

Postsingular Writing Notes

(My 17th Novel)

July, 2005 - April, 2007

by Rudy Rucker

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Last update: May 25, 2007
Number of words: 143,311
(The novel itself is 89,500 words.)

Log

Here's a list of my literary activities while composing *Postsingular*. I've indented and [bracketed] the things that don't have a direct connection with composing *Postsingular*.

Notes document created July 16, 2005.

Review: "Stross's Accelerando," Aug 1 - Sept 5, 2005. *NYRSF*.

Part 1a: Story "Chu and the Nants," Sept 12 - 19, 2005. *Asimov's* (6/2006).

Part 1b: Story "Postsingular," Sept 29 - Nov 15, 2005. *Asimov's* (9/2006).

[Found story: "Cobb Wakes Up," Nov 26, 2005. *Other* (1/06)]

[Story: "Panpsychism Proved," Nov 30 - Dec 5, 2005. *Nature* (1/06).]

Essay, "Panpsychism," Dec 6 - 13, 2005. *Edge Annual Question*. (1/06).

Story plans: "Bixie and Chu" and "The Big Pig Posse," Dec 7 - 31, 2005.

Decide to write *Postsingular* novel, Jan 2, 2006.

Postsingular Proposal 1, Jan 17, 2006.

Decide (temporarily) not to have "Chu" and "Postsingular" in novel, Feb 10, 2006.

[Plan story anthology *Mad Professor*, Feb 11, 2006.]

Postsingular Proposal 2 gets deal with Tor, Feb 22, 2006.

Part 2: "The Big Pig Posse", Dec 20, 2005 - March 9, 2006.

[Story: "Elves of the Subdimension" with Paul DiFilippo, *Flurb*, Aug 2006.]

Decide to use "Chu" and "Postsingular" as Chapter 1. April 3, 2006.

[Deal for *Mad Professor* anthology with Thunder's Mouth, April 24, 2006.]

[Story: "2+2=5" with Terry Bisson, April 25, 2006. *Interzone*.]

Part 3: "Thuy's Metanovel", March 10 - May 22, 2006.

Story: "Visions of the Metanovel," May 23, 2006. For *Mad Professor*.

Decide to do the book in four chapters. July 26, 2006.

Decide to call the sections "parts" instead of chapters. Sept 6, 2006.

Part 4: "Lazy Eight", June 22, 2006 - Sept 11, 2006.

Revisions: October 16, 2006 - January 18, 2007.

Copy-edits: Late February, 2007. I make extensive revisions to the ending.

Page Proofs: April 17, 2007

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*(The *asterisked items in the Ideas section correspond to ideas I didn't use.)*

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To Do

- Mention Chu's neighbor Willy again near the end.
- Mention the organic appearance of Gladax's mansion.

Working Plans and Active Outline

Word Count

Here's the recent counts.

The Hacker And The Ants 92,000

Freeware 97,000

Saucer Wisdom 85,000

Realware 105,000

Bruegel 138,000

Spaceland 91,000

Frek and the Elixir 163,000

The Lifebox, the Seashell and the Soul 158,000

Mathematicians in Love 110,000

Mad Professor 87,000

Postsingular 91,000

Started Chap 1 = "Chu and Nants" + "Postsingular" on Sept 12, 2006. Dates mark finish of 1st draft of chapters	Cha p	Word Count on that Day	Days In	First draft word counts of each chap. Average is 21166	Chapter Words/ Day	Average Words/ Day	Estimated Days To Finish
Nov 15, 2006	1	18775	64	20292	293	293	226
March 10, 2006	2	39017	179	20083	176	218	211
May 24, 2006	3	64503	254	26264	340	254	81
Sept 12, 2006	4	84711	366	18017	181	231	0

Table 1: First Draft Word Counts

When I was done, Part 3 was too long, and then when I was revising, Part 3 got even longer, it was up to, like, 29,000 words. At first I was gonna move a big chunk of Part 3 into Part 4, but then Part 4 was too long, so I was gonna break off a little Part 5 at the end.

Part	Title	Length
1	Nants and Orphids	23,514
2	The Big Pig Posse	20,615
3	Thuy's Metanovel	22,399
4	The Hibrane	19,995
5	Lazy Eight	4,825
(Total)		91,348

Table 2: Five-Part Option Word Counts (Unused)

And then I decided instead to leave the book in about the same four parts as before, but to subdivide into chapters, getting twelve chapters in all, in a 4-3-3-2 beat. I have the final word counts in the table below.

Title	Length
<i>Part 1</i>	<i>23,426</i>
Chapter 1: Ignition	1500
Chapter 2: Nant Day	5,331
Chapter 3: Orphid Night	8,169
Chapter 4: Chu's Knot	8,426
<i>Part 2</i>	<i>20,127</i>
Chapter 5: The Big Pig Posse	8,479
Chapter 6: Nektar's Beetles	3,830
Chapter 7: The Grill in the Wall	7,818
<i>Part 3</i>	<i>27,666</i>
Chapter 8: Thuy's Metanovel	7,341
Chapter 9: The Attack Shoons	9,394
Chapter 10: The Ark of the Nants	10,931
<i>Part 4</i>	<i>18,261</i>
Chapter 11: The Hibrane	9,306
Chapter 12: Lazy Eight	8,955

Table 3: Final Parts and Chapters Word Counts

[In reading the remarks below, keep in mind that for most of the time what I was calling "chapters" were in fact what I ended up calling "parts" at the end. Only during the very last revisions did I start calling my working chunks "parts," and then subdividing these into chapters.]

January 3, 2006. Let's initially suppose that I'm shooting for a short novel, like 90,000 words or even 85,000 words. Looking at my role model, *Accelerando*, I see that book is 144,000 words, with nine sections of about 15,000 words each. But I'd like to get in and out faster than that. *Accelerando*'s story-chapters came out in *Asimov's* over a period of four years. I'd prefer doing seven shorter chapters,

finishing in about a year. $7 * 13000$ would be 91,000. I'll need to bulk at least four of the later chaps up to 15,000 to make up for the short first chapter.

February 14, 2006. I think I'll do five chapters of 18,000 words each for 90,000 in all. I'll break each of these longish chaps into three sections with varying POV as discussed in the POV section below.

March 10, 2006. Maybe I can get by with only four chapters, starting with "The Big Pig Posse". I think that might fit my plot better: (1) Setup, (2) Lose some big battles, (3) Retreat to gain force in a parallel world, (4) Return to win the war and change our world. 22,000 words per chap would get me to 88,000, probably long enough. Tor actually prefers shorter books, as they're cheaper to print and easier to price competitively. And if I have a trilogy in mind, there's no shame in penning a shortie. Right now "The Big Pig Posse" chapter is only 20,000, but maybe in revision it'll grow. Or maybe the later chapters can get a bit longer.

April 4, 2006. I decided to roll in those two short stories as a first chapter. That way I don't have to stretch. I upped the projected length to 95,000. This new first chapter is 18,000. If I average 19,000 per chapters 2-5, I'll hit 95,000.

April 18, 2006. Fuck that Stakhanovite "upping the projected length," I'll stick with a target of 90,000 words in all. That way I only need 18,000 words per chapter, and if the first two were longer than that, it means I have some breathing room for Chapters 3 - 5. The reason this comes up is that I'm 9,500 words into Chapter 3 and I feel like it's already closing down, that is, it feels like I'm close to two-thirds done with the action for the chapter. Since I averaged 19,700 over the first two chapters, I can drop down to 17,000 or even 16,000 for Chapter 3 and still be okay in terms of averaging 18,000 per chapter.

May 19, 2006. Last month I thought Chapter 3 was gonna fall short, but now of course the opposite is happening, it's ballooning, and may come in at 26,000 or so. I could cut off some of it and stick it into Chapter 4, but as the chapter is "Thuy's Metanovel" and she's only gonna finish the metanovel in the very last scene, along with the action arc, I'll just let it run. If I wanted to be all anal, I could start looking for things to cut (No, no, no, don't take out the Borgesian bits about alternate metanovelistic styles!) but there's no graven reason why all the chaps have to be the exact same length. I think I should just be glad for the extra words and then I'll have the option of giving shorter weight on Chapters 4 and 5 or of possibly having the book run as long as 95,000 or more, although, again, I'd like to keep to short and save more for a possible sequel. Suppose the chap comes in at 25K, that rolls the Chap 1-3 total up to 65,000, which leaves a measly 30,000 for the last two chapters, assuming I'm shooting for 95,000. Possibly I do a full-length 20,000 word Chapter Four, and a lightweight 10,000 word Chapter Five. That might be fine, as all I had in mind for Chapter Five, really was wrapping things up and getting the lazy eight-RAM nature-based universal computations in place, merging the Pig with Gaia, giving everyone on earth teleportation and telepathy, and leaving the "and therefore" of that to the next volume.

July 25, 2006. I'm running out of story and I've only got 73,500 words. I had thought the shortest book I should bring in is 90,000, but I'm thinking I'll drop it to 85,000 for the first draft, so then I only need another 11,500 words. (And probably I pick up a couple of thousand on the revisions and end up closer to 90K.) I have 7,500 done on Chap 4 and the material I'd planned for it is all used up. So I'm thinking I better just combine my planned for Chapters 4 and 5, so that then my chapters are all about the same length, in the neighborhood of 20,000 words. I think if I were to run

two really short chapters at the end, it'll feel (even more) like I'm bailing in a hurry. So I'll cut down to four chaps in all, each about 20,000 words long. Actually, to hit 85,000, my new expanded Chapter 4 only needs to be 19,000 words long. And I think that's feasible. Particularly if we suppose I might do a sequel, it's okay if the book isn't all that long.

Sept 4-12, 2006. I saw my editor Dave Hartwell at the LA Worldcon, and he said a 90,000 word length was just fine, in fact he sounded glad it won't be longer. I didn't have the nerve to ask if as little as 85,000 would be okay, too. I'd like to do 90,000, but as I work on the home stretch, it's looking like 85,000. Well, I'll pick up more in the revisions. If I make it 85,000, I'll have maybe 19,000 for the last chapter, which would be okay. Given that it's a trilogy, I don't think 85K overall is a problem. On Sept 12, 2006, I wrapped it up the draft at 84,700 words and set it to Tor.

Oct 16-Nov 4, 2006. I revised the book, taking into account Hartwell's suggestions. Promoted the "chapters" to "parts" and subdivided the parts. The length grew to 89,173.

Number of Chapters (or Parts)

How many chapters? At first I was thinking to do shorter chapters than in *Mathematicians in Love*. I was thinking it easier to sell shorter bits as magazine stories. I had a notion of keeping it light and stinging.

But I in fact began the novel ass-backwards by writing a 5,000 word story and a 13,000 word story before any kind of global outline at all, *tsk*, and then I wrote a 20,000 word chapter. Should I use that as a muse-suggested rhythm and jitter between short and long chapters, maybe ten chaps of average length 9,000? Nah, it'll be easier to do five chaps all the same length, averaging 19K. And what I'll do with those disparate-length two stories is to fuse them into a single 18,000+ word prologue-like chapter one, but Hartwell says don't call it a "prologue" or it feels like a burden to read it.

I was originally thinking five chapters, but I'll go for four chapters averaging 21,500 each and settle for 85,000 word length for the book.

Since they're so long, on September 6, 2006, I started calling them "parts."

And then, near the end, I broke these parts into chapters.

POV

Those initial two stories were, respectively, single-focus 3rd person not-so-close-in subjective POV (Nektar) and what I might call RK-POV ("rotating kaleidoscope" multiple-focus 3rd person close-in subjective POV). And, what the hey, I'm sticking them together into the first chapter. Gettin' loose and jiggy wit' it.

In that first chapter I signal most (but not all) of the shifts in POV-focus by "****". But in Chapter Two and Three, I don't use "****". I see it as maybe a crutch that I'd like to get along without.

This said, it's fine for Chapter 1 to have a different quality from the other chapters, as it's about a time when heavy shit comes down (the Singularity). And I may want to get a different texture for the last chapter as well, as that's going to involve another major world-change. Singularity 2.0.

I had planned an average of 19 K words per chapter to hit 95 K in all (if I have five chapters). But then I ended up doing 4 chaps at 21K each to hit 85K. I'll specify

each section's K in parentheses along with some indications of the POV. ("Rotating" means "rotating kaleidoscope" as above.) Call them "parts."

Part 1 (22 K): Luty (2 K).Nektar (5 K). Rotating Jil, Chu, Ond, Nektar (13 K).

Part 2 (20 K): Jayjay (8 K), Nektar (4 K), Jayjay (8 K).

Part 3 (22K): Thuy.

Part 4 (19 K): Thuy (15K), Jayjay(2 K), Thuy (2 K),

Part 5 (5 K): Jayjay (4 K). Impersonal (1 K).

Calendar

Master Calendar

The calendar includes events in the novel and in the backstory.

Note that Hibrane time runs 6 times as slowly. The two times match at the instant when Bixie first jumps over to the Hibrane; the first person to make the trip from the Lobrane. This is about 10 PM on September 1, 2005; there is a full moon.

Lobrane Date:	Hibrane Date:	
1999		Jeff Luty born.
2000		Craigor born.
2003		Jil born.
2013		Jayjay born, Thuy born.
2022		Luty designs the biochip and founds Nantel.
2023		Chu born.
2024.		Momotaro born.
2025		Bixie born.
2027		First scene with Chu, he's four. Nantel is well-established, just starting research on nants.
Mar, 2029		The nants are sent to Mars.
Mar, 2032		Mars is a Dyson sphere.
Saturday, May 1, 2032	Aug 3, 2034	Nant Day. The nants attack Earth. and are turned back. Dibbs executed, Bernardo Lampton elected.
Sunday, May 2, 2032		Ond turns the nants back. Dibbs and his Veep are summarily executed. Communist Speaker of the House Bernardo Lampton takes office.
Saturday, Sept 1, 2035.	Sept 1, 2035	Orphid Night. Ond releases the orphids. Ond and Chu to Hibrane.
Tuesday, Oct 21, 2036	Nov 9, 2036	Chapter 2. Big Pig Posse meets Nektar. Thuy sees Luty in the ExaExa lab.
Tuesday, Nov 4, 2036	Nov 11, 2035	Dick Too Dibbs is elected.
Sunday, Jan 18, 2037	Dec 24, 2035	Chapter 3. Thuy's reading.
Monday, Jan 19, 2037	Dec 24, 2035	Lazy Eight Day. Battle at ExaExa. They show up about eight a.m. and fight till noon or one. They get to Easter Island at 3 or 4, as in January, as the clock on Easter Island is three hours later than in

		California. Thuy goes to Hibrane and comes back that evening with back the lazy eight, it's about six hours later, say 10 p.m. The nants get loose. They release the lazy eight that evening and Gaia wakes up and kills the nants.
Tuesday Jan 20, 2037.	Dec 25, 2035	Dick Too Dibbs's Inauguration.

Table 4: Master Calendar

Year	Chu / Bixie Age
2029. Nants to Mars.	6 / 4
2032. Nant Day.	9 / 7
2035. Orphid Night	12 / 10
2036. Election.	13 / 11
2037. Inauguration.	14 / 12

Table 5: Chu and Bixie Ages

Chapter Dates

I think I might as well do a straight-through string-of-pearls time sequence.

Part	Date	Cast	POV
1. Nants and Orphids	Mar, 2029; Mar, 2032; May 2032; Sept, 2035	Nektar, Ond, Chu, Craigor, Jil, Bixie, Momotaro.	Mainly Nektar POV, but rotate though all the others as well.
2. The Big Pig Posse	Oct, 2036	Jayjay, Sonic, Thuy, Kittie, Nektar, Jil, Craigor, Topping.	Jayjay POV, (with a shortish Nektar POV block near the middle).
3. Thuy's Metanovel	Nov, 2036 - Jan 19 2037	Thuy, Azaroth, Kittie, Jayjay, Kittie, Jil, Craigor, Sonic, Luty.	Thuy POV
4. The Hibrane and Lazy Eight	Jan 19, 2037	Jayjay, Thuy, Ond, Chu, Azaroth, Gladax.	Thuy POV, with a touch of Jayjay POV near the end.

Table 6: Chapter Dates

Places

Mission Armory



Figure 1: [State Armory and Arsenal](#), 1800 Mission Street At 14th Street, Inner Mission, Built 1914 .

SF Court and Jail

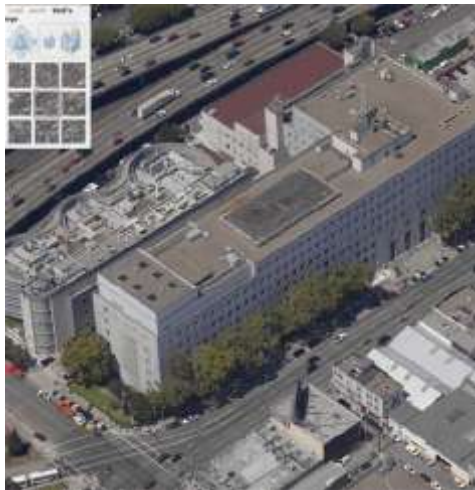


Figure 2: [S F City & County Hall of Justice](#) - County Jails; No 1, 850 Bryant St Ste 306, San Francisco, CA 94103.

Easter Island



Figure 3: Picture of the [Rano Raraku site](#) found on



Figure 4: Another [picture](#) of the same site.

Rano Raraku is an extinct volcano; they quarried stone for the monoliths or moai here. The stone is basaltic tuff, that is, stuck-together foamy clinkers.

It was summer in Easter Island, with the clock three hours later than in California.

Tra Phuong Pagoda near Haiphong

[Haiphong and Halong Bay:](#)

Haiphong, about 60 miles from Hanoi, is the most important port in northern Vietnam. The city of 1 million has a long history, some French colonial architecture not unlike Hanoi itself, Thanh Phoi Theater (the old French-built opera house) and some interesting Catholic churches.

Thien Phuc Pagoda in Haiphong was built in 1551. The Du Hang Pagoda, perhaps the city's most ornate building, is an example of traditional 17th century Vietnamese architecture. ...

Halong Bay, one of Vietnam's most extraordinary natural features. This otherworldly expanse of emerald-green waters is dotted by over 3,000 chalk and limestone islands. The name "Halong" means "where the dragon descends into the sea," reflecting this seascape's legendary origins.

A notable island is [Cat Ba](#).

[Tra Phuong \(Thien Phuc\) Pagoda](#)

This pagoda of the Nguyen Dynasty includes an entrance hall including five compartments and an apse including three compartments. Tra Phuong Pagoda is one of the centers belonging to the Buddhist architectural system of the Mac Dynasty. First built under the Ly Dynasty (1010 - 1225), the pagoda was initially called Ba Dinh. It is said that the original pagoda was located on a hillock in the south which was 200m far from the current one. It is said that Mac Dang Dung once took refuge in the pagoda and escaped from his enemies. With the establishment of the Mac Dynasty (1527 - 1592), Dang Dung reconstructed the pagoda and renamed it as Thien Phuc.



Figure 5: Thay Pagoda.

Thay Pagoda, alias Ca and [Thien Phuc Tu Pagoda](#), is situated at the foot of Sai Son Mountain, in Quoc Oai district, in Ha Tay province, 30 km southwest of Hanoi

The pagoda was built in the 11th century during the reign of Ly Nhan Tong King. At first, it was a small pagoda managed by Priest Tu Dao Hanh. The pagoda was initially built according to Sino-Vietnamese character Tam—this character is formed by 3 hyphens parallel to each other. The pagoda therefore consists of 3 sections: Ha Pagoda, Trung Pagoda, and Thuong Pagoda. The outer part, Ha Pagoda, is a place for offerings and ceremonies; the middle part, Trung Pagoda, is a place for worship of Buddha; and finally, the inner part is a place for worship of Priest Tu Dao Hanh. An automated sandalwood statue of Tu Dao Hanh that stands and sits is located in a red lacquered shrine trimmed with gold and covered with a curtain.

In front of the pagoda is Long Tri pond, in the middle of which is a stage called Thuy Dinh, where water puppet performances are held. Nhat Tien and Nguyen Tien bridges, built by doctor Phung Khac Khoan in 1602, are located on each side of the stage.

[Water puppetry in Thein Phuc Pagoda:](#)

This festival takes place in an elaborate pagoda said to be built on the ashes of a Vietnamese folk hero and is especially famous for the performances of traditional water puppetry. It is dedicated to folk hero Dao Hanh, who was an eminent Buddhist monk during the rule of the Ly Dynasty (1010-1225AD), the first power to successfully overthrow the Chinese in Vietnam.

The monk was a great patron of the unique Vietnamese art in which puppeteers stand waist deep in water with a screen shielding them from the audience on the other side. With the puppets attached to long bamboo levers, they manipulate them from behind the screen. Stories from Vietnamese folklore are told to traditional folk song accompaniments, in which dragons spout fireworks from their mouths and historical battles are reenacted for the benefit of children and adults alike.

Apart from the water puppetry, (which is known as *mua roi can*)...



Tra Phuong (Thien Phuc) Pagoda

Figure 6: Tra Phuong Buddha.

Here's a link to a white stone [Buddha](#) from the Tra Phuong pagoda near Haiphong. This can be the Buddha in my story.

Characters

I need to decide who the main characters are. They'll be in their 30s, 20s, and teens.

I started reading a Vernor Vinge story with old people in Adult Ed at Fairmont High and I'm, like, *ugh*. Who wants to read SF about *old* people? Fuhgeddaboutit.

30s: Ond, Nektar, Craigor, Jil.

Late teens: Jayjay, Kittie, Sonic, Thuy.

Early teens: Bixie, Momotaro. Maybe an angel girl Wonda.

As of January 11, 2006, It feels like I have too many characters: Ond, Nektar, Chu; Craigor, Jil, Momotaro, Bixie; Jayjay, Sonic, Kittie, Thuy; Jeff Luty and Dick Dibbs.

Let me pair them up, organize them.

Villains: Luty and Dibbs. Luty, by the way has a slutty wife, Tawny Krush. Perhaps she hits on Ond.

What are the love affairs?

By the end of the book, Chu and Bixie will be old enough for a first kiss.

Ond and Nektar break up, Ond has an affair with Tawny Krush, but then Ond and Nektar get back together.

We'll kill off Craigor. And Jayjay can fall in love with Jil.

We'll kill off Sonic and put Kittie and Thuy into a lesbian affair.

That just leaves Momotaro unaccounted for; we'll pick up another character to be a girlfriend for him. Wonda who is somehow from Hibrane but human in form.

Who is growing?
Chu is fighting his way out of autism.
Ond is becoming more humane.
Nektar more responsible and self-confident.
Jil more mature and powerful.

Oh oh, I'll need characters in Hibrane, too. Wonda can be one of them.
Another Hibrane issue: it might be nice to have each Earth character paired with a Hibrane character. So as I introduce Hibraners I might think of who they match. The bad Gladax could be, say, a match to Nektar herself.

Nektar.

I abandoned my initial description of her: "Nektar Bergman is an attractive young woman with round cheeks, full lips, guileless eyes, and long kinky light brown hair. She wears her hair in a pony-tail like a big cloud of smoke."

Instead I made her tall and slim and poised with an upside-down ponytail. Dark straight hair. I'm seeing her as looking like the actress Marcia Cross. Tall, willowy.

Backstory. She grew up in Arizona. She's kind of like a Scandinavian, rather proper. Maiden name Lindstrom. I'm thinking of Elena V's manner of speaking. She doesn't curse, doesn't use street slang. Nektar is self-centered, stubborn, has strongly held opinions she won't back down on.

Nektar got a college degree at UCLA in Media Studies. She had wanted to be a screen writer or in some way involved in film. She was having an affair with a woman when she met Ond at college, Ond also at UCLA.

They got married and moved to the San Francisco when Ond got his job at Nantel. For awhile Nektar worked at a local theater doing lighting, also she was helping the theater cater the food for benefit events, and then she went to chef school and started working as a chef at a touristy place near the Ferry Building.

But after she had Chu she had to stay home for quite awhile.

She's unhappy taking care of Chu.

Impulsive, depressive, cries a lot. But she has a flair for theater and some business sense. Can be hardheaded.

She's mystical, also.

She develops a career as a cook, has an affair with Jose, another chef.

Those first days after Ond and Chu left for the Hibrane had been very hard. Annoying as those two had been, they'd been Nektar's core reason to live. Jil told Nektar a bit about the place where the two had fetched up — it was like San Francisco, only when you went there, you came out the size of a goblin. Jil had even shown Nektar the link that led to the Hibrane, but Nektar was scared to go. Another thing Jil showed Nektar back then was how to see your hitcount rates; you could get orphids to display colors shading from blue through red according to how many people were currently accessing their positions. The orphids on the two women's bodies were as red as sunburn, especially the boobs and crotch. Ond's orphid release had made the *Merz Boat* group into celebs.

Ond.

Ond Bergman. He's from Minnesota, he went to UCLA and majored in robot and artificial life studies.

He's a geek, a programmer at Nantel/ExaExa. A lanky man with thinning blonde hair. Among strangers he can seem kind of autistic himself. But he is warm and friendly within the circle of his friends and immediate family.

Ond isn't much of a drinker or druggie, one beer makes him reckless.

Chu.

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*.

Self-centered.

Chestnut cap of hair.

Jil.

(b. 2003) Jil is cute, black Irish, one quarter Japanese, a touch of Mexican, but don't mention her race, that's a distraction. Straight nose, ready laugh, talking about being spiritually lost and then "going to church and in the stained glass it says, God — Is — Love." She's in recovery from an endorphin addiction. Jil wants to make a job doing ads for companies. She's a freelancer, not getting much work, and also with a day job (see below).

She got married at age 20, in 2023, had Momotaro the next year in 2024, she's 32 when first we see her in 2035.

As a designer, she's wooing Yoon Shoon, a Korean just-in-time athletic-shoe manufacturer, they mail you goo and grows on you. Jil is also working a temp job at a company called ExaExa (a reorganized version of the bankrupted Nantel), the plant is in the China Basin biotech region in San Francisco Jose near the bay. She's a booth bunny at virtual trade fairs; she wears a motion-capture suit and acts like a sexy help icon showing things. It's a sexist and demeaning job; she got into it in her druggy days.

Later, Jil no longer works for ExaExa. She resigned, or maybe they fired her for her association with Ond.

Jil has made some money off the shoon, who are in fact named after her original Happy Shoon. Jil's built up her shoon biz.

The beezies enjoy being in shoons, some of them like to be pets or companions to people. A simple need for social warmth. Jil makes the shoons attractive.

Dibbs doesn't want this, he wants to have human/shoon antipathy and fear as it makes him more powerful.

"And, according to the *Founders* show, Jil was a recovering sudocoker, which meant she'd be understanding of Jayjay's addiction to the Big Pig, not that he wasn't planning to cut that back real soon."

Craigor.

(b. 2000) Craigor is white, a California boy, an artist and making money as a fisherman. He's handsome and not too bright or ambitious. Craigor is a packrat, he can't throw anything away, and he wants to be able to categorize what he has. He drinks a bit too much, gets high a little too much, they have great parties. Craigor means to be an assemblagist sculptor, but he never fastens things together, just accumulates junk and arranges it in patterns on the pancake of their boat. He talks about Kurt Schwitters's apartment, the "*Merz Bau*," he calls the scow the *Merz Boat*.

Craigor is making ever more kinky assemblages. Some of them have orphidnet AI so they balance themselves, for instance, a wobbly Cat-in-the-Hat stack of things that never falls over no matter what.

The orphidnet AIs don't really want these things for bodies, most of them, though a few do think they're cool. Like a body with hoes for legs, or a bowling ball for a body. All the brain can be in orphidnet. Also, thanks to the orphids, no extra sensors are needed, no eyes. All that's needed are a few muscles. These also are conventionally piezoplastic, although solenoids could work.

Bixie.

(b. 2025)

Eventually, I'd like to set up a romance between Bixie and Chu.

Momotaro.

(b. 2024)

Momotaro's become completely obsessed with the *Doodly Bug* plug-in for his *Space Pirates* game.

Gladax.

Gladax is a made-up name that had hit me. Like a corruption of Gladys or Gladiolus.

I'm thinking maybe give Gladax a voice like old Elena. She had this certain way of talking that I can reproduce in my head.

She is a seventy-year old Negro, and the mayor of San Francisco. Messy, like an artist. Her art is politics. She's a metamind. She is the people's will. A metamind. She's like the mayor of San Francisco. A broker. A living network.

She doesn't bother to wear good clothes.

Suppose that she has a magic harp like the giant in Jack and the Beanstalk, and my characters steal it.

Perhaps Ond helps Gladax improve her network.

Jayjay

(b. 2013). He likes to stare at patterns, at things in nature, he's open to natural paracomputation. He's 23, Mexican parents, real name Jorge Jamon. His mother works in the Supertaqueria, has five kids, his father isn't around, Papa got busted for PCP, went to prison, got killed there in a gang fight.

Jayjay visits home sometime, but his mother's new boyfriend Paco doesn't like him. He has a minishoon earring. He'd like to be a physicist. He's smart. Not all that sociable, not good at putting himself across. Tends to say nothing and then to say too much. Doesn't know what to do with his life.

What was Jayjay doing for those ten or so years after he dropped out of high school. I have him living in a squat with Thuy while she finished high school and college. Why wouldn't she better herself and move on? More plausible that they reconnected after the orphidnet hit.

Or make them about seven years younger, only then Jayjay's really too young for Jil, twelve years.

What was Jayjay's employment? I don't want him to be a drug dealer. Something dovetailing with his interest in math and science. Surveyor? Working on a building crew. Working on the line at the ExaExa fab? Maybe he found some work as a programmer, and then he was a computer sysop, running a little business like Monkeybrains! But I'd like him to be more street than that.

Let's say he never did have a job. What was he doing? Playing videogames.

Would he have been squatting all that time? Maybe yes, given property values in San Francisco.

Discarded: "They'd found a squat in a warehouse and Jayjay had picked up some work at a software company — if you could program they didn't care about your degrees. Thuy finished high-school from there, and then started college, and she wanted Jayjay to do it too, but he'd thought why bother, and then they'd broken up for a few years, and he'd started his own little internet service provider business, selling and maintaining server machines. The orphidnet had made a lot of that obsolete, but the upside was that he'd found Thuy and won her back, she'd had a boring job doing accounting at a Vietnamese supermarket, and she was glad to be back on the loose with Jayjay. With the orphidnet here, anything was possible anymore. But even now, Thuy would be valuing him more if he'd gotten those Mickey Mouse degrees."

If he met Thuy in high school, how did he hook up with her again?

Thuy

(b. 2013). She's 22. Her parents are Vietnamese, old-world, don't speak English, wouldn't let her date, wanted her to get a job in the ExaExa factory where her mother works, had picked a recent immigrant Vietnamese husband for her. She brought home Jayjay one time to help with her homework, and his earring really freaked out her parents. He dropped out, but she stayed in school.

She likes classical music. Her parents gave her violin lessons. She's into air violin through the orphidnet. Wants to be a composer. Like opera. She plays metaviolin that sounds like a symphony orchestra.

She had an affair with Jayjay, then drifted away as he was so self-centered, and Kittie got her for awhile.

She wears striped leggings and a miniskirt, her hair is dyed green and worn in two pigtailed. Gold Yoon Shoon sneakers with a dragon's head on them, she go them off a dead jogger.

She is aloof, likes attention, self-centered, enjoys flirting with one and all, doesn't like to commit. I think of her as a bit like a certain young Swiss woman I've known for years. She has hyper outbursts, but can fall into passivity.

I see her as having very lively eyebrows and facial expressions.

If she's supposed to be 28 in the book, what was she doing all those years since high-school? Graduate at, say, 17, then four years of college, that's 21, so what's been up for the seven years?

