wonderful Japanese-theater-type hand-jive moves when he’s manipulating his cyberspace interface. I never understood why this movie wasn’t more popular.

Q 380. Is there any particular aspect of current interface technology that you feel needs to be changed?

Q 380. It’s absurd to see people pecking at their tiny smartphone keyboards. This is so clearly a bad user interface. It’s unnatural, error-prone, isolating, and non-ergonomic.

If you’ve learned to touch type—and this should be a mandatory course in every middle school—then you can use a real keyboard without having to look at it. With a real keyboard, the words flow though your arms and onto the screen.

But there’s currently no good way to have a true keyboard on a smartphone. Sure, you can connect a portable full-size keyboard, but that’s kludgy. And you can, at least theoretically, have the device project a virtual keyboard onto your table top, but that’s going to have horrible ergonomics.

We need, I think, to take another step along the keyboard-virtualization route and get serious about having the device “see” the mock-keyboarding twitches of your fingers. At some point, a more ergonomic set of hand gestures could take hold. Along these lines, I think of the finger-squeezing interfaces that have been installed in the handle-grips of some experimental bicycles. Using your eight fingers gives you a byte per squeeze.

A different solution to the smartphone interface is to forget about hand gestures and go for voice recognition, and this technology seems to be maturing. One problem here is that you’re making noise in public,

announcing texts that you might want to keep private. I do a lot of my writing on laptops in coffee shops, and I can't imagine dictating my stories aloud—including all the corrections. I'd seem like a madman. Not that the people having cellphone conversations with earphones and dangling mikes don't already seem dangerously insane. I suppose the next step might be to have the device lip read your subvocal speech, or pick up the vibrations from a throat mike.

I also need to say something about pointing devices—mice, trackballs, and touchpads. Over time, using any of these devices intensively is hideously damaging to your body—ask any author or programmer. It's like a silent, unacknowledged industrial disease that attacks a relatively powerless underclass. Like black lung used to be for miners. We've seen demos where a computer camera tracks your eye movements and lets you point by looking. I don't understand why this feature isn't being perfected and rushed to market for every desktop, laptop, tablet and smartphone.

With all this said, I have a feeling that there's some as-yet-unimagined solutions that we'll be using in twenty or thirty years. Possibly we'll get to an uvvy-style direct brain interface. But for sure we won't be pecking at smartphone keys and ruining our bodies with computer mice.

Q 381. What kind of user interface are you using in your latest novel *Turing and Burroughs*?

A 381. Telepathy. For me, that's the gold standard, the interface that we're really working towards. At a metaphorical level, telepathy stands for the dream of being perfectly understood by your friends and lovers. And we're always getting closer.

Even though we tend to ignore this, even print is a first step towards telepathy, but time-delayed. You read this interview and you know what I'm thinking. The phone is another step. You're speaking and listening to someone who's far away. Speech is very intimate, very close to the roots of the mind.

An interesting aspect of full telepathy is that you can communicate info in a hyperlink style. When I have a big image to share, I don't email the whole image, I simply send a hyperlink to the image's location, and let the user find the image there. With telepathy, instead of wrestling some complicated thought pattern into words, you might simply send a trusted friend a "hyperlink" to the location of this thought within your brain. And possibly they can connect to you and experience the thought as if they're having it themselves. Note also that with this style of communication no longer need to break down an image into RGB bytes, nor need you code a thought into words.

I've put telepathy into any number of my novels, using all sorts of SFictional gimmicks to make it work. In *Turing and Burroughs*, my characters experience a communicable biological mutation that makes

them sensitive to a certain type of brain-generated wave. Also they can shapeshift into giant slugs and have great beatnik orgies.

Q 382. In the movie *The Graduate* (1967), the young hero is urged to focus on the future based on one word: *plastics*. If you were to guide newcomers to the world of the future, what would that one word be?

A 382. One word? *Telepathy*. Or a reasonable facsimile thereof. At least in terms of user interfaces.

In the tech realm, the answer is surely *biotech*.

And for a creative person trying to make a living, the key word might be *disintermediation*, that is providing your creative content directly to consumers. Self publishing, in other words. When you're distributing things on the web, you want to avoid the various parasitic entities that might leech onto your slim income.

So, regarding the future, I'm suggesting that you be a creative content provider, and to manage the distribution yourself. DIY, as the punks used to say.

Oakland, California, May 2, 2013

Interviewer: Liza Groen Trombi

For: *Interview for Locus magazine*.

[This is an edited transcript of an audio interview. My interviewer, Liza Groen Trombi, encouraged me to talk at length on various topics. Tim Pratt did an initial edit, and then I edited it some more. An version of the text appeared in the June, 2013, edition of *Locus*. Note that *Locus* interviews are published without any questions in the text, and here I've inserted some questions to improve the readability. These questions are not verbatim copies of what Liza specifically said, but I think they capture the nature of her prompts. I've placed an audio of the interview on my podcast site as well.]

Q 383. Tell me about your memoir, *Nested Scrolls*.

A 383. *Nested Scrolls* came about because I'd always wanted to write an autobiography, but I kept putting it off. Then in 2008, I had to go to the hospital. I had a vein burst in my brain—I could have died. It's what they used to call apoplexy. I'd just finished writing a story with Bruce Sterling. Bruce is a very opinionated person, and usually about two thirds of the way through collaborating we end up arguing about what we're doing. After I got out of the hospital I jokingly told Bruce, "See, you almost killed me, by making me so angry." He said, "Well, if you would just accept that I'm always right, you wouldn't have this problem."

I realized I could have died, and I thought, “If you’re ever going to write your autobiography, you ought to do it now.” I wrote *Nested Scrolls* fairly quickly, in about five months. Then I set it aside and got into a novel, *Jim and the Flims*. I thought, “OK, I’m going to go back and look at that autobiography and make sure I wasn’t just out of it when I wrote it.” I was still recuperating when I worked on it. But the book looked pretty good, and I polished it some more. I didn’t want it to be exhaustive—Isaac Asimov did these exhaustive autobiographies that were interesting, but I didn’t want to do that kind of thing. I wanted it to be more like I was taking a car trip with somebody, telling them stories while we’re going along.

That’s one of the difficulties in writing an autobiography. Your life isn’t really a linear string of events, because everything reminds you of something else, and everything branches out. It’s like a fractal, or a bush, and then you try to turn it into a straight line. So it’s tricky, and you want to keep moving—you’re skating on the surface, and you don’t want to fall in and just wallow in this endless amount of detail. I did organize the book linearly, because that’s what people want. Actually, David Hartwell advised me to put in lots of dates, and always mention the date when something’s happening. That’s useful. In Virginia Woolf’s journals she doesn’t always have the dates of when things were happening, and that’s confusing.

First PS Publishing said they would publish it in England, and then Tor said, “If they’re publishing it, we might as well publish it too, because we can use their layout.” I was happy to get the book out. I thought, “This is the one that will break me out into the mainstream. It isn’t a science fiction book, it’s a memoir. I’m not just a science fiction person, I’m a mathematician, a computer scientist. Maybe we’ll get a review in the *Times*.”

That didn’t happen, but I’m glad I got it out there.

Q 384. Reading *Nested Scrolls*, I enjoyed your stories about your mentors. Can you talk about that?

A 384. I’ve been fortunate to meet a number of my heroes over the years. I met the famous logician Kurt Gödel when I was in grad school. That was a big deal. He’s the smartest man I ever met, and just an amazing person. He knew what I was going to say before I said it. I only spent a couple of hours with him, but that was such an important event for me, like seeing the guru in his cave.

I also got to meet Allen Ginsberg around 1982. We were at the Jack Kerouac School of Disembodied Poetics (at the Naropa Institute). The Beats were always there, Ginsberg and Burroughs and Corso. I was teaching a course on the philosophy of mathematics, but I always wanted to be a beatnik writer, or a beatnik science fiction writer, so I was thrilled to meet these guys. As soon as I met Allen, I told him I was a writer and I

said, “Can I get your blessing?” Like in a myth, where you meet the old writer, the old guru, and you say, “I need your blessing.” He was into it, and right away he slapped his hand down on the top of my head and said, “Bless you.” I got to give Burroughs a copy of *White Light*. He said it looked “far out.” That made me happy.

Robert Sheckley had always been a big hero of mine too. He was the first science fiction writer who I really connected with at a deep level, I was about 13, in 1959. I liked science fiction a lot in any case. Like anybody in those times, I liked Asimov, I liked Heinlein. But Sheckley spoke to me more than anyone else. There are two aspects of his work that I have tried to emulate. There’s satire and humor in it, but you aren’t just going for laughs. There’s also a feeling that he’s writing about real people he knows, himself or his family, his friends—that’s something I came to call transrealism. I like to root my novels in my actual experience.

I met Sheckley a couple of times in the 1980s and it was a big deal for me. He had a friend with a connection with Timothy Leary, and Leary had this idea that he wanted to host a TV show, sort of like *Nova* with Carl Sagan. It could have been an interesting show, covering various modern topics. Sheckley and I went over to Leary’s house to have a story conference, and that was kind of wild.

Leary was a very charming man. At that point, around 1987, I was working as a computer scientist in Silicon Valley, and I had this special circuit board you could put into your PC computer, and it would show the kind of graphics I was interested in. They were sort of psychedelic images, called cellular automata, and Tim thought they were great. He would mention cellular automata sometimes after that.

Q 385. I know you have some theories about your practice of writing. Let’s get into that.

A 385. Certainly when I started writing, I didn’t quite grasp what a long row it is to hoe, if you want to be a writer for your whole life. I’ve published 35 books now, and I’m working on my 36th, *The Big Aha*, my 21st novel. It just goes on and on.

If I’m going to write a novel, there are a number of things that go into it. First, there has to be a place I want to go that attracts me. Some scene, or something about the world, or some event. So at the beginning it’s like I’m standing at the edge of a wilderness. There’s this mountain that I see in the distance, and I think, “I want to get there.” But don’t really know how I’m going to get there through the wilderness or how I’m going to get back.

I like to have the characters clear in my mind. As I’ve often said, I sometimes model my characters on people I know. I used this trick more when I was younger. I’d say, this character is going to be like my father—like the character Cobb Anderson in the Ware series. Or the character Sta

Hi; he was modeled on a guy I knew, the younger brother of a friend of mine. It's that transreal thing.

Am I writing science fiction or am writing I beatnik novels about my own life? The virtue of modeling your characters on other people is that then they're not smooth, they're sort of irregular. They're not like dolls. It's one of the weaknesses in generic golden age novels, the way characters are very interchangeable. They might say, "Well, let's give this guy a limp" to differentiate him. But what else?

At this point, I've run out of new people to use for my characters, and the old ones are tired of me doing it over and over, so I tend to invent my characters more than before. I think about them quite a bit before writing them—I sketch out background stories for their lives, I work that out.

Q 386. How about outlines?

A 386. Over the years, I've started planning my novels more. But I find it very hard to write outlines. Because, again, I can see one or two peaks I'm trying to reach, and there's the woods in between, and I don't really know what I'm going to hit in the woods. Is there going to be a canyon, is there going to be a river? So I can't exhaustively describe the outline.

Sometimes when you're trying to sell a book to a publisher and you haven't written it, they like to see an outline. But my outlines, when I've written them, I've never viewed them as being chiseled in stone. If I have an outline, when I finish a chapter, I'll go ahead and revise the rest of the outline to fit where I'm currently at.

Frankly I think that, if a novel's worth writing, then it's in principle impossible to write an accurate outline of it in advance. The story's like a living thing, it's growing, and you need to stay open to new possibilities. When you work at the limits of your abilities, you can't possibly know what you're doing. And if you do know, you're not pushing hard enough.

The other thing I do when writing a novel is to work out some conceptual ideas in. Maybe more so than many SF writers. I did, after all, get a PhD in mathematics. I worked as a computer scientist. So I have a really scientific frame of mind. I want to have crazy ideas in my novels, but I want them to have internal logic. I want it all to hang together.

There's an ongoing interaction between the novel and the underlying ideas. Whenever I make something happen in the story, I want to figure out—how does that fit into my theory of, like, how the hyperjump to another place in space is working, or how the travel to a parallel world is working. So I'm always working on the theory as well as the story, going back and forth between the two.

You might think that would be limiting, but it's not. When I work out the theory, there will be little aspects of it that suggest new things that could happen, things I might not have thought of otherwise.

Like in the book that I'm working on now, *The Big Aha*. There's a certain theory of telepathy based on quantum mechanics, that you could in a sense merge your brain function with someone else's. That works, but there's a catch in that when you separate back into two people, you can't really remember the experience. That's something I haven't really seen other writers do with telepathy. It's sort of like if you see somebody in a dream, and you have these memories about it, but they're surreal, not accurate. Or when you have a deep, romantic conversation with somebody, and later you don't necessarily remember the words, but you remember the feelings. I call it "oblivious link" or "oblivious teep." I like to call telepathy "teep."

Q 387. There's an art to coining SF words.

A 387. When I'm working on a book I like to invent a language for it—short, easy slang words. Language is like a rock tumbler, when you tumble rocks to make them into gemstones. Every existing word has been smoothed over the years by everybody using it over and over. You don't want to have a slang word that's awkward or hard to say. I'll think, "What's the word sound like? What does it remind people of?" Like in the *Ware Tetralogy*, I called the robots the "boppers." I liked the sound of that, and it hooks into be-bop and bopping.

Still on the topic of my working process, while I'm working on a book I generate a document of notes that ends up being as long as the novel itself. Paul Di Filippo can't believe that I do that. When I don't necessarily want to work on my novel, I'll work on the notes. I have all the PDFs of the notes posted online at my Writing page.

One final trick that I've started using for writing is that I sometimes make paintings that are connected with the book. Like if I can't imagine what'll happen in a coming chapter, I might make a fairly spontaneous painting of a scene that could fit into my book. It's relaxing to work with the paints, they're so non-digital. Not like sitting at a keyboard. I've had a couple of shows in the Borderlands Books cafe, and now and then I even sell a painting. I like looking at them.

Q 388. Let's talk about *Turing & Burroughs*. How did you come to write about those two men?

A 388. I moved to California in 1986 because I'd gotten a job as a professor at San Jose State. Before that I'd been a mathematician with a specialty in mathematical logic. At San Jose State I retooled and started teaching computer science instead. I got to be pretty knowledgeable about computers, and I worked at SJSU about 20 years. I was riding the Silicon

Valley wave, from about 1986 to 2006. That was exciting. I even dropped out of teaching for a couple of years, and I worked at Autodesk, writing software for them. I helped write the software to accompany James Gleick's book *Chaos: Making a New Science*.

One of the big figures in computer science is Alan Turing. He's a legendary figure. He created the idea of what's called the Turing machine, which is a simple abstraction of a computer, and he was able to prove interesting theorems. As a sort of daily example, when you're on your computer and you're waiting for it to finish doing something, you'll see a wait icon, like an hourglass or a progress bar, or something like that, and the progress bar isn't always accurate. Turing showed that even in principle, it's impossible to write a program to predict how long the wait is going to be. Which is strange. A given computation can't really know everything about what the other computations will do. In a roundabout way, this connects with the remark I made earlier, about it being impossible to predict where your novel is going to go.

During his life Turing had a way of switching subjects. He helped to design and build some of the first electronic computers, and he was involved with a code-breaking effort in WWII, cracking the German Enigma code. Near the end of his life, he was interested in biocomputation, and he was looking into how certain mixtures of chemicals will produce patterns, such as the ones you see in the coats of animals. He wrote a paper, "The Chemical Basis of Morphogenesis", where he did this immense calculation, and the output was a single black spot, like you'd see on the back of a cow. This great mathematician, working on it for months, doing a lot of the computations by hand, all these differential equations, and he gets this irregular black spot and he's glad. That makes me love Turing so much.

Something that makes Turing especially of interest to the wider public is that he was an unabashed homosexual. He had the kind of personality that many mathematicians and computer scientists do, somewhat socially unaware. He'd say whatever he thought, so he'd just tell people, "I'm a homosexual. Would you like to have sex with me tonight?" In the 1950s in England! That was not done.

He got in trouble. It's a long story but he ended up getting busted. He hired a guy to have sex with him, and then the guy stole something from his house, so Turing went to the police and said, "This man stole something." They said, "Why did you ask this raffish, lower-social-strata person into your house?" Turing said, "To have sex with him. And we did this, and this, and this." The authorities made him take these treatments—they had this crazy idea that they should give him female hormones, and that would reduce his sexual desire. It made him start growing breasts. They were like the same hormones a transsexual would take.

Turing became despondent, and apparently he killed himself. He was really big on the movie *Snow White*, with the poison apple. He used to dance down the hall and sing songs from the movie, and he was found

dead with an apple that had cyanide on it. They concluded that he put cyanide on the apple and then bit it. Just for a weird way to kill himself.

Q 389. Talk about how this works into your novel.

A 389. I've always had a theory that the British equivalent of the CIA, MI5, murdered Turing. This was the cold war period. They were incredibly paranoid about homosexuals knowing state secrets, because homosexuals could be blackmailed—although again, as I mentioned, Turing probably wouldn't have cared. He would tell anybody that he was homosexual.