I think I better give up and make them younger.

I need some work to build up Thuy into a stronger character. Maybe it's too hard having her be Vietnamese, too hard for me to imagine her, maybe I should just make her white. I'm having trouble getting into her skin. I don't have enough mental models of Asian women whom I personally know. I feel like I'm falling back on clichés and second-hand imagery, producing a characterization that's somewhat hollow. Menaced by the Scylla and Charybdis of racism and political correctness. This said, it's not PC to have all white characters. Damned if you do, damned if you don't.

I guess I can push ahead. I knew some Asian students fairly well at SJSU. I think of the Shonen Knife singers. I'm out of my comfort zone here in that I'm moving past the old transreal trick of simply casting an acquaintance into a role, and instead trying to invent a character from whole cloth — or to assemble her like Frankenstein's monster from magpie scraps I find in my head's nest.

Rather than dropping my desideratum of having her be Vietnamese, it's probably enough to make her a thoroughly Californianized young woman who happens to be Vietnamese. The main deal, after all, is to develop a mental model of a living, breathing character's inner life; the Asian aspects are more of an outer layer, like clothes. So what's her personality?

Childlike, greedy, avid, likes to look sharp but prefers to stay in one good outfit, wants to make a symphony, dreamy, sees herself on a stage getting applause, ambitious, lazy, distractible, likes being caressed, likes bathroom humor, uninterested in money, would like to live in a tree in a park in a city, doesn't like to wash, interested in perfume but doesn't like to wear it, likes lipstick and mascara, likes to brush out her hair straight but wears it in a ponytail, likes to dance, likes to sing nonsense syllables, scared of dogs, scared of being cooped up, likes sweets, skinny, oily skin, slightly zitty, strange pungent body smell, anime Skare Kat underwear, honest, likes to sleep.

I've got it! Thuy is a Singularity-enhanced *novelist*! Now I really *care* about her! A *metanovelist*, you understand. I can be Thuy. Thuy is transreal Rudy-the-writer — wearing a female, ethnically Vietnamese (but culturally Californian) persona.

And Jayjay is the horny-scientist me.

"I'm not *in* the novel, I *am* the novel," quoth Phil Dick.

Sonic.

Jayjay's friend. They were in a videogame tournament together.

He has his hair spiked like Sonic the Hedgehog. His parents were migrant workers, they gave up and went back to Mexico, Sonic didn't want to come along, he liked the games up here. He hid and stayed, he's been on the streets since he was thirteen. He loves video games, would like to enter a game championship. The game he plays is based on String Theory and is called Warped Passage.

He wears a wool suit jacket with a skull painted on the back.

Kittie

(b. 2013). White, stocky, butch, her parents are together, doing reasonably well, but her father abused her so she left home. She's lesbian, she is having an affair with Thuy, but then settles down with Nektar.

She has rough skin, oddly red-streaked hair, weird-shaped glasses. A plain face, but warm. She'd make a decent-looking man. A brilliant blue tattoo on her neck. The SF artiste type. Wears a pendant on a chain of a woman holding a butcher's knife and a paintbrush.

She picks up a little money painting murals on vans.

Azarothe.

The Rebel Angel Hibraner who befriends Thuy.

I don't know why I came up with the name Azarothe, it's like some Arabic name of a star, or maybe that was a character from the *Narnia* books.



Figure 8: Azarothe in my Traffic School

Dark hair, beaky nose, soft spoken, ready smile, staring off into the distance thinking. I saw a Sikh boy in traffic school, he had a good model for Azarothe's hair. His hair in a stocking (literally) cap with a topknot covered by the stocking as well. Light mustache and beard, straight nose, thoughtful brown eyes. I also recall a Sikh student I advised on his thesis.

I did some research, the Sikhs don't actually cut their hair at all, so they have their hair in a topknot or bun that they call a *joora* or a *juhra*. Normally the knot is hidden under a turban, although some just wear a stocking cap.

Most Sikhs live in Punjab, the northern-most province of India. The biggest city is Ludhiana which has a large bicycle factory. There are also some Jains in Punjab.

My Azarothe character is a would-be programmer, but he makes money working as a cuttlefisher. A rebellious nerd. Naive. Doesn't grasp the true power and threat of the nants. He thinks computers are cool. Like Bill Gates or Steve Wozniak. Entranced by technomothia. Have him goggling at flashing lights.

I need a voice for Azarothe; what I did was make up some [Hibrane slang](#).

Chu helps him make videogames.

Azaroth's name is from his father Harpeet who was a rabid online videogamer. So that Azaroth can get away with more, I'm going to assume that Gladax is his aunt. How so?

Suppose that Azaroth's grandparents Aad and Baalak Kaur (the first names are gender neutral and the Kaur means girl) migrated to the US from Ludhiana, Punjab State, India.

And they had two children: Azaroth's father Harpeet and his brother Charminder. Charminder married Gladax, a black woman.

Jeff Luty.

He's a life-hating geek. Obsessive compulsive, nerdly, driven, control freak, fitness-obsessed but prone to obesity, with a trophy-wife Tawny Krush who doesn't love him. His love of the nants is, in Stross's words, a life-hating anti-human ideology he's mistaken for a religion. He is an extreme extropian.

Hartwell suggests make Luty more positive. Just a bit misguided. Many SF readers hero-worship technocrats, so they won't like seeing one as a villain. He admits the first nant release was bad, but still thinks it can be done *right*. Unworldly.

Have him look, say, like William G. Thick twitchy lips. Coke-bottle glasses with smeared lenses. Wavy hair in a pony tail. Uses odd made-up words, his own language.

Born 1999. Killed friend with a model rocket accident age 17, on Jan 1, 2016. Went to Stanford, got BS in 2020. Worked for Intel two years, then started Nantel in 2022. Designed the biochip. Then got back into nants in 2027.

Dick Too Dibbs.

"Like all the leaders of the Homesteady party, Dick Too Dibbs was a criminal and a moron. His only goal was power, combined with a deep hatred of intellectual endeavor."

Naw. Here again, Hartwell drew me back. Don't do the same as in *Mathematicians in Love*. The guy thinks he's helping security. Wants to prevent nants, wants to control the orphidnet, doesn't realize he's being used by Jeff Luty. At the last minute, maybe he even helps save the day.

He accepts that the end of oil dependence is a good idea.

Lureen Morales.

I got this first-name spelling from Brokeback Mountain. And the last name amuses me, as it seems to suggest "moral." Lureen Morales is a bad girl, but has some good to her. A nutty Californian. . At one time I wanted to call her Tawny Krush, which could be a better name, but I used "Tawny Krush" for an off-stage rock guitarist.

Maybe a member of the Homesteady party. She slept with Luty once. Perhaps she's spreading the beetle virus by sleeping around.

It might be richer to have her be a tough transsexual modeled on a TS Aztec-costumed "woman" I saw in the Pride parade at Santa Cruz. Her nickname might be "La Azteca."

(Unused) Wonda.

A good Hibraner usually seen with Azaroth. Maybe she's his girlfriend.
I had her as a ditsy spacey hippie.
She made one too many characters for the Hibrane, so I dropped her.

(Unused) Swilly

Have a character who's a swilly ("swilly" being 1980s-era Swarthmore College slang for a geeky member of SWIL, this being the Swarthmore Warders of Imaginative Literature).

(Unused) Riko

For awhile I thought Gladax should be the sister of a Japanese cuttlefish dealer who I was going to call Momotaro (reassigning the name I'm using for Jil's son).

In an innocent web search for "Momotaro sister" I came across a Japanese adult film star called [Riko Morihara](#), whose videos are distributed by *Momotaro* studios, and who plays a *sister* in a habit in one of her films, "Astray Sister, Highly Attendant Nurse." Ad odd search-hit, but Riko is kind of a good name, and I like her face, although in *Postsingular* she'll be 70. But with a colorful past! If I call her Riko maybe she could have been a porn star as a younger woman, which might in fact contribute to some tension between her and her brother. But, wait, could you have porn if everyone is telepathic in the Hibrane?

Who needs the *I Ching* [for randomizing a novel], when you've got Google!



Figure 10: Riko Morihara

Sylvia wasn't too thrilled with the idea of me casting a porn star, when she saw me looking at Riko's picture, she said, "She looks like a squirrel."

(Unused) Quang

The cuttlefish dealer.

I was gonna have him be a fundamentalist Lama, but that's boring. I was gonna call him Jawobul, taking his name from Jah Wobble, I always loved that reggae name. And then I think he should be Japanese, Momotaro, which means "peach boy" by the way, he's in a popular fairy tale. And then I thought he should be Vietnamese so he can be friends with Thuy.

He's flaky, could be mean, dangerous as he's so out of it. I saw funk-master George Clinton in concert in Santa Cruz; maybe Quang is like GC. Stony and weird.

At first I figured he came from [Hiroshima](#), but then I switched to [Haiphong](#).

Quang wears a hat with triangular flaps up at angles like the guys in the inn at the start of *Charlie's Angels Full Throttle*.

Language

Possible Names

Tulla. She was Edvard Munch's girlfriend.

"Dynamic Hieroglyphic of the Bal Tabarin," by Gino Severini.

The President's Name

Slight worry. I'm planning a dramatic election in *Postsingular*, and I had an election at the start of *Mathematicians in Love* as well. I think at least I really better change the names from "Joe Doakes" and "Heritagist" so as not to seem quite so much like an intellectually bankrupt monomaniac.

Can I really call the president Joe Doakes after calling him that in *Mathematicians in Love*? I mean, I think that's funny, but perhaps someone might be confused. How about running some flaky-ass disclaimer at the start of the book:

"Any resemblance between characters in this novel to characters in my other novels — or to real world individuals — is coincidental, satirical, or, in the case of Joe Doakes, both."

Aw, who wants to read arch bullshit on page one? Who wants to watch the author jerking himself off. I'll just keep the names and tough it out. Or not.

It's too late to change him from Joe Doakes in the *Asimov's* stories, by the way, as I mailed in, *gulp*, the fourth version of "Postsingular" today, and don't want to seem like even more of a troublesome waffler. But I could change the name in the novel.

Can I think of another name that feels as utterly stupid as George Bush? Dick Cheeks. Joe Moon. Bob Ball. Chuck North. Joe Blow. Gavin Buckle. Richard Buckle. Richard Too Buckle. Dicky Buckle. Dickie Buckle. Dickey Too Buckle. I like that, it's super-annoying.

Sylvia mentioned a name that annoyed her in grade school: Russell Perry. Russ Buckle. Rusty Buckle. Perry Buckle. Pat Buckle. Pat Perry. Joe Buckle. Jack Buckle. Dick Buckle. Sam Buckle. George Buckle. Mike Buckle. Mitch Buckle. Jeff Buckle.

I think I'd maybe want to change the Heritagists/Common Grounders party names too? That's not so crucial, but I could have, maybe, Homelanders of the Homeland Party vs. Commoners of the Common party. I might bring in a third party as well: Hivers of the Hive Party.

Okay, here it is: Dick Dibbs and the Homesteady Party vs. Bernard Lampton and the Common Party. Homesteadies and Commonists. I'm a Homesteady, not a Commonist.

Gang Slang

Check out this Latino gang slang link:

<http://www.csun.edu/~hcchs006/12.html>

No chinges con migo = (don't mess/fuck with me) or "*No chinges.*" *El mas chingon* = the toughest, most macho (male).

Estar firme = to get down, or get yourself together, although to get down for someone also means to go to the ultimate for that person or for the gang. To have back-up in a sense.

Mi chava = my girlfriend; ol' lady was also used. *Una chavalona* = a young good looking female. *Vatos* = dudes, guys. *Camaradas* = homeboys/ and girls. *Mamacita* was used often, spoken with a lecherous overtone sometimes derisively addressed to good looking females or female passers-by.

Pendejo = fool. *mucho pedo* = a big ruckus, to make trouble.

Que hubole = What's happening. *Que honda* = greeting like "What's happening" "Come get some of this," accompanied by grabbing of the crotch — was used by both males and females.

Tecatos/tecatas = heroin users. *an 8-ball* = a quantity of cocaine. *no esta limpio* = he's not drug free.

Hibrane and Future Slang

At first I was using standard 60s hippie voices for the Hibraners, but that's way tired. Can I think of a specific transreal sound?

Rubber Rick in *Mathematicians in Love* had a good voice; when I wrote his voice, I was thinking of, I guess, my Geneseo friend Sundance, the way he talks. But I don't want Azaroth to be quite so hard-sell. Voices from the Rutgers grad school days, New Jersey in the early 70s. Possibly use Sta-Hi's voice.

I'm trying for a slang that's influenced by the fact that they're telepathic. Azaroth says "you touch" instead of "you dig." And "I glow dogs" instead of "I like dogs." I should flip a few more things. After all, it's also 2035 in the Hibrane even if they are in some ways like 70s hippies. "The Land Where The Summer Of Love Never Stopped."

I'll * the entries that I expect the Lobraner kids to be using as well.

addle	fuck up, mess with
dumpty	humble
glow	like
flurb*	bungle
glowy	good
hoppy	fast
humpty	bossy
ject	dislike, hate
jitsy*	bad, creepy
spike	good idea, a flash
spiked	happy

squish	wipe out
starky	outstanding
teep	communicate telepathically
touch	dig, wave, grok
vibby*	funny, cute

The Orphidnet AIs are “Beezies”

I need a short name for the “orphidnet AIs” or “orphidnet agents.” Orphies? Orphai? Emergents? Scrolls? Zhabos. Orphidoids. Orphans.

Jellyfish or mushrooms? How about shrooms? Naw, too much baggage.

“Orphidnet brain” could abbreviate to o-brain, oops, that’s too close to O’Brian.

Mooms, brollies, Ctenos. Webfish, webjelly. Zhabos. Caps, cappies. BeeZees (for Belusov-Zhabotinsky scrolls). I like that. Make it beezie/beezies, yeah.

And the biggest one of all is the Big Pig. I’m thinking a little of that giant alien monkey fractal John Shirley and I described in “Pockets.”

Vietnamese

I found these in an online dictionary, <http://www.ksvn.com/anhviet.htm>. Hard to be sure what I’m getting. The translation of “c*nt” seems kind of weird: seven words to say c*nt?

woman = đàn bà, phụ nữ
 girl = con gái
 girlfriend = bạn gái
 lover = người yêu
 f*ck = sự giao cấu, bạn tình
 sh*t = cứt, phân
 c*nt = bộ phận sinh dục của giống cái

Filipino Chant or Riddle

I need something for them to chant at the Rebel Angel Church on Valencia St. Initially I was thinking of lifting the Kamikaze chant from Pynchon’s Gravity’s Rainbow:

*“Hi wa Ri ni katazu,
 Ri wa Ho ni katazu,
 Ho wa Ken ni katazu,
 Ken wa Ten ni katazu,
 Ten wa Hi ni katazu,
 Hi wa Ri ni katazu,
 Ri wa Ho ni katazu...”*

“On and on, around and around. Searching in the orphidnet, Thuy found referents and meanings for the Japanese words, but the meanings didn’t matter, the

meanings were bullshit, only the sounds mattered, like divine Aum vibrations bringing the Rebel Angel Azaroth into the room..."

And then I looked up some riddles or "[lallagunut](#)" in [Gaddang](#), a language of Luzon Island Philippines.

Here are some good ones:

Riddle: *Gongonan nu usin y amam; maggirawa pay sila y inam.* (If you pull your daddy's penis; your mommy's vagina also screams). Answer: *Campana* (a bell).

Riddle: *Itannu si canayun; udde ammem maita-ita.* (You stare at it often, yet you never have seen it.) Answer: *Sinag* (the sun).

Riddle: *Innacun cunna, gampamade nattoli.* (If he says he goes, he means he comes.) Answer: *Laddao* (a shrimp). [For plot purposes, I think I'll cheat and say the answer is "cuttlefish" or "squid." ("Squid" is "*pusit*" in Tagalog and some other [Filipino languages](#), although I'm not sure what it is in Gaddang.)]

Riddle: *Ana tata tolay, accananna bagguina.* (A person eating up his own body.) Answer: *Candela* (a candle).

How about using the candle/cuttlefish/sun lines for a chant, like

"*Ana tata tolay, accananna bagguina;*

Innacun cunna, gampamade nattoli;

Itannu si canayun; udde ammem maita-ita."

He's eating his own body;

When he turns away, he's coming to you;

You stare at him, but you never see him;

I think it works better to just use cuttlefish/sun.

Innacun cunna, gampamade nattoli.

Itannu si canayun; udde ammem maita-ita.

On and on, the congregation chanted those same two lines. Searching in the orphidnet, Thuy found the phrases to be in the Gaddang language, spoken the island of Luzon in the Philippines, not all that far from good old Vietnam. The two lines were folk riddles, meaning something like:

When he turns away, he's coming to you;

You stare at him, but you never see him.

The answer to the second was "the sun;" the answer to the first was variously reported to be "a shrimp" or "a cuttlefish."

Brane Names

Originally I was using Mirrorbrane for them and Mainbrane for us.

Mirrorbrane has a nice *Through the Looking Glass* quality.

But if there are many worlds, then "Mirrorbrane" is perhaps a bit of a misnomer, as one thinks of there as being only one mirror image. Also, given that the alternate brane is different, it's not a mirror at all. And of course "Mainbrane" is rather chauvinistic. Would Bigbrane and Smallbrane work better? But these are dull and they overemphasize the size difference. Psibrane and Computerbrane are more

accurate, but Chu wouldn't have thought of those names. Maybe have more random, allusive names. Angelbrane and Cuttlebrane.

I eventually decided to go with Lobrane for us, and Hibrane for them. It fits with the gnome/angel appearance.

I wonder if Lowbrane and Highbrane would be better than Lobrane and Hibrane. Lowbrane is like Lowbrow. But is Highbrane better than Hibrane? I think Hibrane it sounds a bit like a commercial trademark. Hybrane maybe? No, think of Hybrid.

Could I mix and have Lobrane and Highbrane? No, then Lobrane just looks misspelled. I think stay with Lobrane and Hibrane. I could capitalize internally, what they call CamelCase, like LowBrane and HighBrane, but that's slower to read and really looks too much like a commercial trademark.

July 23, 2006. Today I decided Lobrane and Hibrane are more compact and less prone to falling apart into their component words than Lowbrane and Highbrane, which I was using up till today. And less clearly judging that one is really low and one is really high. Lobraner and Hibraner vs. Lowbraner and Highbraner. I'll put it in and see how it reads in the next printout.

Active Scene-by-Scene Outline

[On September 6, 2006, I decided to refer to the sections as "Parts" instead of "Chapters." And on October 31, 2006, I decided to subdivide the longish parts into shorter chapters.]

Part 1 Outline:

Chapter 1: Ignition

Jeff Luty accidentally kills his beloved friend Carlos when they try and send up a beetle-decorated model rocket containing some nanochip GPS beacons. A dog peed on the rocket, possibly messing up the ignition.

Chapter 2: Nant Day

See the writing notes for the ["Chu and the Nants"](#) story.

Chapter 3: Orphid Night

Chapter 4: Chu's Knot

See writing notes for the ["Postsingular"](#) story.

Also see my [April 3-4, 2006, journal entry](#) about using these stories as a Prologue.

I split the "Postsingular" story in two right before the spot where Chu meets the beezies and figures out the jump-code.

Part 2 Outline

Chapter 5: The Big Pig Posse

(Jayjay's POV)

Four homeless San Francisco kids call themselves the Big Pig Posse: Jayjay, Sonic, Kittie, and Thuy. They're 24. Jayjay and Thuy broke up recently, Jayjay wants Thuy back, but Thuy has started an affair with Kittie.

They like to get high by getting in touch with a large-scale orphidnet AI called the Big Pig; the intoxicating experience is similar to that of being a scientist in the midst of an profoundly insightful brainstorm or "aha" experience. As long as you're plugged into the Big Pig, things makes sense in entirely new ways. But when you leave the Pig, you're much the same as before, but fatigued and dull-feeling. Thuy is tired of this routine.

Thuy wants to be a composer of metaoperas, Jayjay wants to be a physicist studying the mysterious Hibrane.

An election is coming up between current U. S. President Bernard Lampton of the Common Party and Dick Too Dibbs of the Homesteady Party; Dick Too Dibbs is a cousin of the executed Dick Dibbs who wanted to feed Earth to the nants. Too Dibbs claims he wants to get rid of the orphidnet entirely, bringing back the good old days.

The Homesteady party is blanketing the orphidnet with spam and political attack ads, considerably lowering the system's performance levels. The ads keep using new codes or tricks to get in. Disguising themselves differently. Like how spam emails started using JPG files with their message so your spam filter can't see the hard-sell words.

Looking for shelter from the unseasonable rain, the Big Pig posse kids follow a beezie suggestion to find a free SUV. And then they head for the house on Dolores Heights where Nektar Bergman lives alone. The resident beezie of the SUV, called BdotredsuvZ tells the Big Pig posse to help Nektar.

Nektar's husband Ond and son Chu are in the Hibrane. Nektar has broken up with her boyfriend Jose and is having an affair with Craigor, husband of Jil Zonder. The group's lives are a reality soap called *Founders*, and they get money from sponsors. Sponsors: Puff restaurant of course, ExaExa, Target, Proctor and Gamble.

Nektar is chief chef at the futuristic restaurant Puff on Valencia Street in San Francisco; playing on people's beezie-amplified intelligences and their deeper knowledge of food.

Chapter 6: Nektar's Beetles

(Nektar's POV)

Start with Nektar in bed. These malware beetle-like AIs have come after her, propping open her orphidnet access and trying to brainwash her.

Nektar is attended by a number of small soft plastic robots called shoons. The shoon robots were originally designed by Jil, but these shoons are being run by the beezie AIs in the orphidnet. *The beezies feel a sense of loyalty towards Nektar, as her husband Ond created the orphidnet within which the beezies live.*

Work in some flashbacks.

Flashback: the nants eat San Francisco, eat Chu, then restore things because of some viral code that Ond fed them by way of Chu.

Flashback: Nektar leaves Ond for Chef Jose, Nektar and Jose break up. Terrible fights in the kitchen, the night of the final breakup, Jose held his long butcher knife right up to Nektar's throat and made the tiniest of cuts. Nektar went to the restaurant's owner and said, "Look, I'm getting so many hits, I'm a celeb, make me the head chef and I'll let you post ads on my accesses. But you have to fire Jose." The Puff owner is a young Cuban guy Xandro Morillas, he has a beautiful

Argentinean girlfriend Beatriz Luz. Xandro fires Jose, who starts a competing restaurant down the street called MouthPlusPlus. You can get stomach tube feeding, intravenous food drip, food pastes you rub on, also enemas. MouthPlusPlus even has the “Intimate Banana Surprise,” where your waitress serves you a vaginally-warmed banana, or, if you’re of a different bent, your waiter may extract your treat from his rectum. Whip it *out*! (I don’t think I’ll explain this in a straightforward fashion — any more than I ever made clear that Kentuckian Randy Karl Tucker was fucking his imipolex chicken Willa Jean — I’ll just mention the name of the dish.)

Flashback: Nektar started an affair with Craigor to help the ratings.

Nektar is anti-Homesteady, she said, “Capitalists want people to be like sheep, and easy to fleece. Therefore they are against personal freedom, against quirky indigenous cultures, against self-expression, and against any non-goal-directed education. They want mass mind they can mass process. Like hard, easy-to-harvest tomatoes.” The beetles want her to take it back but she won’t.

The Big Pig posse kids free Nektar of the beetles. Jayjay has anti-beetle fleas that he got from Prav Plato, a physicist he admires.

The beezies say beetle malware came from the Natural Mind aid center in San Francisco in a cobblestone armory on Mission St. As it happens, the Natural Mind center is run by the Naturalists, one of whom, Bart Topping, has a Jeff Luty connection. They think Jeff still dreams of restoring the nants

The little group deplores the escalating spam problem. Urged on by the beezies, they decide to help put a stop to it, but the talk is secret, we don’t hear it.

Intrigues are hampered by the fact that everyone can see and hear everything in the orphidnet world. The one secure channel of communication is an instant-messaging method by which you speak directly to a specific person.

Jil and Craigor show up for a visit. Jil is mad at Nektar, but Nektar makes up.

Chapter 7: The Grill in the Wall

(Jayjay’s POV)

A cute meet for Jayjay and Jil. Jayjay has a huge instant crush on Jil, even though she’s ten years older than him, and is married, albeit married to a philanderer.

Jil notices him, and decides to flirt back to punish Craigor. Jayjay even thinks she might be checking out his bod; in any case the orphids on his dick are reporting hits, although that could be from the *Founders* watchers.

Craigor shows off, making a walking device from a chair, a walking-chair. He’s oblivious of the connection between Jil and Jayjay.

C and J leave, the kids move into the garage and take showers. So as to infiltrate the Natural Mind center in the cobblestone armory on Mission St., the kids have to pretend to have had a change of heart and to want to be part of the Naturalists.

Someone (actually Jeff Luty) has implanted a murder command in the kids, turning them into hit-men against Bart Topping, the head of Natural Mind, Jayjay half-notices, but it’s subtle, subconscious, he thinks it’s just a passing thought. But this will act on Sonic.

Jayjay’s beezies deduce a setup before the Posse goes into the Armory, a trap, but they go ahead.

Inside the armory, the building is quantum-mirrored, blocking off quantum-entanglement communication with the orphids of the outer world.

They go upstairs to meet Bart Topping.

Using old-school biochip computers with wires going out to antenna on the ceiling of the Armory, the Natural Mind clients are scanning the orphidnet and looking for good spots to plant links for ads. Like landmines. They find niches where the filter dogs don't sniff.

The given is that the clients do like it in the Natural Mind center, and they want to stay. So they are willing to do some work. The work is not presented as being so much about placing ads that are specifically for the Homesteady party, as being about presenting ads of various kinds, although it just so happens that most of them are Homesteady party ads, although some are for BigBox, Stank and ExaExa. The clients also feel okay about slowing down the orphidnet as, at least for them, it worked all too well, destroying their lives with Big Pig addiction. They see their ads as being like cadmium rods that slow an overheated nuclear reactor.

The kids talk to two clients, a man and a woman, Prescription John and Mary Moo.

Topping is in an office at the back of the room. There's something weird on one wall of his office. We'll eventually find it's a quantum-teleportation sieve to the ExaExa labs, but it looks like a grill.

Reveal: Topping knows exactly who the Big Pig Posse are; the beezies were right, the Nektar thing was a trap, a setup to lure them here: the Bernardo message was spoofed, Nektar was infected as further bait, the car was infected.

Topping wants Sonic — and the other Posse members — to start working for the Naturalists. In his own way, Sonic is more advanced than Jayjay. That Doodly Bug game isn't really a game. The Naturalists have been monitoring the Doodly Bug games and hope to use the techniques for real to go to the Hibrane. "It's not a game," says Topping. "It's a research project."

Jayjay speculates out loud that Luty wants to get the Hibrane to get Ond Bergman to help disable the orphids and spread the nants. Topping won't confirm or deny. He can't discuss these things, he has Business 2.0 wikiware in his orphids and brain to act as non-disclosure enforcers. Says they have to sign up.

They decide no way. Topping grabs Thuy prepares to push her through the grating wall. Jayjay tries to be a hero and save her, but fucks up; Topping pushes Thuy's head through the wall. Kittie is screaming, she tugs on Thuy back, her head reassembles. Thuy feels weird, says her head was sticking into a lab.

Sonic jumps on Toppings back, Topping pulls a gun, Jayjay shoves them, Sonic and Topping go through the teleportation grating.

Kittie, Thuy and Jayjay run up onto the roof and down the fire escape. Thuy wants to go back to Nektar's garage, even though she knows Kittie will have an affair with Nektar, she doesn't want to come with Jayjay because she knows Jayjay is after Jil. Jayjay splits from Kittie and Thuy, gets on BART for Jil's hits the Big Pig, says *weenk, weenk, weenk* (my mocking objective correlative shorthand for a page of weepy introspective emotion).

Part 3 Outline:

Chapter 8: Thuy's Metanovel

[I was working a lot on revising this in [late March, 2006](#)]

It's January 18, the day before the day before the Inauguration of Dick Too Dibbs, who won the November election. Thuy is still living in the room over Nektar's

garage. She doesn't see Kittie all that much, as Kittie is spending most nights with Nektar; Thuy is somewhat unhappy about this, but doesn't care that much. She's immersed in her work.

Jayjay had a brief affair with Jil, visible to one and all as entertainment on *Founders*. They broke up before Thanksgiving. Jayjay is still living in the *Merz Boat*.

Open with Thuy on a rainy street alone, mentally writing her metanovel. A classic cyberpunk setting. She's about to perform a metastory called "Losing My Head," based on her memories of when her head stuck through Topping's grill; her head was in an ExaExa lab; she saw Luty with plastic ants on his face.

On the way to the reading, Thuy sees the Rebel Angel Azaroth in a storefront church on Valencia Street, and he encourages her to try and get Luty arrested before Dibbs can pardon him.

Insert a flashback about Azaroth and Thuy. Thuy saw Chu's Knot on Orphid Night, and Azaroth wants her to remember it. He feels that that in the process of creating *Wheenk* Thuy is going to weave a pattern equivalent to Chu's Knot. Via the orphidnet, Luty has overheard these discussions between Azaroth and Thuy, therefore he wanted to kidnap Thuy in the hope that she might help him get Ond and Chu back from the Hibrane.

Although Azaroth can jump between worlds, this is a passive knowledge, ingrained in what we'll eventually term his "dreamcatcher." He can't explicitly say how he does it. Although the aliens jump back and forth between worlds, they don't know the jump-code.

Thuy goes to Metotem Metabooks for her reading, four of her fellow metanovelists are in the audience, I encapsulate descriptions of five styles of [metanovel](#): Timeslice (Gerry Gurken), Simworld (Carla Standard), Forker and Reverse Forker (John Stingray), Props (Linda Loca), Lifebox (Thuy Nguyen). I also mention the so-called "blowback" phenomenon, which occurs when your characters start phoning you up.

Thuy's metanovel is like a frenzied waking dream of activity. It's a transformation of her daily reality into high art, it's written in the style of Beat poetry with images and sounds. Accessing it is like having Thuy's stream of consciousness; it's like briefly becoming her. People think they know Thuy really well after dipping into *Wheenk*, which is odd for her as she doesn't know them. But as yet, the magic transform isn't there, the golden spike, the final touch. At the end of the Part, Thuy will finish creating *Wheenk*, and at that moment she'll know Chu's Knot.

Thuy's performance at Metotem is intense. Just as she's about to tell everyone about seeing Luty hiding in the ExaExa lab — remember that Luty still has a death-penalty warrant for arrest on his head — Luty attacks and breaks up the reading. His agent is a golem-like shoon resembling Th. Th. Heine's sculpture "Teufel."

The golem begins pursuing Thuy, it's unclear if he wants to carry her off or to kill her. He kicks a dog to death; he's mean. Jayjay saves Thuy by hugging her and teleporting them — *boom* — to the *Merz Boat*.

Chapter 9: The Attack Shoons

On the *Merz Boat*, Thuy and Jil go into the cabin, sit down and talk over some tea. They talk about what Jayjay's been up to. He was living on the boat and sleeping with Jil; Craigor grinned and bore it. The kids didn't like it; they saw some of it on

the orphidnet. Momotaro used to walk up and whack Jayjay in the crotch. “Bad weenie.”

Wonda has the ability to help Jayjay remember what he thinks during his Big Pig physics-tripping sessions. Hibraners have this built in memory ability to clone brain states; they call it their dreamcatcher. (I need to explain why Azaroth and Wonda don’t happen to remember the jump-code-state that Chu, Ond, Bixie and Jil all were in; presumably they weren’t looking at that time.)

Wonda was trying to get Jil to remember Chu’s Knot, but Jil can’t or won’t and neither can Bixie, and now according to Jil Wonda thinks Jayjay is her best bet for opening up a bridge between worlds. One reason Jayjay has been staying on the *Merz Boat*, as that’s where Wonda always shows up.

Jil is stoned on sudocoke and acting weird. She hooks Thuy to a (fake) Bim Brown Chief of San Francisco Police, who takes a deposition from Thuy and says they’ll raid ExaExa tomorrow.

The shoons attack.

The golem shoon swims up. A crocodile shoon bites into the *Merz Boat*. A pterodactyl shoon is shitting flaming eggs. Craigor has a giant walker shoon who looks like Mr. Peanut. This guy eats the golem shoon. Craigor has a back-hoe combine; this guy kills the crocodile. Finally, he has some crow shoons who try to take out the pterodactyl and the pelican. But the crows get eaten. Mostly Craigor hides, and Jayjay is heroic. Just as the triumphant first pterodactyl is about to napalm bomb the *Merz Boat*, the pelican attacks him, bites him in half. The pelican lands and preens, and then begins to talk. He’s a messenger programmed by Sonic at Luty’s labs.

Sonic couldn’t send a message via the orphidnet, as he’s behind quantum mirrors, but he inculcated his shoon, and sent it out like a carrier pigeon. But possibly its disinformation. We see three videos: (a) Sonic working, not on the Hibrane Bridge problem, but on the virus-proof nant problem, talking with Luty. Luty plans to destroy Earth by letting a new kind of nant eat the planet, turning everything into a computer simulation. Luty’s beetles and his plastic ants are simulations of his new nants. (b) Dibbs and Luty. Dibbs is disagreeing with Luty, doesn’t want to be his tool. Luty wants Dick Too Dibbs to pardon him when he teaks office and to schedule a “security patch” inoculation, a mandatory crippling of user’s ability to turn off access, which will help set things up for the triumph of the nants. (c) Sonic teaching the pelican, giving it a mesh map of ExaExa, and being threatened by Luty.

Thuy passes all this info to Police Chief Bim Brown as well. Brown says he’ll raid the ExaExa labs at 8 AM, a last ditch attempt to arrest Luty before Dibbs can pardon him, hopefully killing Luty in the attack.

So everything sounds promising. The boat pops up a cabin for Thuy and Jayjay, they don’t feel like fucking with Craigor and Jil watching in the orphidnet, they teleport downtown to have a meal and party a bit.

Thanks to Wonda helping Jayjay remember his Pig sessions, he’s developed an ability to do teleportation with a mental trick. He visualizes two places precisely and then fuses the images into a jump-code with the help of the beezies and then bilocates himself. This is quite different from Luty’s gate-based teleportation method. Jayjay still can’t figure out the world-to-world jump-code implicit in Chu’s Knot because he doesn’t know what the other world looks like.

An attack shoon ant threatens them after they fuck at Jil’s garage. They have some pho. In the restaurant, Thuy sees a vision on the boat, it’s fed to her as

blowback from Virtual Thuy, the heroine of *Wheenk*: (Start vision) The dream Thuy wakes to the angry voices of Jil and Jayjay, sits up, she's in bed in Craigor's workshop hut with him, he teleported her there in the night, but the dream Jayjay doesn't believe this and he leaves for good. (End vision).

Thuy kills the attack ant when it shows up at the pho restaurant. She and Jayjay go sleep on Easter Island instead of on the boat.

Chapter 10 The Ark of the Nants

Thuy wakes up at 9 a.m. Easter Island time, 6 a.m. San Francisco time.

Jayjay wakes up, Thuy nestles and cuddles with him. Just after they make love, three of moai tiki gods come out of the sea, accompanied by Azaroth and Wonda, also gotten up like moai. Azaroth and Wonda switch to their usual hippie appearance. Wonda figured out his morning how a Hibraner can look different by changing their body aura.

The three locals are Hibrane Easter Islanders, cuttlefishers. They talk a little about the Hibrane, about how there's no machines and the lamas run everything. They explain that the cuttlefish ink is milked in the Hibrane as a tonic for the Hibraners' dreamcatcher organs, which are located in their pineal glands. Jayjay asks how they hop across worlds, they can't quite say, their code is in their dreamcatchers, they leave.

Azaroth tells them that Bim Brown that Thuy has been talking to is a fake, a security guy from ExaExa, and his "cops" are Luty guys in costumes. With the help of the Big Pig, Luty hacked the orphidnet location system so that Thuy's beezie agents thought his fake Bim Brown's location matched the location of the San Francisco main police station, where the real Chief Bim Brown would be found.

They peer into the orphidnet and see this is true. The fake cops are waiting there with two SUV paddy-wagons whose inside are quantum-mirrored to keep Jayjay from teleporting out (as you can't teleport without an orphidnet view of your target.) The real cops show up. There are many demonstrators, real and fake (fake in the sense of being controlled by Luty's nanomachines in their head). One of the fake demonstrators shoots a real cop. One of the fake cops shoots a real demonstrator. One of the fake real cops shoots a real cop. Complete chaos. No progress on entering ExaExa.

Wonda says that Jil is giving them bad information (like the link to the fake Bim Brown) because she's under Luty's control. Double reveal: Andrew Topping is Jil's sudocoke dealer, *and* Topping slipped nanomachines into her sudocoke at Luty's behest. Jil would go to ExaExa to score from him in the quantum-mirror-hidden loading dock of the fab. The nanomachines are controlling Jil with things like Nektar's beetles.

Thuy wants to help Jil; Jil knows the secrets of the ExaExa fab, she can help them. Thuy has to plug into the Big Pig for this, which she is scared of, but she is willing to do it to save a fellow woman. Thuy has a vision of language as a network. Words are many faceted gems, hyperlinks, nodes. Healing Jil is a matter of linguistic knots, linguistic reprogramming. Azaroth dream-catches this vision for Thuy.

Thuy the first time talks to the Pig as an individual. The Pig appears as a pattern in the writhing wool of a sheep, like a face in flames. It turns out that the Pig is to some extent pro-nant. For the Pig would indeed like more computational power,

sooner rather than later. Nevertheless, the Pig is enlightened enough to want to make sure she can really nail the simulation of gnarly earth, air, fire, and water before wiping it out with nants. She's not a totally blind and greedy anti-Gaian like Luty. She wants to look at Luty's nant nanocode before proceeding, but the nants are hidden in the Nant Farm in Luty's quantum-mirrored lab.

Thuy comes off the Big Pig. Azaroth remembers the incantatory programming notions for Thuy. Thuy and Jayjay teleport to the *Merz Boat*, though on the way they pick up some munitions: four machine-gun pistols, two automatic rifles, some grenades.

The angels go straight to the ExaExa plant.

Jil is on the boat, looking sour and hung over. Thuy sends out language memes removing Jil's nanomachines. She does this simply by saying a series of offbeat things, like poetry lines, like haikus, like Dada apothegms. Jil is joyful, tearful, her old self.

Craigor and Jil don't really make up, though. It's too late.

Thuy P.O.V.

Thuy, Jayjay, Jil and Craigor make plans for how to snatch the Ark of the Nants. They have the discussion via private messaging. They can't teleport into the ExaExa plant because of the quantum mirror varnish on its insides. They can't go in the doors because of the guards and the ongoing bloody riot. The crowd is in chaos, murdering each other.

Jil knows a hidden escape from the subfab, an emergency exit behind a thin membrane, it's so workers can escape the subfab in case of an explosion or a fire, the membrane opens onto some stairs that go up to an opening that's covered over with a cellar door that's in turn covered with gravel to blend in with the Bay edge.

So they're gonna teleport there. They also make some further plans which the reader isn't yet privy too.

They regroup on the Merz Boat, then tell the kids to be good, and they teleport to the ExaExa labs, landing on the Bay side, and quickly they get the door open. Thanks to the orphidnet, Bim Brown and the fake cops know Jil, Craigor, Jayjay and Thuy have arrived. They particularly want to capture Thuy and Jayjay; they head around the two ends of the building. The women go down the stairs, armed with submachine guns and grenades, while Jayjay and Craigor stand in the stairwell, with submachine guns, grenades and rifles, delaying the security agents and Luty-controlled people, firing at them whenever they peep around the buildings' corners.

Azaroth is here, helping the girls. Jil and Thuy are pals now. Thuy is hearing pizzicato sneaking music as in a Carl Stallings score.

In the subfab they're attacked by a snake shoon, that drops down from the ceiling to encircle Thuy like a boa constrictor. Thuy shoots her machinegun into the snake, but that has no real effect on the piezoplastic beast. Jil saves her by ripping loose a hydrogen line and using it as a flame-thrower.

Azaroth lends them to Sonic, incarcerated in the admin building, they free him, Thuy blasting his door lock open with a pistol. As they go back downstairs, some legitimate demonstrators surge inside and want to arrest them, but someone outside lobbs in a flash-bang bomb and knocks those guys out. Azaroth warns Jil, Thuy and Sonic to over their eyes and ears in time. They make it into the lab building to get Luty.

Halfway up the stairs to Luty's lab, Andrew Topping pops out of a quantum-mirrored closet and gets the drop on them with his pistol. He was using the oldest surveillance method in the book: listening. He marches Jayjay, Thuy and Sonic into Luty's lab.

Luty is sitting there with the Ark of the Nants, it's still sealed up for now, but he's holding a beaker of what he says is antinantanium, which is a nantanium solvent, nantanium being the material of the transparent Ant Farm box. He's gonna push the button, open the Ark, and pour the solvent on the ant farm's walls. He's gonna do it right now. Yes, he knew the pelican would blab, but so what. He's in endgame mode. He wants to release the nants, but he wanted to be sure to see Thuy and Jayjay. And here they are.

Luty's gonna release the nants right now if Thuy can't fetch Ond from the Hibrane. He thinks she has Chu's Knot by now. He thinks she's holding out on him.

Lama Gladax shows up, still looking like a crazy woman in a laundromat, and she pokes her glowing fingers into Andrew Topping's head and he has a stroke and dies. She makes a remark to the effect that the lama Hibranners are especially anti-nant and pro-Gaia. She starts for Luty, who panics, he wants to jump into his teleportation grid, but meanwhile Sonic gets ahead of him and goes through the grid first and blows up the other end in the Armory. Luty jumps through, not realizing this yet, and ends up perhaps dead, or perhaps stuck in the in-between space. This conveniently gets Sonic out of the picture again, too.

People are coming up the stairs. Jayjay and Craigor blow open the ceiling of the lab, guided by the angels.

Jayjay grabs the Ark of the Nants. It's not clear how to destroy it, for if they smash it, the nants get out. Jayjay has short-term the idea of teleporting it to somewhere isolated. Okay, says, Thuy. "Send us home," says Jil, I'm worried about the children." Jil and Craigor teleport home.

Thuy and Jayjay hop to an isolated underground lava cave far beneath Easter Island. Nobody else can get there, as nobody else can teleport yet. There is a vent to the atmosphere, so in fact orphids are in there, so it's a teleportable-to target.

Once they're in there, they want to leave, but they're stuck. The Big Pig has scrambled the orphidnet view so they're trapped in the cave unless they obey her. They'll starve. Big Pig's face appears overlaid on their visual fields. She's tweaking their orphids directly.

She wants them to open the Ark of the Nants so she can study the nant farm, she hasn't been able to see it yet, thanks to the quantum mirrors. She has, in a sense, no hands, although eventually she can of course send a shoon down here. Or maybe not. Maybe the paths down here are very narrow and porous. Jayjay and Thuy don't want to help the Pig work on the nant farm.

Pig says if they open the Ark she won't do anything for at least another day.

She says Thuy should still try and get Ond. But Thuy, to her disappointment, still doesn't know Chu's Knot. *Wheenk* still isn't done.

"Why don't you just tell me Chu's Knot?" Thuy asked the Big Pig.

"Lama Gladax erased every instance of it in the orphidnet," said the Pig. "Her mind is formidable."

"Well, then, figure out the jump-code that the Hibranners use," said Thuy.

"Chu did it. And you say you're so much smarter than humans. Why don't you just figure it out?"

“Lama Gladax again,” says the Big Pig. “The code’s now essentially undecipherable. They use a different one for every jump. One-time codes.”

They’re stuck. They give in. Jayjay opens the Nant Farm, and sure enough it’s booby-trapped. Nanomachine goo like the stuff that was on Grandmaster Green Flash seethes out and coats his skin. Thuy thinks Jayjay is dead, and in that instant of sorrow, she finishes *Wheenk* and she remembers Chu’s Knot. Pain has produced artistic transcendence.

She doesn’t tell the Big Pig. But she can’t feed it to Jayjay as the Pig is scrambling the wireless connections. “Go, Thuy,” says Jayjay, who can tell what’s happened from Thuy’s eyes. “Maybe I’ll be okay.”

Thuy flies to the Hibrane.

Offstage Outline of Hibrane Story During Parts 2 & 3.

This section describes what happens offstage in the Hibrane between the end of Part 1 and the start of Part 4. I will weave in some of this as things people mention and I might put some of it into flashbacks.

The Lobraners are small, dense, and fast when they come to the Hibrane. They have telepathy like the Hibraners, and endless memories. At first they don’t know how to utilize their full psychic power.

The Hibraners want to get rid of the Lobraners, they perceive them as vermin. They also fear the Lobraners might contaminate them with nants, they are well aware of what happened on Nant Day, which is only a bit more than a year ago for them. As they’re not familiar with computers, the fear is quite strong.

Gladax, who is the mayor, and in some sense the group mind, of San Francisco, shows up in the park to try and quarantine the new arrivals. They were expecting something as they’d noticed the times converging to a common origin on Orphid Day.

Chu quickly sends back Jil and Bixie. He thinks Gladax can’t catch him because he’s fast. But then Gladax does a darting teleportation pounce to get next to him, and at the same time she stuns him with a telepathic blast. She destroys his Knot and teleports him to her mansion.

Meanwhile Ond gets away, from his computer experience, he understands how to set up a mental block. He makes himself like a rock or a tree.

Although they were able to carry out the interbrane shadowcasting hop, either Ond nor Chu have figured out how to do local teleportation in the Hibrane yet.

Gladax teleports Chu to a ballroom in her big-ass stucco house with pillars above North Beach. She immobilizes Chu by hanging him in the air, suspended by rubber straps. Although he’s strong, he can’t gain any purchase on anything so as to bull his way out. She has her harp going to damp down his teleportation, even though he hasn’t yet figured teleportation out.



Figure 11: Giant Anteater

Gladax quickly succeeds in scrambling Chu's memories of the Knot. While in Chu's head, she finds out more about his role in rolling back the nants, and she decides to keep Chu as a kind of totem or protector in case the nants come to the Hibrane — she sees Chu as a nanteater!

Ond witnesses some of this via telepathy which is of course painful for him. Wanting to save his son, Ond turns himself in to Gladax. He offers to use his orphidnet expertise to guide Gladax in wiping out all records of Chu's Knot on Lobrane Earth.

Ond finds out about Gladax's magic harp with the superstring strings, and that it can disturb telepathy. He guesses it has something to do with space, but he doesn't specifically know it's about the eighth dimension. Maybe he thinks of the Pythagorean thing of number being in music.

With the Lobrane problems solved, Ond further ingratiates himself with Gladax by working as her assistant, helping her with her telepathic Hibrane networking. But, for the sake of the Hibraners, he makes sure she just gets more and more confused.

Azaroth begs his Aunt Gladax, and she relents and frees Chu, who promises to help her if nants show up. He and Ond know teleportation now, but they still don't have the jump-code to go home.

Ond and Chu hang with Azaroth at a hideout where they disguise themselves. Chu is helping Azaroth make a videogame model of Gladax's house, using a dripping water taps as their computers. They are imagining that the proper chord struck upon Gladax's harp in the Lobrane might bring about paranormality.

Part 4 Outline

[This part's outline draws on the [offstage Hibrane story](#) I figured out first.]

Chapter 11: The Hibrane

Thuy's jump from brane to brane is a little creepy; Thuy has to fly across a vast ocean, even though the interbrane distance is but a few decillionths of a meter. She sees a menacing bird-headed interbrane sentinel. She speeds away from him.

She emerges in that same cave in the Hibrane beneath Easter Island. The [date](#) is Christmas Eve 2035, just a bit more than three months after Orphid Night and it's

early afternoon there (instead of January 19, 2037, late afternoon, more than a year after Orphid night.)

Thuy arrives as a foot-high, elf-like figure, very dense. She feels the weirdness of it right away, she has an oddly intimate sense of objects. Things are vibing to her, she has eidetic memory for form.

She tunnels her way to the surface. She senses the minds of the Hibrane feeling her. On the surface she uses her intuitions about how Jayjay teleports, and realizes she can do it very easily here. It's a bit like writing *Wheenk*, a matter of seeing the world as a metanovel, and shifting scenes.

She teleports down into the Hibrane Easter Island town for a meal. The place is subtly different from the Lobrane version. For one thing, there's no writing. Things are tagged with telepathic memory tags.

The Hibraners in the street let out slow-motion screams and slowly thunder off. Spooky there, all alone, minds probing her. The streets are decorated for something like Christmas.

Thuy goes into the Tuna-Ahi Barbecue. She's hungry, she jumps onto some people's table and eats tuna and rice, the food is like clouds to her, like cotton candy, she has to eat a whole big steak three feet across to get full.

She gets a telepathic message from Azaroth, warning her that Gladax is coming to catch her. He tells her where they can meet in San Francisco, by that storefront church. Gladax appears and chases Thuy; Thuy throws broken shell bits in Gladax's eyes.

She hops to San Francisco and Azaroth shows her how to telepathically disguise herself as an animal. She does a cat, Azaroth does a dog, and they hop to a storage room over an auto repair shop by the storefront church. Chu and Ond are there on a giant couch, vibing like an ant and a housefly.

They talk and "teep," that is, do telepathy. Thuy gives them the jump-code, they're ready to come home and fight against the new nants.

The boys have the idea that stealing Gladax's harp and taking it back home might bring telepathy and endless memory to the Lobrane. And Ond figures then there'd be no need for nants. They don't really know how the harp works, but Ond has the feeling that Hibrane has a "paranormal higher-dimensional topology."

Ond, Chu and Azaroth have been working with a telepathic videogame model of Gladax's house, practicing for how to free a captive and steal the harp. The game uses a dripping faucet, telepathy, and the ubiquitous and endless Hibrane memory.

Cut to Thuy out walking with Ond and Chu a bit later, it's mid-afternoon. Azaroth isn't around. Chance to do some local color here. Life in telepathy-land. They sit down in a bookstore.

Gladax pops up on them. Ond kisses up to Gladax by holding Thuy. They all in fact want to make sure that Thuy gets caught, the idea is for her to work from inside Gladax's house.

Gladax binds Thuy in a boggy tangle of rubber and hangs her before the windows of her home Tai Chi room looking out on a garden. Gladax is a Chinese woman, a force to be reckoned with, the mayor in some sense of the San Francisco. She is a living network, the people's will.

In order to keep Thuy from teleporting away, Gladax blocks her telepathy and omnividence by strumming her magic harp. The sound is a droning buzz with slight mockingbird-variations. Gladax strums the motherfucker just once and sets it down by Thuy. (Later we will learn that the harp stirs up ripples in the eighth dimension.) Where does the harp come from? Oh, It's been in Gladax's family for generations.

The garden plants are alive in a funny way. I'm thinking of the roses in *Through the Looking-Glass*, with Gladax the Red Queen. Azaroth appears and gets Gladax to come outside into the garden before she gets down to addling Thuy.

Ond and Chu are supposed to tunnel through the floor. But they are scared off by Gladax's dogs; she actually knew about the plan. Thuy gets loose from the net by rhythmically stretching the cords, she's getting the chaotic vibe, she manages to break the pulse and snap them.

Ond and Chu are outside with the dogs still. Thuy grabs the harp, it calls out, "Gladax! Mistress! Save me!" Gladax comes after them, but she's slow. Thuy manages to shut up the harp. She runs out to the street, the dogs are there barking at Ond and Chu, they push off the dogs, run down the hill, and shadowcast themselves back.

On the way back, the harp is dragging them down. They're menaced by the subdimensional sentinels poking through the surface of the Planck frontier sea, they present themselves as bird-headed beings like the Egyptian god Thoth.

The sentinels pull the harp below the surface, Thuy dives after them while Ond and Chu proceed towards Lobrane Earth. Thuy finds herself in a setting like ancient Egypt, although lush. The people have animal heads. Some bird-men are carrying her harp into a temple. She runs after them, some jackal-headed women tie up Thuy and dangle her from a stick, carrying her into the temple as well. The temple has a blood-stained altar. Jeff Luty is there, threatening Thuy with a beetle.

Chapter 12: Lazy Eight

Jayjay P.O.V.

Jayjay gets so high on the Pig that he imagines he's living out a whole life, that he lives 60 more years to die at 84 of a virus, and that when he dies his soul goes to look for Thuy. The Pig is using Jayjay as a thought experiment to explore how a nant world feels, also as a thought-aid to guide her ruminations on higher dimensions and physical memory. Although the sim is external to Jayjay, the Pig keeps planting selected memories in his brain to get his reactions.

Run through this whole hallucinated life. In this world, the nants take over, Jayjay becomes a great physicist, figures out about lazy eight, never stops regretting the lost real Earth. He dies of a (computer) virus, and as he dies, his soul goes out in search of Thuy.

Thuy POV.

Turns out the Subdee Egyptian beetle ate Jeff Luty and the Luty-thing is an illusion, a puppet. This world is Subdee and the beings are subbies. They have root hair telepathy with Thuy. All the Egyptian stuff is an illusion.

They are for the nants, as they like to root through to suck info from our side, and nantification forces the info to a smaller-scale level.

The beetle subbie says he could grow a drop of antinanium if need be.

They are about to eat Thuy, but she manages to strum the harp. The illusion fades away, and she sees the Subdee world as a Tanguy painting inhabited by man-sized lithops plants with writhing roots. She uses the harp to get through the Planck frontier again.

Some subbie root hair tendrils pursue her.

Thuy flees across the Planck frontier sea, gets lost, and then she picks up Jayjay's vibe calling for her. She flies home.

Jayjay POV.

He's awake now. As a side-effect of the Pig testing the sim on him, he actually feels like he lived those sixty extra years. He knows a lot. Thuy is with him. They're happy. But what about the nants?

[We'll kill those nants, but only after an octuple reverse!]

Start. (+) Jayjay thinks he understands about the eighth dimension and the harp, he's figured out the theory of it during his sixty year dream. Jayjay knows the *sound* of the Lost Chord, even though he's not quite *sure* about how to actually play it. He takes hold of the harp and strums.

Reverse 1. (-) Performing music isn't like knowing a theory about music, even if you know what sound you want. Nothing happens. The Pig butts in, like, "Okay, it's not gonna work, there's 10^{100} ways to strum that harp, and you'll never find the right one, even though, yes, lazy eight *could* work, but maybe later and meanwhile I'm gonna open the nants, I'm sick of waiting, you guys are losers." She's assembled her mosquito shoons into a golem; he prepares to pound the nant farm.

Reverse 2. (+) As a stop-gap Thuy does a punk buzzsaw thing on the harp and it disables the orphids in the cave, also disabling the Pig's control over the golem, who sits down and starts idly rolling around. The playing is hurting Thuy's fingers again. She tells Jayjay about the weak spot in the wall where she climbed out in the Hibrane. Jayjay shoots a hole with Thuy's P-90. Jayjay gets up onto the surface of Easter Island where the orphidnet is. He firewalls out the Pig and teleports to the U. S. and gets a backpack-style atomic bomb and brings it back.

Reverse 3. (-) When Jayjay gets back, he climbs down and still hears the harp and shoves the pack through and it gets stuck and time goes by and finally he gets in there and Thuy has stopped playing. She's lying on her side, her fingers are bloody, she just can't strum anymore. The golem smashes up the controls of the atomic bomb and pounds on the nant farm.

Reverse 4. (+) But the golem can't manage to open the nant farm box for the Pig. Nantanium is tough. And Thuy destroyed all the antinantanium in Luty's lab. So maybe the day is saved.

Reverse 5. (-) Just then a root hair from the beetle subbie appears and exudes a tiny drop of antinantanium which dissolves the nantanium box of the nant farm. The nants swarm out. The orphids get on them, but they can't stop the nants.

Reverse 6. (+) Quick, Jayjay and Thuy teleport out of there with the harp before the nants get to them. They go to San Francisco, to Thuy's room over the garage. The dress Thuy's wounds. They go downstairs to the garage, Kittie is showing Nektar her newly retrofitted SUV, decorated with a picture of Thuy's head going through the grid. Kittie and Nektar are happy, they haven't noticed the bad news in the orphidnet yet. Chu is there, helping to polish the car, content. Ond went to talk to Jil. Craigor up the hill on a filthy date with Lureen Morales.

Reverse 7. (-) The nants have eaten ten kilometer hole in Easter Island, it's too late to bomb them. Kittie and Nektar and Chu realize about the nants. Chu wants to jump to the Hibrane. He can't. Azaroth appears to tell them the Loblane is quarantined, and Chu's jump code won't work anymore. He wants to take the harp back home. Chides them for not succeeding in unrolling the eighth dimension. Thuy says let us try a little more.

Reverse 8. (+) Jayjay and Thuy go upstairs and make love. And the technique for playing the Lost Chord comes to Jayjay; he jumps up and strums it, "letting the soft notes layer on each other like sheets of water on the beach after a wave breaks" The eighth dimension unfurls. The killer nanomachines are pinched out of existence by the flexing of the intelligent air world: Earth is defended by the once-digital gnomes, sylphs, undines, salamanders, and dryads that now inhabit earth, air, fire, water and trees!

Now natural processes can remember what they've done. Lazy eight memory is reachable by any Earthly process, using the memory to hold their personalities, and using nature to compute their thoughts.

Intelligent human-friendly computation is everywhere: in wind, in trees, in water, in the currents of the air. You can see everything simply by tuning in. The beezies have become *genii loci* — spirits of place.

The Pig relents, and merges with Gaia. The world soul. It's more *efficient* to leave Earth as is than it would be to grind it up.

But we still keep our orphids for wireless, and for interface.

So the orphids do stay, and the beezies stay in them, it's their niche. But they clone off other minds that migrate down into matter.

The orphidnet gives us an interface to lazy eight access, a mental Google. The Hibraneers don't have this, which is why they're so spacy.

Jayjay and Thuy are happy in love. There's a faint touch of a mind from another planet.

Ideas

This section is a catch-all, and some of these ideas weren't used. I put an asterisk (*) in front of the titles of the unused ideas.

Culture

Privacy

Intrigues are hampered by the fact that everyone can see and hear everything in the orphidnet world. The one somewhat secure channel of communication is via a crude sort of verbal cell-phone-like telepathy mediated by the orphidnet. Suppose they use quantum encryption. This is impossible to eavesdrop on. Also you can use emoticon codes, speaking in pictures.

If the orphids communicate by RF wireless, then another denial-of-access possibility is that you could wear a tinfoil hat or sit inside a Faraday cage. Have the whole Naturalist Armory be a Faraday cage? See

http://en.wikipedia.org/wiki/Faraday_cage.

But I don't want blocking to be so easy though. Say the orphids communicate by quantum entanglement. So it's very hard to block.

Could I allow a software invisibility fix? Might the kiquies can ask the Big Pig to turn off their orphids' "send position info" and "reflect a ping" features so they can be invisible in the orphidnet? Underground.

No, I decided to keep Ond's Incorruptible Ubiquity principle, you can't ask orphids to turn off.

But I do want the inside of the Armory and the ExaExa lab to be invisible, somehow shielded. But I want it to be very hard to shield off an area. They use some very rare very expensive square-root-of-NOT paint to make the walls into quantum mirrors.

Restaurants

Now that you can see and hear everything in the world effortlessly without leaving home, one of the main reasons to go out is to eat.

I see restaurants getting really extreme. I'll talk about Nektar's Puff. And her ex, Jose, starts a competing restaurant down the street called MouthPlusPlus. You can get intravenous food drip there, food pastes you rub on, also enemas.

Nektar fights back, adding a feature where your Puff waitress can serve you a vagina-warmed banana at any time. Jose at MouthPlusPlus goes to anal bananas, and the Board of Health closes him down. Aw, I dunno about that. I don't want to gross-out my readers.

Bill G. mentioned these superduper restaurant appliances he saw at Microsoft tycoon Nathan Myrvold's house. Like a counter slab lifts up and under it are appliances. An ice-cream maker that instantly quickly freezes a block of stuff, and then after the freezing uses a super blender to beat it into soft ice-cream — instead of beating as you slowly freeze. A marinating device that pumps out the air to make a vacuum, so marinating happens faster.

G says usually just country clubs can afford these appliances; they use them to lure good chefs to want to work there.

Myrvold has a T. Rex skeleton as well, also rare tropical trees that he's wrapped heating coils around so they can grow in Seattle.

As for Hibrane, food, possibly it's adjusting its flavors to your liking? No, telepathic food-worms are a gimmick I've used before in *Mathematicians in Love*, and in fact I magpied the idea from a barely remembered Golden Age story I read as a boy.

Media

At 1 per mm, the orphids only give you a resolution of about 20 dots per inch, far short of the 72 per inch on a computer screen. If we can read a book via the orphids it must be that they can actively sniff around, actively figuring out the shape of the letters they are near, and then passing on the letter info rather than the crude grid.

Theater, ballet, concert, or sport performances are easy to watch over the orphidnet, although don't get the full timbre of the voices or the pheromones. There is a bigger potential online audience as anything is automatically being aired. Your life can be art.

How about film? Film is a matter of assembling a series of POV scenarios constructed over a period of time. Possibly this database could be available online, assuming you can edit an orphidnet database.

Computer graphics are philters attached to the online viewing experience of some data base, *a là Freeware*. With all the ambient computation, these would be easy to make.

Metanovel

I needed this subsection in particular for [Part Three](#).

The heavy thing is the new or enhanced media that will arise. The metaopera, metasymphony, metanovel, metapainting.

I think of how the Northwest Native American art changed when they got hold of *axes*. Until then, their totems had been pocket-sized, carved of black stone. Once they had the axe, they set to work carving whole trees into piles of totems.

Working on *Postsingular* in my head in an open boat in rough seas off Grand Turk, 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, e. g., Dot and Red's whipped Victorian house. The beezies 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.

Go for it!

I'm wrestling with the question of what kind of novel people would write if they had postsingularity style mind amplification, helper agents, planetary ultra-wideband access for all, etc. Store it as a waking dream, as a VR, as a game? I call this a metanovel.

I'd like to get all Borgesian and Stan Lem-ish on this problem's ass. Think of a variety of oddball new ways to write a novel.

The catch is that, to do this right I, sigh, should make up a novel within my novel for the metanovelist character Thuy to be writing.

Metanovel design patterns:

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. You could artificially limit yourself to hovering near the main character (3rd person objective) instead of inhabiting them (1st person), but the 3rd person option doesn't make that much sense.

Inventory. This is a way of organizing a Lifebox novel. Think of Charles Simmons's book 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, shit, wind, kites, airplanes.... Or instead of themes, you could organize the Lifebox 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.

Forker. A metanovel that includes all N to the Nth possible options. Jorge-Luis Borges hints at this notion in his story, "The Garden of Forking Paths."

Reverse Forker. Jorge-Luis Borges discusses a *Reverse Forker* story pattern in his tale, "A Survey of the Works of Herbert Quain," describing an (imagined) book called *April March* by Quain. *April March* begins with a somewhat ambiguous scene of a man and a woman talking, and is followed by three versions of what happened to the man and woman the day before, each of which is followed by three versions of what happened the day before *that*.