Anyway, Turing had promised as part of his parole not to have sex with anyone in England, but he'd go on vacation to Greece, or to Scandinavia, and have boyfriends there. Sometimes the boyfriends would visit him in England. And he would debate to himself what the restriction meant, against having sex in England, if the person wasn't English.

The setup in *Turing & Burroughs* is that Turing has a guy visiting him from Greece, and they're about to have sex, but the vice squad is sneaking around watching Turing. He's in a hotel with this boyfriend, and the cops send up a pot of tea with cyanide in it. Turing's boyfriend drinks it and he dies. So then Turing says, "They're out to kill me, I have to run. But what I'll do is put this guy in my bed, in my house, and I'll leave. But before I do that, we'll switch faces."

From there we're getting into science fiction. The idea of growing faces wasn't completely unlikely, given that Turing did those experiments in morphogenesis. So he gets a bit of skin from his nose and his boyfriend's nose, and grows two faces in the oven, and puts his face on the guy's, and the guy's on his. Then he flees to Tangier.

In 2006, I wrote up this idea as a short story called "The Imitation Game," and I read it in San Francisco. They have a monthly reading series there, SF in SF. Jeremy Lassen of Night Shade Books was there and he said, "If you ever turn this into a novel, I'll publish it." I kept that in the back of my mind, and at some point I couldn't think of what else to do, so I wrote a sequel story about Turing in Tangier, and I ran that story in my webzine *Flurb*.

Q 390. And this is where William Burroughs enters the picture.

A 390. Right. In the second story, which I called "Tangier Routines," Turing meets up with William Burroughs, and he intensifies his biotech to the point where you can actually turn your body into a huge slug that slimes around. It's vintage 1950s style mutant invasion science fiction!

Once you can change into a slug, your touch has the ability to turn other people into slugs, and it's contagious. The slugs have telepathy, and they can have sex like slugs do—they hang from the ceiling on a rope of

mucus, and slime around each other. Turing and Burroughs do this in a bedroom in Burroughs's parents house, and Bill's mother walks in on them. Great scene. You can see videos of slug sex on YouTube. I had a lot of fun writing those early chapters, so I expanded them out to a novel.

I'm a huge Burroughs fan. I always liked his attitude, so completely in your face, no compromise. He was openly homosexual, just, "This is what I like." In your face and funny about it. And the same with the drugs. I've studied Burroughs's letters very closely over the years, so I wrote "Tangier Routines" and some of the later chapters in the mode of being letters or journals by Burroughs. I think it came out as quite a nice novel.

Q 391. Tell us about how you published *Turing & Burroughs*.

A 391. My agent sent the manuscript for *Turing & Burroughs* to a number of people, and they all said, "This is well written, but we don't want it." I'd even dreamed that it might come out as a mainstream book, rather than SF.

Maybe the publishers thought it was too outrageous. And that seems unfair. I see books reviewed in the *Times*, and they're outrageous, and nobody cares. Then I write what I think isn't really all *that* outrageous a book, and I'm even holding back a little. But people say, "No, that's too much."

Jeremy Lassen at Night Shade would have liked to publish *Turing & Burroughs*, but by that time, Night Shade was going under.

My whole life as a writer, which started about 35 years ago, every year somebody says, "This is the worst year in publishing." This year, 2013, it actually *is* the worst. because there aren't any bookstores. Borders is gone, Barnes and Noble is going.

Finally I decided I'd just have to self-publish the novel. It's a little strange as an older writer—the younger writers don't feel embarrassed about self-publishing. Once you accept it, there are a lot of nice things about publishing yourself. It's a psychological step to take, and there's the matter of how you do it. I've got a couple of books with the specialty house E-Reads, which is not quite self-publishing—they do all the work, and they do a nice job, they're doing a good service.

But I'm a computer guy, so I can figure this stuff out myself. I'm not sure I have all these numbers right but, looking at my royalty statements, my impression is that when I do an e-book through a big publisher, I get a royalty something like 10% of the retail price. And the e-books and print-on-demand books that I did through E-Reads, their royalty rate is better than a big house, but once all the intermediaries take their cuts, I'm still only getting something in the range of 20% of the retail price.

So I thought, if I'm self-publishing, it'd be nice to get something more like 35% through Amazon, or maybe even get 100% for the e-books

I can sell direct off my own site using an order fulfillment service—I'm using this site called E-Junkie. And I call my line of publications Transreal Books.

I spent seven months figuring all this out. There's the writing skill, the computer skill, and the marketing skill. I can write and do computers, but marketing is still my weak point. I'm not the most sociable person.

I do tweet, and Facebook, and I blog and create websites for my books, but that really eats up time. Of course, for a writer, it's always good to find ways to waste time, other than getting incredibly drunk and stoned. Social networks are a less personally destructive way to waste time.

Q 392. I think it's cool that you're self-publishing. How did you get started?

A 392. It was during the early part of 2012. The first book I published in ebook and paper was a reprint of a book I admired very much, published in 1970, called *Be Not Content* by William J. Craddock. Sort of a test run to see if I'd be able to do it with my own books.

Craddock wrote his novel when he was 21, and it was the first book by an acidhead. This was before the Merry Pranksters, really early. It's just a fascinating book. He had this great humor. I'd lost my paperback copy of the book—you know how you loan a book to somebody and then you forget who it was—but then I found the paperbacks of the book were quite expensive, like over \$100.

I blogged about that. That's another thing about blogging: people come to you with scraps of information. Somebody knew Craddock's widow. She lived in Santa Cruz, which is not all that far from where I live. So I got in touch with her, and I got her to sign a contract for me to publish the book.

At that point I learned it's not very hard to do an e-book. While I was learning the ropes, I encapsulated my knowledge in a little e-book called *How to Make an E-Book*. Self-reference! That little pamphlet was my first dip into the realm of self-publishing. I put most of the material online as blog posts as well. It's very useful for me to publish the details of tricky computer things that I learn—because six months or a year later I won't remember the details, and if I've put them online, I can look them up.

Craddock's book was more work than publishing one of my own books, because I didn't have an electronic copy of it. I had to scan it and do the OCR thing. Optical character recognition. But I bought some good OCR software, Abbyy FineReader, and this actually wasn't nearly as hard as I thought it would be. It took about a month.

And then I thought, well, as long as I can make e-books...yeah! It's like I was building a fallout shelter. I'm going to have safety here. It was already looking as if I might not be able to sell *Turing & Burroughs*, but I was gearing up to publish it myself.

Before I got to that point, I decided to publish my *Complete Stories*, another test run. Some people said, “How do you know it’s your *complete* stories?” I said, “I’m going to upload a new version every couple of years.” It doesn’t mean I’m never going to write another story! A comprehensive story collection is a hard type of book to sell to a publisher. They aren’t going to pay you anything for it, so you might as well do it yourself.

Then I thought, “I’m going to learn how to do a print book too.” That was a lot harder. I had to learn how to use InDesign and, speaking as computer professional, this was the hardest software I’ve learned to use. Harder than assembly language, harder than the C++ debugger. At least for me. But I finally got over the initial hump, and at this point, producing another book as an e-book and a paperback should be pretty easy for me. Assuming I haven’t forgotten everything I learned over those seven months that it cost me.

I haven’t yet posted the details of how to make a paperback book—it’s an order of magnitude harder than making an ebook. But I’ve made some notes and I’ve bookmarked a lot of useful webpages I found, so I think I can still find my way back into the process. It’s kind of like blundering around in a jungle wildly hacking at shit with a machete, and at some point you’ve reached the Lost Pyramid, and you don’t really know how you got there, or which parts of your path were completely unnecessary sidetracks. I do want to write it up after I’ve done it one or two more times. But at this point it’s like a fever dream.

In any case, the process was interesting. And, again, it was a way of avoiding writing.

So anyway, by the time I’d finished learning how to self-publish, I realized I really wasn’t going to be able to sell *Turing & Burroughs*. The manuscript had been floating around out there, and nobody was making an offer. I thought, “Okay, I’ll do it myself.”

It’s a meager cash stream, but it’s steady, and it lasts for a while. and, as I mentioned, you can sell e-books direct by yourself. I have my site for Transreal Books. I’m a publisher. Oddly enough, I’ve already made about as much money off *Turing & Burroughs* as I would have gotten as an advance from Tor. I’m selling fewer copies, but I earn a lot more per book.

Q 393. There’s a lot of new models for publishing, and for supporting yourself as an author.

A 393. Crowdfunding intrigues me. That’s the missing piece of self-publication: getting a cash advance.

In the *Locus* interview with the younger writer Tim Pratt, he was talking about doing Kickstarters, and again as an old school writer, I have trouble wrapping my mind around that—spare-changing people. But I talked to Tim, and he told me the amount of money he gets, though, and

it's good, so I might give Kickstarter a try. People like my four *Ware* novels, and I might some day do a Kickstarter for a fifth one. Or maybe do one for *The Big Aha*.

There's another thing that happens these days, you can get paid for speaking, or for commissioned projects. It's like the way bands make money from appearances rather than selling CDs—it's a personality thing. Cashing in on your brand.

Just recently I got a nice piece of money from the Institute for the Future to write a short story called "Apricot Lane." It's about what's going to happen when all objects are networked. And I went to two of the Institute for the Future events. In all, they paid me about as much as Tor would have given me as an advance for a novel, just to write this one short story and to be on a couple of panels.

Q 394. Is there anything we've left out?

A 394. My latest story with Paul Filippio, "Yubba Vines," is in the July, 2013, *Asimov's*. It's about space lobsters using traps to catch people.

Collaborating is one thing you see in science fiction that you don't see much in mainstream literature. A literary person might say it's because we're writing worthless crap, that we're like house painters. But I don't know why that should be true. Jazz and rock music have people collaborating a lot.

I've really enjoyed my collaborations, because when you're a writer, you're alone a lot of the time. I wrote four surfing & SF stories with Marc Laidlaw a while back, which was a blast—but Marc's into been into game design for the last few years.

I've written maybe seven stories with Bruce Sterling, one with Terry Bisson, two with John Shirley, one with Eileen Gunn, and six with Paul Di Filippio.

Sometimes the collaborative stories seem better than the ones I write on my own, although it annoys me when critics say that. They collaborations have extra texture.

I mentioned that I tend to argue with Bruce when we write together, but I really love how our stories come out. Our friction kicks them up a level. Paul is incredibly easy to work with, a pro's pro, genial, affable, a Joycean wordsmith. Terry says I'm the only person he's ever collaborated on a story with. He has this dry, spare, Zen style. John brings dark weirdness, and he comes up with great dialog and some intense empathy. I loved working with Eileen, it was so nice to have a woman in the mix—she finds these great jokes that I wouldn't have thought to make. With an affectionate but jaded view of men.

Q 382. And tell us about the novel you're working on. *The Big Aha*.

A 382. *The Big Aha* is set in Louisville, Kentucky, where I grew up, and I'm enjoying that. If you stay in Louisville, then all the people around you are people you've known your whole life, and you can pretty much say anything to them. Nobody cares. I've been visiting Louisville lately, and it's strange.

I'm pretty close to done with the novel now, maybe 85% of the way. I enjoy writing books about genomics and the biotech revolution. I think that's going to be one of the really big technologies of the 21st century. We're still just barely wading into that. I don't think it's unreasonable to suppose that in a century or so, lots of our devices won't be manufactured machines anymore. They could be plants and animals that have been designed to behave in ways that we consider useful. Even things like a knife or a glass, it's easy enough to imagine plants growing such things for us. Primitive peoples drink out of coconut shells, but we could tweak it so it's more what we like. And for communication devices, there's all this interest in squid skin—that would be a great visual display. Electric eels send out electromagnetic pulses, so that could be the basis of wireless communication.

I wrote a book a few years ago called *Frek and the Elixir*, set in 3003, where everything was biotech. I wanted to come back to a world like that. In *The Big Aha*, I wanted to have a book where the technology is based on living things. It's not set too far into the future, more like 2100.

I was born in 1946, so the Summer of Love was the year I graduated from college. I really liked that period. It was over so quickly. It was getting really good, and suddenly it was over. I wanted to have a story where something like that was happening, but I didn't want it to be based on drugs. By now everyone has ossified opinions about drugs, they're for them or they're against them. It sort of closes the imagination.

I wanted to have something to give people a cosmic experience. I thought, "I'll use quantum mechanics." As a science fiction writer, there are various nebulous "bogosity-generator" tools I can use. Something about quantum mechanics that interests me is there are two modes in quantum mechanics. You can think of the world as evolving in a smooth wavelike pattern, but then as soon as you start measuring things, you find a choppy discrete pattern. It's what they call the quantum collapse, the collapse of the wave function.

In my own mind, I feel like there's a pulse, where I'll sort of merge into the place around me and then snap back. Say it's a nice day, and you're not really verbalizing to yourself, you're not really forming opinions in your mind, you're not doing anything consciously. And then you snap back and you think, "There's so-and-so, I have to ask them for something; it's such-and-such o'clock, I have to get in the car and go somewhere." There are two modes, and I call them the cosmic mode and the robotic mode. It's almost like sonar—you ping out with the cosmic mode and you pull back with the robotic mode.

The gimmick in *The Big Aha* is that people get quantum wetware. “Wetware” is already an intriguing word—it’s what’s going on in your body, your DNA, your chemicals. And then make it quantum, so you can consciously control how rapidly you do the oscillations between the cosmic mode and robotic mode. So my characters are party people, they just wedge their minds open to the cosmic, and they’re cosmic all the time. It’s like they’re acidheads, but they’re not taking any drugs. And they can teep each other. And instead of mechanical technology it’s all biological, so instead of a car you have a road spider, and you ride on its back. The animals you create can have quantum wetware as well. You can get in the vibe with them, and make them change their form. And so the world becomes more spacey.

Then, of course, you always need something bad to happen in a novel. It’s always good to have an alien invasion. So there are these things like mouths sticking into our world from another dimension, and they’re eating people. I call it *The Big Aha* because people always have the dream of getting the Big Aha! The big vision beyond the white light. My characters are seeking that. There’s also the Zen idea: “I was looking for enlightenment but it was here all along.” Just for a moment, you feel it—the big aha.

Q 382. Publication plans for *The Big Aha*?

A 382. I’m not sure who’s going to publish it. At this point I’m unsure about my chances with publishers. And I’m starting to wonder if they’re worth the months or even years of waiting, and the begging for such meager pay.

I’m putting a little more sex into *The Big Aha* than I used to do for my Tor books. David Hartwell once said to me, “If you’re talking about the 13-year-old audience, there are some 13-year-olds who are very interested in sex, and some who aren’t. And you can guess which group is the one that reads science fiction.”

Not that *The Big Aha* is mainly about sex. But maybe it’s hard for me to judge what’s acceptable. Like I’ve been out there so long that I don’t even know what’s supposed to be normal. In any case I’m having a lot of fun with the book.

I like using the classic tropes of SF—I call them the “power chords.” That’s how I thought of cyberpunk, as a way of taking the classic SF things, like alien invasions, telepathy, giant ants, and making them rock a little harder. That’s what I’m doing in *The Big Aha*.

I’m confident I can publish *The Big Aha* with Transreal Books. Maybe I’ll do a Kickstarter. We’ll see how it goes.

Portland, Oregon, August 4, 2013

From: Beverly Orth

For: Paper for a literature course

Q 383. I'm writing a paper about the critical reception of David Foster Wallace's book *Everything and More: A Compact History of Infinity*. I saw your 2010 review of the book in *Science*, and wonder if your negative opinion of the book changed? Do you think that the book could have been improved if the author's tone had been more self-deprecating? If you were judging the book purely on literary merit, are there characteristics of the book that you think are exemplary, others that you think detract from the book's success?

A 383. My opinion of *Everything and More* hasn't changed, although I haven't reread it.

Certainly the book's tone was a problem in that Wallace's tone is that of being very knowledgeable, even though, as I explained in my review, he made some really crippling mathematical errors, and he failed to properly cover several essential aspects of the mathematician Georg Cantor's work, such as the nature of alef-one, and Cantor's interest in theological and physical infinities. One might also say that the tone is somewhat manic, even for Wallace.

But the main problem, as I mentioned in the review, is that so much of the book is squandered on the subject of uniform convergence, and at the end of these *longueurs* Wallace gets the statement of the theorem wrong. I also had a problem with Wallace ending the book with dismissive remarks about the deaths of Cantor and the mathematician Kurt Gödel. I met Gödel several times as a young man, and I thought of him as a friend and a mentor. These men were giants, and they deserve respect.

I don't think it would make much sense to judge a non-fiction factual book on "purely literary merit," unless one were to view the book as deliberate parody of a non-fiction book and I don't think that was the case here.

As for stylistic aspects that are exemplary, certainly the opening pages of *Everything and More* are very engaging, and I still smile when I think of the chicken's "warm-up pecks." And Wallace's fond recollection of his high-school math teacher is touching.