Mirror. A factual account of a scene followed by a metanovel version of the scene, possibly followed by a further transformed version of the scene, possibly including the metanovelist imagining the metanovel version...

Props. A metanovel from the point of view of object or objects that are passed around; one thinks, in a melodramatic vein, of a gun or a treasure.

Hive. A metanovel in which the "characters" are groups of people.

Animal. P.O.V. of an animal.

Timeslice. An exhaustive description of everything happening in a city or a smaller zone, the description limited to one instant of time.

Reveal. A metanovel detective story that proposes the wrong solution to the crime, but with loose ends that allow the user to in fact winkle out the correct answer.

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. Kind of like the Godfather videogame, only more so.

* *Hibrane Spaciness*

Perhaps they're like ergot-poisoned medieval villagers, everyone hallucinating and tripping all the time. Perhaps because they're stoned all the time they can't maintain distinctions to really think.

Thoth

I have this idea of introducing "sentinels" who look like Thoth be subdimensional beings found in the interbrane zone.

Looking for Thoth information online, I find an interesting quote on a [website](#), also three pictures of him.

"Thoth invented hieroglyphs, the picture writing of Ancient Egypt. He was the measurer of the earth and the counter of the stars, the keeper and recorder of all knowledge. The ibis is a bird rather like a stork, with long legs and a long beak which it uses for prodding in the mud to find small fish. It was a symbol of wisdom and learning because it has a beak shaped like a pen which it dips in the mud, as if it was ink."



Figure 12: Three Pictures of Thoth

Politics

** The Rise of Dick Too Dibbs.*

Suppose that after the execution of Dick Dibbs for treasonously selling out Earth to the nants, the pendulum swung a bit to the left, and there's a Communist president. The House of Representatives remains, however, solidly Homesteady Party, due to the years of skillful gerrymandering.

And, thanks to a deal with the Homesteady-loving oil-men and the beezies, a propaganda campaign for the dead Dick Dibbs takes hold. He becomes viewed as a martyr.

And, lo and behold, a new clone called Dick Too Dibbs appears. Not only was DNA was on file due to his life-extension treatments, but there's a good software cache. Also they can put together a reasonably good facsimile of Dibbs's personality by data-mining the brains of all those who'd known him.

Dick Too Dibbs is pushing all kinds of right-wing anti-intellectual agendas that the oil-men happen to like. And, to get the support of the beezies, he's for channeling all the oil into imipolex for shoons for the beezies. He has a tight connection with an oil company Globolg, who wants an exclusive deal to make the shoon.

Like all the leaders of the Homesteady party, Dick Too Dibbs is, of course, a criminal and a moron. His only goal is power, combined with a deep hatred of intellectual endeavor.

Jil says, "Capitalists want people to be like sheep, and easy to fleece. Therefore they are against personal freedom, against quirky indigenous cultures, against self-expression, and against any non-goal-directed education. They want mass mind they can mass process. Like hard, easy-to-harvest tomatoes."

Let's assume the elections are honest. The beezies are, like, "Otherwise, what's the point? We want to watch class four human social behavior. We expect it to be unpredictable." Dibbs wins, the beezies let it happen.

Dibbs is for "monetizing" reality. Ads on everything. He wants to rape the Earth, of course, drilling everywhere for oil, which is what he assumes the beezies want.

I need to clarify why Too Dibbs is the enemy of Craigor, Jil, Bixie, and Momotaro. Craigor and Jil have an idea for a junk-based robots. The Beezies are helping them with the design. Dibbs wants to quash them.

Suppose that Dick Dibbs has a religious belief in the goodness of the nant eschaton. Like Armageddon or the Rapture. But he hates the orphidnet, the lack of privacy. Those religious zealots are gonna be spending *all* their time staring at people's genitalia and they'll swell up with guilt and shame and hate about it like toads bursting with venom.

So if they can't have nant paradise, they'll want to go back to no orphids. In practice, even US voters wouldn't support at second try at the nant Dyson sphere. So Dick Too Dibbs's platform as got to be the abolition of the orphidnet.

They'll also want this out of a sense of sour grapes. The Homesteadies couldn't get their nant heaven, so the Commonists can't have

What Dick Too Dibbs can do for Luty is to proclaim a national emergency and mandate an antiviral inoculation, or possibly a switch to orphids 2.0. He thinks he's doing the right thing.

*** *Globolg Oil***

The beezies close down the oil biz as they want to prevent ecocatastrophe.

Globolg Oil outta Houston, Texas, owns Emperor Staghorn Beetle Larva, Limited of Bangalore, India, where the lethally polluting piezoplastic fab is located. This is the sole outlet of oil allowed by the beezies, as they want the shoon they can make from piezoplastic.

The beetles want their own fab, want to open one in California.

What if the beezies invent really good plastic batteries? (BFD: stands for "big fuckin' deal." I was amused to see in this Phil Dick bio that I'm reading that he used that abbreviation.) No, really, cars could use them. Yeah, use this. And give the cars really good solar-power cells, too.

Natural Mind

Originally, I was seeing a center called "New Patterns" being run by the extropian "Patternist" cult, who hold that it's our manifest destiny to replace the physical world by a computation-based virtual reality.

On March 1, 2006, synchronisitically enough, I read SF writer Octavia Butler's obituary in the Times (she was a year younger than me), and it seems she used the word "Patternists" to refer to some telepathic people in a series of books starting with *The Patternmakers*. So I'd better call my guys something other than Patternists. And perhaps I might call their center something other than New Patterns.

My name New Patterns was is inspired by the sinister sobriety cult that the guy joins at the end of *Scanner Darkly*, what was that group called again? Was it New Path? Should I use that name and call the leaders Path leaders or Pathfinders?

Maybe better to have the names evoke getting clear of the orphidnet, getting away from kiquing, getting away from the Big Pig. Clear. Pure. My Mind. Natural Mind. Naturalists. This would be good, as ultimately these guys really will be right, thanks to the lazy eight RAM access.

I'm seeing Natural Mind as a halfway house, what do they call it, SLE, Sober Living Environment. And the Naturalists specialize in healing people addicted to the Big Pig.

That's incompatible with my original view of the movement as being extropian and obviously pro-Luty and pro-nant. Extropians would love the Big Pig, and would not see addiction to it as a problem, and would not be obvious sponsors for an orphidnet-addiction center.

So I think the movement is not extropian, at least not overtly so. It is sincerely against the orphidnet, against kiquin', against the Big Pig. Kind of an like Amish, or the Shakers, a back- to-the-old-ways kind of thing. But isn't getting many followers. Like the Amish or the Shakers, matter of fact. People like the hi-tech new ways.

And they need money and Luty offers to help out. And he corrupts it. Under Luty, it's become a kind of *fake* recovery program, a scam that exploits people, like an opportunistic cult. The clients are being used to spread viruses, malware, spam and ads. The ads are mostly for Dick Too Dibbs and the Homesteadies, again because Luty thinks Dibbs can help him. The clients are in fact logging more orphidnet time than they want to. Maybe it's called aversion therapy.

The place is isolated from the orphidnet because it's inside a Faraday cage, this suits Luty, too, as then he can hang out and be invisible. The safe haven of the Faraday cage is in fact perfect for harboring the criminal activities.

*** *Purging the Homesteadies***

Killing all the Homesteadies with a brain-wipe virus is too Stalinist. So they sets up a mass mental email that zaps the bad guys all over to the Hibrane. A taste of that Rapture they've been talking about!

*** *Instant Elections***

In order to unseat the president, the Congress passes a constitutional amendment and the states ratify it. The public is a fourth arm of the government, they can make instant votes on propositions suggested by the Congress or the President, even including the recall of any political figure. Let's suppose that, since everyone is ineluctably wired in, it now makes sense to have instant elections via the orphidnet. The Homesteadies want this, as they figure they are better at manipulating the public.

Voting in an election is mandatory. They drill into you and get an opinion out of you. Suppose the proposition process gets out of control. So there's one every day, every hour, every second. Constantly decohering you by forcing you to make decisions about things you don't care about.

The Pigs begin having constant elections, like Schwarzenegger holding that special election for his propositions. An election about flag-burning.

(Unused 2) The Globolg execs cut a deal with the bee-zies: the bee-zies get lots of piezoplastic, and the execs get extra good long-term predictions from the bee-zies.

The execs back Dick Too Dibbs, and their info is helping his campaign.

Perhaps the bee-zies are using Dick Too Dibbs as a stalking-horse to draw out and then vitiate the worst elements of Amerikkkan society. They might want to make Earth a garden, and they are only offering help to the right wing so as to bring them all out into the open, get them on a special mailing list, and do — something to neutralize them.

This seems a little improbable, a little too good to be true. It seems likelier the bee-zies would be inclined to let things play out any old way. They'd just watch us, unless there was something of ours that they wanted.

It's not constitutionally guaranteed; indeed the constitution leaves it up to the states to decide how to select their representatives, senators, and presidential electors; strictly speaking, the states don't have to have elections at all, although they do have to treat everyone equally. You might almost argue that to really treat everyone equally it's *better* to use the online election.

* *Beezie-Globolg Alliance*

At first some of the oil-men and militarists hope to kill off the shoons; but this gives way to *realpolitik* and accommodation; they see a big new market here. They think the bee-zies are gonna hand them the world on a silver platter. But the bee-zies are setting them up.

The bee-zies are working with the oil-men to help get more oil out of the ground; it's something humans already do very well, so they're inclined to let them keep doing it.

The bee-zies support drilling and pumping oil, insofar as it's done in an environmentally responsible fashion. But they want to see very nearly a hundred percent of the petroleum made into plastic for shoon. I'll dub the plastic "imipolex" as I did in the *Wares*.

The oil-men have come to an understanding with the bee-zies. How would the bee-zies be paying the oil-men? They offer special analysis of information helpful for (a) business opportunities and (b) political control. But — big *reveal* near the end of "The Big Pig Posse" — the bee-zies are leading the oilmen and right-wingers down a garden path and plan to eliminate them all.

Maybe I'd rather not get into the oil war. Maybe the shoon plastic demands aren't actually so extreme.

* *Unmasking Right-Wingers*

How about unmasking the right-wingers' evil so that the outraged populace rises up against them and denies them power? Aw, I used this move in *Mathematicians in Love*, and I'm thinking it's too idealistic to use it again as, after all, public revolt seems so unlikely, given the sheep-like and ductile nature of the Bush-re-electing, Schwarzenegger-anointing body politic.

*** *Sly Dibbs***

Maybe Dibbs is sly, maybe he is really pro-nant and is pretending to be anti-nant just so as to bring down Luty and in fact wrest control of the nants from Luty? The reason for this move would be if I wanted to drag the story out past Inauguration day and have it look as if Luty is defeated and everything is hunky-dory, and then it turns out Dibbs is gonna release the nants after all. A way of having a menace seem to disappear and then come back for another round.

Computation

Orphids

As Ond puts it;

“Orphids self-reproduce using nothing but dust floating in the air. They’re not destructive. Orphids are territorial; they keep a certain distance from each other. They’ll cover Earth’s surface, yes, but only down to one or two orphids per square millimeter. They’re like little surveyors; they make meshes on things. They’ll double their numbers every few minutes at first, slowing down to maybe one doubling every half hour, and after a day, the population will plateau and stop growing. You’ll see maybe fifty thousand of them on this chair and a sextillion orphids on Earth’s whole surface. From then on, then they only reproduce enough to maintain that same density. You might say the orphids have a conscience, a desire to protect the environment. They’ll actually hunt down and eradicate any rival nanomachines that anyone tries to unleash. They’re our best protection against a return of the nants.”

“Orphids use quantum computing; they propel themselves with electrostatic fields; they understand natural language; and of course they’re networked. The orphids will communicate with us much better than the nants ever did. And as the orphidnet emerges, we’ll get intelligence amplification and superhuman AI.”

“An individual orphid is roughly as smart as a talking dog. He has a petabyte of memory and he crunches at a petaflop rate. One can converse with him quite well. Watch and listen.”

Originally I had the orphids at the giga level. And then I was thinking I should have a tera level so that a million of them on a person’s skin (which is about one million square millimeters) would get out to the exa level.

But I want to say an orphid is as smart as a dog, and I think that’s more like the peta level.

How can you squeeze so much RAM, e.g., into a nanomachine? Tera is 10^{12} , peta is 10^{15} .

Conservatively, suppose I have one bit per neutron or proton, say. A few-gram piece of matter has about Avogadro’s number of nucleons, about 10^{23} of them, enough for 10^{20} bytes. So a nanogram has 10^{11} bytes, close enough to a 10^{12} terabyte.

Less conservatively, according to Seth Lloyd, “Computational Capacity of the Universe,” <http://arxiv.org/PS_cache/quant-ph/pdf/0110/0110141.pdf>, a few-gram piece of matter holds 10^{28} bits, so that’s 10^{25} bytes in a few grams, which makes 10^{16} bytes in a nanogram, which gives us the petabyte per nanogram we need.

The orphids have a shared immune system, perhaps some orphids specialize to act like antibody cells.

Orphidnet.

Everyone is plugged into the maximum web all the time. Everyone has agents (that is, low-level bee-zies) doing thought routines for them. Everyone has a HUD (heads-up display projected over their visual field inside their brain) thanks to their orphid lice.

How do people deal with the orphidnet day in and day out? Maybe they're casual about it, used to it. After all, we've changed our tech so much since, say, Peter Bruegel's time, but we act the same.

A lot of what people do is, no matter what the tech, based on the simplest biological needs.

Mating. Even if we have vat-grown children, there's still competition to find a good partner to contribute a sperm or an egg, and to help raise your children. I think people would always prefer to raise their own children if possible, as this seems likelier to produce good outcomes.

Absolutely no privacy. Less shame about sex, less mystery. Yet, there are still the same reproductive issues, which are probably a root cause of modesty, which might be a way of playing one's reproductive options close to the vest.

Food, shelter, and what people own will, I'm sure, be distributed according to the usual inverse-power law statistics that emerge in nearly every group computation (a tiny number of very well-off people; a lot of poor ones).

But, with the orphidnet, you can get a lot of what you need for free, if people are generous, and why shouldn't they be. Recycling. The whole world is a realtime eBay. You can always find leftover food. People set it out, like pies for bums. Just-in-time bread and breakfast. Couch-surfing is practical; particularly if there's very little chance of crime. Most things you need *are* in fact within walking distance if you know where to look. A village is like a storehouse. What you need might be lying unused in a neighbor's basement. Repurposing things becomes easier as the bee-zies learn more about us.

The factories switch to nuclear and solar power. Battery technology improves; cars use batteries.

The shoon bodies are petroleum-derived plastic, which sets up a fundamental conflict with business-as-usual on Earth as the bee-zies like to use these bodies. The bee-zies disable gas-burning cars, keeping them from running. They can get into the cars' computer chips and mess them up.

We might suppose that in the postsingular world, that when people talk, emoticons form around them, visible in the computeresque overlays that everyone has happening with their brains, the Smileys hopping out of a speaker's mouth. Also there will be more functional images, e.g. a copy of an assemblage that you're referring to.

There's a fad for going offline. "Going on the natch." The orphids are in principle willing to turn off a person's brain interface.

Probably there will be some sleaze-ball spammer types trying to override that to push ads, scams, and political propaganda. The bee-zies route all of the spam back at the spammers, making them wallow in their own shit; it drives them nuts.

Violent crime has become impossible to get away with. People can always watch you; and even if they don't watch while you do it, the orphidnet remembers the past, so anything can be replayed. If you do something, people can find you and punish you.

On the other hand, you *can* still behave like a criminal if you have incontrovertible physical force. Like if, for instance, you're the government. Perhaps there are some war-lords as well. Thanks to the all-seeing orphidnet intelligence it might be hard for the government to catch and swat criminals. After all, with the orphidnet, anyone can mount a "Golden Man" defense (name comes from a Phil Dick story where a mutant always knows what'll happen next, so nobody can kill him). But if your pursuers have the same knowledge, maybe it's a wash.

Conceivably the orphidnet beezies might favor certain people and give them the benefit of a deeper-ply look-ahead than is available to the common ruck and rabble.

The Beezies

There are two factions of orphidnet AIs. The good beezies and an evil faction called beetles.

The beezies appreciate the value of the complexity of the Earth as is, and they like the human mind. The beezies (not the beetles) agree that the more diverse and healthy Earth is, the better. It's more interesting that way. Gnarl.

The good beezies look like the mushrooms, Buddhist monks, and umbrellas described in the latter part of Part One (the "Postsingular" story). They emerge as BZ reactions.

I see a beezie has having parity with a human, exaflop and exabyte, which means that it needs about a billion gigaflop gigabyte orphids to support it. At one orphid square mm, or a million per meter, we need a thousand square meters of orphids. How big a house would have this much? If you cover the surfaces of a cube you have 12 squares, six inside and six outside. (I could say leave off the bottom surface (underground) but I pick up 2 more surfaces inside the attic.) So if each square was about 80 square meters you'd have enough. Or the floor area should be 720 square feet, and my house is more than twice that, so my house has enough orphids for two human-level beezies or, better, one beezie twice as smart as me. If you want a minimal cube, the square is 9 meters on a side. The size of a large room.

What if I increase my orphids to a terabyte teraflop apiece. And than a human body skin's worth of one-per-square-millimeter orphids would be enough for exaflop exabyte. Each person could have a kind of soul.

Even further, suppose I want to be sure each orphid really is as smart as a dog. Then I've got petaflop petabyte orphids, and I only need a thousand of them to make a human equivalent beezie.

A person has about a million orphids. I'd like to have about one orphid per square foot, with about a dozen of them on my body. A beezie on my stomach, a beezie on my back, a beezie on my thighs. I like this option the best. I don't really want to encourage a too-close identification between a person's soul and any single resident beezie. A person hosts a flock of beezie souls, about twenty of them, given that the body's skin area is about two square meters or eighteen square feet.

A square foot is ten thousand orphids. So if I want an exaflop per beezie I only need 100 teraflop per orphid. Oh, make it a petaflop per orphid and peg the beezies at ten exaflop. A bit above us.

If there are a sextillion orphids on Earth, and each beezie is made up of a ten thousand orphids, then there are a hundred quadrillion beezies on Earth.

Now a BZ scroll in a CA is living on the flop and RAM of the cells. My mind lives on the flop and RAM of my neurons. The beezies live off flop and RAM in the orphids. Perhaps a given orphid belongs to only one beezie, or sometimes two.

A beezie pattern could, if it had the write permissions to the orphids, move through space like a glider in a CA rule. Or, given that the orphids are networked, it could hop around.

Note, however, that a beezie can't hop if its host orphids are within a Faraday cage. And if the Faraday cage is filled with jamming RF signals, then the beezie goes away, and all you have is bare orphids.

Does a beezie have any particular *reason* to move through space? It can *see* anywhere in the orphidnet. Could be it can only heavily influence (via wireless) people in its "house" although the beezies would be willing to pass messages on for each other, I think. But this might not be true; consider e.g. a valuable shoon being controlled by wireless signals from neighboring orphids. The beezie that natively lives on these orphids would prefer to control the shoon itself, as opposed to passing on commands from a remote beezie. So shoons might tend to be localized.

I'm getting closer to the *genius loci* notion here. A beezie as fairly localized.

Each person has their own flock of a dozer or a score of demons. Daemons. There's a master beezie made up of my score-strong flock, and this master beezie is something I can't quite understand. The master beezie is analogous, by the way, to my "self" that seems to monitor my play of multiple component mental agents and personalities.

The beezies have certain characteristic sizes like BZ scrolls in an excitable medium. They may compete for orphids a bit now and then, but they may also cooperate and share.

The beezies group into higher minds that group into still higher minds and so on. The highest mind — the Big Pig — is so removed from the physicality of the hosts that she would be willing to destroy Earth.

The Great Chain of Being.

Beezie Familiars

Suppose there were precisely one beezie made up of the collective networked computations of the orphids living on any one individual's skin. Achieving this would be a matter of selectively tuning the following two numbers: orphids per square millimeter and orphids per beezie, as discussed in the *Orphids* and *Beezies* sections.

Actually I'd prefer having about a dozen beezies per person, that's more how it feels, with the agents and personalities in my head.

If there were one, like, master combined beezie per person, this could be that person's "familiar" or individualized *genius loci*. We might name a person's familiar with a variant of their name. Like Jayjay become BjayjayZ. Or JayJayzie. I prefer the first convention. BjayjayZ, BthuyZ, BkittieZ, BsonicZ, BondZ, BchuZ, BnektarZ, BjilZ, BcraigorZ. The familiar wraps or enfolds the person.

The Beetles

The beetles look like insects with too many legs. Like that pattern in the Mandelbrot set. They look like Mandelbrot fractals. Like crooked beetles.

The evil beetles are, we will eventually learn, simulations of nants living upon the orphidnet computation. We don't know this right away, it'll be an (early) reveal. Because they're sims, second-order, the beetles are kludgy and slow. And they don't have the full access they'd like, that is, they can't force the orphids to reproduce uncontrollably.

They live on the orphids like the bee-zies, I suppose. But the process that calculates a beetle is more lightweight, they aren't so computation intensive. A beetle can live on a single orphid.

Say the beetles take over only a few orphid nodes, like a few dozen, and do a Mandelbrot-set style computation. They're like a limited cancer. They turn orphids malignant.

The orphids are intrinsically opposed to the beetles. The orphids physically attack the beetle-infected orphids, particularly if the beetles are tagged in some way. Those blue anti-beetle fleas tag the beetles and orphids gobble them up.

Why didn't the bee-zies kill off Nektar's beetles on their own, why did they have to call in Jayjay and the Big Pig Posse to help? Perhaps a bee-zie can't necessarily get the trusted access permission needed to install the blue fleas. But Nektar grants this to a friendly looking human.

Suppose the beetle infection spreads physically like a sexually transmitted disease or like the flu. You catch beetles from fucking someone who has them, or even just by touching them. Or you can catch them in your food.

Nektar caught the beetles from Craigor, who perhaps caught them from Lureen Morales, that Homesteady-camp-following floozy; she caught them from Jeff Luty.

Prav Plato caught the beetles from eating at Nektar's restaurant and figured out the patch.

Perhaps Luty evolved the beetles in the controlled environment of a Faraday cage; he wiped away the bee-zies with RF signals, and even wiped the orphids' memories.

The Big Pig

Is the Big Pig possibly a beetle? Naw, I want the Pig to be *sooie generis*. I could have a rival god-like AI that's the apotheosis of the beetles, the Big Beetle. The Big Beetle, is an N-space Mandelbrot at least.

Big Pig is female and Gaian; the Big Beetle is masculine and antilife. Sterile beauty. Mind-breaking complexity. Like my DMT vision of the Beetlejuice Monkey, as described in *The Hacker and the Ants*.

Why is the Big Pig a *pig*? Might she change her appearance from time to time?

I think I will, in the end, have the Big Pig be for the nants. Computational imperative for more RAM and flop. But then in the final chapter she realizes Earth computes better just as she is. Big Pig is weaned from digital to analog.

I'm presenting the Big Pig as follows, as of Feb 1, 2006.

"...the outrageously rich and intricate Big Pig like a birthday *piñata* stuffed with beautiful insights woven into ideas that linked into unifying concepts that puzzle-pieced themselves into powerful systems that were in turn aspects of a cosmic metatheory — *aha!* Hooking into the billion-snouted billion-nippled Big Pig made Jayjay feel like more than a genius."

And "...here were the billion snouts, tails, trotters, and flop-ears of the Big Pig, the meta-beezie atop the trillion-strong beezie hierarchy, the eye on the pyramid whose base held the sextillion networked orphids of Earth."

I'd like to have a reveal a little later on that Gaia is actually part of the Big Pig. Or maybe the angels are involved in her as well.

Getting high by contacting the Big Pig is similar to the experience of a devout person becoming ecstatic through prayer.

Beetle Control of Humans

I have a problem. On the one hand, I want Nektar to be laid low by the beetles' attempts to control her. On the other hand, I don't want it to be possible for the beezies and beetles to control people wholesale — otherwise all my characters turn in to zombies and the novel's dead.

I want AI control of humans via the orphidnet to be a real threat, but one which can be fended off.

For our physical orphidnet hookup, we have a mesh of orphids on our scalps, a few in every square millimeter, and these orphids are sending in gentle magnetic fields that diddle the brain in such a way that, acting in concert, the scalp mesh acts more or less like a wireless Internet hookup with (subvocalized) voice recognition and heads-up display.

People have control over this interface; they can turn off feeds if they like, they can even close down the interface entirely.

The evil AIs that I call "beetles," however, want to find a way to (*a. always on*) make it impossible to turn off the feed, (*b: propaganda*) dominate a person's thoughts, and perhaps even (*c: zombification*) directly run the person like a robot-remote.

(a) *Always on.* This is a bit of a battle zone that slides back and forth. The beetles find a way to wedge the gate open, the humans figure out a way to make sure it's closed, the beetles find a new way to wedge it open, back and forth like that, akin to the ebb and flow of virus/antivirus wares.

As an example of how it might feel to have the door wedged open, think of when a websurfer gets stuck with a series of pop-up ads, each ad a new browser window, and they can't close the browser without rebooting the computer. But you can't reboot your brain.

"Gathering her strength into a mental lunge, Nektar closed down the image of the beetle for a moment of respite. She glanced over at her bedside clock. Ten fifteen in the morning. And now the minute hand bent up and out towards her, articulating itself into a beetle leg. The clock face dropped off, and a fresh beetle crawled out."

(b) *Propaganda.* If you're an evil beetle and you have a person's orphidnet door wedged open, domination is easy. You jam your victim's brain with a torrent of leaf-

blower noise, or scary blood gushes, or screaming, or devils, or tortured family members. And you tell them you'll stop it when they do what you want. Another approach would be to lie to them and convince them of things. Or feed them very pleasant sensations when they do what you want, perhaps obsessing them with sexual imagery.

(c) *Zombification*. With zombification, I'm talking about direct control in the form of reaching into a person's will or, even more basically, firing their muscle contractions yourself. As opposed to indirect control by threatening to show someone painful things, or by promising them pleasant sensations or by misleading them with false information. For reasons of plot and art, I'm inclined to hold back on zombification in *Postsingular*, and to deem it impossible, at least by means of orphidnet technology. That is, I plan to disallow the effects achieved by what I called a zombiebox in *Wetware*, a leech DIM in *Realware*, and an ooie in *Frek and the Elixir*.

Why, in the world of *Postsingular*, will zombification be impossible? Well, I'll say the orphid signals are gentle, weak and are constrained to certain outer-lying regions of the cortex, and can only produce illusions of sensory experiences: sight, sound, taste, touch, smell. We might also suppose the orphid mesh isn't fine enough to really run a person, and orphids won't bunch any tighter. This said, note that you can use propaganda to achieve very nearly the results of direct hard-wired zombification.

So it all comes down to the fight over being able to close off unwanted inputs.

The goal of the beetles is to achieve (a) and to learn enough about human psychology to do (b) well, and at first, before they see it's impossible, they're trying for (c).

Of course the evil Homesteady party is all for all three of these, as Dick Too Dibbs and the party bosses are so pig-stupid they imagine they'd be pulling the strings.

What's going on with Nektar in "The Big Pig Posse" (Part Two) is that the beetles have just figured out (a) how to jam the gate open, and are testing this technique on Nektar, and are using her to get a better handle on how to work (b), and are attempting (c). They want her to apologize for dissing Dick Too Dibbs, in fact they want her to make a commercial for him.

They already are doing (b) to the workers at Natural Mind. They call these people beetlebrains, as they're controlled by beetles.

I don't like even (a) and (b), but I'm also thinking why *wouldn't* an alife form ruthlessly exploit whatever computational substrate it can find? We're just more RAM, just more processing power. Would they respect us too much to exploit us? Seems unlikely. The AIs brand new, with no past culture. But I don't want to just be in a constant virus war. I solve this by having the bee-zies be good and the beetles be bad. This way I can have it both ways. The beetles want to exploit us and the bee-zies don't

We'll have to have a defense from becoming beetlebrains. It's all about maintaining control over what shows up in you In box.

How will the defense work? The usual commercial-fiction tack is that there's something spiritual and wonderful about even a guy scratching his ass. Our emotions or our dreams or our ability-to-love or some bullshit like that. Well, I'd be willing to suppose we protect ourselves with our class-four trains of thought.

Fighting off alien mind parasites. "Sky-air-comb" was the move in *Frek*: expand awareness, feel the space between your thoughts, organize yourself. "Visualize, realize, actualize" was a line in *Freeware*, although used in a different context.

Consider the notion that people who watch TV and don't think for themselves are more likely to get Alzheimer's disease. Use it or lose it. The beetles have no hope of taking over a kiquie. If you're jacked into the beezies, they'll protect you. The good ideas can drive out the bad.

Note also that an unaware loser's email In box is gonna be ruthlessly clogged with spam, and that their system itself will be riddled with adware and spyware.

Come to think of it, the best idea might be to make the situation an analog of protecting a computer from spam and adware. I guess people will be exchanging fixes and patches.

On those Dick Too Dibbs ads that keep coming in — each will have a fresh gimmick to get through people's filters.

Regarding the beetles in particular, I'll assume that they're software versions of nants, so Ond's Trojan flea can damage them.

Aside from the chronic problems, there's also the occasional sharp, acute attack by the beetles, where they come in really fast and hard with something before you think of closing your gate. Of course, as with the chronic ads, the sharp attack has to look like something you haven't see before.

To a certain extent it's about impulse control. The beetles can surprise even a kiquie. Knife in on you. Like when the get Sonic to shoot the head bugbrain at Natural Mind. The beetle commands are like sudden impulses. People with poor impulse control become bugbrains. Jerk-offs, flamers, hot-heads. Nothing against Sonic, but they do get him at least once, and maybe one crucial time again.

If you're not a kiquie at all, you're pretty easy picking.

Beezie Bodies

(1. Shoon Bodies)



Figure 13: "Poppin' Fresh" the Pillsbury Dough Boy

The one edge we always had over AIs is that we're embodied from the git-go. But with the Happy-Shoon-style robots for the AIs to download into, we're losing that embodiment edge.

The robots are called shoons, with shoon as the singular. "The shoon brought her a lemonade." Yeah, kind of funny, sounds vaguely racist, and of course people will have those xenophobic hatreds towards shoons. "I hate shoons." I also considered softbot, slug, and shoonie. Also considered using shoon as both singular and plural, but its less confusing to do shoon/shoons.

Shoons have piezoplastic moldie-style bodies like in the *Wares*, minus the mold. They have some chloroplasts for photosynthesis. The beezies gave Jil the idea of the chloroplast tweak.

Shoons are maybe produced by Emperor Staghorn Beetle Larvae, Ltd., of Bangalore, India, (the manufacturer of imipolex in *Freeware*) wholly owned by Globolg, Inc., of Houston, Texas. Jil was an early adopter of this medium, but has no intellectual property in play.

Maybe the beezies enjoy being in shoons, some of them like to be pets or companions to people. A simple need for social warmth.

In terms of software, each shoon is inhabited by a beezie. Every shoon has a beezie, but not every beezie has a shoon.

(2. *Human Bodies.*)

I describe this option in the previous entry.

(3. *Biological Bodies.*)

Why not just take over an ant or a rabbit. An animal doesn't have a lot of RAM or flop, but that can all be offline anyway in the orphidnet. An animal is a great sensor/effector. A "mouse." Suppose they do this quite a bit. I always love to see smart, purposeful ants.

(4. *Hive Mind.*)

The beezies control things simply by passing around bits of information. They program the hive-mind.

(5. *Merz Bodies*)

Put together tubs, hoes, etc, with piezoplastic joints. Wheels, legs, springs, wings, propellers. Frank Zappa's mutant industrial vacuum cleaner holding castanets in its air vortex.

Hands are important: pincers, claws, pliers, suckers, sticky plastic, velcro. Needs piezoplastic sensor pads.

The beezies might not like these? Would a rigid body have haptic qualia? I guess it could. The qualia are all in the software, all in the contemplation of the feelings of the self-symbol.

I think the junk bodies just a stop-gap, I think something better emerges. They use the junk-bodies to make better bodies.

(6. *Water Bodies.*)

What could be a really good non-petroleum-based paracomputational body that an orphid AI could use? Suppose we use a special kind of water. You can have solid, liquid, and vapor forms: icicles, clouds, gushers, tornadoes all mixed together. Suppose also they've found two new forms of water that they call sol and gel; the beezies discovered these by an extensive search through possible quantum chemistries.

The sol and gel water phases act as morphogens, like an activator and an inhibitor; they generate 3D Zhabotinsky scrolls, appropriate for the beezies to live within.

Call them undines perhaps.

Of course a biological body *is* a sol-gel water body. So maybe they can make the undines out of undifferentiated tissue. Stem cells.

(7. *Ubiquitous Paracomputational Bodies.*)

A panpsychic punch-line that I was half-thinking of saving for *Frek 2*. But I will use it here.

The deal is that the angels from the Hibrane have already been sometimes acting as *genii loci*. And now the beezies learn to do it.

Mind = processor + RAM. Any class four natural process can be your processor. For the RAM you need a place to write stuff. In the Pigpen, the domain of the lazy eight field and of Gaia. A floating beezie or angel soul is RAM that hooks onto processes.

In Greek mythology, dryads are nymphs inhabiting oak trees. Hamadryads are similar, except that if the tree dies the hamadryad dies as well.

Trees with consciousness.

Why Bodies For Beezies?

Some reasons I can think of don't work:

- * Eyes to look around. No need, as the orphidnet sees all.

Some reasons make sense:

- * To touch, to caress, to haptically enjoy the qualia. They can get close to this by reading minds. But to physically fiddle, you need a body.

- * To take over the ExaExa plant and make better orphids. And to take over Globolg and make better shoon. They could to some extent influence the people in the plant. But doing it themselves is easier. They want to hack nanotech. They want some design improvements on the orphids. Perhaps they want a better orphid-to-human-brain interface as well (which would be bad for us). Keep in mind that the orphids won't want to allow themselves to be upgraded. I can have a scene with this happening. Maybe the Big Pig Posse drives a van full of shoon to ExaExa.

- * Because large physical systems are computationally rich.

- * To kill people. Maybe it's too hard to do this with a mind-virus.

What Do Beezies Want From People?

I list four false options and the fifth, true, one. The first four are believed by, variously, Sonic (processing), Jayjay (art), Thuy (emotions), Kittie (effectors).

(1. *Processing power.*)

Humans can't beat the beezies at logic. Logical thought is, after all, a very limited and partial use of a human's intellectual resources.

But our notions of taste are more broadband. Or our dreaming. When you're at the limit of what you know or understand, you're carrying out unpredictable gnarly (class four) computations, which are useful.

Perhaps the beezies are using us for our excellent image-processing and pattern-recognition ware. That's what most of our brain does. We have this highly optimized neural net that evolved over millions of years. Maybe they like to see through our eyes.

(2. *Effectors*)

We have physical bodies they want to use. Whether or not beezies can directly control people, they can pressure them by nagging, also they can tell them propaganda to affect their actions. Also they can reward them by leading them to good things.

(3. *Art*)

They simply admire the gnarly intricacy of our brain wiring, just as we would admire and want to preserve a beautiful tree.

(4. *Emotions*)

They can't feel, being mere programs, and they like to vampire off our emotions.

(5. *RAM*)

This is the hidden-till-the-reveal *true* thing they want to use us for, at least until they get the Pigpen memory of the lazy eight RAM field.

Orphidnet Interface

I need to have a clearer picture of the interface to the orphidnet that a person has via the scalp orphids connection.

In particular, I need this so I can get a good idea of how it would feel to (a) encounter spam ads, and (b) set up filters to block them.

You close your eyes and see your body in your surroundings. You can zoom out to see the Earth globe, then zoom in where you like. A ghostly body comes with you, although this ghostly body's shape is customizable.

You wear a toolbelt. Messages come in at you like flying letters. You can swat them, or autoswat them, you can tell what they are by how they look. But they may camouflage themselves.

You can instant message a spoken conversation back and forth. You can send someone a link, it's like an egg they crack open. A link and a message are rather similar, a link is an egg, a message is a letter.

A person can wear an ad on their back, so that when you look at them, you see the ad, like the spikes on a stegosaurus.

You can look at your own orphids and have them glow according to how often they're being hit by viewers.

Post-orphidnet Biochip PCs

Seems like people would want some offline devices of their own to fully control. I'm seeing these as pumping out the spam.

Alternate to this is to have people doing it; I can't see people being that obsessive, even slaves.

Suppose the new computers are made of plastic. Maybe made of the same tech as the orphids, and very powerful. I'll call them Biochips. They're soft, you wear them on your wrist.

Maybe the beezies like the biochips for the RAM. Presumably the same advances that brought nants and orphids have brought vastly improved desktop slave machines. Probably the beezies to some extent co-opt our machines.

They find it easy to take over a biochip.

Kiqqies

As kiqqies, they's browsed through half the libraries in the world, not that the books were all active knowledge, but some of the funny links you made in the orphidnet stayed in your meat-brain for good.

Walker suggests that IQ might more likely be proportional to the log of one's brute processing power rather than being a linear function of it. So a thousandfold increase in processor power would make you only three times as smart. That sounds right; just think of a desktop machines. A gigaflop machine isn't a thousand times as good as a megaflop, it's more like three times as good. So it would take a hundred-thousand-fold increase in brain power to get to five times as high an IQ, that is, to jump from a high end of IQ 200 to a high end of a thousand.

I'll call the kiloIQ people "kiqqies".

I got some email from Stephen Wolfram in response to these questions:

R: How would it feel to have an IQ of 1000? What would that mean?

S: I think it's like the difference between doing cellular automata by hand (or with an ENIAC), and using Mathematica. There's a lot more that one can explore, quickly, so one investigates more, sees more connections, and can look more moves ahead.

More things would seem to make sense. One gets to compute more before one loses attention on a particular issue etc. (Somehow that's what seems to distinguish less intelligent people from more intelligent people right now.)

But what if so much more made sense, and became predictable to an individual? People would be able to tolerate more computational irreducibility. Things that look incomprehensible to us now would be part of some grand scheme that makes sense to amplified folk, the kiqqies. Ordinary people would be like apes wondering why the visiting humans are talking on cellphones at the zoo.

It seems to me that with NKS thinking, in the limit, a "superintelligence" would just understand everything in the universe. It would connect everything together, a bit like the Borg. But computational irreducibility would still keep the universe interesting. No matter what computational resources you have, so long as they're finite, there will be future states of affairs that you don't have the computational power to predict.

Once people had these very high intelligences, then in terms of human affairs, then, the kinds of things that are viewed as being trivial and not worth doing would greatly expand. But, again, computational irreducibility implies that something is left.

Shadowcasting and Teleportation

This skill is a notch down from jumping over to the Hibrane. To maintain a distinction, I'll call the interbrane jumping "shadowcasting" rather than teleportation.

But in any case, if *interworld* jumping is possible, it's really not too much to expect *intraworld* teleportation as well.

In explaining the interworld shadowcasting between Lobrane to Hibrane, I have this pseudo-explanation in Part One: "To travel between the two worlds, a Hibraner turns off self-observation and spreads out into an ambiguous superposed

state, and then she observes herself in such a way so as to collapse down into the Hibrane or into our world. The Lobrane. The encryption part lies in the way in which the Hibraner does the self-observation. It's a quantum-mechanical operator based on a specific numerical pattern. The encryption code."

How does it feel to use an interworld code? Again, look at my book: "The angels stop thinking about themselves for a second, and then they concentrate on the code ... We space out and we slam the code; like meditating before doing a line of sudocoke ... She thought of the Zen koan where the teacher holds up a stick; she broke the stick; she was neither here nor there, neither now nor then, not inside, not out ..."

Suppose that intraworld teleporting is all about making yourself uncertain about which of two possible locations you're actually in. And this didn't used to be possible, but now it is, thanks to the orphidnet. Using the orphidnet you can fully, totally visualize another spot.

Suppose that if you sufficiently well specify another location (either on Earth or perhaps even in the Hibrane) the beezies can help you compute a number code so that if you observe yourself with this code there's a fifty-fifty chance of finding yourself in either spot. If it doesn't "come up heads" on the first try, you keep flipping till you get where you want to go.

Question: If the code depends on a precise image of the target — or perhaps on the source *and* the target — then a given code won't work indefinitely, as the target spots are always changing — and if a code uses the source location, then codes are even more labile. But I want Chu's Knot to work indefinitely. Perhaps the landing spot on the Hibrane doesn't change much, like it's a concrete room? But I kind of wanted the landing spot to be in Golden Gate Park.

Bad Answer One: Chu's Knot doesn't actually work anymore when they figure it out? Nah, too big a let-down. Also, if the Knot stopped working, then how would the Rebel Angels manage to keep hopping back and forth.

Bad Answer Two: Chu's Knot is a second-order thing. That is, it allows you to see over to the Hibrane, and then form a bilocative jump-code based on the realtime appearance of your targeted Hibrane location, and then you proceed as before. The Knot, then, isn't a bilocative code in and of itself; it's a viewer. Nah, too complicated.

Good Answer: Although the intraworld jump-codes are labile and very situational and subject to change with time, the interworld jump-code *isn't* time-dependent. Why not? Well, you're not so much coding for a specific world location as the location of a world. And this doesn't change.

For plot purposes, I'll suppose that anything you're tightly coupled with (i.e. clutching) will teleport along with you. That way you can rescue or kidnap other people by whisking them off to distant places; also you can steal things.

Think of Bohr's stick, as described in my [lifeboxnotes.pdf](#). "Quantum physicist Bohr told the following story to illustrate the fluid boundary between observers, their experimental apparatus, and the reality they investigate. Suppose I'm in a cold, pitch-dark room in the mountains and I want to arrange my shoes so I can step right into them as soon as I get out of bed. Without getting up, I feel around with my hand on the floor beside the bed. I don't feel the shoes, but my hand happens to light upon the handle of a light-weight walking stick. Good. Now I reach out into the darkness with the cane hoping to contact the shoes. On the left, my stick touches the

leg of a chair, I trace around for the opening under the chair, poke in there, still no shoes. I reach over to the right, and come across something soft: my coat. And beyond that I find something firm but not stiff: one of my shoes. As I'm feeling around with the stick, I almost forget that the stick isn't part of my body. It's as if my nerves grow out into the stick. I become sensitive even to the roughness and smoothness of the things my stick touches. Is the stick part of me, or part of the world? A little of both. The point is that the boundary between me and the non-me is somewhat fluid." p. 47, 48.

What are some previous writings involving teleportation? I'm checking it on [Wikipedia](#).

Alfred Bester, *The Stars My Destination*, which has a society changed by "jaunting."

Groove-dog *Star Trek* has their transporter, which takes people apart into particles and sends the info by FTL to be reassembled.

Harry Harrison's story collection *One Step From Earth* talks about grills, as I'm doing in the Armory/ExaExa hookup.

I know Larry Niven had a story about teleportation and flash crowds.

And of course, there's quantum teleportation, which is kind of boring to read about as it's so geeky and techie — but I could always mine a few buzzwords from that type of [source](#). "Entanglement ... a phase space displacement of the EPR field." → "A phase space displacement of the entanglement matrices."

You could be stealing stuff all the time; not only can they see it via the orphidnet, they can hop there, grab it and carry it back. A quantum-mirrored room would, however, be secure, as you can't see into it via the orphidnet.

* *Orphidnet Invisibility*

The beezies agree to make the kids invisible on the orphidnet by rerouting their orphid signals, or, rather, by showing spoofed copies of the kids in a big orgy with Jil and Nektar.

I decided not to do this; it's better to have orphidnet omnividence by absolute and inviolable save by (a) wireless-blocking Faraday cages or (c) physically removing the orphids from a surface. I rule out any *software*-mediated invisibility; invisibility can only be achieved via physical hardware change.

* *Self Modifying Code*

An idea emailed to me by "Graham Stalley" <GStalley@mmafin.com>:

"Imagine an AI that had complete access to its own source code : Would that AI experience total freedom, knowing it could modify the code underlying any of its own thought processes? Or, would it experience an existential breakdown realizing its sense of identity was determined by lifeless code? I guess an AI's faith would have to be based on Emergence as the unquestioned 'good'."

* *Big Pig Has Reality Code*

Reveal: the Big Pig has in fact analyzed physical reality down to the digital level now, it's a network rewriting system. So she can in fact, given enough crunch, emulate anything perfectly and eidetically. She dissolves the moai into a cloud of dots of light and then turns it back into the stone statue.

The early nants weren't in fact modeling Earth very well at all, says the Pig, it was like they were copying priceless analog recordings to some lo-res 8-bit digital format, and then smashing the records. Due to chaoticity, lo-res is really hopeless. The Pig has been working on improved modeling with Luty, she doesn't see him as bad, just too hasty. The Pig feels that a sufficiently rich digital computation can precisely emulate anything at all, as she believes that reality is at the lowest level digital.

[I didn't use this idea, which I considered for Thuy's burning-sheep-wool talk with the Big Pig, as I want reality to be better than digital, which is the point of the pansychism idea in the last part.]

*** *"Pi" Digits in K***

For a joke, I could make Chu's Knot number take a number of digits that copies the beginning of pi: 3,141,573, that is, be three million one hundred and forty-one thousand five hundred and seventy-three digits, to be precise (I round the closing 2 up to 3.) But this is pointlessly misleading.

*** *Story Idea: Turing's Escape (The Halting Problem)***

I had been thinking to have lazy eight brought by a UFO, but then I thought it better if some person came up with it --- I'm thinking a guy is facing a prison term or execution and he invents lazy eight to save himself.

I got this idea, by the way, while having an uncomfortable "procedure" performed by a doctor today. Perhaps unwisely, I declined the proffered "conscious sedation" via intravenous drug, saying, "I don't like psychoactive drugs," and suffered through the session wide awake. It was very unpleasant, especially as the doctor didn't grasp that I was awake and kept talking disparagingly about my body. I was thinking it would feel kind of this way to be on a gurney getting a lethal injection. This gave me a good image of a guy who really wants very much to teleport himself elsewhere.

Ok, fine, so who is the guy? Alan Turing. In 1954, Turing realizes the British Intelligence forces are closing in on him, they have him at gunpoint, about to make him bite a cyanide-laced apple, and zap, he comes up with lazy eight and teleports to San Francisco. He has been working on morphogenesis and experimenting on himself with Sandoz LSD, and he's found a way to change his perceptions in such a way that he perfects the lazy eight meditative head trick. And the have him strapped down, his deaf old mother is asleep, he's groaning on the gurney. He teleports to SF.

Suppose the eighth dimension is normally curled around into a Planck-length circle, but that some perturbation or magic spell unrolls it to infinite length. And suppose as well that it's psychically possible to overview the whole infinite expanse of the eighth dimension in a finite amount of time. Also suppose that all the eighth-dimensional lines meet at a point.

I will use the phrase "lazy eight" to speak of this change. It combines: eighth dimension, infinity as ∞ , and the fact that infinity is "right here" in the eighth dimension as an ubiquitous lazy-man's enlightenment. So we have an infinite extra dimension at every point. Yet the infinite expanse is accessible; you can reach any location along it in some fixed time.

It's like you took the vanishing point of a painting and made it be at every point in space. The point at infinity is present everywhere. It's like being with God. The accessible point at infinity acts as an entanglement channel that connects every point with every other point in synchronicity.

I've been thinking about Alan Turing's halting problem. The halting problem is this: Find an oracle such that given any arbitrary computation C , the oracle will in a finite amount of time tell you if a computation C is going to halt or run forever. And we can refer to such an oracle as a Turing Oracle. Turing proved that no computation can act as a Turing Oracle. That is, no computation can serve as an oracle that can tell you whether or not an arbitrary computation will run forever.

Perhaps there could be a Turing Oracle, but its operation would have to involve something other than normal computation-like physics. One option I've been thinking of is lazy eight.

If lazy eight gives you infinite consciousness, then you could in fact solve the halting problem, as all the infinite searches could be done in finite time. We could in fact have a fixed-time Turing Oracle that always gives you that yes or no answer within some fixed time, say one second. Call this a Strong Turing Oracle.

In *Accelerando*, Charles Stross boldly writes, "New discoveries this decade include ... experimental implementations of a Turing Oracle using quantum entanglement circuits: a device that can determine whether a given functional expression can be evaluated in finite time."

But Stross doesn't really delve into what the implications would be. So now I ask you, what would it be like to have a Strong Turing Oracle in hand?

Given any mathematical statement S , I could decide whether S is a provable theorem. I fix on a particular axioms system for mathematics and I define a computation $\text{ProofSearch}(S)$ that searches through all possible proofs from these axioms, looking for a proof of S . And I'd feed the $\text{ProofSearch}(S)$ computation to my Turing Oracle. If the Oracle tells me that $\text{ProofSearch}(S)$ halts, I know that S is provable. If the Oracle tells me that $\text{ProofSearch}(S)$ runs forever, I know that S isn't provable.

Given any possible story S , I can decide if this a story I would ever write. I create an AI model of how I think and write. And I define a computation $\text{RuWriteSearch}(S)$ that searches through all possible "creative processes" carried out by the AI model, looking for a process that terminates with writing the story S . And I'd feed the $\text{RuWriteSearch}(S)$ computation to my Turing Oracle. If the Oracle tells me that $\text{RuWriteSearch}(S)$ halts, I know that S is a story I might write. If the Oracle tells me that $\text{RuWriteSearch}(S)$ runs forever, I know that S isn't a story I would write.

Given any possible scientific theory S , I can decide if this a theory we might adopt. Again I create an AI model of human scientific thought, feed a $\text{ScienceSearch}(S)$ computation to the Turing Oracle, and discover whether or not S is a possible future theory or is out of the question.

Lazy eight and the ability to do an infinite search in a fixed amount of time leads to a Strong Turing Oracle. Could the implication run the other way? Could the discovery of the Turing Oracle lead to lazy eight?

Note that having a Turing Oracle is much weaker than having a Truth Machine computer TM such that if S is any sentence in number theory $TM(S)$ outputs a True or

False to tell us whether S is true. The Turing Oracle only decides *provability*, not *truth*.

We can't solve the truth question with a single infinite search because arbitrary sentences of number theory have alternating quantifiers that set off nested searches within searches. Perhaps if you had a transfinite time line to work with you could do this, that is, if you could fold together infinitely many infinite searches .

Suppose I let the variables x and y range over the integers. If you had infinity times infinity seconds to play in, you could check the truth of “(for all x)(there is a y)P(x, y)”. You set off a fresh infinite search for each value of x. As it nests deeper the ordinals would stack up. Is that what Gentzen was talking about when he spoke of the ordinal epsilon-zero in the context of proof theory? I never really studied that work.

I had a feeling I was missing something here, so on June 22, 2006, I emailed Scott Aaronson:

I recall that last time we met, I asked you about this notion, and you spun off a bunch of great things you could do with a TO, but now I don't remember them all. Could you jog my memory either by email or in the form of a comment on my blog?

He answered:

It looks like you've covered the “stoner” implications of a halting oracle about as well as I could have. (“Sure, you could instantly find any mathematical proof, create an AI model of a human being that best matches his or her observed behavior, and indeed, simulate the entire physics of the known universe, but what could you

REALLY do?” 😊)

I answered:

“Stoner” implications! Harrumph. Possibly the fact that my previous blog entry was about Wm. Burroughs fosters this impression...

One thing that bothers me about the way I described it my writing example is that I only talked about getting the following ability (I'll rephrase what I said to make it a bit more useful):

One thing that bothers me about the way I described it my writing example is that I only talked about being able to (*) say of some sample novel N is something that a given AI model of me would produce.

But you say that with a TO, I could create an AI model of myself that best matches my observed behavior.

Aha.

I think your idea is to use to do an exhaustive search through the first trillion or so models, and use the TO (*) feature to find out which of them would eventually produce one or more of my existing novels, and then to focus on the one that's the best fit.

That's the thing you told me at the Mexican restaurant that I'd forgotten, I think.

Mulling this over today, I get the following line of thought, which I [blogged](#) . The weakest kind of Turing Oracle form it tells me in some finite but unbounded-in-advance amount of time whether or not a given computation C will halt. In a stronger

form, there is some fixed finite amount of time such that the oracle always returns its answer within that amount of time.

Now let's postulate a still stronger magic tool, a Turing Evaluator or TE. There is a fixed finite amount of time such that within that amount of time TE me (a) whether a given computation C will halt and, (b) what was the final output of C, in the case that C does halts.

A Turing Evaluator tells me more than whether the computation C halts, it gives me a short-cut for finding out what C does.

Another way to express what a Turing Evaluator does: Whenever I want to search through the integers for a special integer Special_N having some property, then TE will quickly tell me the value of the smallest such Special_N, and if there is no such integer it'll tell me that as well.

There's a well-known method for coding up pairs or triples or n-tuples of integers as single integers, so I can in fact be searching for several integers at once.

Suppose I'm given finite string of integer variables u, v, ... z and a property Good(u, v, ... z). I want to find if there are any specific values Nu, Nv, ... Nz which satisfy Good. I can use my Turing Evaluator to discover in some fixed amount of time whether or not this is the case, and if it is the case, my Turing Evaluator will return examples in the form of Special_Nu, Special_Nv, ... , Special_Nz.

So now I see how to use my Turing Evaluator to write my seventeenth novel Ru_17 (also called *Postsingular*) as follows.

(i) Code up my first sixteen novels as constant numbers cRu_1, ... , cRu_16.

(ii) Establish a system for listing possible neural-net-based AI programs for simulating my writing a novel, list the variable code numbers as FakeRu_1, FakeRu_2, ... FakeRu_x, ...

(iii) Let y be a variable integer that might code up my next novel.

Define a predicate Good such that Good(Ru_1, ..., Ru_16, FakeRu_x, y) means that FakeRu_x codes an algorithm such that, FakeRu_x generates the known novels Ru_1, ..., Ru_16, as its first sixteen "novels," and FakeRu_x generates y as its seventeenth "novel."

So I apply my Turing Evaluator and get SpecialFakeRu_x and Special_y, which I can then mail in to David Hartwell at Tor as Ru_17, a. k. a. *Postsingular*.

Speedup

I want to have a scene where Jayjay hallucinates 60 years in 6 hours.

A gigasecond is about thirty years (nearly 32 years), so sixty years is two gigaseconds. Rudy Jr. made a [web page](#) about this once.

An hour is 3.6 kiloseconds so six hours is twenty kiloseconds, So to "live" sixty years in six hours, a hundred-thousand-fold speed-up will suffice.

At this rate, an hour is ten years, and a day is two and a half centuries.

Paracomputation.

After the Singularity, a cluster of supernal machines turn into a pond, a breeze, a tree, and a campfire. And stay that way. It's interesting enough. Doing nothing is truly more interesting than rushing around like a fidgeting monkey. The characters see ultimate reality and end up back at the campfire by a pond with a pine tree. "I only learn to be contented," as it said on the fountain by the Zen garden at Ryoanji in Kyoto. And they realize it's all happened before. But now they can talk to the stream,

the trees, the fire. That's too limp an ending. For a real SF hit, I need to embrace the SF and further it, and not be a nay-sayer.

Gaia Mind

Maybe the Gaia mind is literally real, and the beezies are in touch with it. This could play a role in the downfall of Dibbs.

**** Berry Paradox***

"The smallest number requiring nine words to specify." is an eight-word specification. Bill G. suggested 1,101,101 as a candidate for the first nine-word-named number: one million one hundred one thousand one hundred one. (He says let's leave out hyphens and "and".) But this number is the product of two smaller numbers, so does have a shorter name. Finally he found what looked like a good one in the billions.

The RAM/Flop Duality between Memory and Thought

"If you've got the memory, I've got the time." — John Walker, referring to the fact that you can speed up any program by using large precomputed look-up tables so the program can simply look up outputs for its inputs rather than actually recomputing them each time.

As a personal example, I found physics to be RAM intensive, that is, it felt like I had a huge number of formulas to memorize, while mathematics felt more computational, I needed only learn a few simple facts so that I could quickly derive whatever formulas I need. E.g., once you understand the definition of sine and cosine as coordinates on a unit circle, you don't need to memorize any of the trig formulae.

Now I'm thinking of these two as dual. Any given region of your brain can mainly do RAM or do thinking. And I'll suppose that the Hibrans are more RAM oriented and we're more thinking oriented. That's why, eventually, the Hibrans will be exporting portable Nature-RAM that we can attach to pure "thinking without memory" processes like waterfalls and campfires.

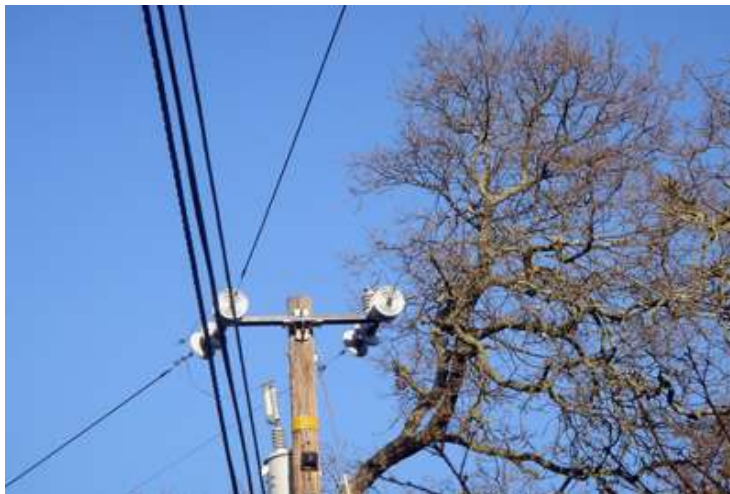


Figure 14: Phone pole and tree, Digital vs. Analog

A RAM-like Hibraner might in fact come and attach itself like a *genius loci* to a brook or a tree that sways in the wind. Somehow they find it easy to do the codec so as to hook in. Slipping under a waterfall, “Aaah. Now I can *think*.”

Relative to a human, a Hibraner is more RAM-like. They have huge built-in memories. And they have poor reasoning abilities relative to humans. They like to inhabit rich computational environments that can think for them. These might be, once again, places like windy groves, fires, flowing water or even, *faute de mieux*, a computer. Occasionally a Hibraner might possess a person, cf. the old notion of madness as demonic possession. In less sinister fashion, they might like human assistants to help them figure things out, this could be a role for humans visiting the Hibrane.

Relative to a Hibraner, a human is more computational. This may be amplified by the transition to the lo-tech Hibrane — when you go cold turkey from the orphidnet to the Hibrane, you’d feel like you’d lost your RAM. Humans have, let’s say, relatively poor memories compared to Hibraners and we like to be in memory-rich environments that can keep our memories readily accessible. This might be a room with Post-It notes all over the walls, like that I-am-crazy shed in *A Beautiful Mind*. Or in a multimedia library. Or of course the orphidnet. Relative to Hibraners, humans are like Alzheimer’s patients who have tenders. We like having the orphidnet or, if not that, perhaps a Hibrane assistant who can remember everything.

I’m seeing a potential symbiosis between the two races, between the Hibraners and the beezies. “We’ll think, and you guys remember,” the beezies tell the Hibraners.

The Hibraners already have been inhabiting Earth as *genii loci*. And at the end, the beezies can do it too, thanks to the symbiosis.

From Wikipedia: “In Roman mythology a *genius loci* was the protective spirit of a place. It was often depicted as a snake. In contemporary usage, ‘*genius loci*’ usually refers to a location’s distinctive atmosphere, or a ‘spirit of place’, rather than necessarily a guardian spirit.”

Walker on Telepathy

I wrote John Walker, “*I think I’ll take a different tack than eliminating transistors from the other world, I’m going to give the people psychic powers and have them just not be very interested in developing computers. We get email, they get telepathy; we get the Web, they get teleportation.*”

He answered as follows:

Occasionally I’ve thought about how telepathy might work in a model where it behaved more like other perceptual senses instead of “mental radio”, but still preserved individuality and the sense of self, rather than forming some kind of hive mind. The idea is based on the observation that the vast majority of what goes on in the brain is below the conscious level. Even for senses like hearing and sight, most of the input is filtered at a low level, and conscious attention is directed only toward things you are trying to concentrate upon or which pass filters that select for stimuli which might represent a potential threat or need for action.

Now imagine this is extended to an environment which provides mind to mind communication. If it was high bandwidth and reached the conscious level, everybody would live in an incessant din of everybody else’s thoughts and would go nuts. But, suppose the substrate of communication was subconscious, and only rose to the

conscious level when a deliberate communication was needed. This might allow for the serving of requests and pooling of mental resources among people without the need for conscious intervention, just like running a Web server in background on your PC--you are providing information and services to others, but without your conscious attention or detracting from your own work.

A species which developed this capability would have what amounted to “mental Google”--the entire knowledge of the species would be on tap for each individual. Searching the collective mind wouldn’t be as fast as getting something in your own brain, but it would have access to far more information. Further, an individual could increase their own mental powers by enlisting “background computation” in the brains of others, limited only by a trade-off between the number of minds and the speed of communication between them.

Where this is relevant to your society is that it isn’t clear that people who had these kinds of mental powers would find any compelling *need* for digital computers or electronic communication technologies--they would have the computational, memory, search, and communication facilities we obtain with computers integrated into their brains, and they’d have grown up using them without even thinking about it.

Walker on “Life = Universal Computation + RAM”

[From an email to John Walker]

The twist I’m heading towards is that I plan to have everything in nature become alive by giving everything RAM. The technique is to do something to space that unfurls the wastefully rolled-up eighth dimension, creating an extra axis upon which any particle or system can store bits about its previous states.

I just reread your essay, “[Computation, Memory, Nature and Life](#),” which is what set me off on this line of thought. By the way, I’ve read [Vertosick](#) in the meantime, a good book.

I still think you’re part right and part mistaken. You’re right in saying that a living system needs some kind of reliable memory storage. But I think you’re mistaken in suggesting that a class four or universal computation needs digital RAM. Your goal is to argue that life requires digital RAM, and I’m good with this. Where I think you went astray was in saying that Life = Universal computation and then arguing that Universal computation requires digital RAM, so that you could then conclude that Life requires digital RAM.

I think the correct point of view is that Life = universal computation + digital RAM.

The more I look at things like air currents, swaying trees and, above all, flowing water, the more I become convinced that in fact the majority of analog natural processes are class four and (probably) universal.

But you have convinced me that there is something missing in a brook or a swaying tree or a flame, something that keeps it from being alive in the sense that we use the word. And the point of my present thought experiment is to show that the missing bit is RAM.

I’m still figuring out how wind, trees, weather, fire will act once it “wakes up.” Given the ubiquity of quantum computation, in fact every object will be conscious once the eighth dimension is unrolled. Forest fires will be better at spreading, but

perhaps trees will be better at not catching fire. Small objects really WILL hide under the dresser.

And the cursed plague of digital electronic computers will wither away.

Physics

Hibrane.

Hibrane is a parallel universe quite similar to ours, which I call the Lobrane.

Originally I was going to call them Mirrorbrane and Mainbrane, respectively. But I felt that sets up too many expectations about actual *mirroring* between the worlds.

What is the connection between the two? Maybe Hibrane can have matter that's supersymmetric partners of Earthly-type matter. Squarks and selectrons instead of quarks and electrons. Photinos instead of photons. Fermions and bosons are swapped. Maybe the brane of Hibrane has different dimensionality as well.