As far as the facts go, my harsh review was logically justified. But, I must confess, there was an element of malice. My thinking was that the publishers could equally well have asked me to write this short book on infinity and Georg Cantor, and that I might have done better job. In other words, I was envious. Even so I was also thinking that, at some level, Wallace might find my review amusing. I was in some sense adopting a Wallace-type technique of pushing my style to an exaggerated extreme.

I have a lingering sense of regret about my review, and I don't think I'd ever write a strongly negative review again. It leaves a bad taste. It's better to say nothing. Writers' lives are already hard enough. And of course I'm troubled by the fact that Wallace committed suicide four years

later. In certain moods I worry that my bad review might have contributed to his final depression, although realistically I don't think this is at all likely. It's more probable that, as intended, Wallace found my review funny, or that he dismissed it out of hand.

Factoid: Wallace's editor sent me an early print-out of the book manuscript, still in a rough typed form. I would have liked to help correct any errors, and I offered my assistance to the editor with fact-checking. But he said there was no time and that all he wanted from me was a blurb. I didn't want to write a blurb at that time, nor to read a rough manuscript, so I didn't fully read the book till *Science* happened to send it to me to review. After my review, Wallace's editor wrote me a disappointed or even angry letter claiming that he'd had the book "vetted by a mathematician." But certainly it had not been checked carefully, at least not by a mathematician who was knowledgeable about set theory.

My guess is that Wallace took the contract for *Everything and More* because it seemed like an interesting project, that he ran out of time while working on it, and that he was unable to properly finish it. His inexperienced editor was also in a rush, and he didn't really get the book properly checked. Too bad.

Not that the average person cares about this tempest in a teapot. My impression is that *Everything and More* did fairly well, considering its esoteric subject matter. I wish Wallace were still alive, and I wish I could have met him. Even if he erred at times, he was a wonderful author.

Durham, North Carolina, December 16, 2014

Interviewer: Monica Byrne

For: Damien Walter's blog

Q 384. When I read your "Transrealist Manifesto," it was an uncanny experience, like I was reading a step-by-step description of my writing philosophy for *The Girl in the Road*. Except you'd written it when I was two. So first of all, thank you for articulating that mode of expression, then and now.

Can you point to a moment in time when you realized that science fiction literature wasn't saying what you wanted to say—that there was a niche that needed filling?

A 384. In the '70s, when I was trying to publish my very first novel, *Spacetime Donuts*, I got a provoking comment from the SF master Frederik Pohl: "This is a fascinating read, but it's *not science fiction*." Naturally my feeling was that SF had to change. Indeed, much of the SF of that time seemed flat and uncool to me.

I was coming from a place where my favorite writers were Kerouac, Pynchon, Borges, and William Burroughs. I wanted to do the Beat thing of having my novels reflect my life; I wanted to have fabulous yet logical twists in my stories; and I wanted to use rich language. I

believed in SF the same way I believed in rock'n'roll. Selling to the mainstream literary market wasn't something I even wanted to try.

Eventually I was able to get *Spacetime Donuts* serialized in an SF zine. And then, early in the '80s, with *White Light* and *Software*, I was able to start publishing my SF novels in paperback. And then cyberpunk hit, and I had a few good years. My cyberpunk novels had a transreal core. Like in *Software*, the old man Cobb Anderson is modeled on my father. And the mad Sta-Hi Mooney, he's a guy I used to hang around with. Of course, to some extent, both of these characters are me. As Phil Dick wrote in the afterword to his transreal *A Scanner Darkly*, "I myself, I am not a character in this novel: *I am the novel*."

Q 385. Your novel *The Secret of Life*—the first book of the *Transreal Trilogy*—follows Conrad Bunger, an alter ego, through adolescence and early adulthood. He has a lot of experiences with drugs, including a peyote trip I don't envy. I'm very square in comparison—the most serious thing I've ever done is pot, and the most exciting thing that happened was that I fell asleep to Elton John's "Tiny Dancer" on repeat. But I remain very curious—reality is already pleasurable surreal to me, and it seems like drugs would make it even more so.

Do you think you would have conceived of transrealism without drugs?

A 385. Oh, I would have thought of transrealism anyhow. It's not useful to try and reduce an artist's ideas to drugs. Like, was Hieronymus Bosch high? Would it matter? You don't really see other people painting like Bosch, no matter what they ingest.

This said, in the old days I did like smoking pot after hours, and I took psychedelics three or four times. Part of the appeal of getting high may be that it makes reality feel like SF. We tend to maintain an ongoing subconscious narrative about the world—naming and classifying the things we hear and see. When you disrupt that, you're in a position to see the world raw, rather than seeing it as you've been taught.

And, as you mention, it's possible to get into this mode of perception without being high. My writer friend Gregory Gibson terms this "the ongoing Venusian space-probe sensation." It's the sense that you're seeing the world as if you're a space probe sent by "Venusian" aliens, and you're observing humans and their customs from the outside.

Q 386. Speaking of observing from the outside, traveling is a sure way to unglue my mind from consensus reality. I remember my first time traveling abroad to Sorrento, Italy, and thinking that the very soil and air were different, but in ways I couldn't articulate. What was your first experience traveling abroad?

A 386. Travel gets you into that special mode of seeing reality bare. In my daily life, many of my thoughts and actions are like computer macros or like automatic apps. I'm half asleep. Travel wakes me up. It nudges me into my alert Venusian space-probe mode.

My first trip to Europe was in 1953. I was seven. My mother, brother and I went to visit my grandmother. They still hadn't finished cleaning up from WWII—there were great mounds of rubble that I was warned not to play on And I encountered a man who scared me. If I were to write a story about this time, I might chose to sharpen the strangeness with transrealism. Like: alien eggs were lurking beneath the rubble, and the scary bum wanted to implant an alien larva into my flesh. More expressive that way, less been-done.

Q 387. You've said before that your wildest dream is to be able to fly, and that you dream about it a lot. So do I. In fact, I'm pretty sure I flew down the stairs once when I was really little. That seems very common in children (and adults who still admit it to themselves). What are your flying dreams like?

A 387. I know exactly what you mean about having the feeling that you once really did fly down the stairs. And that's a good idea for a transreal story—I think it's been used before, but you could make it your own.

I have a habit of pondering the objective correlatives for the events in my dreams and in my transreal novels. I don't try to do this in any doctrinaire sense of hammering every nail home. It's more a way figuring out what I'm doing, so that I can fatten up the texture of my fiction a bit more.

I've noticed that in many of my flying dreams, I'm hovering about eight feet off the ground, perhaps lying horizontal in the air, and I'm talking to my family and acquaintances who are, as usual, standing on the ground. And the galling thing in these dreams is that none of the people ever notice that I'm flying. I'll mention it to them, even yell about it, but they obdurately refuse to acknowledge that I, Rudy the writer, am in fact floating at a level slightly above their heads.

Q 388. Like you, your *Secret of Life* character Conrad Bunger goes to a Catholic school even though he's not Catholic. Given that my Catholic background has had a profound impact on my writing, I wondered: what effect, if any, did observing that culture influence yours?

A 388. As an Episcopalian, I was very much an outsider at my Catholic high school. But I relished the feeling. Given that I felt alien anyway, it was nice to have the situation made real and objective and externally observable. It's like the way that a paranoid might feel relieved when the police really *are* following him.

In terms of me putting quirky religions into my transreal SF novels, I was more heavily influenced by the experience of living in Lynchburg, Virginia, in the early '80s. At that time Lynchburg was the center of the right-wing evangelist Jerry Falwell's empire. God's little joke to put me there, with cyberpunk aborning. A *long* joke. We lived in Lynchburg for six years.

Q 389. *The Secret of Life* is, to me, a very touching portrait of adolescent alienation—in this case, expressed as being an actual alien who chooses to stay on Earth. I've often had the same feeling—that I don't really belong here, but am choosing to stay for the time being. Do you still feel that way, as you get older?

A 389. Ah yes, the continuity of the ongoing Venusian space-probe sensation. Forever hovering eight feet off the ground with nobody noticing.

When I was younger, it made me uneasy to realize that I see the world differently than most people. Or at least I see things differently than most people *admit* to. And my oddball impressions of reality are something that I happen to be eager to talk about. Even though, at times, it feels like society's forces are working to silence me.

But I was never the only outsider. I always have few bitter, rebellious friends whom I can relax with. Generally these are fellow mathematicians or hackers or SF writers.

At another level, I've come to realize that pretty much everyone alive has strange, idiosyncratic views. People pay lip service to the mind-controlling propaganda imposed upon them by the media—but deep down they don't believe much of it. And that's why there's an audience for those who dare to step forward and speak.

Unconventional and transgressive ideas—they resonate with people. Momentarily surprised and awakened—an audience will laugh. It's a laugh of recognition. My books tend to seem funny. But I'm not exactly a humorist. I'm trying to tell the truth.

Q 390. Ah, "truth." A word that means something vastly different in different disciplines. You're both a scientist and an artist—do you think everything in the universe is ultimately knowable by the scientific method as we currently understand it?

A 390. Oh, of course not. We've only had what we now call "science" for a couple of hundred years. How likely is it that we tiny creatures in this tiny backwater of the vast cosmos would so quickly have found a path to an ultimate answer?

If we could fully open our eyes to the world around us, perhaps we might begin asking better questions about it. I'm fond of hylozoism, that is, the ancient doctrine that everything in the world is alive. We're

educated to think this isn't true. But it makes for an interesting program of thought experiments to imagine that the things around you are not only alive, but conscious, and perhaps even able to talk with you. My novels *Postsingular*, *Hylozoic* and *The Big Aha* are a transreal product of such ruminations.

Q 391. Fantastic—I need to read them. You helped found a tradition I identify with, after all. In an October, 2014, column in the *Guardian*, Damien Walter proposed that transrealism might be called “the first major literary movement of the 21st century.” What’s your take on that?

A 391. These days, a large number of literary novels are using tropes drawn from SF. The reviewers tend to avoid that label as—not entirely without historical justification—SF is reflexively viewed as being subliterate and beyond the pale. Instead of being tarred with the SF brush, these new mainstream novels are termed visionary or speculative.

So, what the hey, why not call them transreal? Transrealism might be regarded as a modernistic literary mode that’s a bit like magical realism. But instead of magic, we’re using SF. For my own taste, magic or fantasy are a little too gauzy, a little too anything-goes. I enjoy the SF tropes because they give us something concrete and seemingly logical. Instead of yearning for the past, a character uses a quirk of spacetime to go there. Rather than being crazy, someone has a brain parasite. A loving couple attain a state of mutual radiotelepathy. Not only is a young person alienated, they’re actually from a UFO.

Using SF tropes in a novel gives an author a sense of perspective on things, a way of backing off just a bit from the bewildering present, a way to get something of an overview. As William Gibson put it in a 1997 interview on CNN, “I actually feel that science fiction’s best use today is the exploration of contemporary reality rather than any attempt to predict where we are going... The best thing you can do with science today is to use it to explore the present. Earth is the alien planet now.”

Rudy. Before we wrap this up, Monica, I’d like to ask you a couple of questions. I just read your excellent novel *The Girl In the Road*. It has two interwoven threads, a pair of journeys by two women. In one thread, a woman walks thousands of kilometers along a sea-spanning structure called the Trail. Taken a transreal tack, what are some of the things that the Trail represents to you and/or to your character?

Monica. Ah yes. To me, *The Girl in the Road* is a translation—transrealization?—of my twenties. Specifically how I dealt with losing my mother to cancer at the beginning of it. And the Trail itself is a transrealization of the round-the-world trip I went on when I was twenty-

seven, where I finally learned to take care of myself instead of giving that responsibility to others—I “grew my own mother,” in a way.

There’s also something about the simplicity of the Trail—metal, sky, sea, nothing more—that echoes the meditation practice I started during that decade, when I realized the Catholic tradition I’d grown up in was no longer meeting my needs. The Trail is like insight meditation. You’re perfectly unencumbered, and at the same time, you have no place to escape yourself. Perfect solitude, and the fruits and flowers of it, is a theme that has always appealed to me.

Rudy. In the second thread of your novel, a girl is journeying across northern Africa on a freight truck. To me, this journey had a science-fictional feel—as we have a character passing through territories that are wildly unfamiliar. Like travel writing by an alien. Can you tell me a bit about how the novel’s African journey relates to the your experiences?

Monica. Being a tourist *is* a lot like being an alien! It’s also like any experience of radical newness. Writing from the perspective of a runaway seven-year-old girl in the future who’s never been outside Nouakchott (my character Mariama), is a transrealization of the perspective of a twenty-seven-year-old tourist woman who’s never been to Africa and will never really belong there (me). I drew on the senses of wonder, alienation, and apprehension common to each. Of course, the correspondence only goes so far: I also had to do extensive research on Mauritania, modern-day slavery, early trauma psychology, and so on.

People sometimes ask me what’s “real” and what’s “not real” in *The Girl in the Road*. And they don’t mean what’s autobiographical/not—they mean what’s really happening to Meena and Mariama, as opposed to what they’re perceiving. But I just don’t really see a difference. Meena encounters a hot dog stand in the middle of the ocean; Mariama sees a little girl with black wings. Both of those are entirely in keeping with my lived experience. We see breaks in consensus reality all the time, but only some of us choose to register them. I just want to say, “Have you been paying attention? Do you know how *weird* this world is!? Let the strangeness in. It’s real, too.”

Los Angeles, May 12, 2015

Interviewer: G. Brown

For: A fanzine called *nerds of a feather, flock together*.

Q 392. In a panel during a Cyberpunk Day event at USC in April, 2015, you recalled how cyberpunk emerged in reaction to the prevalent “arena rock” quality of science fiction in the 1970s—its emphasis on spectacle, elitism and tired, endlessly-rehashed tropes. Fans of the era, Rucker suggested, were comfortable “wallowing in their castles and

space-navy bullshit.” Cyberpunk aimed to transgress, disturb and upend these conventions and expectations.

Arguably we stand in a similar position today. Bruce Sterling, speaking on the same panel as you, argued that science fiction lacks a “rhetoric of the 22nd century” analogous to the rhetoric of the 21st that served as the pulse of 20th century science fiction. Similarly, the critic Paul Kincaid has framed the problem as one of “exhaustion”—a loss of faith in the idea that the future is knowable, and consequent retreat to formal explorations, the old “castles and space navies” tropes, and the comforting simplicity of nostalgia (including for cyberpunk).

As Sterling and Kincaid both note, few practitioners seem to be looking forward and engaging in rigorous speculation on the future. Yet even in this environment, there are voices within the community loudly complaining that science fiction is too challenging, too intellectual—essentially that it is not ‘arena rock’ enough.

So my question is: What does science fiction need to do, or be, or try to do or be, to break out of its current inertia? What would it take, in today’s environment, to restart the kind of transgressive thinking that fueled cyberpunk? What lessons can writers, critics and fans draw from the 1970s and 1980s, and what should they specifically ignore about that context?

A 392. That’s very much a multipart question, G man. So I’ll give a multipart answer, breaking it into sections with italicized headers.

Why SF?

When I’m talking aloud I get loose and I say things that I wouldn’t write in an essay. So it’s amusing to hear that on the USC Cyberpunk panel in 2015 I spoke of “castle and space-navy bullshit” as being kinds of SF that I don’t enjoy.

My point was that I prefer to see SF that’s about ordinary kinds of people, as opposed to being about aristocrats, power elites, military officers, or police. To this end, I often use my so-called transreal approach of basing my characters on myself, my friends, or people I casually know. It’s a way of making the SF real, and not veering off into the writing about generic kinds of characters. Above all, I don’t want to base my characters on characters in movies, TV show, or other books I’ve read. I want them to be real people in a SFictionally doctored world. I want them to be transreal.

I like the idea that SF acts as a funhouse mirror to show us what our current lives are really like. And there’s the persistent wishful hope that SF might raise people’s awareness and somehow change the world. Like, during the long years when the US was under the yoke and lash of the Bush-Cheney administration, I made a point of writing novels in which the US President was a stupid and evil man—I had Dick Too Dibbs in *Hylozoic*, and Joe Doakes in *Mathematicians in Love*. I was doing my part

for political change—as surely as if I’d been handing out leaflets door to door. It almost goes without saying, by the way, that a transreal book is intrinsically antiestablishment. The goals of individuals are forever antithetical to the goals of power elites.

The Birth of Cyberpunk.

Jumping back to the birth of cyberpunk—it’s not like it was a considered and well-thought-out campaign. In 1980 my biggest beef with the SF scene was that my books weren’t getting much attention. I’d hoped to find a home in the SF world, and I had a feeling I wasn’t welcome there. And now in 2015, thirty-five books later, I have much the same feeling about SF!

My 1980 malaise about SF mirrored the fact that, in the wider world, the system was bent on grinding me into dust. I’d barely escaped being sent off to die in Viet Nam. I was unable to get a secure academic job. Our nation’s leaders hated me. I’d fled reality for SF, and I wasn’t welcome in SF—so then what? Then I was lucky enough to meet some people who were writing like me.

I’ve sometimes compared cyberpunk to Beat literature. The Beats had Jack Kerouac as their angelic voice and Allen Ginsberg as their agitator. We had William Gibson for our star. He’s a sheerly wonderful writer—a master of language, aphorism, imagery, characterization, and attitude. And we had the manic, motor-mouthed, confrontational Bruce Sterling for our advocate.

I met Allen Ginsberg in person around 1981, and I asked him how it was that the Beats had gotten so much press. His answer: “Fine writing.” We cyberpunks were very focused on being good writers. We wanted to write avant garde, high-lit books that used the tropes of SF, with the added factor that our books had a rebellious, anti-establishment quality—the punk thing. And, of course, we dealt with the uneasy fusion between humans and machines. The cyber thing.

Trad SF and Crypto-SF.

Fast forward to 2015. Has the publishing category of SF become as plastic and bogus as it was in 1979? Time for another revolution! Is the SF industry being run by tiny cartel of greedy multinational corporations and book distributors? Is 99% of the attention and money going to 1% of the writers? Are the Nebulas and the Hugos complete bullshit?

Could be, seekers, could be.

Just in passing—you mentioned the rhetorical question of whether the SF publishing niche needs *more* badly written, middlebrow space operas and thrillers populated by emotional ciphers. Do billionaires need more tax breaks? Does the media run too many articles about art? Is TV news too liberal? Is the right wing being oppressed? Is science taken too seriously by congress? Is global warming a hoax?

No, no, the majority of the books being published under the science fiction label really are quite dull and generic these days. The other day I was looking at the SF rack in an airport shop. Yeeecchh. It really *is* like the late 70s.

But, unlike the old days, that's not the whole story. If you're a regular reader of, say, the *New York Times Book Review*, you will have noticed that a *lot* of recent mainstream novels have SF elements in their plots. I'd guess that fully a third of all new mainstream novels are crypto-SF.

Of course the tame mainstream critics never use the SF label when enthusing over these new books. The works are visionary, speculative, powerfully imagined, and magical—but they're *not* science fiction. Couldn't possibly be. The *New York Times* doesn't review SF.

Breaking In and Dropping Out.

So where does this leave the ambitious, literary, independently-minded young author of the genre formerly known as SF? Well, even now, the SF publishing system does grant newer writers with a certain novelty credit. Nobody ever knows what's going to sell, and they have to hedge their bets. So you do have a possibility of selling a non-traditional, transreal, politically subversive novel. Your novel, launched in the usual blaze of no publicity and no reviews, will probably bomb. Maybe you can sell a second, but not a third. And then what?

Maybe, if you're enough of a shapeshifter, you can knuckle under, bloat up, and dumb down. Or maybe you can manage a YA book. Or maybe you can sell into the mainstream market—although, if you have a track record as an SF writer, the mainstreamers will be loath to consider you. You're tainted. Potentially subliterate.

So then you might go hat in hand to a series of small publishers, abasing yourself in the hope of no advance, a shitty cover, an ugly font, no ads, five free author copies, and potentially iffy royalty payments! (Just rhetoric here—I really do love my small press friends.)

Or maybe you get into self-publishing. That's where I've been at for my last two novels. It's not bad. A little like being under house arrest. If you put in seven or eight painful months of trial and error, you can figure out how to create legit-seeming PDF interiors and covers for print-on-demand paperbacks. Plus you'll make ebooks for the Kindle and other readers. And you can sell your paperbacks and ebooks via Amazon and maybe via the one or two pipsqueak alternate venues that still happen to exist. If you do all this yourself, it doesn't cost you anything—although you do need to get access to some software along the lines of InDesign, Dreamweaver, Photoshop, Sigil and Calibre.

A plus is that, as a self-pubber, if you're pushy and high-profile enough, you can run a Kickstarter to score the equivalent of a cash advance for publishing your book. Really when you crowd-source and offer rewards, you're doing advance sales of a collector's edition. You're

likely to score more money this way than you'd get from a small press, and maybe even more than you'd get from an SF industry house.

Reforming SF.

But these are the perhaps too gloomy musings of an old man. What about the dream of writing a style of SF that changes the genre and gets noticed by the wider world? Okay, that's possible.

Certainly it helps if you can band together with a couple of other writers. Starting an online ezine is a good way to do this. In my opinion, online ezines should be free—especially if you want a lot of people to read them. Forget about nickel-and-diming your initial readers, if you can get a groundswell of interest going, then you'll be making money at the back end of the process, that is, when you start selling books or Kindle singles or commercial stories.

I had a little experience with this in publishing and editing my ezine *Flurb* from 2006 to 2012. You can read all thirteen fab issues free online at www.flurb.net. It was fun for me to be in touch with other writers. Shout-outs to: Adam Callaway, Brendan Byrne, Eileen Gunn, Cory Doctorow, James Worrada, Kek, Emily Skafun, Leslie What, A. S. Salinas, Wongoon Cha, Mac Tonnies, Rudy Ch. Garcia, Bruce Sterling, Charlie Jane Anders, Madeline Ashby, Bef, Jon Armstrong, Paul Di Filippo, John Shirley, Seth Kallan Deitch, Anna Tambour, Howard Hendrix, Cody Goodfellow, Kim Stanley Robinson, Charles Stross, Martin Hayes, Alex Hardison, Ian Watson, Christopher Shay, Charles Platt, Lavie Tidhar, Th. Metzger, Kathe Koja, Carter Scholz, Michael Blumlein, Tamara Vining, Danny Rubin, Annalee Newitz, Marc Laidlaw, Richard Kadrey, Ernest Hogan, Terry Bisson, Doug Lain, Brian Landis and all the other deviants involved.

Flurb did get some notice—we were getting hundreds of thousands of hits. It was art, and it was interesting, but did we change the face of SF? Hard to say. It's not clear that our lumbering multinational commercial publishers ever look at anything but spreadsheets. A cultural democracy in action, with every consumer-dollar a vote. And just look how wonderfully democracy does in selecting the very cream of the crop to serve as our representatives in the Congress!

Another angle for changing SF from within is to start writing about a set of ideas that haven't really been touched upon yet. That's a true and hardcore kind of SF endeavor. It's not easy. You have to get yourself to look at the present day world with new eyes—as if you're a Martian. You pretty much want to forget about all the SF plots and futurist-type prognostications. In the same sense that your characters shouldn't mirror characters in existing works, your ideas shouldn't mirror futurist ideas that you might read in magazines.

A good rule of thumb here is that if most people believe something—then it's wrong. Consider: a hundred years ago, the human race pretty much didn't know jack shit about science or modern

technology. A hundred years from now, just about every single bit of tech that we're using today is going to be gone. What's going to replace it? Anything you want. Make up the weirdest shit you can think of. Be optimistic. Why not a new force of nature? Why not aliens from the subdimensions? Why not telepathy with every single object that you see?

Pile on the bullshit and keep a straight face. As the immortal David Lee Roth said, "It's not who wins or loses—it's how good you look." If you and your friends can make your books fun and quirky, then maybe the soggy, stodgy SF ship of state will change its course.

Abandoning SF.

Or maybe at this point it's impossible to change the commercial genre known as SF. In 2015, there's an alternate path. What if you sidestep the SF publishing niche, and shoot for mainstream publishing from the start?

It could be that the whole SF publishing industry is on its way out—or down. There will still be some great science-fiction books, yes, but they'll be called something else. Transreal, visionary, speculative—like that. And the hidebound old trad SF label might really be fated to descend into subliterature. Maybe in ten years nobody will even consider publishing a good SF novel under the old SF rubric. Maybe the old category has been eaten by parasitic Martian blimps with electric news-crawl letters on their sides, or by institutional politics left and right, or, more simply, by cultural dynamics and the processes of media change.

It's a bit sad. For me, it's like I grew up in a nice small town—cue the silo-fulla-corn nostalgia routine—and I go back thirty years later and it's all strip malls, and the city core is stone cold dead. As the Pretenders put it in *My City Was Gone*: "Ay, oh, where did you go, Ohio?"

The big loss for us mad-scientist, freakazoid, pinpoint-pupil SF nut-cases is that the mainstream market is harder to break into than SF publishing. Here in the nest it's kinda okay for us to write funny. Me, back at the very start I was so daunted by the whole Brahmin Mandarin *New Yorker* vibe that I never tried selling into that market at all. I liked the idea of being an SF writer. I liked the image of being a rock and roll musician instead of an orchestra violinist.

But...if the orchestras are trying playing rock and roll, however ineptly, why not try for a gig with them? If you keep your soul, you'll still be writing SF. Maybe better than before. Educating the squares. Showing them where it's at.

Many paths, many futures.

Write on.

Further Reading.

In the DIY punk tradition, I self-published my *Collected Essays* as an ebook in 2012, and in the fuck-it hacker tradition, I also posted the essays as free webpage. Google "Rudy Rucker essays." Relative to the

topics I've touched on here, you might check out "What is Cyberpunk," "Cyberpunk Lives," "New Futures in SF," and/or "The Great Awakening."

San Francisco, June 12, 2015

Interviewer: Daniel Bogan

For: "The Setup," a webzine at usesthis.com

Q 393. Who are you, and what do you do?

A 393. I'm a writer and a painter, and I spend a lot of time online promoting myself, building my brand, expressing myself, connecting with friends, whatever. I maintain a large website which includes a blog and a number of webpages relating to my individual books. I have a Paintings page as well, where I sell some of my paintings online. I also post a number of podcasts via the Rudy's Podcasts station. I self-publish some of my books and I have a separate website for this: Transreal Books. And I take a lot of photos, many of which I post on my blog.

Q 394. What hardware do you use?

A 394. I run Windows 7 on my computers. I have a honking big desktop machine with a pair of RAID drives and not enough RAM (12 Gig). My son Rudy Jr. built the machine for me six years ago. My monitor is for shit, it's over ten years old, it's a ViewSonic, a VP191b, it used to be considered good. It's in the old-school 4x 3 aspect ratio, which I prefer. I turn the monitor so it's a vertical rectangle like a sheet of paper. I use a Microsoft ergonomic keyboard, and I have a trackball on the left and a mouse on the right.

I've used ThinkPad laptops for many, many years, I've gone through about four of them. I like their keyboards, and I like that they're black. Just last week I got a new one, an X250 with a touch screen, and all solid state memory. I don't like the 16 x 9 aspect ratio, it's like a frikkin' letter slot. In my opinion that ratio is for people who mainly use their laptop for watching videos—as opposed to writing novels. But I'm making the display work for by using narrow margins in my documents—which makes for longer lines. And I've reduced the spacing between lines—in Word, you can tell it to put 1.4 spaces between lines, as opposed to double space, single space, or one and a half space.

Also the keyboard layout on the Thinkpad X250 sucks, and the little touchpad control is flaky. I feel like all the time I'm wrestling the keyboard layout. It's horrible. Why did they have to revamp it? I don't know if I can live with it or not.

I'd been telling myself that this time I'd get a Mac Book Pro, or Air, or the new plain Mac Book. I like the keyboard on the Mac Book Pro a lot, but not on the thinner ones. But in the end I didn't make the change.

Maybe I feel like I'm giving Apple enough by using an iPhone. I could get into the whole Apple vs. Microsoft "religious war" here, but that's a tired topic.

But the Thinkpad keyboard and touchpad are bugging me so much that I may just get that Mac Book Pro. Take a loss on the Thinkpad. I'd probably run Windows on the Mac Book so I can use my existing (expensive) Adobe CS6 Windows software. I have a lot of the Windows moves pretty well taped down into my muscle memory, so for me the system is very easy to use. And I like the intricate fractal structure of the Windows options. For several years I taught Windows programming with Visual Studio C++ at San Jose State, so I feel safe in that OS. I know what's under the hood.

For regular printing I have an HP LaserJet 2055dn, which works great, I love it, except that the printer cartridges cost about \$100. Basically when you buy a cartridge you're buying a printer. The printer on my desk is really just a docking station for the cartridges.

For printing color prints of my paintings, I have a Canon Pro9500 Mark II, which is a very fussy and demanding machine. Very hard to get a good print out of it—I've finally learned to print from Adobe Photoshop, to use the "Photoshop Manages Colors" option, and to use the "Absolute Colorimetric" option. If I don't do those last two things, the prints look like shit, and I'm burning through the ten incredibly expensive and tiny little bottles of varicolored Canon ink, and I'm using up my incredibly expensive heavy-duty Canon art print paper. I always forget how to use that printer,, as I only make prints about one year, like when I have an art show. And each time it's printing day, I make about ten crappy prints before I home in on some workable right settings.

For painting, I use oil on canvas. I buy prestretched canvases. I use Galkyd as my medium for the paint, and use Galkyd gel to get impasto. My studio is a plastic table and chair in my backyard which works as it's usually sunny in California. Simple. No computers.

I've been shooting photos for about 55 years, and I've had a lot of cameras. The best camera I ever had was a Leica M5 I got second-hand from a photo-journalist, and like an idiot I then traded it for a cruddy Leica R3—this was forty years ago, and I still grieve. I'll never be rich enough to own an M-series Leica again, and really they're *so* overpriced nowadays. Just recently, however, I got hold of a nice old-school-look camera, it's a Fujifilm X100T—despite the name it's a digital camera. I love it. It's too big to be a pocket digital camera, but it's got real presence in terms of the images it captures. Like the Leica has.

The reason I got the Fujifilm was because it's a fixed-lens compact—no zoom. I've had about four or maybe five pocket zoom-lens digital cameras, like a Canon S90 and an S100, and more recently a SONY RX100, and every frikkin' one of these cameras died in the same way: the zoom lens started jamming, and then the only fix is buying a new lens assembly—I know that people online will tell you, "Oh, just pound it

on your desk and it'll start working again," but that's complete bullshit, at least in my experience. A new lens assembly costs close to \$200, which is iffy, given that the camera costs maybe \$500 or, if it's an RX100, \$700. Actually I really *liked* my Sony RX100 so I did shell out for the new lens, but I want to "teach it a lesson." So I'm hanging with my hot new Fujifilm shooter instead. Take that, RX100.

I have a heavy-duty Canon 5D Mark I that I've been using for about fifteen years. It's way too heavy to carry around all the time, although of course it does take the best photos by far. The main thing I use it for is getting good photos of my paintings. I use the images for my online painting page, of course, but crucially, I use the images for prints, and for the illustrations in my paintings book *Better Worlds*, which I revise every year or two.

I have a pocket-sized Sony audio recorder for taping my talks, it's an SX733. And then I put the talks online as podcasts—although the whole concept of podcasts eluded me for a long time. For a long time, all I did was to post downloadable / streamable MP3 audio files online. But then finally I figured how to set it up so that podcast readers can treat this collection of files as a station called Rudy's Podcasts. And they can subscribe to it for free.

The microphone in a pocket audio recorder is of course for shit, and the cheap \$50 Sony plug-in microphone isn't much better, so now I got a heavy Sony Electret mike that has a battery in it. It's an ECM 44b, and I had to buy a Kopul LMT-100 converter so I can plug it into the tiny pocket recorder. The Electret mike gives me *much* better sound. Pro quality.

So that's the hardware situation around here.

Q 395. And what software?

A 395. I've used Microsoft Word for about thirty years and, like with Windows, the commands are all in muscle memory. And I frikkin' hate it when a command changes or, worse, when a new computer has the keys arranged in a different way. I've written a few macros to simplify tasks, but basically it's just straight Word. When my writing is going well, the words flow down out of my brain, through my fingers, through the keyboard onto my screen, and there's no conscious awareness of the interface.

Browser? Firefox. Email? Thunderbird.

For visual things I have Adobe CS6 products that I own. I plan never ever to go up to the Adobe rent-as-you-go package, for me CS6 was the end of the line. I got a wholesale price on the software as I had a former student of mine working at Adobe for awhile, and he'd become a friend. I use Lightroom, Photoshop, Dreamweaver, and InDesign.

Lightroom is great for maintaining my photo library and doing lightweight image tweaks. When I really to bear down on an image, like

for a book cover, I go over to Photoshop. Dreamweaver is my web design tool, the one problem is that it lugs/lags if I have a superbig HTML file that I'm tweaking. Sometimes I'll just dump a single giant book, like my *Complete Stories*, into a single giant web page for free online reading. You can find the page on the web.

I got into self-publishing about three years ago—I'd published about forty books with "real" publishers, but then they decided I wasn't earning enough for them, and they dropped me. I fell off the long tail. But I didn't want to shut up. So I started doing my own books as ebooks and as print books. For print, I upload a PDF of the book to CreateSpace at Amazon and maybe to Lightning Books as well, and they print the books as people order them.

Even though I'm an emeritus professor of computer science, it was really hard to learn how to make ebooks and print books. So many gotchas. I've worked with Sigil (which is still good even though it's not the same person maintaining it), Calibre, and especially with InDesign. I now have a workflow where I'll write the book in Word, import that into InDesign, tweak it so it looks like a real printed book, export a PDF for the paperback and maybe hardback versions. And then I can also export an EPUB from InDesign, and I can use Calibre to turn that into a MOBI for Amazon. Now and then I use Sigil to tweak something in the EPUB.