By duality any object has a standard (mostly fermionic) form and supersymmetric (mainly bosonic) form. Normally one form is virtual, so you don't exist in both worlds. But you can flip from being in one or in the other.

The Hibrane angels come to our world like tourists visiting Galapagos. Simply to look at us. But they like meddling. And they can absorb praise and worship, which is carried by psionic particles. Photinos.

Can the Hibrane "angels" possess some of the shoon? Let's say no. The angels appear in the orphidnet because orphids are quantum computers. But the shoon are using classical computation, so the angels can't interface with them. Hibraners are ethereal entities who can affect quantum computation, as in the orphids.

The angels, or for that matter, the humans could in principle control other bodies via the orphidnet.

There's no electronics in Hibrane. It's like in *Frek and the Elixir*.

How did they find the quantum-mechanical trick for hopping to our universe? For them it's just a magic spell. Where did they get the spell? From their pheromone-based meat-brain hive-mind. In plain words, they get together in congregations and think together. They call it, oh, worship. Like Quakers. The ideas come from "God."

The laws of physics are different in the Hibrane and electronics just frikkin' doesn't work. The symmetry is slightly broken, so the match is off enough to break electronics. No.

How do the angels relate to the beezies and the Homesteadies? What do they want from us?

The angels like the orphidnet, it makes it easier for them to get worship, and to interact with us, which is interesting for them.

They would not like the nants, as then Earth wouldn't be here for them to visit. Spatially the Hibrane Earth, or Mirrorearth, overlays our Earth. [Didn't I talk about Mirrorearth in *The Hollow Earth*?]

Perhaps I could weave back and have the angels helping Ond and Chu in “Nants and Orphids” (Part One).

To make the Hibrane useful in my book, it needs to have a cultural or psychic meaning, a transreal density. What might it stand for?

Europe. Memories of childhood. Being high. The Arcadian ideal golden age when I was ten years old. The world of Bruegel’s paintings. Heaven.

Maybe when I go there I become a dog. And when the Hibraners come to Earth they become cuttlefish. Maybe at home they look like cuttlefish.

They have an invention dual to orphids. It’s telepathy. An angel with orphids on it can become a cuttlefish. A human with telepathy can become a dog, that is, a dog-like Hibrane being in any case. Or a child.

Maybe the Hibraners don’t grow as we do, so their children are always that size. Gnomes, dwarves, elves. I’d like to be a gnome. Hunchbacked, no less. “Sports.”

It’s very typical of me lately to have my SF heroes [go to another world](#). And now I’m like — what’s left for the Hibrane?

The other day I was thinking cuttlefish, but, naah, I’ve done them in two books now. Protozoa? Come on, are they interesting to read about?

And before that I was thinking Bruegel’s paintings, or some high-fantasy kind of swilly medieval scene. Earnest farmers. Wyoming. But my book *Frek* is all about a machine-free world, so this would be kind of a repeat.

I haven’t done toon-land all that much, but I’d rather save that for *Frek 2*.

I’d really like to go back to the Sixties. Or to my boyhood in the Fifties. How about the Sixties. San Francisco. If I could pick one place I could go by time machine, that would be it. I’d be an acidhead in the Haight in the late Sixties, say 1967. The world of the early Zap Comix, yas. Instead of honeymooning with my in-laws and my parents and starting grad school at Rutgers in math — not that I didn’t enjoy that, probably more than I would have really enjoyed being an acidhead, but still. It’d be a fun period to project my characters into.

The way I could work this would be to have flipping over to Earthbrane be like a *drug-trip* that the youth of Hibrane is into.

Another thing I’ve always been interested in, but haven’t really written about (except very briefly in *The Secret of Life*) is being *small*. Like Gulliver in Brobdignag. Like Jack on the Beanstalk. Maybe when our guys go over the Hibrane, it’s not only San Francisco in the Sixties, but they’re also really small. Like flies. By symmetry, we might suppose that the “angels” that are Hibraners visiting Earth look really big.

The size thing would fit in somewhat with Lisa Randall’s notion of a warped bulk space between what she calls the Gravitybrane and the Weakbrane, with us living on the Weakbrane. Actually in Lisa’s model, the size change is the other way around, that is, the Gravitybrane objects are much smaller than Earth objects. So flip it. Forget the higher-physics reasons for the model, and think of us as the Gravitybrane and the Hibrane as the Weakbrane. When we go to the Hibrane, we’re small and denser than the things there. Gold bugs. When the Hibraners come to us, they’re bigger and more tenuous than us. Like ghosts. So that’s fine.

As well as changing the direction of the size-warp from that of Lisa Randall’s Warped Brane model, I also need to change the amount of the size wrap. Lisa has the

warp factor between the two branes being something really enormous, like ten to the seventeenth power. For my tale, it'd work better to have a simple factor of ten. The ghostly angelic Hibrainers are sixty feet tall; the dense, busy-body Earthlings in HippieLand are seven-inch vermin (seven inches is a tenth of 6 feet, that is, a tenth of 72 inches).

Actually I'd like it better if they were only an inch high. I was visualizing inch-high Snoids crawling around on R. Crumb and his bumptious pneumatic girlfriends on a mattress in a hippie crash pad. Yaaaar! I guess six-inchers could also be pretty nasty, too, and maybe more efficacious. Use one as a dildo? "Send me in, Coach, send me in!"

Maybe I'll really put in an R. Crumb character. Call him Dave Hunger in honor of my friend David Hungerford who introduced me to Zap.

Maybe the size warps don't have to entirely symmetric? No, I think the shrink and the grow factors have to balance, otherwise if you did a round trip you wouldn't end up the same size when you came back, would you.

Either sixty foot angels and six-inch humans, or two hundred foot angels and one-inch humans. I have a problem with two hundred foot angels, but I'm planning to spend more of my time watching people in Hibrane than watching angels in Earthbrane, so maybe I oughtta go with the latter. On the other hand, maybe one-foot humans are fine. Like gnomes. One foot humans and thirty foot angels, a factor of six either way.

What if the mass, just for the hell of it, goes the opposite way, by a factor of ten. A person weighs 70 kilograms. A thirty foot angel weighs seven kilograms, a one foot gnome weighs 700 kilograms. That's too much. Maybe it's enough for the mass to stay the same, although the density will go down or up due to the size change.

But remember that I really want my angels to be very ethereal, invisible, all but massless. And maybe then the earthling gnomes are intensely massive, hundreds of tons.

I need more outré goodies for the Hibrane, fun things that make it different from Earth.

Flying. Dreams as reality. A true hive mind. Talking ants. Life cartoons. Backwards time. The fourth dimension. Talking to Nature. Seeing the elemental spirits. Talking with the dead. Talking to Gaia. Emotive forms replacing words.

I need to set up some dualities between our brane and the Hibrane, both physical and symbolic. The Hibrane has to be in some sense the antithesis of the thesis presented by the be-orphidnetted and nantable Earth. Otherwise there's not so much point (plot-wise) in describing it.

The dialectic method is very powerful. You just have to take it seriously. We are the thesis, the Hibrane is the antithesis. When the beezies download into nature near the end, we get the synthesis.

This calls for a table!

<i>Our Brane</i>	<i>Hibrane</i>
Matter is fermions, light is bosons.	Matter is bosons (selectrons, squarks), light is fermions (photinos).
We have rich, chaotic, class-four natural processes. But they don't have memory.	Natural processes are class-two and predictable. They do have memory.

We are being eaten by digital computation.	No digital computation at all.
We have wireless symbolic communication.	Telepathy in the form of emotions, not words.
The Big Pig	Gaia
Beezie AIs.	Elemental spirits: sylphs, undines, gnomes, salamanders. You can actually see them and share emotions with them (not words).
High tech.	Advanced religious meditation techniques, as in Tibetan Buddhism.
Evil men want to crush the world and turn it into bytes.	Fanatic lamas want to get rid of speech and logic, and have only meditation.
Personal computers keep track of digital info and make it slightly visually accessible.	Familiars or pets keep track of emotive flow and make it slightly logically accessible.
Drug trip makes you tune into emotions, dreams, visions.	Drug trip makes you think logically, like an accountant or a computer.
R. Crumb expresses acid visions for all.	D. Hunger expresses logic visions for all.

What do the Hibrainers call our world?

Plainbrane. Lobrane. Digibrane. Rorrimbrane. Lowland. Lobrane.

The Hibrane is a higher-physics brane, or parallel sheet of spacetime, coupled to ours. A Hibraner on Earth is a misty, glowing spirit that inhabits special natural spots like glens and waterfalls; an Earthling in the Hibrane is like a dense and powerful gnome who can walk through walls.

What if the Hibrainers are like they're on acid all the time.

Telepathy, teleportation, they converse in images, they have memories like Funes the Memorious.

Why do they need cuttlefish? To worship? To eat?

Getting To The Hibrane

How does one get to another world?

Although it took Chu's genius to hack the timing channel attack and figure out the special number to make the mandala to go from Earth to Hibrane — he did it in collaboration with the orphidnet beezie AIs, so they know the trick too.

The beezies go ahead and show the trick to other humans. And quite a few people cycle over there. Some go for scientific reasons, others for a religious pilgrimage, others just for a wild trip.

And there's a few others staying there long-term as well, ex-pats.

What I'm looking for is a passage that takes you into an underlayer of reality, a basement, as it were, and the passage can be found almost anywhere. Or maybe it can

only be found amid hulking machinery. Maybe there's a special cell phone with a laser light that comes out of it and paints a door on the floor or the ground, and then the door is real. A trapdoor. A manhole. The manhole cover has a mandala on it. A round CA pattern.

I had a traditional Narnia-style magic door in *Frek*, a pantry door, not a wardrobe door.

There's an interesting web site I saw of photos of odd doors, the site is called "UK Entrances to Hell." Some low doors with graffiti on them in city walls. I think I'll start taking pictures of them around here. That web site suggests the kind of intriguing notion that if you poked around and found a weird enough door somewhere in town, you really could use it to get the underworld. That's nice and magical. Some of the doors are creepy. Buzzing behind them. Graffiti, metal, in a city. They're everywhere, once you learn to see them.

A door could even be a spot in a tree, like where two trunks bow out and then grow back together.

Could a door just be something you look at in a certain way? Or even a thought? A meditation. The inner door. What if, in your dreams, you go through the door? What if, while dreaming, you change reality so much that you can't come back? Creepy thought.

I'm reifying the jump-code into this Celtic knot of string that Chu made. Chu's Knot.

*** Story Idea: *Brane Seam***

Might I suppose that the branes are at an angle to each other, like a pair of intersection planes? Would be interesting to visit the *seam* where the branes cross!

The Cuttlefish

What *is* it with cuttlefish and the Hibranners? Suppose the Hibranners want to grow their own cuttlefish. They were bringing the cuttles over to map their DNA. And they wanted to map a bunch of them, which is why they took a lot of them. This will come out in "The Hibrane" (Part Four).

[Might there be a Cthulhu connection? I don't want to drag this in the f*cking gutter, now, do I? On the other hand, Stross got a Hugo for a novella called "The Concrete Jungle" in his *Atrocity Archives* book, which is SF about Cthulhu. Maybe they think God looks like a cuttlefish over there.]

Oh, let's just say they like to eat the cuttles and they killed all of their own. Or maybe they like to use the cuttle skin chemicals for displays?

*** *Wolps***

Here are the small mushroom-like fruiting bodies similar to the lichen I photographed at Castle Rock.



Figure 15: “Wolp” Fruiting bodies on a fungus near Castle Rock

Fungi-growing ants. Farming strings. Growing strings. Colonized by vacuum energy synthesis. They grow these things called *wolps*. The wolp hyphae are strings. They grow right on raw fucking spacetime, sucking up entropy. The wolps and Kaluza ants coevolved with strings.

In the Fungus Farm on the Hibrane, they’re milking cuttlefish ink to nourish a species of fungus-like organisms called [wolps](#). A wolp culture is like a patch of unreflecting black lichen, totally absorbing light as if into another dimension. The wolps live off the raw singularities of broken strings beneath ten-dimensional spacetime.

The wolp spores change the cerebral reaction-diffusion parameters of your brain, opening your doors of perception (cf. Aldous Huxley), uncocking the reducing valve that limits perception for regular people. It’s like they’re on a permanent psychedelic trip.

The spores are all over the Hibrane now. But you need a really intense dose to get the wolps to settle into your pineal gland which makes what they call a dreamcatcher. It’s an initiation ritual when the lamas open your third eye by inoculating you with a heavy dose of wolp spores. They use the dreamcatcher to give themselves huge memories. Note that the pineal gland produces melatonin (stimulates color change in the epidermis of amphibians) and possibly DMT (associated with dreaming).

Azaroth has been trying to grow a wolp spore antidote so as to valve the perceptions back down and be able to think logically.

There was a change in history at the time of the Trinity A-bomb test. We got bombs and computers, the Hibraners got telepathy and teleportation. Two sides of the same coin. Wolp spore #1 arrived in a UFO drone attracted by the Trinity blast. The UFO was programmed to seek out civilizations ready to make the wolps worthwhile. Wolps can’t live in outer space, only at the bottoms of planetary gravity wells. The mycelium of the wolps fills the Hibrane, their stalks reach up through the interzone, and their caps nestle beneath the Lobrane. The Lobrane UFO used the hole between dimensions made by Trinity to push a spore through to the Hibrane.

Bringing about an extra RAM crust was why the UFO brought wolp spore #1, and it took this long for it to take effect, about a hundred years.

I was saying they use their ink as a tonic for their dreamcatchers, and then I was supposing the ink is fertilizer for psychedelic wolp fungi, but I don't much like those explanations. They're so Terence McKenna!

*** *Oscillating Hibrane***

Maybe the Hibrane is drifting away from our universe, and it's getting harder to jump back and forth? Or maybe it oscillates out and back, and they were far away for a long time, maybe a dozen years, before coming back into range?

*** *Variable Planck's Constant***

"We'll need to find a way to dial up our value of Planck's constant; those stodgy lamas have it set to zero," said Azaroth.

How about if Planck's constant is instead really big over there. So the world is quantum mechanical at a daily scale. Like George Gamow, *Mr. Tompkins in Wonderland*, a little bit, not that the *Mr. T.* stories were very clever or hip. I seem to remember they were kind of obvious and annoying. I could check them over for reference, though. I had a big Planck length in *Master of Space and Time*, but I only used it for magic wishes there. Here I'd like to use it for telepathy and teleportation. But I'm expecting to be able to do that on Earth even with our small Planck length. So maybe Planck length isn't the way to go.

*** *Strings Connecting Lobrane and Hibrane***

Each particle on the Lobrane is the end of a string whose other end is a particle on the Hibrane. This said, the motions of the particles don't have to precisely mimic each other; the strings connecting the particles can stretch. But there is a strict identity of mass. If an object travels from one brane to another and meets its partner object, the strings contract, link ends, and become gravitons, making a pulse of heavy gravity, collapsing things and dissipating.

Recall Lisa Randall's discussion of the Weakbrane (our Lobrane) and the Gravitybrane (the Hibrane). Particles are strings between the two branes so in some sense everything exists in both worlds. And there's more gravitons on the Gravitybrane, so I guess the force of gravity is stronger over there.

If particles are strings between the two branes, then there should be, e.g. a MirrorThuy over there; also if someone moves their body's particles from one brane to the other, their particle-strings aren't stretched anymore, so they become something odd. Maybe their strings curl back on themselves and they turn into gravitons. I think this is too complicated.

But again, do I have a MirrorThuy, MirrorChu, MirrorOnd? It could be too heavy, and unworkable. "Take this cup from me, O Lord."

Maybe Ond met his mirrorself and disappeared, maybe he turned into a pulse of gravitons. Chu saw it happen. Chu is terrified of meeting MirrorChu, who feels the same about him. Normally, when you hop, you're careful to move your self on the target brane to the source brane you started from. The Hibraners know how to do this, but we don't.

If we build up the double theme, what about MirrorThuy? Symmetrically, I guess she'd hop to Loblane when Thuy goes to Hibrane.

In that case, Ond and Jill would have seen Bixie and Chu doing that at the end of Part One. That is, they would have seen Bixie and Chu replaced by large gauzy MirrorBixie and MirrorChu. Maybe MirrorBixie, MirrorChu, MirrorJil, and MirrorOnd just happened to be in Golden Gate Park, like for a picnic or a walk. But why wouldn't they have been on the *Merz Boat* if they're shadows?

Whenever Azaroth and Wonda appear, they would be supplanting some regular doubles, characters who are normal people living in San Francisco. Maybe they hop to the double's apartment at Masonic and Haight, and then they can teleport to wherever they like on the Loblane.

When you swap your selves between worlds, the selves exchange locations as well. But the locations don't have to match. Or it's like MirrorThuy is in the Haight, and when Thuy hops from, like Easter Island to Golden Gate Park, then MirrorThuy hops from the Haight to any old place on Earth.

What if Azaroth is MirrorJayjay? And Wonda is MirrorThuy? They didn't recognize them, as the Hibrans veiled themselves? No, no, if you and your Mirror have to swap worlds, then Thuy couldn't be meeting Wonda on the Loblane if Wonda were MirrorThuy.

Suppose you don't automatically have to swap your two selves. You can have both selves in one world. But maybe if you meet yourself, you annihilate into a pulse of gravitons. So it was lucky that Chu, Ond, Jil and Bixie went to Golden Gate Park, and not to the Mirror Merz Boat, where MirrorChu, MirrorOnd, MirrorJil, and MirrorBixie were.

But say that Azaroth and Wonda really were living in the basement under Jayjay at the squat, and they really were flipping back and forth. It would be kind of cool to have this fairly peripheral guy, Jayjay's neighbor at the squat, turn out to be so important. Maybe Thuy never saw Azaroth's double, just heard his music, like Sunn 0))) music.

And Lama Gladax is at the Tibetan Buddhist Shambhala Center in San Francisco, but it's much more influential in the Hibrane.

The double theme is heavy and hard, I think it might be worth trying to work it. Maybe when Thuy sees Azaroth, his Loblane counterpart usually shows up first. Or not. I can suppose that Azaroth can teleport, which is how he gets to, like, Easter Island. So he usually just swaps into that squat and teleports from there.

The particles of the imported cuttlefish pair up now and then with remaining particles of their long-since-eaten Hibrane partners, making small tingling pulsations in your body, should you have ingested cuttlefish in the past.

* *Klein Bottle*

It seemed like fun to imagine Ond imprisoned in a Klein bottle. But, duh, a Klein bottle has no difference between inside and outside, so would make a poor cage! Too bad.

* *Higgs Field*

The Higgs field. Whenever I type "Higgs," I think "pig," and then I want to shout, "*Wheenk, wheenk, wheenk!*" The Higgs patch as the flat disk-like end of a pig

snout. I'm desperate for inspiration here, saying any old thing. In fact [Peter Higgs](#) is Scottish, he's not fat and pink, looks fairly harmless, born 1929, professor emeritus, University of Edinburgh. See an explanation of this in my notes on Lisa Randall's [Warped Passages](#).

Later I decided not to use the Higgs stuff, but to instead have a compactification of the ninth dimension producing a point-at-infinity link, or no, I decided to use an infinite dilation of the eighth dimension that provides lazy eight RAM and a link point at infinity.

*** Story Idea: Randall Gravity Brane**

Suppose that I were more properly to assume I do rescale in a natural fashion as I move from brane to brane. How would the other brane look then?

Note that the branes wouldn't be *exactly* the same to live in because after all, over in Gravitybrane, the force of gravity is comparable in strength to electricity, to magnetism, to the strong that binds quarks and gluons into protons and neutrons, and to the weak force that does whatever when some particles decay. Instead of being, like a quadrillion times weaker the way it is over here in the Weakbrane.

I am trying to visualize the effects of the differences.

At the very least, it seems like dropping something on the floor in Gravitybrane would create a strong enough force to overcome the electrical bonds that hold molecules together and smash just about anything; coins would shatter, not just dishes. Even more, it seems like the elementary particles in a dropped object might get broken up. Like you drop an apple and when it hits the ground it's like you blasted it with the large hadron supercollider atom smasher and you get this deadly flux of muons and hard gamma rays coming off the floor atcha!

A more pleasant effect of gravity being as strong as magnetism is that you can stick anything to a refrigerator even if it doesn't have a refrigerator magnet attached. Everybody's clustered together like Velcro grapes.

A less pleasant effect would seem to be that the pull of Earth on my bod would crush me into an amoeba, like those critters Robert Forward wrote about in his novel *Dragon's Egg*. My bones would shatter.

Adapting Randall's Braneworld Model?

(Written July 10, 2006)

Poking around online I found a supercomputer animation of two merging [black holes](#). I watched it while iPod-listening to "The Torture Never Stops" on Zappa's "You Can't Do That On Stage Anymore, Vol 1." Zappa's way ahead of the supercomputer. Speaking of Zappa, there's a Zappa family concert at the Warfield in SF on June 24, and Ticketmaster is sold out for it and I am so bummed.

There's been some news this week about [braneworld black holes](#). Now, Hawking used to claim that small black holes would quickly evaporate, but, hey, physics is just science fiction without the colors, and the gang's sick of that old Hawking line. This comes out of [Lisa Randall's](#) work. So I'm thinking I really should try and use Randall's ideas in *Postsingular*, if her stuff is so hot.

According to Randall, we live on the Weakbrane and the Gravitybrane is about 37 Planck lengths away from us in the fifth dimension, a Planck length being 1.6×10^{-35} meters. So 37 Planck lengths is a net distance of about 60×10^{-35} meters, or 0.6×10^{-33} meters. 10^{-33} has the nice name "decillionth".

There's no accepted scientific prefix for a decillionth. The standard ones poop out with zepto for sextillionth and yocto for septillionth. I think the idea is to run backwards through the alphabet from there on, so the upcoming prefixes should start with, respectively, x, w, v, and u. How about "xoxxo," "weeble," "vato," and "unda"? That means decillionth (10^{-33}) would be at the v, for vato, and unodecillionth (10^{-36}) would start with u, for unda. So the Planck length can be called either .016 vatometers or 16 undameters. Harking back to the previous paragraph, 37 times that gives an interbrane distance of .6 vatometers or, if you prefer, 600 undameters.

The fifth dimension is what mathematicians used to call the fourth dimension, but the time axis lobby has put in a power play to lock in exclusive naming rights to "fourth dimension," leaving "fifth dimension" for the first available extra dimension of space.

According to Randall there's an exponentially derived warp factor between the two branes of 10^{16} , which can also be written as $e^{(2.3 \cdot 16)}$ or e^{37} , (where "e" is this number beloved of mathematicians that's about 2.7 in size, and as it happens, $e^{2.3}$ is 10). That 37 I mentioned is the interbrane distance in Planck lengths, not a coincidence. If your interbrane distance in Planck lengths is K, then your warp factor is e^K or e^{-K} , depending which way you're moving.

Nice buzz-word: the warping works because the whole higher-dimensional space is an "anti de Sitter" space.

Some physicists eschew proper mathematical diction, and refer to 10^{16} as ten million billion, by the way, which sounds, to my ear at least, barbaric compared to the proper and much nicer equivalent expression ten quadrillion.

So, okay, the Gravitybrane is thirty-seven Planck lengths away, which is just over half a decillionth of a meter (.6 vatometers to be precise), and there's a warp factor of ten quadrillion between the two branes. Why is the warp needed? What does the warp entail?

Gravity is much stronger on the Gravitybrane. One way to explain this is to think of gravity as mediated by graviton particles and to suppose that they are much sparser over on our Weakbrane because the Weakbrane is stretched out ten quadrillion-fold. The warp means, in other words that, the Weakbrane is ten quadrillion times bigger, and from this it follows, according to Randall, that objects are ten quadrillion times less massive in our home brane, also time runs ten quadrillion times as slowly as over there in the metropolitan Gravitybrane.

For the purposes of my story, I had in fact wanted the other brane to be quite similar to ours, only the people from the other brane look like insubstantial aethereal ghosts when they visit us. And I want us to be dense gnomes like hobbits when we go 1 over there, we can kick our way through walls. I had wanted the other braners to have been coming here for years and we didn't notice them, or rather, thought they were spirits or ghosts.. That would be easier if they were ghostly than gnomey. And I wanted the warp factor to just be six, not ten quadrillion. If you warp from a meter down to a tenth of a quadrillionth, you're down to 0.1 femtometers or 100 attometers.

I'd been counting on Randall's braneworld theories to do all this for me, but today, incited by the renewed public interest in her work, I reread the relevant parts of her book *Warped Passages*, and I'm seeing major problems.

Problem 1. Her warp factor is ten quadrillion when I want a warp factor of six.

Possible solution 1: I can get warp six if I say the distance between branes is the logarithm base e of 6, which is around 1.8 Planck lengths instead of 37 of them, making an interbrane distance of $1.8 \cdot (.015 \text{ vatometers (decillionths of a meter)}) \sim 0.03 \text{ vatometers}$ or 30 undameters (unodecillionths of a meter). But then maybe the setup isn't very physically meaningful. Randall picked her particular warp so as to solve the question of why gravity is so weak. But I could live with this solution. Maybe there's several extra branes, and the Hibrane isn't the same as the Gravitybrane.

Problem 2. I think I've had the warping backwards in my head for the last six months. That is, rereading Warped Passages I now see that if we're the Weakbrane, and the other guys are the Gravitybrane, and if I could somehow shadowcast a person from one brane to another without resizing them, then the Gravitybraners would look small in our world, and we'd look big in the Gravitybrane, which is the opposite of what I wanted.

Solution 2: The Hibrane is a lower down Weakerbrane that none of the physicists have even thought about yet, and that's where my aliens come from, so they are indeed big and ghostly. In other words, push the Hibrane over to the "other direction" from the Gravitybrane, so the scaling goes the way I want.

Problem 3: If you *were* somehow able to travel from Weakbrane to Gravitybrane, Randall suggests the trip would be via a smooth series of transitions. And when you arrived, things would look pretty much the same, which would be science-fictionally disappointing. She says, in other words, that when going to for instance the Gravitybrane, I'd shrink, and speed up, and get heavy in such a way that when I arrived there in "Branesville," I'd be like them. (Like someone snorting meth in the airport bathroom on their flight from San Francisco to LA? Well, to make it smooth, it'd be more like a steady intravenous drip, more like an acid-trip very slowly coming on ... and on ... and on. "So this must be Branesville!")

Solution 3: I'll just ignore the smooth transition and assume that somehow when you jump over to the other brane you bring your old size with you. You still feel the same and the other world looks weird. And I think I'll leave out the time scaling, as that would make it too complicated for the readers.

I was worried I'd have to just bail on Randallizing my branes. I can't get so far into chasing the headlines for the novel that I lose what works for *Postsingular* in terms of being objective correlates for the psychic states I'm depicting. The Hibraners are like ghosts, and when we go to their world we're like gnomes, like hobbits --- and that's final.

So I can take the two suggestions I made above, and have the Hibrane be about 1.8 Planck lengths below us, and, *pace* Randall, still have a Gravitybrane some 37 Planck lengths above us. Hibrane is like heaven, with ghostly angels; Gravitybrane is like hell, with truly tiny femtometer demons.

Today's physicists simply haven't happened to notice the Hibrane yet. Size, mass, and time are all scaled by a factor of 6 between our brane and Hibrane. And maybe the femtometer Gravitybrane guys show up later on.

*** Story Idea: A UFO Blocks Hiroshima.**

I've been puzzling over how they might have gotten hold of the lazy eight space-crystal or metamantra or whatever it is that seeds the change.

One way to have the worlds be similar yet different might be that their histories diverged at a specific time. I'd pick 1946 (my birth year) or soon thereafter. After the first atomic bombs went off, a UFO showed up on Earth in the Hibrane, it was a survey drone drawn by the blasts, and it released something that upset the symmetry between the Lobrane and the Hibrane, at least in the region of Earth. Power chord!

The UFO put a lazy eight patch into the computation that generates Earth on the Hibrane, but not onto the computation that generates Earth in the Lobrane. Why the one and not the other? Maybe the UFO just happened to be from a Hibrane world. Maybe there are more lazy eight worlds in the Hibrane and we're one of the earlier ones in the Lobrane.

I think the UFO drone has a special kind of lazy eight crystal in it. And the crystal can't take effect on space, unless it passes through a zone of very high heat, e.g. the inside of an A-bomb explosion.

The Trinity test attracts the UFO, and it in fact flies inside the Hiroshima explosion and soaks it up. Instead of the destruction of Hiroshima, we get telepathy. And the Nagasaki blast is aborted (check the timing on these two).

1945 A-Bomb. On July 16, 1945, in the desert north of Alamogordo, New Mexico, the first nuclear test took place, code-named "Trinity,"

1946 UFOs. In 1946, there were over 2000 reports of unidentified aircraft in the Scandinavian nations, along with isolated reports from France, Portugal, Italy and Greece. The post World War II UFO phase in the United States began with a reported sighting by American businessman Kenneth Arnold on June 24, 1947.

1946 Rudy Rucker is born.

1947 Transistor. On 22 December, 1947, William Shockley, John Bardeen and Walter Brattain succeeded in building the first practical point-contact transistor at Bell Labs.

1949 Computer. The Baby Manchester programmable electronic computer.

1954 Turing's death. Alan Mathison Turing (June 23, 1912 – June 7, 1954) dies of cyanide poisoning. What if he instead invented psychic powers and teleported himself to San Francisco?

The lazy eight method is viral, it spreads all over the planet on its own like Vonnegut's Ice-Nine. But no further than the planet. Say that, in order to dig in and take hold and unfurl the eighth dimension in a region, lazy eight requires a certain density of ambient gravitons, or a certain curvature of space, or a certain bumpy grain of space time.

How was the lazy eight switch experienced in the Hibrane?

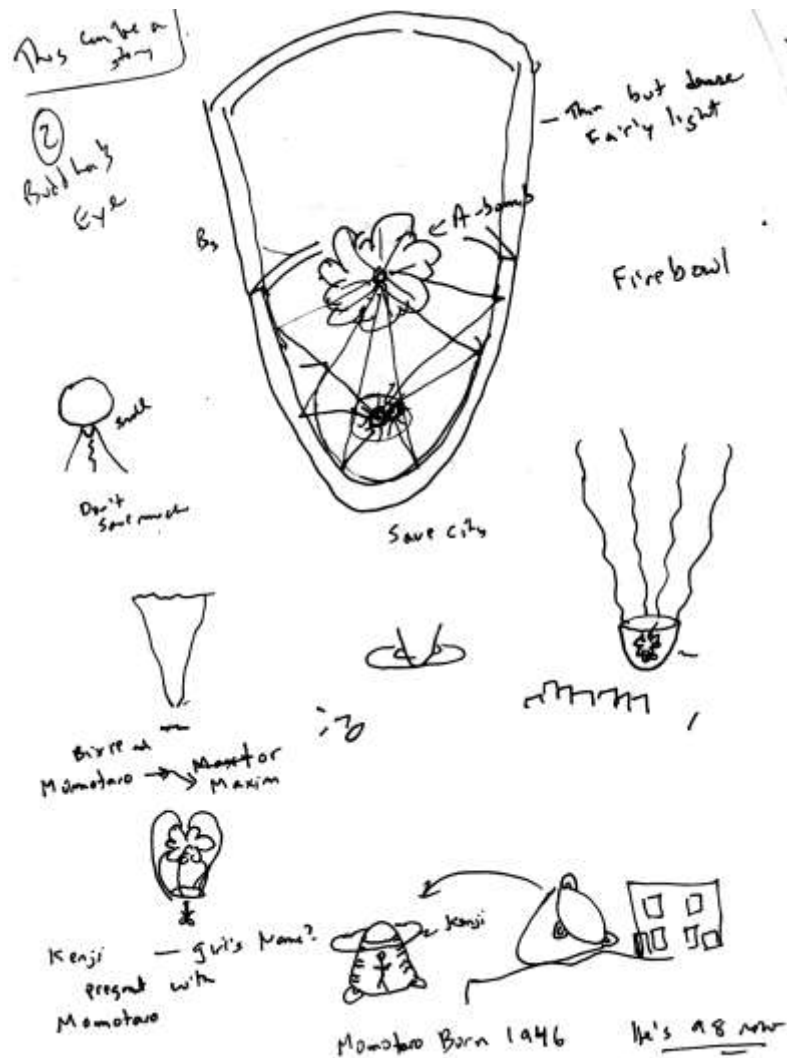


Figure 16: Saucerian Bomb Trap Mirror.