I sell my ebooks via Amazon mostly, but I also sell them direct using a product called E-Junkie, and I list them as Nook books on B&N, and maybe on Apple iBooks, but those last two channels are kind of a "why bother" thing. It's all about Amazon ebooks. And with my direct E-Junkie sales of MOBI / EPUB ebooks, I can satisfy those who'd rather not buy from Amazon.

Q 396. What would be your dream setup?

A 396. To barely use a computer at all. Just paint, and read paper books, and write novels in Word, and have sycophantic, well-paying agents and publishers take care of the rest of it. Bring me meals, get me speaking gigs, send me and my wife on vacations.

In closing, I'll put in a plug for my latest book, an 820 page tome called *Journals 1990-2014*. I'll be giving a reading from it at Borderlands Books on Valencia St. in San Francisco, and I have a show of my paintings there as well.

Seattle, February 29, 2016

Interviewer: Liz Argall

For: [Lightspeed](#) webzine.

Q 397. You have been referred to as one of the parental units of cyberpunk. What do you think of your kids? Do you have any particular dreams for the grandkids?

A 397. I'm not as up-to-date on younger SF writers as I should be, so I can't answer this really well. Charles Stross is young enough to be second generation cyberpunk, and he's great. Cory Doctorow, Paolo Bacigalupi, Hannu Rajaniemi, Madeline Ashby, and Charlie Jane Anders too. Widening the focus, it feels like cyberpunk and what I call transreal SF are becoming modes used by mainstream high-lit writers. Some of them don't actually understand SF well enough to make it work—like maybe they've read *1984* or something—and the results are pathetic. But David Mitchell, Margaret Atwood and George Saunders are mainstream writers who can hit the SF mark really well. I'm generally disappointed by today's SF movies. They often have kind of a cyberpunk feel, what with the neon light reflecting on rain wet streets. But, at the movies, the future drugs are dull. The hackers are autistic. The heroes are in league with the cops. The robots are evil or childlike. Nobody ever laughs, nothing interesting happens, and, may god help us, the big AI is a face on the wall with a stewardess voice. I was encouraged, a couple of years ago, by the movie *District Nine*, but cyberpunk isn't a mode that comes easily to giant corporations. I wish they'd break down and base some movies on my *Ware Tetralogy*. It's under option once again, so I have a spark of hope.

Q 398. You wrote a pretty passionate manifesto for transrealism in the early 80s, see <http://www.rudyruker.com/pdf/transrealistmanifesto.pdf>. How has your relationship to transrealism evolved over time?

A 398. In short, transrealism means writing fantasy or SF that is in some way based on your actual life. You're steering clear of received media ideas and trying to write about your daily reality in a warped way. SF tropes become objective correlatives for your psychic drives. At times, I've based transreal novels on specific swatches of my personal history—such as college, say, or my experiences working at a software company. But these days I'm more likely to write what I call cubist transrealism. That is, I don't go for a full reality-encrypted roman a clef. Instead I shatter my daily experiences into surreal frags and tessellate them into a tale. The juxtapositions generate the story and plot.

Q 399. In your transrealist manifesto you cited the importance of organically finding a story, what might be described as sketching rather than plotting. I'm intrigued to see how many of your paintings are part of your novel writing process. Could you tell us a bit more about how your visual arts practice and writing practice interweave and feed into each other?

A 399. It's the left-brain / right-brain thing. Part of my mind fabulates tales and thinks in words. Another part of my mind sees images and dreams up flash. It's useful to do a drawing or even an oil painting that relates to whatever might be in one of my upcoming chapters or stories. The paints and canvas do a lot of the work. I shove the colors around and see what I get. By the way, you can see my paintings at www.rudyruicker.com/paintings. Of course, if I can get loose, my writing can be that way too. Sometimes I'll be tempted to go with a completely crazy and out-there scene, even though, in the current terms of my story, it doesn't make sense. Turns out it's almost always better to go with that impulse, and to do the gnarly scene. You and the readers want to have fun and to see wild things. And you can patch in an explanation later. Another lesson from painting is that revisions are easy. You can always paint over a fence or daub in a tentacle. It's just paint, it's just words.

Q 400. A couple of questions about your story "Knobby Giraffe." Why a giraffe? And why the philosopher Gottfried Leibniz's cryptic essay, *The Monadology*?

A 400. For many years, I kept journals, where I'd write about my thoughts and moods, and about things I'd read or see. Last year I published my *Journals: 1990-2014*. While editing the journals, I made notes of entries that suggested story ideas. One particular entry, from 2004, was about me being alone in a motel in the North Beach area of San Francisco, and how I'd woken up early, and I'd read the whole of Leibniz's short book, *The Monadology*, while lying in bed. *The Monadology* is pretty close to being incomprehensible. It's way out there. Leibniz seems to say that our universe is an assemblage of "monads" which reflect each other, and each monad has the whole world inside it. And, naturally, it struck me that an idea this crazy ought to be used in an SF story. And—here's the pro surrealist-in-action part—as soon as I thought of that, I immediately thought that each monad should resemble a knobby giraffe. With brindle patches on it. A zap from the muse. Those little black antlers on a giraffe, they're like joysticks, see, and you could wiggle them to control the appearance of the world. The knobby giraffe! Very clear in my mind. So, okay, I'd written this journal entry in 2004, and I came across it again in 2014, and a year later I found a way to put that image and the *Monadology* rap into the heart of an SF story. I often start with a cool image or situation, and I grow a story outwards from there, filling in the gaps with transreal story cubes.

Q 401. I was so surprised by this story's happy ending! Messing with reality in this way never works out well, we've been taught that in stories time and time again! Were you surprised by the ending when you

got there? Was breaking the standard expectations part of your plan all along?

A 401. I think it might be easier to write a sad ending than a happy one. Sad or *meh* endings are a cultural default. People think a downer ending is tough, and hard, and realistic, and it's bravely facing facts. So when you write a happy ending, you have to do it with the right touch, or people might think you're corny or weak. But if you nail a happy ending, people like it. I almost always give my novels happy endings. People already know that life's a bummer. So why rub that in their faces? We're talking about escape literature, friends. Fairy tales. Entertainments.

Q 402. How has working with other writers affected you? You edited thirteen issues of the webzine *Flurb*, you've taught a few writing classes, and you've collaborated on about twenty-five stories with other authors.

A 402. It was fun editing *Flurb* and being able to help other writers get into print. And interesting to be on the other side of the table—looking dispassionately at stories and making suggestions about how they could work better. But when you teach a workshop instead of editing a magazine, the students tend not to take your advice. It's not like you're going to pay them or get them into print. Why should they listen to you? They might feel like they wrote the story once, and that's enough. Even so, it helps *me* to try and tell them how a story could work. The most writing feedback I get is when I collaborate on a story with someone. There's different ways of doing this. The easiest is if you just take turns, adding a thousand or a couple of thousand words at a time, and then you're done. I learn from closely observing how the other writer bends the story and develops the characters. Sometimes collaborating is harder—like with Bruce Sterling. Over the years, I wrote nine stories with him. Rather than just adding new stuff when it's his turn, Bruce tends to go back and revise what I've already written. And then I have to think about his changes, and possibly even be angry about them. But in the end the stories always work out, and I learn a certain amount from the ordeals, like about tightening and cutting. We recently published the Bruce and Rudy stories as an anthology called *Transreal Cyberpunk*. The transreal aspect of the book is that each of the stories has two characters, and the characters are always based on Bruce and me, although in different ways from story to story.

Q 403. What are you working on now?

A 403. I've been writing on a novel for a little over a year. *Million Mile Road Trip*. It's about three high-school kids driving their car really far on a giant flat world. I like road trips, and I have some cool aliens, and

we've got a war against the flying saucers. Lots of wonder, it's funny in spots. I'm slanting the book so it could be viewed as a YA novel, but it could work equally well as adult SF. I'm not sure if I can sell a novel to a big commercial publisher anymore. Over the years I sold twenty novels to the big houses, but somehow I've been edged out of that scene. And I tend not to want to bother with the small indie houses. So these days my default option is to run a Kickstarter to get the equivalent of a decent book advance, and then I self-publish in ebook, paperback and hardback via my Transreal Books. I've learned how to make it work. I'm still not ready to quit. Writing makes me happy.

Hoboken, April 29, 2019

Interviewer: Jeff Somers

For: [B&N SciFi & Fantasy Blog](#)

Q 404. This is Night Shade's "Year of Rudy Rucker," which feels way overdue. You've published 23 novels—where would you recommend a Rucker newbie get started

A 404. Yep, Night Shade is issuing ten books by me this year—nine reprints along with *Million Mile Road Trip*. A matching set of print books with great covers. I'm not sure I'd say this is way overdue, but I'm really glad it's happening. If you're an author, having your books in print is the blood of life. Which of my books to start with? Whichever one you get your hands on. I do like *Mathematicians in Love* a lot..And *Saucer Wisdom* is a hoot. But this week I'm gonna say that *Million Mile Road Trip* is a good place to start! Could be the best book I ever wrote.

Q 405. *Million Mile Road Trip* seems like it takes inspiration, in part, from both Kerouac and Pynchon—with maybe a snort of *Rick and Morty*-your word "smeel" evokes "shleem" from that show a bit. Were they in your mind while you were writing?

A 405. For sure I thought about Jack Kerouac and Thomas Pynchon—Kerouac for his flow and his cosmic yea-saying. And Pynchon for the humor and long sentences and his use of the present tense. The SF cartoon show *Rick and Morty* has escaped my keen attention thus far, but I'll check it out—I'm a huge *Futurama* fan.

The word "smeel" is one I've used before in my SF. Sometimes I invent words and they hang around like pets. To me, "smeel" sounds inherently funny. It's a somewhat slimy and perhaps ethereal substance that fills up empty spaces in your body or brain. A parasite who's latched onto you might say, "Our smeel is one."

Q 406. Your companion book, *Notes for Million Mile Road Trip*, is actually longer than the novel! The idea of following up reading a novel with that kind of metadata is fascinating; can you tell us more about it?

A 406. It's hard to write a novel. It takes a year or maybe two years of tickling the keyboard at your desk, or using a laptop in a cafe, doing that pretty much every day, even on the days when you don't know what comes next. This is where writing a volume of notes comes in. When I don't have anything to put into the novel, I write something in the notes. I might analyze the possibilities for the next few scenes. Or craft journal entries about things I saw. Or describe some of the people sitting around me, being careful not to stare at them too hard. Or wheenk about how hopeless it is to try to write another novel, and how I've been faking it all along anyhow. The more I complain in my notes, the better I feel. I publish the finished *Notes* in parallel with the novel, not that I sell many copies of the notes. Longterm, the notes will be fodder for the locust swarm of devoted Rucker scholars who are due to emerge any time now from their curiously long gestation in the soil.

Q 407. What's amazing about a book like *MMRT* is how you take some pretty high-level math and science and turn it into a rollicking sci-fi adventure. How do you manage that balance?

A 407. I'm blessed with a knack for drawing on both sides of my brain—the techy science side, and the dreamy literary side. I always wanted to be a writer. I was a huge fan of the SF master Robert Sheckley, and of the Beat author William Burroughs. And Jorge Luis Borges and Thomas Pynchon. And Flannery O'Connor. I studied math in college and grad school. Math always appealed to me. So clear and so intricate—the hidden machinery of the world. It is, as you say, a delicate balance to have a book be lively, with romance and fun characters—and also to have it be based on logical science ideas. In studying math, I learned about starting out with some set of assumptions like, say, Euclid's postulates or the axioms of transfinite set theory, starting out with a set of rules and then deducing what follows from them. In my SF novels, I'll make some wild, far-out initial assumptions. But from then it's logical, and I get to see what ends up happening. I don't really know in advance, not before I write the novel. That way it's surprising and fun. I'm not trying to *teach* things to my readers. I want them to be amazed and to laugh and to be carried away.

Q 408. You've been called a groundbreaker in genre—from your foundational writing in cyberpunk and transrealism, to being the winner of the first Philip K. Dick Award ever. What's your take on the modern state of sci-fi, and what do you see for the future of the genre?

A 408. I'm not much involved with factions and fashions in the SF community—although I do have my old cabal of cyberpunks, transrealists, and the writers I published when I was running my webzine *Flurb*. An odd recent phenomenon is that lots of mainstream authors are writing SF. But they won't admit it's SF. Lifelong literary-SF writers like me find this ... irritating. It's like the upper crust authors can dip down into our world—but they don't want to let us out. Even if we're writing high lit. I always think of Kurt Vonnegut's line, "I have been a soreheaded occupant of a file drawer labeled 'science fiction' ... and I would like out, particularly since so many serious critics regularly mistake the drawer for a urinal."

Q 409. It's been thirty-six years since you published *A Transrealist Manifesto*, and some argue that with the mainstreaming of sci-fi into popular-culture transrealism, we've reached a turning point where transrealism will soon be the baseline for sci-fi stories. Do you agree, or is it more complicated than that?

A 409. The idea behind transrealism is that you write in a fairly realistic way about your life and your feelings and about the lives of those around you—but then you bring in SF elements that can stand for subtextual aspects of your mental life. Like time travel stands for nostalgia and hope. And uploading your mind to a computer stands for going to heaven. And telepathy stands for someone actually understanding what the eff you're talking about. And alien stands for people from different backgrounds. When you come down to it, everyone's background is different, and everyone you ever meet is an alien. Or maybe a zombie or a robot. The SF tropes are objective correlatives for things we have trouble writing about. And, yes, this transreal approach can be a baseline for present-day lit.

Q 410. You're considered a founding force in cyberpunk, and transrealism can be seen as a refinement or a response to cyberpunk; how do you view the genre today? Any new writers you consider true cyberpunks?

A 410. I'll mention some cyberpunk authors who aren't exactly *new*, but they're younger than me.

* Charles Stross's *Accelerando* is a feast, an extravaganza, and one of the most important novels of the 21st Century thus far.

* Cory Doctorow's *Walkaway* is a revelation, a deeply imagined design for a new society.

* Annalee Newitz's *Autonomous* pops open the cyberpuzzle of who the robots, androids, and humans are.

* Christopher Brown's *Tropic of Kansas* is the most radical novel I've seen in years. A call to arms.

* Madeline Ashby's *Company Town* is a wonderful evocation of the dark cyber near-future vibe.

* The merry and demonic Charlie Jane Anders's *The City in the Middle of the Night* is next on my reading list. I never know what she'll do.

* And while I'm at it, a shout-out for Ursula Le Guin and *The Left Hand of Darkness*. So heavy, so eye-opening, so hypnotic.

Q 411. You also paint, and have received notice for your artwork, which favors surreal sci-fi themes. Are there connections between your painting and your writing?

A 411. I started painting in 1999 because I was writing a historical novel, *As Above, So Below*, about the life of the artist Peter Bruegel. I wanted to get a sense of what it's like to paint. Over time I got to enjoying it more and more. I've done almost a hundred and seventy paintings by now. I'm not a great draftsman. But with paint, you can push it around and layer it until it looks like what you want. And then of course you ruin it, and fix it, and ruin it again, and fix it, and eventually you stop.

I like how painting is completely analog. No keyboard and screen. Smearing paint on a canvas. I love it. When I'm unsure about an upcoming scene in a novel, I do a painting that relates to it. Not an exact representation, more like an evocation. Like dreaming while I'm awake. Writing is like dreaming, too. You get out of your way and type.

Q 412. Unlike a lot of sci-fi, your writing often seems driven by a desire not to just be amazed, but to *understand*, and your fiction is stuffed with details about science, math, and often obscure pockets of the world. What current obsessions are making their way into your work?

A 412. This takes us into the thought-experiment aspect of science fiction. When you turn your speculations into an SF story or novel, you go deep. You live in that imaginary world with your characters for weeks or months or even years. You unearth unforeseen glitches, and you move to higher levels of strange. Before I write a novel, I need an idea for something odd that I want to see happening.

One thing on my mind lately has been telepathy—I call it teep. I think it's technically close enough that I could write about a teep biz startup. And I see a way to make it new. Another beckoning theme is politics. It's stressful to write about that stuff. But these days, there's a feeling that authors should speak up. So I plan to edit a special political SF issue of *Flurb* later this summer.

Looking further ahead, I want to write about a heretofore unnoticed force of nature. It's at the subquantum level. It relates to dark energy, and to consciousness. And once we get it tune with it, we'll have all the free energy we need, and we'll be able to live inside electrons, like

in my novel *Jim and the Flims*, and to predict the future from soap films, like in *Mathematicians in Love*, and to levitate, like in *Million Mile Road Trip*, and to talk to rocks, like in *Hylozoic*. But I know there's something more than even that, something wilder and deeper, something super new that will, in retrospect, seem obvious and natural. We'll be, like, why didn't we think of that before! I hope the muse shows me.

Q 413. You've been a professional writer and a publisher for decades; how has the business of getting your words out there changed in that time?

A 413. The biggest new thing is the ebook. Ebooks are literary immortality; they don't ever go out of print. And writers can publish ebooks themselves for free. Not only that, writers can publish print books for free, too. And you can sell your self-published ebooks and paperbacks on big online sites such as Barnes & Noble. Personal freedom to publish to the world audience is a huge deal. No gatekeepers.

The catch, however, is that if you self-pub, it's hard getting people to notice you. Including my nonfiction, I've published about forty books. And the first thirty or so were from commercial publishers. But in 2012, the publishers temporarily turned their backs on me. Like, "We've heard enough out of you!" But I wasn't ready to quit. And thanks to the new channels, I didn't have to. I learned how to self-pub my own ebooks and paperbacks—I did my *Collected Stories*, my *Journals*, three novels, and an art book. I call my imprint Transreal Books. I ran Kickstarters for the self-pub books, which took the place of getting publishers' advances. It was a lot of work.

And now, hallelujah, Night Shade Books has taken me into their fold. I'm back in the tribe and off the ice floe. I'm glad.

North Sandwich, New Hampshire, May 7, 2019

Author Profile Questionnaire

For: [*Shelf Awareness*](#) webzine.

Q 414. What's on your nightstand now?

A 414. I just finished John McPhee's old geology book, *Assembling California*. In these times it's soothing to realize there's a deep history running across hundreds of millions of years. Right now I'm reading Alberto Urrea, *The House of Broken Angels*. It's such a great view of Mexican-American culture, with funny scenes, wisecracks, and tear-jerking moments. The merry and demonic Charlie Jane Anders's *The City in the Middle of the Night* is next on my reading list. I never know what she'll do.

Q 415. Your favorite books when you were a child?

A 415. I loved the world of C. S. Lewis's Narnia books. And Beverly Cleary books like *Ribsy*, *Henry Huggins*, and *Ramona the Pest*. And a picture book by Robert Lawson, *McWhinney's Jaunt*—about a professor who rides across the country on a flying bicycle, held aloft by “Z gas” in its tires. I read all the Robert Heinlein novels, and especially liked *Revolt in 2100* and *Tunnel in the Sky*. I was a huge fan of the SF master Robert Sheckley's *Untouched by Human Hands*. And when I was fourteen, I got hold of the Beat author William Burroughs's *Naked Lunch*, which I found on my big brother's bookshelf. Burroughs showed me that you can write about anything at all.

Q 416. Who are your top five authors?

A 416. How about Flannery O'Connor, for her quirky, colorful tales in *A Good Man is Hard To Find*. Getting into SF, Charles Stross's *Accelerando* is a feast, an extravaganza, and one of the most important novels of the 21st Century thus far. Cory Doctorow's *Walkaway* is a revelation, a deeply imagined design for a new society. Annalee Newitz's *Autonomous* pops open the cyberpuzzle of who the robots, androids, and humans are. Christopher Brown's *Tropic of Kansas* is the most radical novel I've seen in years. A call to arms. And while I'm at it, a shout-out for Ursula Le Guin and *The Left Hand of Darkness*. So heavy, so eye-opening, so hypnotic.

Q 417. A book you've faked reading?

A 417. The philosopher G. W. F. Hegel is my great great great grandfather. And I'm very interested in philosophy. But somehow I've never managed to get through Hegel's epic tome, *The Phenomenology of Mind*. But I have read enough of his extensive preface to refer to it now and then. Hegel mentions that when you want to see an oak tree in its full vigor and richness of leaf and branch, you're not satisfied to see an acorn. To me this suggests the useful idea that we might think of an oak tree as being the output of a wetware program that was contained inside the acorn.

Q 418. What's a book you're an evangelist for?

A 418. I really love William J. Craddock's autobiographical novel from 1970, *Be Not Content*. It's about the early days of the psychedelic revolution, and it's very deep and funny. When Craddock wrote his book, none of our current notions about the Sixties had been laid down and fossilized. The novel is wonderfully fresh. By 2012 it had been out of print for over forty years, and used copies were insanely expensive. So I took it

upon myself to republish it. I formed my own Transreal Press, got permission from Craddock's widow, and set about learning how to self-publish paperbacks and ebooks—a useful skill. I've also published a few of my own works via Transreal Press, but *Be Not Content* remains the best seller.

Q 419. How about a book you've bought for the cover?

A 419. A record album whose cover pulled me in was R. Crumb's cover for *Cheap Thrills* by Big Brother and the Holding Company, featuring Janis Joplin. And soon after that came a book with an equally alluring cover, *R. Crumb's Head Comix*, also of 1968. A good year. My wife and I were newlyweds. Crumb's mind-warps and humor definitely had some influence on my fiction.

Q 420. A book you hid from your parents?

A 420. I grew up in Kentucky, and in the University of Louisville bookstore I found a text on types of mental illness. As a budding young author, I had to consider the option of going mad as an early career move. I got the book, and I'd look through it to find symptoms that I might be having, or that I might be able to convince myself that I had. It drove my parents nuts to see me do that. As if I weren't already enough trouble!

A 421. What book changed your life?

A 421. David Foster Wallace's novel *Infinite Jest*. I read it when it came out, in 1996. I skipped most of the stuff about tennis and focused on the parts about the characters who were in recovery from drug and alcohol problems. Very funny, warped and colloquial writing. I was almost fifty years old, and I was realizing that I needed to clean up my own lifestyle. It was inspiring to read about the people in *Infinite Jest*. They made sobriety seem feasible.

Q 422. How about a favorite line from a book?

A 422. It's hard to top William Burroughs, although I can't vouch for my textual accuracy. In one of his books, a native lad tells the explorer protagonist. "You win something like jellyfish, mister. Or it win you." Soon after that, our hero is covered with a slimy mollusc-like substance, and the boy tells the man, "Skin like that very hot for two, three days. Then...wearing the happy cloak!" Burroughs was definitely an influence on my science-fiction. Indeed, in my cyberpunk *Ware Tetralogy*, I even have some symbiotic creatures called happy cloaks. You wear them over your shoulders, and they poke fangs into your spine through the nape of your neck. But they're your friends, and you like them. Oh, and speaking

of great lines, how about James Joyce's description of the night sky in *Ulysses*: "The heaventree of stars hung with humid nightblue fruit."

Q 423. What are five books you'll never part with?

A 423. Oh, let's just do one. A fat one. Thomas Pynchon's *Gravity's Rainbow*. I reread it ever five or ten years, reveling once again in the man's wit, and the richness of his prose. I've persistently been trying to write like Pynchon over the course of my twenty-three novels, and in *Million Mile Road Trip*, I think I finally got close. Some Pynchonian elements: Write in the present tense, like a person describing a movie. Use close-in third person viewpoint where thoughts of the focus characters spill onto the page. Use some very long sentences, with phrase after phrase being added on, like you're a carpenter working your way out on an increasingly rickety scaffolding that you're assembling as you go along. And allow yourself an occasional fourth-wall-breaking exclamation, like, "Maybe this is going a little too far."

Q 424. What book do you most want to read again for the first time?

A 424. A volume of stories by Jorge Luis Borges. *Labyrinths*, say, or *Collected Fictions*. When I first read Borges, I was stunned at the richness of the trove. "Tlön, Uqbar, Orbis Tertius," might have been the very first of his stories I found. It's a crazy-sounding title, but that's as it should be. The tale is about the discovery of an encyclopedia about an unknown planet with "its emperors and seas, its minerals and birds and fish, its algebra and fire, its theological and metaphysical controversies." All this in a single short story! And "Funes the Memorious," where Borges describes a youth with a perfect memory. "He knew the forms of the clouds in the southern sky on the morning of April 30, 1882, and he could compare them in his memories with the veins in the marbled binding of a book he had seen only once, or with the feathers of spray lifted by an oar on the Rio Negro on the eve of the Battle of Quebracho." Borges stories are my notion of what fantasy and science fiction ought to be. Truly other, and utterly wondrous.

A 425. Books you'd still like to write?

A 425. Before I write a novel, I need an idea for something odd that I want to see happening. One thing on my mind lately has been telepathy—I call it teep. I could write about a teep biz startup. And I see a way to make it new. Looking further ahead, I want to write about a heretofore unnoticed force of nature. It's at the subquantum level. It relates to dark energy, and to consciousness. And once we get it tune with it, we'll have all the free energy we need, and we'll be able to live inside

electrons, like in my novel *Jim and the Flims*, and to predict the future from soap films, like in *Mathematicians in Love*, and to levitate, like in *Million Mile Road Trip*, and to talk to rocks, like in *Hylozoic*. But I know there's something more than even that, something wilder and deeper, something super new that will, in retrospect, seem obvious and natural. We'll be, like, "Why didn't we think of that before!" I hope the muse shows it to me.

Washington DC, June 15, 2019

Interviewer: Chris Richards

For: *Debussy Ringtone* print zine.

Q 426. Most of your novels and stories are optimistic. Why?

A 426. The media are awash with bad news. But this is a custom, and not a reflection of reality. My theory is that bad news (a) makes people more fearful and more likely to accept repressive rulers, and (b) makes them more likely to buy distracting expensive things. Media, the Man, and Mammon work in concert. It's not really true that the world is worse off than it's ever been. Flip back through history, and things are *always* a mess. We're all going to die. That never changes. Why obsess on it? I prefer to have some fun in the time that I have. And to hell with the daily news.

When I'm writing an SF story, I'm describing an alternate world that I'm inventing on the spot. I want to see interesting characters, good dialog, rad mind warps, surprising plot twists, rich vocabulary, eyeball kicks, and unheard-of science. I'm like a painter who prefers bright colors to blacks and grays. There's good as well as bad. Unknown natural laws await. Aliens might be friendly. A novel can have a happy ending.

This said, I'm not above killing off a main character in any given book. You need chiaroscuro, that is, some dark against the light. It's nice to pump up a big operatic scene where a good person dies. But, do note that I do like someone's death to be a big deal—and not just have a stranger shoot a person in the back of the head and have everyone be, like, "Oh, *sigh*, that's the way it is in this boring vale of tears, and now let's parrot some media headlines."

I think you said you only wanted three hundred words? Wow, that's not many! I'd hoped I'd be able to go on and write about—*erk*

Indiana, Pennsylvania, July 1, 2019

Interviewer: Robert Penner

For: *Big Echo* ezine

Q 427. Your relation to mainstream SF is somewhat skewed, in fact you're even skewed relative to the cyberpunk genre you helped found. I see your writing as relating to the genealogy of Dick and Vonnegut and

Ballard and Bradbury—folks who challenged the dominant tone of SF. You seem to have remained always an outsider. Now with the publication of *Million Mile Journey* and nine other transreal novels by Night Shade Books it would be interesting to hear how you would characterize the trajectory of your career in relation to other literary movements—both in genre and out.

A 427. I came into SF writing without ever having been to an SF con, nor having met any SF writers. I didn't know anything about the trade. I liked science fiction, Beat literature, black humor, and Jorge-Luis Borges. *Gravity's Rainbow* in 1973 hit me like an atom bomb.

In 1976 I got to a point where I felt able to write a novel. I wasn't sure I could do it, but I started typing and in a month or two I had *Spacetime Donuts*. I wrote about social oppression, and about a cool new science idea I had. I made my story move fast, with witty dialog, funny bits, and eyeball kicks. Rabble-rousing entertainment that makes the readers think.

That's been my formula ever since. A lucky twist of fate threw me together with the rest of the cyberpunk writers. We happened to be writing roughly the same kinds of things at the same time. It had to do with the historical period. There are distinctions among the cyberpunks, but we all had that in-your-face, rebellious, delirious, post-Sixties, here-come-the-robots vibe.

Over the years, I've collaborated with quite a few writers on SF stories. We share ideas, and styles, and we learn from each other. But it's more like a circle of friends than a literary movement.

I refer to some of my SF as *transreal*, meaning that it's inspired by my real life, just as many Beat works were. I use SF tropes to pep up the work and to make it more fun. In the 21st Century, transrealism is catching on among non-genre literary writers. People like to draw from the SF palette to make their novels flashier, or more *au courant*. Playing with our modern myths, our new archetypes, our new subtexts..

I always go too far to be a reliable, board-certified member of any school. I get all gleeful about making my tales weird, and I add a Bosch-load of kurios krittters, and I tie the science in knots, and I rant venomously against quantum mechanics, and I have someone holler, "Kill the Pig!"

From my point of view, everything I write is strictly logical. And please don't call me gonzo. I'm a highly educated craftsman, not a drunk with a chainsaw.

Re. being an outsider, the eminently quotable William Gibson says his work isn't about the future, it's about the present. The pretense of writing SF allows an author to take a step back from our quotidian world—and to see it more clearly. It's a move akin to writing a novel from the point of view of an insane person, or an animal, or a child, or a person on their death-bed. An outsider's point of view.

Thing is, just about everyone thinks they're an outsider. It's part of the human condition. So people relate to outsider books. But I'm a *far* outsider.

"Hi, I'm from Dimension Z, and I'm going to paint your portrait. Or, no, wait, are you painting me? Or—am I the paint?"

Q 428. You plunge fearlessly into religion and religious experience. I think there's a Blakean quality to your work, a sort of Beat willingness to indulge in mysticism, which is uncommon in SF. Where does that come from?

A 428. Certainly Kerouac and Ginsberg talk about the world as Holy. And consider this startling remark by my role model, William Burroughs in *Naked Lunch*: "Gentle reader, we see God through our assholes in the flash bulb of orgasm." I used to think about that one a lot, trying to remember to look at just the right time—but *how do you see through your asshole*—and anyway I'd never remember to try, being of course distracted at those peak moments.

God is everywhere—that's the perennial philosophy which had a resurgence in the Sixties. If you're worried about dying—and if you're not, you're not paying attention—if you're concerned about your mortality, then surely you find succor in the mystical belief that you're part of the One, that is, irrevocably merged with the eternal and omnipresent All. *The Big Aha*, as I called it one book title, or the *White Light*, as I named it in another.

It's pretty easy to notice that the Absolute is all around you, no? Some don't agree. They think we're lifeless junk bouncing around in an idiot wind—but who wants to hear that shit? Saith the psalmist: "The fool hath said in his heart, There is no God."

The mystic vision isn't at all rare in SF. Higher transcendence at the end of a story is, as Bruce Sterling once told me, "a standard move." Bruce always sounds sarcastic, no matter what he's talking about, and that's how he tricks you into thinking he's smarter than you.

Does a dog have Buddha nature? The fool hath said, there is no Dog. The universal rain moistens all creatures. Are you wet yet?

Q 429. Since I mentioned Blake it might be a good moment to talk about the relation between what you write and what you paint. Could you could say a few words about working across media? How does that kind of play across forms shape your ideas?

A 429. I think it's the *attitude* that's the important thing. The specific ideas—well, I always just think about the same few things, whatever I'm doing. Sex, gnarl, color, sounds, and the now. I'm here in this rich, amazing reality and—I *can't believe it!* My family teases me. "Be quiet, Rudy. You always say that."

So, okay, I have no mind. It's my attitude that's the key. What kind of attitude is needed in order to write, or paint, or take photos, or to assemble a zine from arbitrary grunge mailed in by strangers?

Be loose. Spontaneous bop prosody. Forget yourself. Keep it bouncing. Ruin it, fix it, ruin it again. Make it fun. Revise, revise, revise. God is in the details.

Painting has made some of these practices clearer to me. Like the whole concept of painting over an awkward patch—yeah. And the importance of popping the colors and working the chiaroscuro.

If I'm painting to match a sketch, it's a drag, and it doesn't really work. It's better when I'm mindlessly dabbling, just following the shapes and the colors, and letting my brush loose. Ditto for writing. I don't worry too much about outlines. I prefer surprise. If the action takes over, and the characters are talking, and I'm dreaming while I'm awake, and transcribing what I see—that's when it's good. I'm in it so deep that I'm gone.

Q 430. How about the relations between mathematics and language. The thing that makes a mathematical idea elegant—is it similar to what makes a short story good?

Q 430. Mathematics is a rich storehouse of shapes and processes and forms. You don't necessarily have to be a trained mathematician to appreciate these riches. But you do have to read some popular math books.

The biggest new technique for exploring math is computer simulation. Realtime self-generating graphics. I'm an avid devotee of continuous-valued cellular automata. They're like gnarlier, funkier versions of Conway's classic Game of Life. I put these into my early cyberpunk novel *Software*—as constantly moving patterns within the piezoplastic skins of my robots.

Chaos, fractals, and Stephen Wolfram's work have changed the way I see the world, and the way I think about it. I wrote about this in my non-fiction tome *The Lifebox, the Seashell, and the Soul*.

It's kind of hard to explain the ideas in just a few words. A key insight is that any interesting natural process—like an ocean wave, or a leaf twitching in a breeze—a process like this is fundamentally unpredictable. It's too complex and gnarly for there ever to be a quick, short-cut way to know in advance what it'll do next. But, and here's the kicker, these processes are *not random*. Unpredictable, but not random.

That's also the nature of your mind. You don't know what you'll do next. But that doesn't mean you're mentally flipping a coin. You're like a chaotic, incompressible computation. Things emerge. You're dancing with nature's gnarl.

And here I circle back to address your question. A mathematical idea or a story is elegant if it looks simple and clear, but a lot of deep thought that was needed to create it.