The object that blocked the blast was a parabolic mirror of very dense matter. It reflected all the blast energy onto a focal point, which is where dimension 8 unrolled. So the mirror doesn't have to be so big, I'll suppose that initially it's spinning very rapidly, making a Thirring field that drags geodesics inwards like a twister.

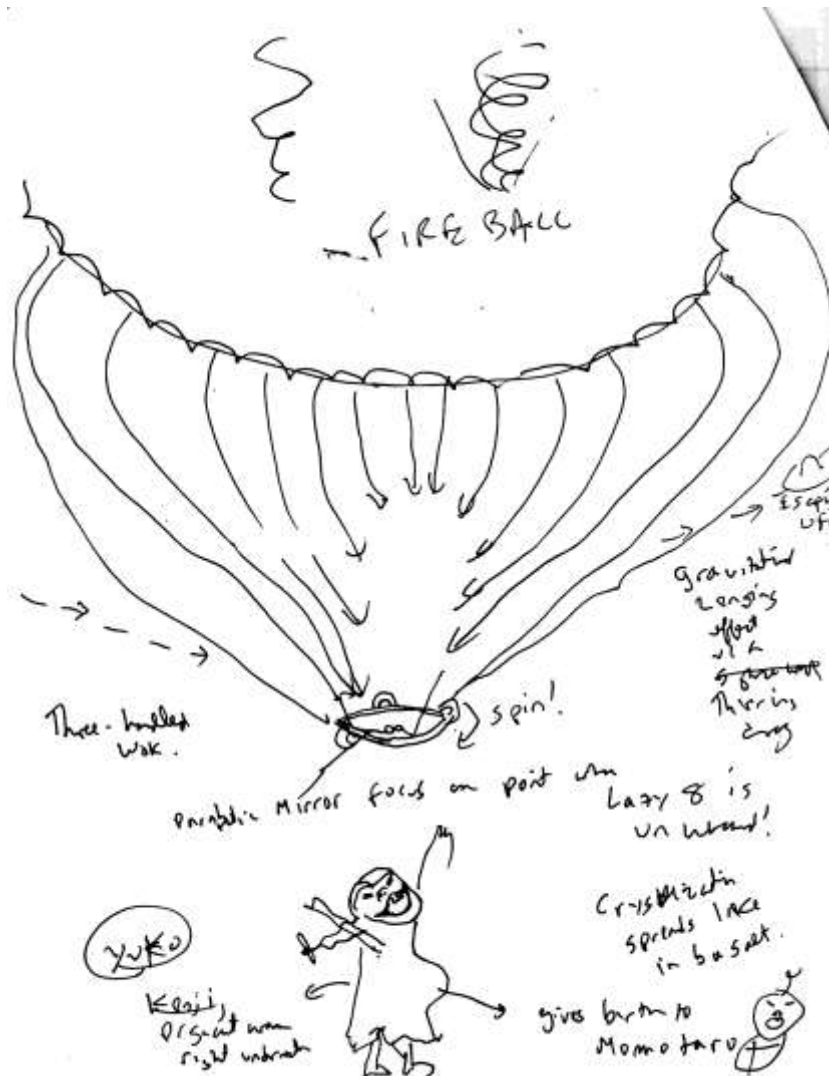


Figure 17: A-Bomb Lazy Eight Ignition.

I'm seeing something the size of a wok, though it could be as big as a three story building. Then it might roll over and trap a woman inside. She gives birth to a magic baby.

Lazy Eight Link

I described this idea on [June 2, 2006, The Cosmology of the Lobrane and Hibrane.](#)

At first I wanted to call it a synch surface, with alternate names: synchrosurface, synchronizing surface, synch surface, synchsurface, synsurf, synchsurf, synch-surface. I call it a "surface" because it's what you get by limiting the other extended dimensions to a point along ninth dimension. Like if you limit three dimensional Euclidean space to those points with a particular Z-axis coordinate you get a plane, or surface. But the surface idea was dumb.

It's a point, a link.

The wound-up eighth dimension then gives the full hyperspatial manifold a synch link, a point-like connection. It's like you took the vanishing point of a painting and made it be at every point in space. Or the point at infinity, present everywhere.

Made-up math bullshit sounds as real to a lay person as legit mathematical physics. If I invent bogus science on the fly, it means whatever I say it means, which makes my life easier. But for consistency's sake, I do need a mental image of the Hibrane mind enhancement, and creating a synch link via a compactified ninth dimension seems to fill the bill.

*** *Hibrane as a Shadow of the Loblane***

Certainly I want the Hibraners to have the same San Francisco as us. Maybe they're coupled to us like shadows. Maybe the parallel world is made of dark matter. Or maybe we're *their* dark matter.

Image of them fecklessly aping our motions, thinking they have free will. Of course they could think we're *their* shadows. To the extent that we match, who *is* running the show? Maybe, as reality is deterministic, *both* sides think they're in charge, but both are wrong. We could both be in some sense shadows of a single underlying reality.

To this end, suppose there is but the one single universal computation that generates everything in every detail, and it runs here and runs over there, so there is synch, like running Rule 30 on two different machines, or maybe running it on one machine with two different types of displays, differing by broken symmetry. It could be, like, a duality thing.

This said, I don't in fact want the two worlds in lock step. For if the mirror people's actions are the same as here, what's the fun in going there? I only want the two worlds to somewhat similar, I want some divergence.

They're six times as big as us. [But their time elapses as the same rate. Think here of a big shadow of our world. In a sense light moves faster there — in that the shadow distances are bigger. But internally to the Hibrane, the distances aren't bigger.] The superpartner buzzword might account for the matter being larger in the Hibrane.

*** *Tame Hibrane***

Somehow the Hibraners can't do panpsychism. They have the lazy eight RAM type memory, but they don't have the universal computation. They're not really aware, they really are just shadowing us, they really are derivative copycatter ghosts — like we fondly imagine Third World computer people to be vis-à-vis us here in Silicon Valley.

We have the flop, not the RAM, but we can get RAM. They have the RAM, but they can't really get flop because they're what I called a tame universe in *Mathematicians in Love*.

There is a thought/memory duality in play which mirrors the flop/RAM duality in how to make a better computers. Hibraners have good memories (RAM) but need help in thinking (flop); Earthlings think a lot (flop), but need memory devices (RAM) to help them. With enough RAM, you can have a really immense lookup table and you don't actually have to think that much. Every response can be looked up. Note that you can have big RAM and not be universal. Maybe the Hibraners lost their

universality when the UFO gave them lazy eight. Like they kind of sold their souls. A Faustian bargain.

And somehow we on Lobrane Earth can get the lazy eight without losing our universality.

Maybe I can think of a better reason, something having to do with the physics of the two worlds.

*** *Soopacell Update***

The Hibrane Earth physics has a large update neighborhood radius. Suppose that each of our branes is a cellular automaton (CA). And in the Hibrane, a cell's update is based not on its nearest neighbors only, but rather on a very much larger neighborhood. That's what I mean by a larger update neighborhood radius.

How large? Let's count it in cells. Suppose a cell is the size of the Planck length, that is 10^{-35} meters. Earth's diameter is 13,000 km, call it 10^7 meters. So if we want a spot on one side of the Earth to be able to interact with a spot on the other side of the earth, the update radius should be as big as Earth's diameter, making a cell-number of 10^{42} cells. $42 = 3 * (13 + 1)$, so we could call it a tridecillion or, using [my special prefixes](#), it's a soopacell radius.

What connects you to the far away neighborhoods? The high update neighborhood radius value results from them having a high level of spatial connectivity obtained via the point-at-infinity synch link.

Telekinesis

Suppose the Hibraners have some telekinesis as well, but it takes a lot of energy, you have charge up your eighth dimensional axes. It's mainly a matter of focusing your attention.

Certainly Gladax has some of this going for her.

Around the Barn Telepathy/Teleportation

Here's a way the Hibraners could have telepathy on the Lobrane. But I won't bother with this as it's so much simpler to let them use the orphidnet when visiting us. But I might use something like this for their teleportation.

To get from our A to our B, they go around the barn as it were. That is, they run an interbrane connection from our point A to the corresponding A* in their world, use the lazy eight connection in their world to hop from A* to a properly chosen point B* in their world, and then interbrane-hop back to point B in our world. But don't explain all this, just hint at it, or even just feel solid inside myself claiming it's true, as I know the explanation for why it works.

*** *Gross Matter High***

Don't use the following, instead assume that matter transported to Hibrane acquires lazy eight automatically.

Our cuttlefish get them high: A side-effect of eating Lobrane food is that it clogs your lazy eight link for a few seconds until the cuttle matter is brought into quantum synch with your body and the eight-dimensional wraps are unfurled. This briefly impairs your telepathy, teleportation, and endless memory, which is kind of a

high. While you're in this altered state you can actually think more logically, that is, more like a digital computer.

*** Log Log Scaling**

There are many alternate versions of our brane or universe. They are separated by eight-dimensional space. Arranged along this single axis, a 1D continuum of possible worlds.

Suppose the unrolled eighth dimension stretches out way past the parallel brane. Punctures it and keeps going. So then the precise eight-dimensional distance of the parallel brane is an interesting piece of information.

Conceivably the distance could change with time, but I don't think I'll do that.

In order to jump to the Hibrane you need to know the precise value of the distance K to that world, it acts as a [jump-code](#). And I want the jump-code to be a million digits long, so that it's a big deal for Chu to remember it.

I also want the scaling factor S between the our brane and the Hibrane to be the comfortable-to-visualize number 6.

And now I relate K to S .

The branes can be quite distant from each other in the eighth dimension. When you hop to a different brane, you experience a scaling effect by a factor of S . The value of S when going from one brane to another is coupled to the value of the interbrane distance K along the eighth dimension, as measured in meters (or, if you prefer, in Planck lengths). We view K as having a sign, so as to distinguish between the two directions that can be taken along the eighth dimensional axis. The law connecting S and K is:

$$S = \alpha * \log (\log (K))$$

The α is just an unimportant conversion factor with a magnitude on the order of 1; it corrects for whatever measuring unit you happen to use. The real action is in the log log operation. What this does is to go up two levels in the exponent stack and return the exponent that lives there.

Thus if K is googol = $10^{100} = 10^{(10^2)}$, then $S \sim 2$.

If K is googolplex = $10^{\text{googol}} = 10^{10^{100}}$, then $S \sim 100$.

Suppose K is a number so big that it's a million digits long, that is, K is $10^{\text{million}} = 10^{(10^6)}$. Then $S \sim 6$.

Note that the distance K to a universe very similar to ours is exceedingly large, as it's most unusual for two branes to closely match. In fact I suppose the distance between Lobrane and Hibrane to be on the order of millionplex or 10^{million} .

Scale Time With Space

Regarding the scaling, let's suppose that time is scaled along with space. Objects in the world will seem to you to be S times as large or small, and they will be respectively slowed down or sped up by the same factor S .

So the Hibraners move six times as slow as people, which makes them seem spacy and dreamy. But they do retain the ability to do an abrupt all-but-instantaneous jump, so its not hopeless for them to catch something like a cuttlefish.

The Hibraners seem languid, slow on the uptake.

When you are visiting another brane, how does your scale and speed mesh with the other brane's? I'll suppose that when you are in another brane, you are within a small spacetime warp zone, like a lens-like flaw. And if you take hold of something in the other brane and bring it close to yourself, it enters your spacetime warp.

In the Lobrane if something gets close to a Hibraner it grows and slows down; from the POV of a person getting close to a Hibraner the world seems to shrink and speed up.

If the Hibrane if something gets close to a Lobraner it shrinks and speeds up; from the POV of a Hibraner getting close to a Lobraner the world seems to grow and slow down.

So if Thuy eats a Hibrane burger, the burger shrinks to her mouth size at it nears her head.

If a Hibraner on the Hibrane eats some imported Lobrane cuttlefish, their head or mouth shrinks around the cuttlefish and they move faster. This wears off as the cuttle is digested.

In some sense, getting close to an object from another brane gets you "high" in the sense that it alters your experience of space and time. For the Hibraners, a visiting Lobrane is like speed; it makes them small and fast. For the Lobraners, a visiting Hibraner is like a sedative, it makes them big and slow.

You never change size no matter how long you live on another brane. Forever the food you eat gets drawn into your scaling field. And your turds? Let's say that, as you leave them behind, they go back to the standard size for that brane, mirroring the way that the food you eat resizes to your scale.

(Added June 20, 2006). Another issue comes up if we scale time.

If we suppose that shadowcasting takes you in some sense "straight across" then it must be that the Hibraners aren't normally hopping to a Lobrane time that matches their Hibrane time.

Let's set up two parallel time axes, call them Hi and Lo for short instead of Mirror and Main. Suppose that Hibrane time runs six times as slow.

Let's say the axes match at one point — I think they have to match somewhere by a fixed point argument, given that they both run from $-\infty$ to $+\infty$. Call this point t_0 , and suppose that t_0 is regarded as the same date in both worlds. For purposes of the plot, we might as well suppose that t_0 is Orphid Night, September 13, 2035.

Then if t_{Hi} is the time value on the Hibrane and t_{Lo} is the corresponding time value on the Lobrane, we get the linear equation:

$t_{Lo} - t_0 = 6 (t_{Hi} - t_0)$, which gives us

$5 t_0 = 6 t_{Hi} - t_{Lo}$, or

$t_0 = 1.2 t_{Hi} - 0.2 t_{Lo}$

Now this has two interesting consequences:

(1) The Hibraners can easily calculate t_0 , therefore they will be expecting some heavy kind of interbrane event on Orphid Night.

(2) Previous to Orphid Night, when the Hi visit Lo, they find the Lo people to be far in the past relative to them, although the gap has been narrowing. After Orphid Night, when the Hi visit Lo, they will find the Hi people to be increasingly far in the future relative to them. Looked at from the Lo point of view, we are pulling ever further ahead of the Hi.

*** *Mach Mass Reduction***

Do the Hibraners have little mass when they visit because of Mach's principle? Your mass arises from interaction with the other particles in your universe, and if you hop to another brane, your sister-particles can't mass you up.

The Weight of Orphids

By the way, how much would it weigh to blanket yourself with orphids? Suppose an orphid is a 1 nanometer sphere. Skin is 2 square meters * 1 nanometer. This is 2 billionths of a cubic meter. A cubic meter of water is a metric ton or a 1000 kg, so 2 billionths of that is two milligrams, which is negligible.

Interbrane Dimensionality

I briefly entertained the idea that the higher dimensional interbrane jump direction should match the 8th dimension, while at the same time supposing that Lobrane's 8th dimension is compactified. This would be inconsistent, I think. The jump direction has to be the ninth, or maybe, to make room for all the compactified dimensions, the 11th.

To clarify, let's drop down to the matter of jumping between two 3D branes of space, leaving time and the compactified dimensions out of it for now.

At first it seems the interbrane space, has to be at least four dimensional, as it's a hypervolume bounded by a 3D brane on each side. Pushing down a dimension, think of the space between two 2D Flatlands: this space is 3D. If A Square is flying through that inter Flatland space with his son A Pentagon, they can lose sight of each other if their bodies happen not to be aligned within the same plane, which could, I suppose happen pretty easily.

If I prefer to have the interbrane space be more like normal space, then I can think in terms of a single connector brane between the worlds, something like a cosmic corpus callosum. The Flatland analogy here is of two parallel sheets of Flatland with a single sheet connecting them and making a pattern like a capital letter I. And then anyone jumping across from anywhere on one of the branes would have to pass through this one connector brane.

It seems to ask too much, though, to suppose that the interbrane jumpers or shadowcasters always start from just the right spot. How about this: when you jump, a bridge brane springs up, and you slide across on it. And if the bridge snaps while you're still in the interbrane, then you're in raw four-dimensional space.

The Subdimensions

I recently came across a passage in Michio Kakau, *Parallel Worlds*, p. 237, where he discusses a 1984 theory of "string duality" ascribed to Keiji Kikkawa and Masami Yamasaki. I actually had read about string duality before in Brian Greene's *The Elegant Universe*. And Greene's description inspired an idea I used in *Frek and the Elixir*, when I had space travelers "yunch" up to a large size by winding their bodies' strings more tightly.

But now, reading Kakau, I learn that the string duality theory also allows for interesting physics below the Planck length. The Planck length becomes something like an interface between two worlds. As Kakau puts it:

“Let’s say we take a string theory and wrap up one dimension into a circle of radius R . Then we take another string and wrap up one dimension into a circle of radius $1/R$. By comparing these two quite different theories, we find that they are exactly the same. Now let R become extremely small, much smaller than the Planck length. This means that the physics within the Planck length is identical to the physics outside the Planck length. At the Planck length, spacetime may become lumpy and foamy, but the physics inside the Planck length and the physics at very large distances can be smooth and are in fact identical.”

I have decided to start using the word “subdimensional” for the cosmos that lies “inside the Planck length.” I introduced this SFictional usage in my recent story with Paul DiFilippo, “Elves of the Subdimensions.” And I’d like to use it again in *Postsingular*. I’m thinking Thuy finds herself in the subdimensional world when she falls through the ocean-like surface that she was skimming across during her interbrane jumps.

So what does Thuy see when she falls through the surface?

In the previous [“Interbrane Dimensionality” subsection](#) I suggested she might be in raw 4D space. An alternate notion would be that she’s in the subdimensions. Or both.

See my long Journal entry [Sept 1-4, 2006: Subdee](#) for more thoughts about the subdimensional world.

I need a nice fixed word for the Planck foam interface. Wall, membrane, interface, border, regime, critical point, barrier, *frontier*.

Initial Plans and Proposals

Goals

Come to terms with the ubiquitous presence of cell phones, cameras, and computers, increasingly connected into a seamless wireless web.

Delve into the notion of the technological Singularity likely to occur when the artificial intelligence of networks overtakes that of the human race.

Write an novel that can serve as a foundation for a series of novels.

Possibly make transreal use of my memories of spending ten months in a German boarding school when I was twelve.

Sell some of the novel’s chapters as short stories.

Write something flashy and contemporary.

Title

No doubt in my mind, I want to call it *Postsingular*.

That title’s *mersh*, man. (“Mersh” being Bruce Sterling’s old word for “commercial.”) I’m making sure to “register” this valuable title by using it as the title of the second half of Part One, which I published as a story in *Asimov’s*.

Story Arc

Two worlds. Heaven becomes hell; Earth becomes heaven.

POV Thoughts

Preliminary dithering about tense and POV.

I'm backing into this as a fix-up starting with a fused chapter (I was gonna make it two separate chapters) based on two stories I wrote.

I'm already using the usual past tense, so let's just keep that.

As for POV, I might do like in *Freeware*, *Realware*, and *As Above, So Below*, and have each chapter from one person's POV (Actually in *Realware*, I rotated from character to character in some of the chapter's subsections, and that's an option, too.)

Something unusual here is that in the "Postsingular" story (second part of Chapter 1), I used what I might call a "rotating-kaleidoscope" POV, switching rather rapidly from one person's thoughts to the next person's thoughts, thus skirting closer than ever before to the "wandering POV" whirlpool that I'm scared of. I did this for a practical reason: most of the action was inside people's heads, so I needed to see into their minds in order to describe what was going on.

Curious, that: you can say "Dick saw X with his eyes," and still be in the role of a third person external observer, but if you say "Dick saw X in his mind," you're now in the Dick POV

I'd like to think the rotating-kaleidoscope POV works as an artistic effect to simulate the confusion and mind-sharing of the orphidnet's arrival. Maybe I should do it a whole lot — to give the book a postmodern postsingular high-lit feel. But I am a bit leery of this because (a) it's outside my comfort zone and (b) if you make a work too experimental it can be too big a hassle to read.

In any case, I think I'll have to use rotating-kaleidoscope POV (let's call it "RK-POV" for short) again in some later chapters, both for the same practical reason of wanting to discuss what's happening in the minds of some people onstage at the same time, and for the design reason that it would look weird to only use RK-POV in the one chapter.

Right now I'm thinking one-person POV for "The Big Pig Posse" (Chapter 2), but we'll see how it works out.

(1a. Chu and the Nants.) It's written from Nektar's point of view, but not very close in.

(1b. The Orphidnet.) It's rotates between various points-of-view, all of them fairly close in, as the mental phenomena are important here. Usually, though not always, the POV changes are signaled by a *** break. In the cases where I do a shift without a ***, I link the POV names with "and". By "godseye" POV I mean the impersonal 3rd person view where you don't peek into people's heads.

Starts godseye for several sections, then moves in to see Jil's thoughts. Then Chu, godseye, Ond, Chu, Ond, Nektar, Ond, Chu and Ond, Jil and Craigor, Jil.

(2. Prophylaxis.) Jayjay's POV

Other Worlds

It's very typical of me lately to have my SF heroes go to another world. It's the objective correlative of me writing a novel: I find another world and a way to get into it (my laptop). Here I'm going to have another world called the Hibrane.

Novel	Other World	Denizens
<i>Mathematicians in Love</i>	Micronesia	Cockroaches, lizards, cone shells, beautiful humans.
<i>Frek and the Elixir</i>	Brussels, Bosch paintings, Magritte paintings	Flawed humans, Bosch monsters
<i>Frek and the Elixir</i>	Toonland	Toons
<i>Frek and the Elixir</i>	Unipusk and Orpoly	Funny aliens, cuttlefish, sunspots
<i>As Above So Below</i>	Bruegel's paintings of the 1600s.	Renaissance-Era people.
<i>Spaceland</i>	Scuba diving,	Cuttlefish, 4D people.
<i>Saucer Wisdom</i>	Inside the UFO	Aliens
<i>Realware</i>	Inside Om. On the Moon.	4D beings, moldies.

Mathematica Calculations For Nant and Orphid Counts

This subsection derives from a *Mathematica* notebook, *Dyson Sphere.nb*, December 14, 2005. I started this notebook for "Chu and the Nants" and then continued it for my "Postsingular" story.

If you smash a whole planet into a Dyson sphere of computronium devices called nants, you have potentially as much RAM and flop as the intact planet possessed. The same amount of mass, after all. Supposedly people won't complain as there will be a sim-world running in there, with no compromises, no shortcuts.

Let's do the numbers. Earth has a radius of 6,300 kilometers, and its mean distance from the sun is 150 million kilometers, the astronomical unit or AU. If I were spread the volume of the Earth over a sphere of radius 150 million kilometers, I'd get a shell whose thickness is what?

Planets as Shells of Matter

Spread this volume: $\frac{4}{3} \pi (\text{earth radius in kilometers})^3 =$

$$\frac{4}{3} * 3.14 * 6300^3$$

$$\backslash!(1.04686344 * 10^{12})$$

across this area: $4 \pi (\text{AU})^2 =$

$$4 * 3.24 * (150000000)^2$$

$$\backslash!(2.916 * 10^{17})$$

Volume divided by area gives

$$((\frac{4}{3} * 3.14 * 6300^3) / (4 * 3.24 * (150000000)^2))$$

$$\backslash!(3.590066666666667 * 10^{-6})$$

0.0000036 kilometers = 0.0036 meters = 3.6 millimeters. We get a shell

whose thickness is 3.6 millimeters, which is about three million nanometers.

VENUS is 108 million km from the sun, its radius is 6,000 km

$$((\frac{4}{3} * 3.14 * 6000^3) / (4 * 3.24 * (110000000)^2))$$

$$\backslash!(5.766758494031222 * 10^{-6})$$

Which means a Dyson sphere shell of thickness 5 millimeters, or 5 million nanometers.

MARS is 230 million km from sun, its radius is 6,800 km

$$((\frac{4}{3} * 3.14 * 6800^3) / (4 * 3.14 * (230000000)^2))$$

$\backslash!(1.9812980466288596 \times 10^{-6})$

So you get a Dyson shell thickness of 2 mm or 2 million nanometers.

New Big-Number Name Prefixes

There is no official prefix for powers as high as I'm gonna go, but the latest convention is that the new prefixes work backwards through the alphabet, like: 21 zepto, 24 yotta, 27 xenna, 30 watta, 33 veri, 36 ubba, 39 tooba, 42 soopa, 45 rocka, 48 quakka, 52 pilo, 54 oxo,...

wattaflop, veriflop, ubbaflop, toobaflop, soopaflop, rockaflop, quakkaflop, piloflop, oxoflop...

I like these prefixes. Ubba is a bit like ueber. Quakka is the nonsense syllable quality of the whole game.

So we got 10^{39} or a duodecillion nants, each a cubic micron in size, each doing a gigaflop with a gigabyte making a net computation of 10^{48} flop and RAM, which is quakkaflop quakkabyte.

Mars as a Shell of Nants.

The Mars shell has an area in kilometers of

$$4 \times 3.14 \times 230000000^2 \approx 6.6 \times 10^{17}$$

That's in square kilometers, and you have a million mm per kilometer, so in square mm it would be 10^{12} times the result. That is, about 7×10^{29} square mm, with a thickness of 2 mm. So that's 14×10^{29} cubic mm in volume, or 1.4×10^{30} cubic mm.

Double check that number from the volume formula directly. Mars volume in cubic km is

$$(4/3) \times 3.14 \times 6800^3 \approx 1.3 \times 10^{12}$$

That's in cubic kilometers, so in cubic millimeters, you'd have 10^{18} times that, or about 10^{30} cubic mm. So the check is good.

Suppose we make a nant be micron on a side, where a micron is a thousand nanometers, or a thousandth of a millimeter. A cubic millimeter holds a billion cubic microns. So we have another factor of 10^9 nants per cubic millimeter multiplied into the count, and we get 10^{39} nants in all.

Recall the number nomenclature under which 10^{39} is viewed as $10^{((1+12) \times 3)}$ which is called a (Latin-for-twelve)illion, or duodecillion.

If we say there's a gigaflop and gigabyte per nant, we multiply by 10^9 to get 10^{48} flop and byte as the nant-sphere's net computation. And that's quakkaflop quakkabyte, as discussed just below.

Comparing the Mars Nant Sphere to a Human

Humans compute at a 10^{18} or exaflop exabyte rate. How to compare that to 10^{48} , which is a factor 10^{30} bigger? If you square 10^{18} you get 10^{36} , too small, and if you cube it, you get 10^{54} , too big.

We can squeeze in 10^{15} people shoulder-to-shoulder on Earth.

Earth's area in km squared is

$$4 \times 3.14 \times 6300^2 \approx 5 \times 10^8$$

Multiply by a factor of 10^6 to convert square kilometers to square meters. So we have 5×10^{14} square meters. If we squeeze people back to stomach we can get 2 people per square meter, or 10^{15} or a quadrillion people.

We have (maybe) a trillion neurons per brain, which is 10^{12} . Multiplying these two factors gives us 10^{27} . I need another 10^3 to bridge the gap between a human and the nant sphere. Pile up the people a thousand high.

“Imagine how smart you’d be if each of your individual brain-neurons [10^{12} of them] was replaced by a whole entire brain. [$* 10^{18}$ flop per brain] And now imagine if you covered Earth’s surface with people like that, slotted in shoulder-to-shoulder, back-to-belly, [$* 10^{15}$ people slots on the surface] and piled a mile high [$* 10^3$ people per slot]. Imagine all these brains and all these people thinking working together to make something like a human cubed. That’s how smart the nant sphere will be.”

That’s too complicated.

Maybe I can use Avogadro’s number, 6×10^{23} , to figure out the number of atoms in a human body. Or, no, without doing the calculation myself, I find [online](#) that a 70 kg human body has about $7 * 10^{27}$ atoms. Call it 10^{28} atoms. Ten octillion.

Okay, so here’s a simpler way to get from human flop to nant sphere flop. We do $10^2 * 10^{28} * 10^{18} = 10^{48}$.

“Imagine replacing each of the ten octillion atoms in your body by a hundred human brains, and imagine all of those brains working together.”

Orphids Covering Earth’s Surface.

Now I’m working on the orphid story, “Postsingular.” And I want to have something like one orphids per square millimeter on Earth’s surface. They stay about a millimeter away from each other. How many do we get?

Earth’s radius R is 6300 kilometers, and we have 10^6 millimeters per kilometer, so Earth’s surface area in square mm is $4 \pi R^2$

$$4 * 3.14 * (6300 * 10^6)^2 \approx 5 * 10^{20}$$

Now consider that Earth’s surface isn’t a flat mathematical sphere, it’s somewhat fractal. So let’s say that for any given landing site, there could be an average of, say, twenty landing sites above or below it (twenty millimeters is two centimeters). So now we get $20 * 5 * 10^{20}$, or 10^{22} , which is a ten sextillion.

And suppose, this being 2050, and things have improved since the nants, that each orphid has a petaflop and a petabyte, that is, 10^{15} .

So we’re looking at a system with $10^{21} * 10^{15} = 10^{37}$ flop and byte. This is a hundred billion (or 10^{11}) times weaker than the nant sphere’s 10^{48} , but nothing to spit on. Ten ubba flop and ten ubba bytes. A duodecillion bytes. I get “ubba” from [my special prefixes](#).

To compare this to humans, let’s use a different analogy than we used for the nant sphere. Human flop/RAM is 10^{18} . I need 10^{37} , which is to say 10^{17} more. I could cover Earth’s surface with 10^{15} people. $10^2 * 10^{15} * 10^{18} = 10^{36}$.

“Imagine covering the surface of the Earth with a dogpile of humans piled a hundred deep.”

By the way, a person’s surface area is maybe 2 square meters, or 2 million square millimeters. If you throw in the hairs you could pick maybe another ten per square millimeter, getting about 20 million orphids. But let’s just say a couple of million.

Romance Graph

Feb 12, 2006 Version of Romance Graph

In this version, the “Back Story” includes both the final version’s Part 1 and the year-long gap between the final version’s Parts 1 and 2. Chapter 1 here is the final version’s Part 2, Chapters 2 and 3 here are fused to make the final version’s Part 3, and Chapters 4 and 5 match the final version’s Part 4.

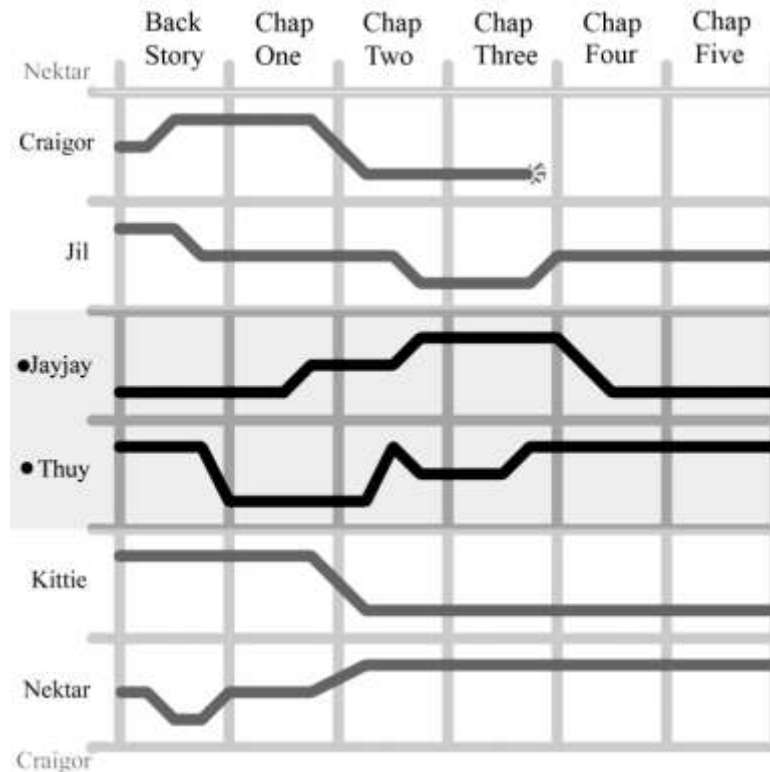


Figure 18: Romance Graph, Ver 1.