It's hard to do this because you can't think faster than you can think. Especially if you're doing something like writing a story or designing a math gem. You're running at the maximum possible flop. Your only hopes of a happy outcome lie in experience, patience and grace. And if it comes together—it's elegant. A gift from the Muse.

Q 431. The theme of this issue is SF and the avant-garde. What do you see as the role of the avant-garde in science fiction?

A 431. The vital heart of SF is essentially avant-garde. We're writing about different realities, and using a style and vocabulary that's a bit off-kilter. Arbitrary scenes with no foundation in fact. Expressing psychic states in physical form. Imagining societies that are totally different from ours. Zooming in on the true oddness of that actual world.

There's a particularly close association between SF and Surrealism. An ant that's a thousand feet high! A woman who lives inside an atom. Dreams turned into crystals and sold on the street. It's a rich bazaar.

SF is, however, a house with many mansions. And certainly you can find hackneyed, retrograde SF that loads stale consensus reality into the starships. Particularly in SF movies. But the lumbering films have their own appeal. The CGI tech they use is, in an Italian Futurist kind of way, highly avant-garde too. And you gotta love the greasy pop-culture references. I'm looking forward to the new *Godzilla*..

Q 432. Politics. You represent as countercultural and punk. I am wondering about the ideological content of that representation. What is the politics of your work? How has that politics changed over the years?

A 432. I've always had a rebellious attitude. To some extent it springs from the fact that I was a younger brother. Fighting oppression from the start. And then there was the Viet Nam war, when they very nearly drafted me and sent me off to die for...for nothing. And, like most of us, I've spent my life in a never-ending struggle to wrest a living from an obstinate world.

Generally I steer clear of politics in my novels. I need a break from the daily bullshit. Sometimes people say SF is escape literature—as if that's a bad thing. But, hey, in this vale of tears, escape is good. This said, even in my sunniest novels, the government isn't likely to be the people's friend.

It's tricky, writing a full-on political tale. It can be gripping when an author is tearful and trembling with rage—but you can take that too far. It can slide over into a dry lecture, or into preaching to the choir. It needs to be entertaining. So I try to keep a little distance from my politics. Do some gallows humor, undermine myself, have twists and reverses.

And I don't want to write a story that ends in utter despair. I'd almost say that despair is cheap and corny. Like—cut to black. So what? Been done. People don't need to hear that life sucks. They know that. They want you to light a candle in the dark.

Today's U.S. political situation is more stressed and menacing than it's been since the Nam war. An author feels compelled to take a stand. I avoided addressing this during my last two novels, *Return to the Hollow Earth*, and *Million Mile Road Trip*. I was happy in my dreams, hoping the shitstorm would blow over.

But it's getting worse. So this month I finished a very intense, and even vicious, political SF story called "Juicy Ghost." About a coup. I wasn't readily able to get into a magazine, and I was in a rush, so I self-published it via my blog—it's almost like *samizdat*. But now, as it happens, *Big Echo* is going to print "Juicy Ghost" in this very issue, so thank you for that, Robert.

What next? I never really know. I slack off, or paint, or go hiking, or travel, or screw around with my web site, and it looks like I'm not doing much, but subconsciously I'm working on the next thing. Characters, scenes, and ideas are crystallizing beneath the surface—maybe.

Or maybe not. Maybe I'll never write again. Maybe I'm done. But I always say that. It's a way of goading myself. And, at least so far, the day comes when I can't take the silence anymore, and I go ahead and type a few sentences. I repeat them to myself. They make me laugh. The next round begins.

Portland, Oregon, November 25, 2020

Interviewer: Cody Goodfellow
For: *Forbidden Futures* ezine

Q 433. Your work was part of the original cyberpunk movement, and you use many c-punk tropes, but your outlook and philosophy seem anomalous. The freaky, witty characters in your *Ware Tetralogy* rebut any stale notion that cyberpunk is be a Genre of Things. I worry that our society is resisting any grand psychic leap forward—and that they'd prefer for cyberspace be a digital mall. How do we change the channel and revive c-punk's revolutionary promise?

A 433. Yes, I never do quite fit in, even when I'm with a band of outcasts! Each of the original cyberpunks was different, and so it remains. I definitely relate to the point you're making. There's a worry that the golden promise of cyberspace, that is, the happy Tomorrow of internet and AI—there's a worry that it's been coopted by the Pig, the Man, spyware, big biz, the data miners, and the spammers. One fears the frontier has been tamed and made ordinary. But that might not be true.

As a writer, your one power over the world is to depict realities that are in line with the way things *should be*. Or realities that reflect the way things *really are*. Even though these truer realities may not be widely recognized. I like to depict smart, empathetic characters doing wild and crazy things. There are plenty of people like this—I meet them all the time in my variously intersecting circles of mathematicians, writers, hackers, hipsters, computer people, and artists. But you don't necessarily see these people in many of the books and movies and videos out there.

If you write about the world as you feel it should be, or like it secretly is, you encourage disaffected readers to hang in there, to stay strong, to be themselves, and keep on the path to the hoped-for Tomorrow.

Q 434. One distinctive feature in your work is the glee that permeates even your more pessimistic stories. So much SF takes itself too seriously—unless it's marketed as farce or satire. How important is it that your work amuse you?

A 434. Good question. I'm constitutionally inclined to pepper everything I write with jokes, wordplay, satire, surreal surprises, oddball characters, crazy dialog, and meta humor. Even when I'm dead serious. I always think of a famous letter from Galileo to his fellow astronomer Kepler. "My dear Kepler ... what shall we make of this? Shall we laugh, or shall we cry?" He was writing about some problems with pigheaded burghers. Sure you can cry, but maybe it's nobler to laugh? Or, maybe even better, it's good to laugh *and* to cry. That's an accurate depiction of life, right?

I also appreciate your distinction between being gleeful and writing farce. I don't want my work to veer mere silliness, with my elbow thudding into your ribs. I respect SF too much for that. And I think things are more deeply funny when they're sad and serious at the core.

Q 435 Your take on artificial life and AI stands out from other treatments. You resist viewing robots, biots, or software agents as cold, drab entities determined to crush or to exploit us. Instead you endow your robo critters with humor and soul, setting your work apart from other SF—with the exception of the divine and supernal *Futurama*. Like, why *shouldn't* robots be cooler, funnier, and more playful than humans! Might it be that the capacity to rebel and to joke are true hallmarks of artificial intelligence?

A 435. Well, erudite and well-spoken as you are, Cody, you're almost answering your own questions while you ask them. I learned how to write about robots from my boyhood hero and eventual mentor Robert Sheckley. Such a wonderful man, such a great genius. He had it down from the start: Write about robots as if they're people! That's all it takes.

And since they aren't *really* people, you can make their personalities and dialog entertainingly quirky and bizarre.

Where does Hollywood get that thing of having AI minds be, like, stiff dull faces screens who talk in Brit monotones and write in ALL CAPS? This is a complete failure of the imagination. Maybe people do that because they're frightened by the thought of robots and computer minds—and they freeze up? Or maybe they want to preemptively belittle these artificial beings who might, god forbid, be superior to them? And of course there may be an anti-intellectual hatred for anything involving math, CS, or science.

They're, like, "Sure you're good at math, bit-brain, but I can pee in the yard. And I can dream about a cow!" But robo-brain is, like, "I am peeing a super-coolant onto you right now. Once you are frozen solid, I will use Hilbert space quantum operators to transform you into the very cow of whom you dreamed. And thy name shall be Elsie Evermore."

Q 436. I've heard veteran SF writers express befuddlement over finding themselves in a future that renders their early dreams quaint. I think of Gibson abandoning cyberpunk to write "future is now" technothrillers, and Neal Stephenson's *Baroque Cycle*. Is it harder to peer into the future as one grows older?

A 436. I think I'm finding it easier. When I was younger, there was a certain default space-opera future that SF was supposed to be about. And cyberpunk was about breaking out of that. Fuck the Space Navy! Misfits doing crazy shit, that's where it's at.

And Gibson is still doing that very well. His *Peripheral* and *Agency* are so colloquial that they look easy. But they're primo, out-there SF. For me, Bill will always be royalty, up there with Burroughs, Pynchon, and Borges.

Over the years, I've gotten past being jealous of Bill's success. I mean, he's a friend, and also he deserves the sales. In reality, I've done pretty well too. Better than I expected as a raw youth. I used to nurse that less-than-famous writer's dream of future veneration—a dream that's like believing in Heaven, or Santa Claus. I've let that dream go. Even if it happened, what good would it do me when I'm dead?

I'm just glad I can still write at all, here and now—and be read. And if I get a real publisher with a real advance that's great. And if not, I've learned how to do a Kickstarter to get some money for the book, and how to self-pub paperback and ebook editions. I don't know if everyone realizes that you can actually do that for free. It took me awhile to figure it out. I call my imprint Transreal Books. So either way, I get my books out there. I won't shut up.

Back to your question. For me, stuff like space-travel feels used up. Unless you were to do the space travel in a car instead of in a spaceship—like I did in my recent *Million Mile Road Trip*. But there's so

much that's untouched. Biotech has endless possibilities, and there's ubiquitous physical computation, and the hylozoic notion that everything is alive. See my pair of novels *Postsingular* and *Hylozoic* for more about that.

And I keep wanting to write about that totally *new* thing that we know someone is going to discover in the next hundred years, and I keep not quite getting there, but by dint of making the effort to think that hard, I'm finding new stuff. Not actual "true scientific theories," but fun ideas like new kinds of wind-up toys. The store is big.

For decades I read *Scientific American* to keep an eye on what's new. But sadly they've turned to shit—small fonts and articles about—*gak*—sociology and political policy and economics? As if. Nowadays it's enough to keep a loose eye on Twitter, and see the wonders trundling past—like a holiday parade that never ends. Grab hold of anything you see—and tweak it a little bit, and make it your own. Connect it in some way to your actual personal life—that's the move I call transrealism. And go a little meta—that's a trickier tactic I'm always trying to master—flip your idea up a level, and into something having to do with states of consciousness, or with the nature of language, or with the meaning of dreams. Go further out. There's still so much. We're just getting started.

Q 437. What is your *modus operandi* for describing the indescribable? Whether or not you've ever actually spelled this out, my impression is that the weirder the subject matter gets, the plainer and more transparent you like your prose to be.

A 437. Back in 1982, in Lynchburg, Virginia, we had a good friend named Mary Molyneux who was pretending to graduate from college, even though really she hadn't. It was a goof. Mary and her husband David Abrams had a graduation party and they asked me to give a talk. I spoke on "The Central Teachings of Mysticism." If you Google for my *Collected Essays*, you can find a free browsing edition online.

In my talk, I said the Central Teachings are: (a) All is One, (b) The One is Unknowable, and (c) The One is Right Here.

The secret of life is shouted in the street. You grasp it as an instant big aha. But if you try and analyze it, you bog down. So when you write about it, the simpler and quicker the description, the better. Short words hit hard.

As an SF writer, I come up against this issue over and over again. I want to treat my readers to something like a come-shot or a titanic fireworks display when a character gets to some unprecedented new level. I'll offer them a giant fractal, a brain flash, sudden obliteration, a paradox, a fugue state, a song, a wave of emotion, or a burst of heartfelt love—I've used them all. I'm anxious when I need to put on an event like this, but I'm also glad. It's something to do.

A complicating factor here is that, since The One is Unknowable, I can't predict what kind of weird scene *is* going to come down when my character does something like, say, merge with the meta mind of the entire web. Or step outside of spacetime. Or become a shoelace. But I have to frikkin write *something*! So, I don't know, I space out and let my fingers to the talking. Fold in some odd object that I saw that day, a piece of dream I had the night before, a treasured old emotion, and a random surreal construct. It doesn't matter. Use any old thing, several of them at once. Surrealism tells us that everything fits, always. All is One. And you're not in control.

And no, as I've said before, I'm *not* on drugs when I write like this. I haven't used anything for more than twenty years. But even so, I'm high. On the natch. I didn't use to realize it, but I've *always* been high, and I always will be. The One is Right Here.

Q 438. I chanced to see a photo of one of your copy-edited typescript pages—it was a print-out overlaid with a flurry of bewildering scrawls. I'd like to hear how this chaotic process works.

A 438. That's been my work flow or over thirty-five years. Write a few pages on my computer, print them out, mark them up with a pen, type in the changes and write a little more—then repeat.

I do the computer work in a trance, seeing the scenes like I'm awake in a dream, getting deeply into the minds of my characters and into the rhythms of their speech. When I'm in this zone, I'm not at all thinking about my day-to-day problems.. I like that a lot—forgetting myself. That's one of the reasons I like to write. It's a way to be blank and high.

Having typed for a few hours, I print what I have, two-sided on a few pages of paper, fold the sheaf in four, put it in my pocket, go somewhere like a café or, in these plague times, to the woods or to a bench in a park. Get out the sheaf and start marking it up with a pen.

I like to use a Pilot P-700 Gel pen with a fine 0.7 tip—I've been using them for maybe twenty years, I buy boxes of twelve at a time. Now that I'm in my seventies, I often do the marking-up while lying on my back on a couch, and the Pilot pens don't work as well if they're sideways, but I can tilt the paper or put something hard behind it. Actually this week I'm trying out a couple Uniball Power Tank pens with a 1.0 tip. They can write *upside down*, but the ink isn't as dark as the Pilot. I spend a lot of time every day looking for my pens. And for the "other" pair of glasses. And for the laptop. And the current sheaf of manuscript. Part of being old.

Back to my work flow. My handwriting isn't very legible, and I'm not even trying all that hard to make it legible, when I'm copy editing, because if I don't wait too long, I'm going to be able to remember what the edit was. The marks are maybe a little like graphic prompts. But if I really strain, usually I can decipher them, and if I *can't*—well then I make up something that's probably similar. It's me, either way.

After I do the marking up, I find up my laptop, if I can, and sit on a couch with my marked up sheaf, typing in the changes. Or maybe I sit or stand at my desk—I have a motorized Geek Desk with adjustable height. In the process of typing in the corrections, rather than precisely copying the notes, I might revise a passage extemporaneously, sometimes adding new stuff, and sometimes jumping to other spots in the manuscript to make things match.

All of this takes awhile, but there's not a huge rush. When I finish a novel, I'll just have to spend a blank, uneasy year writing occasional stories and waiting to start another novel. If there *is* another. Usually, before I start another novel, I have to get to a psychological point where I truly, deeply, believe I'll never write again. I give up, and I accept that I never really was a writer at all. I was faking it for all those years. And now it's over. And then, and only then, the Muse stops by. And she's like, "So you admit you can't do it alone? About time. Let's get started."

A good thing about my work cycle is that if I save a marked-up print-out for the next day, then the process of typing in the corrections in the morning might get me going on the actual writing again. As any writer knows, a big part of the process is *avoiding writing*. What did we do before email and the internet? I seem to recall taking walks. Anyway, anything that nudges me back into the manuscript is of use.

When things are going really, really well—which is at most ten or twenty days a year—I don't bother with the print-outs and the mark-up. I just open up the file on my computer and begin revising and adding new things—as fast as I can, jumping around almost at random, writing in different spots as the spirit moves me, like a sped-up stop-action construction worker—because I have so many things that I want to say, and so many scenes I want to see happen. On these days, I'm like a Donald Duck who's found a treasure chest in a cave, and he's dragged the chest out to the beach, and he's letting the gems stream through his fingers. *Wak!*

That's another of the reasons I write. To get a few days like that.

Q 439. How about your celebrity-cloned meat products notion from *Freeware*? Is that your intellectual property? The idea stuck with me, and I did a horror comic on the subject a while back.

A 439. Yeah, Wendy Meat. She's the wife of the *Software* stoner-hero Sta-Hi, who's now evolved into Senator Stahn Mooney. The tank-grown meat product is Wendy's sideline. Big billboard of her by the beach in Santa Cruz, displaying her haunch.

Last week on Twitter, it said the black rapper who supported Trump, he wants to sell salami with meat grown from his DNA. A lotta good eatin' in thar, my friend.

Don't blame the future on *me*! I just work here

Q 440. What's your next novel?

A 440. It's called *Teep*, for telepathy. I've been thinking about it for awhile and I started the actual writing early in 2019, with a story or chapter called "Juicy Ghost," which I went on to revise a couple of times. By now I'm six chapters and seventy-five thousand words into *Teep*, and I think I'll finish early in 2021. I think I only need one more chapter, but with these things I never know. It's always up to the Muse..

Teep is about near-future commercial telepathy, digital immortality, politics, and computation as part of nature. I don't have the energy to describe the plot in detail here. This interview is already rather self-indulgently long. For now, I'll just point you to a version of the "Juicy Ghost" chapter that I posted on my blog, the month before the 2020 Presidential election. I was hoping it might make a difference. And, who knows, maybe it did. Link:

<http://www.rudyrucker.com/blog/2020/09/24/juicy-ghosts-2020/>

An odd thing is that, while I've been working on *Teep* over the last two years, I've been dealing with the possibility that the current President might win a second term. In *Teep*, to transrealize it over the edge, a very similar type of President is about to be inaugurated for a third term.

And now, here in November, 2020, in the real world, the man we're talking about *didn't* win a second term at all. So *Teep* is suddenly a bit like a historical novel—rather than being the frantic call to arms that it was. Personally I'm very glad for this turn of events—that is, I'm glad for the reduction of my daily life's stress and horror.

Will *Teep* still work as contemporary SF novel? I think it will—in fact I think it'll be more fun to read this way. It'll be the cautionary tale of a narrow escape—as opposed to documenting an unrelenting nightmare reality that's staring us in the face. If the latter were the case, the novel would sting too much to be enjoyable to read.

Bill Gibson went through a variant of of this flipflop when he wrote *Agency*, expecting Hillary to win in 2016, and then she didn't—and he needed to change his thinking about his novel in certain ways. Fortunately for me, the evil President *was* in fact already ousted in *Teep*, so the book fits snugly with our happy post-election world. Things are turning out better than I expected.

Thanks for the great questions, Cody, and good luck with your cool work!

Liverpool, England, March 10, 2021

Interviewer: Jonathan Thornton

For: *The Fantasy Hive* ezine

Q441. You've just finished your latest novel *Teep*, could you tell us a bit about it?

A441. I was looking around for ideas for a novel, and there wasn't one big idea, at least not right away. So I spent a year or two writing stories on themes that might relate to each other. And in the back of my mind I was thinking that eventually I could collage at least some of the stories into what's called a "fix-up novel."

In the end, the three stories that fit together well were "Juicy Ghost," "The Mean Carrot," and "Mary Mary." The first two appeared in the free underground e-zine *Big Echo*, in 2019 and 2020, and "Mary Mary" is in *Asimov's* in March, 2021. Besides the three stories, I wrote five more story-sized chapters to produce my novel *Teep*, which I finished early in March, 2021.

Two of the main ideas I write about in *Teep* are telepathy (thus the title) and digital immortality. I've been writing fiction about digital immortality for forty years, starting with my novel *Software*, which appeared in 1980. Seems like I tend to keep thinking about the same things forever. Digging deeper and deeper.

I seriously see the technology for telepathy being commercially possible in the not-too-distant future. It's not really all that much further out than cell phones with video calls.

My take on digital immortality has to do with a thing I call a lifebox. See my nonfiction book *The Lifebox, the Seashell, and the Soul*. The idea, which is fairly familiar by now, is that you might be able to emulate a person if you have a really large database on what they've written, done, and said. And if it's SF, then we add some AI to the lifebox so it's an intelligent mind. Cory Doctorow also wrote quite a bit about the lifebox idea in *Walkaway*, and others have written about it too.

Oddly enough, Microsoft recently took it upon themselves to file for a *patent* the idea. Kind of disorienting for me. Would be nice if they'd at least fly me up to Seattle for a free meal and let me give a talk. Given that I more or less invented the idea in *Software* forty years ago.

I was on a grant at the Mathematics Institute at the University of Heidelberg at that time, writing my nonfiction popular science book *Infinity and the Mind*, which includes my conversations with Kurt Gödel about machine intelligence and the nature of the human mind.

In *Teep* I delve still further into the lifebox thing. Do you have to pay to have your lifebox stored? What if the company who houses your lifebox rents it out as a gigworker? How about growing a clone to be run by your lifebox? And how do you interface a human brain with an online lifebox?

Teep is also quite political. I was working on the novel from 2019-2021, and all along, in my mind, I was dealing with the possibility that Donald Trump might win a second term. In *Teep*, to push it over the edge, a very similar type of President is about to be inaugurated for a *third* term—and, well, he gets what's coming to him. Big time.

Not to give too much away, but my characters kill the guy three different ways—his body, his lifebox, and his clone—and then they even topple the monumental statue of him at the Top Party headquarters. I was thinking of how, in the first *Terminator* movie, they had to destroy the monster over and over and over. A metaphor?

To make the synchronicity weirder, my plan for the novel's ending turned unexpectedly turned real with the Capitol riot on January 6, 2021. Fortunately in both worlds, the evil President lost. For now. So maybe you've got me to thank!

Who's going to publish *Teep*? We're sending it out. Thanks to the pandemic, this is a hard time to sell a book. If nobody comes through, I'll self-pub it via my Transreal Books, and run a Kickstarter to get an advance. Weirdly I had to do that with three of my recent novels: *Turing & Burroughs*, *The Big Aha*, and *Return to the Hollow Earth*. In 2020, Night Shade reprinted the first two of those, along with a bunch more of my books, which was wonderful.

My recent novels are as good as any I've written, but maybe it's harder to sell my stuff because I'm old. Like—how many Rolling Stones or Patti Smith or Frank Zappa or Ramones or Blondie albums do you actually need? And now there's *another* one?

Well, whatever happens, self-pubbing is something I know how to do, which is a relief. I'm safe. They can't shut me down.

Q 442. You were part of the original cyberpunk movement, and your *Ware* novels are classics of the genre. On a different front, you writing transreal SF novels in which the characters mirror yourself and the people around you, and the SF goodies symbolize aspects of your characters' psyches. How do you feel about cyberpunk and transrealism becoming popular modes of fiction in today's world?

A 442. How do I feel? "Where are the movies of my novels? Where are my Sunday book section front page reviews? Where's my adulation from high-brow lit- crit?"

I tend to be irked when I see a non-SF-literate critic being totally blown away and wonderstruck when a mainstream author pens an uninspired "speculative novel" based on some very well-known SF premise, such as a biotic robot who has a soul. The critics are, like, "Profound and wildly original. Well beyond the range of crude, subhuman SF writers." And of course we subhumans been writing such books for forty years, and many of us dare to fancy ourselves as literary.

Wheenk, wheenk, wheenk. Wasting my breath. Bitter and old.

I'm happy to have gotten forty books published, garnered good reviews, picked up a couple of awards, and recruited loyal fans. And just this month I optioned the film and television adaptation rights for the *Ware Tetralogy* to a London-based production company. The deal was negotiated by Vince Gerardis and Matt Kennedy of Created By. Not the

first time I've optioned the *Wares*, but maybe this time it'll go somewhere. The guys are English! Somehow that gives me confidence.

All in all, I've have a great career—a lot better than I expected in my twenties. Back then I imagined I'd die in my 40s, like Edgar Allen Poe and Jack Kerouac. It helps that I got sober when I turned 50.

Q 443. The *Ware Tetralogy* novels feature a wonderful array of bizarre nonhuman life, from the boppers to the moldies to the Metamartians. Which ones did you have the most fun with?

A 443. I really liked the Happy Cloak. It's a symbiotic or parasitic being, a bit like a coat or a scarf, and it plugs into the nerves in your neck and hangs down your back, and you get into an altered and somewhat ecstatic state of consciousness. Henry Kuttner and C. L. Moore's 1947 novel *Fury* introduces this notion, and William Burroughs read the novel during one of his drug-kicking treatments in a Tangier clinic.

Later Burroughs incorporated material about the Happy Cloak into in his 1962 novel, *The Ticket That Exploded*. As a teenager I read a lot of Burroughs. Not everyone realizes that Burroughs was, in his own way, writing science fiction. And that he's very funny. And I read Brian Aldiss's 1962 fascinating novel, *Hothouse*, where a morel fungus attaches itself to a character's neck and begins helping him while controlling him. A bit like the Happy Cloak.

I always loved that expression *Happy Cloak* because of the contrast between the upbeat, childish name, and the rather sinister nature of the being. I included a Happy Cloak in my novel *Software*, both as an homage to Burroughs and because it was a very useful thing to have, in terms of the story. A Happy Cloak made of computational piezoplastic attaches itself to my character Sta-Hi's neck on the Moon, and wraps itself around him as a space-suit. Happy Cloaks play a part in the later volumes on the *Ware Tetralogy* as well. I'm always looking for chances to talk about them.

As for the boppers, yes, they're great. In *Gravity's Rainbow*, Pynchon mentions a pinball machine painted with jiving robobopsters, which I liked. Maybe I got the word from that. Or from an imagined fragment about the character Cobb Anderson, "...who taught the robots how to bop."

And the thing of having the bopper skins flow with colors was a lucky inspiration. I might have been thinking of the blinking lights on mainframe computers, or about the then-new Game of Life cellular automaton. But I wanted lots more lights, like pixels. Later I did a lot of computer work on cellular automata, including (a) John Walker's Cellab package for discrete-valued CAs, and (b) my own Capow package for continuous-valued CAs, which have many, many possible values in their cells. They generate gnarly, flowing patterns like lava lamps or like Belusov-Zhabotinsky scrolls.

It's worth mentioning that the imaginary piezoplastic substance Imipolex which makes up the flickercladding or skin of the boppers is lifted from *Gravity's Rainbow* as well. A lot of my career has been devoted to learning to write more and more like Pynchon in *Gravity's Rainbow*, and I think in *Million Mile Road Trip* and *Teep*, I'm getting close.

The moldies, who first appear in *Wetware* and come into their own in *Freeware*—they're even better. Although I didn't initially realize it, in some ways the boppers and moldies play the social role of people of color. The moldies happen to be made of flickercladding with a nervous system that's based on fungi.

In the early 1980s, between *Software* and *Wetware*, a Texas fan who called himself Dusty Limestone mailed me a crate of brown rice with a culture of "camote" truffles growing inside it, and I foolishly ate some of them, and ended up staying up all night playing pool on the second-hand slate-bed table in our basement, and with a strong sense that I had a giant lizard tail like a T. Rex. The next day I destroyed all the rest of the camote to be sure I didn't take it again. My friend Henry was mad I haven't saved him any. Those were the days!

I wrote *Wetware* in six weeks in 1986, just before we moved away from Jerry Falwell's Lynchburg, Virginia to—the San Francisco Bay Area. Both *Software* and *Wetware* won the Philip K. Dick award. In the late nineties, I came back to the *Ware* series with *Freeware* in 1995 and *Realware* in 1997. They're largely set in Santa Cruz.

Concerning the Metamartians in *Realware*, that name amused me. They're not *Martians*, man. They're *Metamartians*. You didn't want them around, but here they are! They're freeware that arrived as cosmic rays. They come from a part of the universe with 2D time. Writing about that kind of idea is where SF can be like a thought experiment. I mean, it's so hard to even begin to imagine 2D time, but if you try and work it into your story, then you're forced to do the heavy lifting to get it started even a tiny little bit.

Q 444. I was fascinated by the idea of the vast "metanovel" that your character Thuy Ngyuen is working on in *Postsingular*. Tell me more about it.

A 444. Yeah, I had a lot of fun with the metanovel. And I really liked my character Thuy Nguyen. For about twenty years my day job was being a Computer Science professor at San Jose State University in Silicon Valley, and about half of my students were Vietnamese men and women, and I got used to seeing them and talking to them and helping them with their team projects and being friends. In Vietnam, Thuy Nguyen is a really common name. Like Jane Doe.

The Thuy Nguyen in *Postsingular* is a very cool woman, with a lot of attitude. If you're a writer or a musician or an artist, and you're good at

what you do, then you know that, and you don't necessarily care about what people think of you as a person, nor do you have to care if they like your work. You know from the inside that you're doing it right. You're in the groove, and with the Muse.

Thuy calls her giant metanovel *Wheenk*, which is kind of a joke word for me. Years and years ago I might have read about a rabbit being caught in a trap and making a desperate noise that was written out as, *wheenk, wheenk, wheenk*. Maybe it was in the SF novel *Brainwave*. Or maybe I saw *wheenk* used to represent the sound made by an agitated pig.

Anyway, I started thinking of this word is *funny*. And I say it or yell it at various times, like if I'm uneasy, or maybe if I'm enthused. It's as if I have this faint, borderline touch of Tourette syndrome, in that, if a certain word or phrase enchants me, I might say it or ten or twenty times on some given day. And I'll try to fit it into whatever I'm writing. Like a magpie tucking a shiny wire or a scrap of bright cloth into her nest. *Caw!*

Over time, when talking about my writing process, I began using *wheenk* to stand for a character's repetitious inner thought loops. Like: "Will I ever find love?" "Will I get a job?" "Does everyone hate me?" And when a character is thinking that, they're bascially going *wheenk, wheenk, wheenk*.

It's very common for a bestselling novel to have lots of scenes where the hero or heroine is repeating some worry to themselves. And it can get boring, at least to me. By way of dissing a book like that, I say it has *too much wheenk*.

At the other pole, I myself have to beware of writing a thrilling superscience adventure so rife with gimmickry, incidents, and jest that my characters never pause to reflect on what's happening to them, nor to ponder where they're trying to go. In this case, I say my draft *needs more wheenk*. And I try to work some in.

I remember discussing this with my younger friend Richard Kadrey some years ago, when he was still starting out, writing the first of his hugely successful urban fantasy novels, and I was telling him that it's good to include a romance plot as well as action.

"You need the *wheenk*," I told him. "Do you have *wheenk* in the book?"

Richard paused, thinking it over. "Well, okay, I have my guy out in an alley behind a bar, and he's just killed a demon, and then, in his head, he wonders how this woman he likes is doing."

"That's a start," I said. "But more *wheenk*."

Which brings us, via a commodious vicus of recirculation, back to Thuy Nguyen's metanovel *Wheenk*. Here's two bits of description lifted from *Postsingular*.

Early on. "Thuy was working on her own metanovel, an as-yet-untitled combine of words, links, video clips, images and sounds—she meant for it be a bit like a movie that a user could inhabit, the user coming

to feel from the inside how it was to be Thuy, or, rather, how it was to be a version of Thuy leading a more tightly plotted and suspenseful life.”

And later on. “Thuy was making *Wheenk* into what she termed a transreal lifebox, meaning that her metanovel was to capture the waking dream of her life as she experienced it—while sufficiently bending the truth to allow for a fortuitously emerging dramatic plot. Thuy wanted *Wheenk* to incorporate not only the interesting things she saw and heard, but also the things that she thought and felt. Rather than coding her inner life into words and real-world images alone, Thuy was including beezie-built graphic constructs and—this was a special arrow in her quiver—music. The goal was that accessing Thuy’s work should feel like being Thuy herself.”

Welcome to my world.

Q 445. What’s next for Rudy Rucker?

A 445. Whenever I complete a novel—and I just finished writing *Teep*—after a long haul like that, I say enough’s enough, I’m too old and tired, don’t make me cross the Pacific Ocean in a rowboat again. But then some months go by, or even a couple of years, and I start missing having a novel to live in.

When I’m busy with a novel, I’m inside it a lot of the time. Thinking about the scenes and the characters. Sitting down to work on it nearly every day. The chracters are my friends, and they make me laugh, or mist up, or worry. And it’s nice to have this illusion of an emotive social life.

The granular craft of writing is something I relish more and more—the matter of choosing the right word, having a tasty rhythm in the phrases, and knowing how to swerve—so as to keep the reader alert and off balance.

I love the subtle, indescribable way that the scenes and the dialog come to me. I don’t exactly get there by *trying*, as all followers of Yoda know. But I do have to keep showing up. And while I’m waiting for the Muse, I work on my writing journal, with notes about possible ideas or what I’m doing or how I feel. And when the Muse kicks in, I stop thinking and I *do*. The process turns subconscious. I’m just typing it out, chuckling and rocking—a grinning idiot. And as the novel goes on, I dive deeper and deeper. It’s paradise.

Before I can start a novel or a story at all, I need to have a place that I want to go. When I was younger, there was that default space-opera future that SF was supposed to be about. And cyberpunk was about breaking out of that. I never had any interest in being a hereditary aristocrat in the Space Navy! Misfits doing crazy things, that’s what I like. Mad scientists.

What might I do next? *Maybe* space travel as long as we don’t use a boring metal spaceship or, please no, not a generation starship. In

Million Mile Road Trip I had them travel across the galaxy in a car. In *Frek and the Elixir* I had them do huge hops in a living UFO. And of course Robert Sheckley's characters had space hoppers in their driveway, or they bought one at something like a used car lot—maybe I could go back and do that. Sheckley is forever the great hero of my youth.

Biotech has endless possibilities, and I touched on some of them in *Saucer Wisdom* (which is a novel in the same way that Nabokov's *Pale Fire* is a novel), and in *Postsingular*, and again in *Teep*. I'm also fascinated by the notion of ubiquitous physical computation, and the "hylozoic" notion that things might be conscious and alive. I ran with that in *Hylozoic*.

I've always liked the 1940s or 1950s stuff, with the mad scientist in his or her garage. Gyro Gearloose! It would be fun to write about that totally *new* thing that a lone mad scientist might discover in the next thirty years, a fun idea like a new wind-up toy I can put through its paces.

The science news is eternally a holiday parade that doesn't ends. Grab hold of anything you see. Tweak it a little bit, and make it your own. Connect it in some way to your actual personal life—that's the transreal move. And go a little meta—that's a tricky tactic I'm forever trying to master—flip your idea up a level and into something having to do with states of consciousness, or with the nature of language, or with the meaning of dreams.

There's still so much. We're just getting started. We're doing it wrong. We're getting better.