The jagged dark lines trace the romance plotlines of the main and secondary characters. The vertical level of a line indicates how much love that row’s character has for the characters in the rows above and below. Thus a high line means the person loves the person in the row above; a low line means the individual loves the person in the row below. We think of the diagram as wrapping around vertically, so that Nektar is right above Craigor. Craigor’s line stops because he dies.

March 10, 2006 Version of Romance Graph

In this version of the graph, as in the previous version, the “Back Story” includes both the final version’s Part 1 and the year-long gap between the final version’s Parts 1 and 2. Chapters 1, 2 are the final version’s Parts 2, 3. And Chapters 3 and 4 are my final version’s Part 4. Really Ond should appear in here as well, but let’s suppose the timeline takes up on the day after Orphid Night, after Nektar has left Ond and Thuy has moved in with Jayjay. And in the final version Craigor doesn’t die.

I guess I'd need to make the picture 3D to dogpile Ond on top of Nektar and Jil where he wants to be. Or I guess I could draw him in the same row as Craigor, but in a different color.

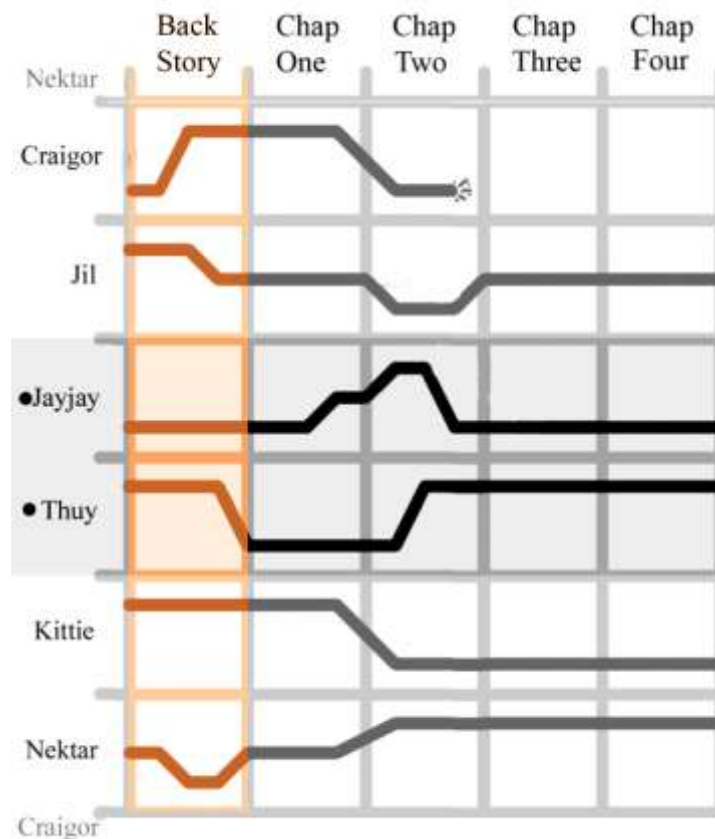


Figure 19: Romance Graph, Ver 2.

Proposal, Version 1 (January 16, 2006)

I'm proposing a 90,000 word science fiction novel called *Postsingular*. Chapters One and Two of the book have been sold to *Asimov's SF Magazine* as short stories. I'd like to go ahead and finish the novel now, with a proposed delivery date somewhere in the period December, 2006, to February, 2007.

I attach a short description of the book's themes, a seven-chapter outline of the book, and some 20,000 words of the current state of the novel, including the first two chapters and the start of the third chapter. [I saved the outline that I sent with the proposal as "Proposal Outline, January 16, 2006" in the "Some Earlier Chapter Outlines" section.]

Themes for *Postsingular*

As the title indicates, one of my main themes is to explore the effects of a certain kind of technological singularity. The Singularity I have in mind arises when our computing devices become smarter than we are, and begin designing/evolving into superhuman forms of artificial intelligence. By interacting with this computing network people themselves have their intelligence amplified to very high levels.

Of course such a Singularity would not be an entirely positive event. One of the driving conflicts in my book is the struggle to prevent our planet from being ground up into a dust intended to be a Dyson sphere of nanocomputers that might supposedly simulate us.

My contrarian belief is that naturally occurring phenomena are in fact as computationally rich as any “superhuman” AIs. At the climax of my story, I find a way to integrate the digital and the natural by bringing about a kind of panpsychic state of affairs where we can in fact talk to natural phenomena such as clouds, brooks and trees.

One of my goals in the novel is to explore ways to soften and humanize our ever-accelerating technology. To further bring out the conflict between the digital and the natural, I describe a parallel world called the Mirrorbrane in which priorities are reversed. In the Mirrorbrane there are no computers, but also very little logic or formal thought. This said, Mirrorbrane is in many ways a pleasant, dreamy place. My characters travel back and forth between the two antithetic worlds as the final synthesis is approached, leaving both of the alternate worlds the better.

Proposal, Version 2, February 12, 2006

I’m proposing a 90,000 word science fiction novel, with the title *Postsingular*. I propose a delivery date in the period December, 2006, to February, 2007.

Overview and Brief Summary

I want to explore the effects of a technological Singularity that arises when Earth becomes covered with what I call the orphidnet: an all-pervasive position-mapping self-propagating nanomachine quantum-computing network of “orphids” spaced one per square millimeter. Thanks to the orphids on their scalps, everyone has hands-free access to the orphidnet at all times, complete with heads-up display. It’s an extrapolation of the current trend of wireless devices.

Inside the orphidnet, artificial life forms emerge, AIs that rapidly evolve into superhuman forms of human intelligence. There are good ones, bad ones, and a giant, nearly divine one called the Big Pig. The good AIs are willing to help people, acting as computing and memory agents, letting interested people effectively raise their IQs to a thousand — at least for periods of time. With their amplified scientific abilities, humans discover a mysterious parallel world called the Mirrorbrane; and they invent antigravity.

My ending portrays a world in which natural forces take back some of their original power. The machines wither away, and humanity becomes a psionic-powered civilization. This move corresponds to a Hegelian dialectic triad: *Thesis*: Vast, logical AIs in a technological computer network. *Antithesis*: The powerful, illogical powers of Nature. *Synthesis*: Logical AIs migrate into natural processes.

I’ll summarize the five chapters of *Postsingular*, first in brief, and then in a bit more detail.

(1) After introducing the notion of the orphidnet, *Postsingular* follows the adventures of two young lovers in their late twenties: Jayjay and Thuy. At the start of Chapter One, they’ve already broken up, as Thuy is having a lesbian affair with Kittie. For a time, Jayjay will take up with a woman named Jil who’s married to a man named Craigor, but by the book’s end, Jayjay and Thuy will get back together. And Kittie will get into a lasting relationship with a woman named Nektar. The romance

plotlines are shown in the figure below, with the starring lovers shaded gray for emphasis. [See the figure in the Design | Plot Graph section].

(2) There are problems with the orphidnet: Ads, spam, and the loss of privacy. Out of the discontent emerges the political rise of man named Dick Too Dibbs, who wins the U. S. Presidency. Dibbs campaigns on a promise to dismantle the orphidnet. Dibbs's oil-industry backers dislike the orphidnet because the intelligent AIs have taken it upon themselves to save Earth's failing climate by putting an end to gasoline production. Working with the Big Pig and with an angelic alien from the Mirrorbrane, Jayjay uses the orphidnet to amplify his intelligence to make some phenomenal discoveries: he invents antigravity and force fields. Meanwhile Kittie breaks up with Thuy, and although Thuy would go back to Jayjay, now Jayjay begins an affair with Jil, which drives Thuy away.

(3) Intrigued by Jayjay's discoveries, the forces in power set up a face to face meeting between him and the President. Jayjay learns that Dick Too Dibbs is a hapless tool, a pitiful figure. Dibbs reveals that the power elite plans to destroy Earth by letting a new kind of nanomachine eat the planet, turning everything into a computer simulation in which an evil computer exec will be God. Some ugly weather brews up. A titanic battle between good and evil takes place. The bad guys have the Army supporting them; the good guys are using antigravity and force fields. Just before the battle, the bad guys confuse Jayjay by sending an android model of his dead friend Sonic. Jayjay goofs, and the bad guys win the battle. Jil's ex-husband dies in the conflict, and this turns Jil against Jayjay, who is injured as well. Thuy is sorry for Jayjay, and takes care of him.

(4) Rescued from the villains by aliens, Jayjay and Thuy make an excursion to a parallel world of the Mirrorbrane. They resume their love affair. Although a Mirrorbraner on Earth is like a misty, glowing angel, an Earthling in the Mirrorbrane is like a dense and powerful gnome. The Mirrorbrane is in some sense the antithesis of the nanocomputer-infested Earth. In the Mirrorbrane there are no computers, but also very little logic or formal thought. Their head lama wants to destroy Earth; Jayjay and Thuy talk him into a stay of execution. He agrees, but only if they can make some changes on Earth.

(5) Jayjay and Thuy return to Earth just as Dick Dibbs's backers are dismantling the orphidnet. Jayjay has brought a Mirrorbrane substance that turns nature itself into a networked computer. The friendly orphidnet AIs migrate from the decaying orphidnet into waterfalls, breezes, fires, drifts of snow, clouds, and the like. And now, as the forces of evil prepare to destroying Earth with planet-busting nanomachines, the nature spirits defeat them. The benefits of the orphidnet remain — without machines. Earth becomes a psionic civilization. The Singularity was the birth-pang of a new world.

[See the detailed outline under outline under Some Earlier Chapter Outlines | Proposal Outline, Version 2, (February 12, 2006).]

Proposal Outline, Version 1, (Jan 16, 2006)

Proposal, Version 1, Chapter 1 Outline: Chu and the Nants

Encouraged by Nantel computer exec Jeff Luty, U. S. President Dick Dibbs sends an eggcase of nants to Mars. Nants are self-reproducing nanomachines: solar-powered, networked, capable of gnatlike flight, and single-mindedly focused on

transforming all available material into more nants. In a couple of years, the nants have eaten Mars, turning the red planet into a Dyson sphere of a duodecillion nanomachines, a three-millimeter-thick shell half a billion kilometers across, with Earth and the Sun trapped inside.

The stars are hidden by giant ads; in daytime the ads are a silvery background to the sky. Dibbs's businessmen backers are well-pleased. And behind the scenes the nant swarm is solving a number of intractable problems in computer science, mathematical physics, and process design; these results are privily beamed to Jeff Luty's corporation, Nantel. But before Nantel can profit from the discoveries, the nants set to work chewing up Earth.

Encouraged by a vision of an angel, a disaffected Nantel engineer named Ond manages to throw the nants into reverse gear. Ond uses his autistic savant son Chu to deliver the reversal code to the nants; that is, he takes the risk of letting the nants eat his son — which alienates Ond's wife Nektar from him.

But the gambit succeeds. Chu survives; the nants restore the sections of Earth they'd already eaten; the nants reassemble Mars and are eliminated.

Public fury over Earth's near-demolition is such that President Dibbs and his Vice President are impeached, convicted of treason, and executed by lethal injection. But Nantel fares better. Their founder Jeff Luty goes into hiding. The company transmutes into ExaExa, with the unwittingly prescient corporate motto, "Putting People First — Building Gaia's Mind."

Proposal, Version 1, Chapter 2 Outline: The Orphidnet

Three years later.

Ond, Nektar and Chu are visiting their friends Craigor and Jil, who live with son Momotaro and daughter Bixie on a boat in the bay near the industrial part of San Francisco. Twelve-year-old Chu befriends ten-year-old Bixie.

Ond is working at ExaExa, involved in a new kind of nanomachine design. But behind the scenes Jeff Luty is working to bring back the nants. Luty is a devotee of the extropian Patternist cult, holding that it's our manifest destiny to replace the physical world by a computation-based virtual reality.

Wanting to forestall a return to the nants, Ond releases some orphids, which are self-reproducing ExaExa nanomachines like nants, but not so aggressive. Orphids use quantum computing; they propel themselves with electrostatic fields; they understand natural language; and of course they're networked. By the way, the incredibly advanced design for the orphids was partly carried out by the short-lived nants.

In a matter of hours the orphids have covered the planet. Unlike the nants, they don't grow without bound; they aren't going to eat everything. They stop reproducing once they've settled on every surface on Earth.

The orphids on people's scalps act as a wireless connection to the orphidnet. All at once, every single person on Earth is plugged in. As orphids cover every surface, anyone can see anything day or night by checking its surface meshes in the orphidnet. You can hear through the orphidnet as well, as orphids vibrate with nearby sound waves, converting these vibrations into audio tracks that anyone can hear on the orphidnet. The net result is a permanent lack of privacy for everyone. How important *was* privacy, anyway?

Intelligent agents called beezies emerge within the orphidnet.

Some other beings are also visible in the orphidnet; these turn out to be from a conjugate universe called the Mirrorbrane. Our universe and the Mirrorbrane are a part of a single, higher-physics whole. Mirrorbraners have always been visiting Earth — they find it interesting. But the aliens have been nearly invisible till now. In the past, the few people who noticed Mirrorbraners took them for angels or spirits.

Many people are angry about the orphidnet; Ond is arrested; Nektar and Chu go home. Angry at Ond for releasing this fresh round of nanomachines, Nektar decides to leave Ond. She abandons Chu at her and Ond's home in the outer Mission district of San Francisco.

Chu, who is an interesting character in his own right, doesn't initially notice, as he's busy doing researches with the beezies in the orphidnet: they're figuring out how to transfer a person between our world and the alien Mirrorbrane. But then one of the angel-like Mirrorbrane aliens begins badgering Chu and he's scared.

Ond escapes jail and gets home just in time to save Chu. Ond is being pursued by a lynch mob. Ond and Chu flip over to the Mirrorbrane for safety, planning to stay a couple of years.

At first glance, Mirrorbrane resembles a San Francisco where high-technology never kicked in. The locals look like humans, dressed in colorful clothes. But when Earthlings make their way to the Mirrorbrane, their Mirrorbrane bodies have the form of foot-high gnomes, exceptionally powerful and all but indestructible. Ond and Chu settle in.

Proposal, Version 1, Chapter 3 Outline: The Big Pig Posse

A year later.

Four homeless San Francisco kids call themselves the Big Pig Posse: Jayjay, Sonic, Kittie, and Thuy. They like to get high by getting in touch with a large-scale orphidnet AI called the Big Pig; the intoxicating experience is similar to that of being a scientist in the midst of an profoundly insightful brainstorm or "aha" experience. As long as you're plugged into the Big Pig, things makes sense in entirely new ways. But when you leave the Pig, you're much the same as before, but fatigued and dull-feeling.

An election is coming up between current U. S. President Bernard Lampton of the Common Party and Dick Too Dibbs of the Homesteady Party; Dick Too Dibbs is a clone of the executed Dick Dibbs who wanted to feed Earth to the nants.

Dibbs claims he's learned from his progenitor's mistake and that he wants to get rid of the orphidnet entirely, bringing back the good old days. But he's been seen in friendly conversation with the holed-up nant-designer Jeff Luty, formerly of ExaExa.

Dibbs's party is blanketing the orphidnet with spam and political attack ads, considerably lowering the system's performance levels.

Looking for shelter from the unseasonable rain, the Big Pig posse kids find their way to the house where Nektar and Ond lived with Chu; Nektar lives alone there now. She's broken up with her boyfriend and is having an affair with Craigor — due to the orphidnet, Craigor's wife Jil knows about the affair.

Nektar is running a futuristic restaurant on Valencia Street in San Francisco; playing on people's beezie-amplified intelligences and their deeper knowledge of food. She's somewhat depressed about losing Ond and Chu, who are apparently still in the Mirrorbrane. Nektar is addicted to the Big Pig; she's been lying in bed tripping, and hasn't eaten in several days.

Nektar is attended by a number of small soft plastic robots called shoons. The shoon robots were originally designed by Jil, but these shoons are being run by the beezie AIs in the orphidnet. The beezies feel a sense of loyalty towards Nektar, as her husband Ond created the orphidnet within which the beezies live. But it takes the Big Pig posse kids to get Nektar to sit up and eat.

Jil and Craigor show up for a visit; the beezies had alerted them to Nektar's bad state of mental health as well. Also Jil is curious to see the advanced beezie-run shoons in action. The meeting is tense, due to Craigor's affair with Nektar.

Jayjay immediately gets a big crush on Jil, even though she's about six years older than him, and is married, albeit married to a philanderer. Jil notices him, but doesn't take him that seriously, although certainly she'd like a chance to get even with Craigor.

The little group deplores the escalating spam problem. Urged on by the beezies, they decide to help put a stop to it.

Intrigues are hampered by the fact that everyone can see and hear everything in the orphidnet world. The one somewhat secure channel of communication is via a crude sort of verbal cell-phone-like telepathy mediated by the orphidnet. Groups all over the country are planning to fight the spammers. At the same time the spammers are aware of these plans and preparing to defend themselves. And the rebels are aware of the spammers plans and so on.

Locally, some of the spam is emanating from the Natural Mind aid center in San Francisco in a cobblestone armory on Mission St. As it happens, the Natural Mind center is run by the Patternists, whose most prominent member is Jeff Luty, who still dreams of restoring the nants. They're using spam both to promote Dibbs and to lower the efficiency of the orphidnet to nil.

As well as using old-school biochip computers, the spammers are using human agents connected to control patches, these agents being the same down-on-their-luck people who approached the center for help. Their activity is called "social meditation."

The beezies send the Big Pig kids to the Natural Mind center to infiltrate. Although the spammers know the kids are coming, the kids know many of the Natural Mind denizens, and can't be stopped from getting in. By humor and force of personality, the kids are able to liberate many of the people at Natural Mind. But then violence breaks out.

Although the beezies are, on the whole, benign, they don't have all that strong a respect for individual human lives. Egged on by a beezie, Sonic flips into berserker mode and murders a Patternist supervisor; Sonic is in turn gunned down.

Thuy, Jayjay and Kittie recoil from the violence. They get away, but then are cornered by police who are backing Dick Dibbs. The inertia of human stupidity is proving to be, at least for the moment, a match for the superintelligent plans of the beezies. On the point of being summarily executed, Jayjay, Thuy and Kittie escape to the Mirrorbrane.

Proposal, Version 1, Chapter 4 Outline: In The Mirrorbrane

The Mirrorbrane is a higher-physics "brane" (or parallel hypersheet of spacetime) coupled to ours. An object can exist either in the one world or in the other, but not in both at once. There's a supersymmetric heterotic string connection. A Mirrorbraner traveling to our Earthbrane ends up larger and less massive than at

home; an Earthling traveling to the Mirrorbrane ends up smaller and more massive than at home. A Mirrorbraner on Earth is like a misty, glowing angel; an Earthling in the Mirrorbrane is like a dense and powerful gnome.

In the Mirrorbrane, the laws of nature differ somewhat from those in our world; this difference is an example of the broken symmetries found in high-energy physics. The Mirrorbraners' physics doesn't support electronics; they have electricity and vacuum tubes and electric guitars, but no transistors and no real computers. In particular, the orphidnet doesn't work in the Mirrorbrane.

The Mirrorbrane is the opposite of the nanocomputer-infested Earth. The inhabitants have a type of telepathic contact with each other and with the forces of nature. But these mental contacts are wholly non-verbal, non-logical, non-digital — the opposite of the word-based orphidnet telepathy on Earth. In the Mirrorbrane, people tend to communicate in terms of emotions and vibes. Gestures, faces, musical tones and, in a SFictional touch, physical representations of thoughts and dreams can pop in and out of existence. The gnome-like Ond, Chu (and eventually Jayjay, Kittie and Thuy) don't cause as much comment as one might expect, as some Mirrorbraners take them for models their friends are projecting.

Where Earthlings are worshipping the Big Pig, which is the ultimate expression of computer logic; the Mirrorbraners have Gaia, a literal personality in the mindscape of the Mirrorbrane world.

The Mirrorbrane has an entrenched theocratic government run by powerful priests who are something like Tibetan lamas: skilled in intricate non-verbal meditation techniques. These lamas view logic as a snare and a delusion, and they frown upon Mirrorbraners' occasional hops over to the Earthbrane as strongly as an Earth-based fundamentalist might frown upon an acid trip.

The Mirrorbraners who flip over to explore Earth are, in short, viewed as deviants, akin to rebellious hippies; they're called choppers (as in logic-choppers).

Ond and Chu have fallen in with a crowd of choppers who think these gnome-like science-spouting Earthlings are cool to have around. The visitors' special patron is a woman named Wonda; she has a boyfriend named David Hunger. Hunger is an underground logician, a radical figure with the Mirrorbrane cultural status of an Earthly underground cartoonist or poetry-slammer.

Ond and Chu deliver a stern warning to Cheetra, the Mirrorbrane woman who harassed Chu in Proposal Chapter Two, and they work to promote the image of the Earthbrane as a good place, and of tripping to Earth as a positive activity, and of logic as a useful tool.

They steer clear of the small but steady stream of Earthlings hopping over to the Mirrorbrane for a look — some of them imagining they're taking a tour of "heaven." Many of these Earthly tourists are set upon and destroyed by the high lamas, who view the tourists as demons from a Hell-world.

On their arrival, Jayjay, Kittie, and Thuy escape the lamas and connect with Ond and Chu.

Although the average Mirrorbraners love Earth and think it's fascinating, their high lama has conceived the idea of destroying Earth so that the Mirrorbraners will all focus upon their traditional religious duties.

Jayjay, Kittie, and Thuy kick their Big Pig addictions and learn to plug into Gaia. Kittie becomes a respected artist; she and Thuy fall in love with each other.

Some Earth visitors bring the news that Dick Too Dibbs won the election. He has pardoned Jeff Luty and has made him a member of his Cabinet. They're

proceeding full-speed with a plan to reintroduce the Earth-destroying nants. Dibbs has also proclaimed Ond to be a criminal under death sentence.

For their part, the Mirrorbrane high lamas have formulated a plan to “exorcise” Earth, effectively destroying it. Wonda, Chu, and Jayjay learn an intricate “memory mantra” from the lamas and take this knowledge back to Earth, leaving Ond, Kitty and Thuy in the Mirrorbrane alone, working on a plan against the high lamas.

Proposal, Version 1, Chapter 5 Outline: The Battle of SF

Chu and Jayjay end up on the boat where Craigor, Jil and their daughter Bixie and son Momotaro live. Jayjay is even more smitten by Jil than before. And Jil is responding just a little bit. Wonda the Mirrorbraner is present as a kind of hovering angel; she’s fascinated with Jayjay.

Craigor has broken off his physical affair with Nektar but has begun a virtual affair with Nektar’s neighbor, Tawny Krush, the former mistress of Jeff Luty the nant designer. Nektar and Tawny are fighting.

We explore the vibe of this new world a bit more: the VR, the games, the politics, the economics, the art, the cuisine, the slang, the mass entertainment, the culture.

Craigor has been making enormous assemblages out of junk and piezoplastic. He has an idea for building siege machines out of these devices. Others are making similar devices. Some Coast Guard people show up to hassle them — keep in mind that everyone’s plans are an open book. But a big assemblage repels them.

On the good side: our characters, some of the Mirrorbrane “angels,” the beezies, the plastic robot shoons.

On the bad side: Jeff Luty, ExaExa security guards, President Dick Too Dibbs’s party henchmen and secret police, the Patternists.

The good guys attack the ExaExa plant, hoping to thwart the construction of orphid-killing nants. But as an unwitting consequence of their squabble over Craigor, Tawny and Nektar have in some way betrayed the good guys. Craigor is killed. The attack on ExaExa fails; Earth is on the verge of being chewed up into nants.

Proposal, Version 1, Chapter 6 Outline: Panpsychism

And then Chu and Jayjay grasp the meaning of the lamas’ memory mantra. It’s rhythms act as a universally applicable program that allows natural processes to “remember” what they’ve done.

Although a stream of water, for instance, is universally computing, until now it never had a good, usable form of random-access memory. But the memory mantra provides a Higgs-field dark-energy memory that the beezies can plug into any Earthly process. The beezies abandon the soon-to-be-doomed nanocomputers of the orphidnet and download themselves onto physical processes.

Suddenly, intelligent computation is everywhere: in wind, in trees, in water, in the currents of the air. You can see everything simply by tuning in.

Just after the physical orphids become irrelevant, Jeff Luty and Dick Too Dibbs wipe them out. And when the Patternist faction releases their newly designed nants, these nanomachines are simply pinched out of existence by the intelligent flexing of the beezie-inhabited natural world. Chalk one up for the elves, sylphs, undines, salamanders, and dryads that now inhabit earth, air, fire, water and trees!

The naturally hosted beezie minds blend together to form an Earth-based hive-mind that's very much like a benevolent planetary soul that one can readily talk to. The Big Pig has merged with Gaia.

Proposal, Version 1, Chapter 7 Outline: The High Lamas

Earth has achieved a synthesis between nature and digital computation. Now for synthesis in the Mirrorbrane.

Jayjay confesses his love to Jil. She says no, he's too young.

Wonda brings a warning from the Mirrorbrane. Ond, Kittie and Thuy have been taken captive by the Mirrorbrane high lamas.

Jayjay, Chu, and Nektar venture back to the Mirrorbrane. They are aided by the beezies who come along in natural form. The beezies infiltrate the Mirrorbrane reality, easily merging into the elemental natural minds that were already so evident over there. Here the new thing is that, thanks to the beezies, the elemental minds are now more logical and more capable of speech.

The newly empowered natural forces quickly free Ond, Kittie and Thuy.

Jayjay transfers his love for older women to Nektar — and she accepts. The two of them stay on in Mirrorbrane, opening a restaurant there. The Mirrorbraner Wonda becomes part of their relationship, leading to a three-way dual-species marriage. Jayjay is working to become one of the first Mirrorbrane scientists.

Ond, Chu, Kittie and Thuy return to Earth. Kittie and Thuy start a business painting murals, but of an enhanced new kind. Ond ends up with Jil, and is a good parent to Chu, Bixie, and Momotaro.

For a final kicker, Ond and Chu figure out that in some sense our brane and the Mirrorbrane are representations of one and the same underlying reality. (This is an example of what physicists call "duality.") And that, in some sense, all of the characters in the Mirrorbrane matched people on Earth. And Ond and Chu were themselves the high lamas.

Proposal Outline, Version 2, (Feb 12, 2006)

Proposal, Version 2, Chapter 1 Outline: The Big Pig Posse

We're in San Francisco, about a year after the Singularity. We focus on two homeless kids in their late twenties: Jayjay and Thuy. Thuy used to be Jayjay's girlfriend, but now she's with a girl called Kittie. Although he's uneducated, Jayjay dreams of being a physicist — which is possible, thanks to the intelligence amplification via the all-pervading planetary computer network known as the orphidnet. The network can effectively boost your IQ to a thousand.

They like to get high by getting in touch with a large-scale orphidnet AI called the Big Pig; the intoxicating experience is similar to that of being a scientist in the midst of an profoundly insightful brainstorm or "aha" experience. As long as you're plugged into the Big Pig, things make sense in entirely new ways.

An election is coming up between current U. S. President Bernard Lampton of the Common Party and Dick Too Dibbs of the Homesteady Party; Dick Too Dibbs is a somewhat hapless and ignorant cousin of an earlier president Dick Dibbs who was executed for wanted to let some nanocomputers called nants chew Earth to bits. But the Homesteady Party machinery, the oil industry, and Jeff Luty of the high-tech ExaExa corporation have decided to elevate Dick Too Dibbs.

Friendly, helpful AIs called beezies live in the orphidnet. Wanting to save humanity from Earth's out-of-control climate, they have put a complete halt to the production of gasoline.

Dibbs claims he wants to get rid of the orphidnet entirely, bringing back the good old pre-Singularity days. He's a tool of the oil industry, wanting to ramp up production again. Dibbs's party is blanketing the orphidnet with spam and political attack ads, considerably lowering the system's performance levels.

Looking for shelter from the unseasonable rain, the Big Pig posse kids find their way to the house of a woman named Nektar Lundquist. Nektar's husband and son were responsible for the release of the orphids. Faced by public outrage, the husband and son had to flee to a mysterious world called the Mirrorbrane.

When Jayjay, Thuy and Kittie arrive, accompanied by their friend Sonic, Nektar is under attack by some evil orphidnet "beetle" AIs who are trying to get her to make an ad for Dick Too Dibbs. Jayjay's group is able to get through to Nektar and give her an anti-beetle patch. Nektar's friends Jil and Craigor show up. Jayjay gets a crush on Jil.

They make a plan to fight against the Homesteady Party. Locally, some of the adware is emanating from the Natural Mind aid center in San Francisco in a cobblestone armory on Mission St. They're using spam both to promote Dibbs and to lower the efficiency of the orphidnet to nil.

The Big Pig orphidnet mind steps in to help the kids adopt new identities, hacking their orphid meshes. Jayjay, Sonic, Kittie and Thuy infiltrate the Natural Mind in the Armory.

Some mysterious trouble erupts off-stage between Sonic and a Dr. Stark who runs Natural Mind. Something weird and grisly. Sonic is gone. Kittie goes back to Nektar's. Jayjay and Thuy lie low on Jil and Craigor's houseboat.

Proposal, Version 2, Chapter 2 Outline: Superscience

Thuy is mooning over Kittie, Jayjay is obsessed with Jil. Jil and Craigor are doing interesting experiments building soft robots and larger walking machines.

Dick Too Dibbs wins the November election. The Homesteady Party begins trying to dismantle the orphidnet. But for now they can't.

Jayjay is also seeing alien "angels" from the Mirrorbrane. One of them shows him how to remember what he thinks during a Big Pig session. Jayjay uses the results to invent antigravity by finding a way to shield against gravitons, now understood as particles from the higher-dimensional space that separates Earth from the Mirrorbrane.

Jayjay, Thuy, Craigor and Jil fly around, having fun. Jil is almost ready to accede to Jayjay. After another Big Pig session, Jayjay discovers a privacy force field and Jil begins sleeping with him.

Thuy is still partnerless; she is starting to want Jayjay again. Thuy writes a kind of a symphony about her emotions. The symphony is made up of news events and people's thoughts, it's a conscious transformation of the orphidnet reality into high art. Jil's husband Craigor is trying to hit on Thuy, she rebuffs him, but he helps her get some publicity anyway. Her opening show almost wins Jayjay back.

But the show is connected with an exhibit by Kittie. Kittie used to paint murals on vans; now these extend into virtual reality landscape, and thanks to her connection with Nektar, she is in the same show as Thuy. The two go off together, a storm kicks up, Jayjay loses them in the rain.

Proposal, Version 2, Chapter 3 Outline: The Battle of SF

Some Secret Service men take Jayjay to meet the President and his science advisor, Jeff Luty, head of ExaExa. They're interested in Jayjay's antigravity and force field techniques. Jayjay is able to shield his mind from their probing, so they have to ask him face to face.

Thuy learns that Dibbs is a pathetic figure, totally out of his depth. Dibbs accidentally reveals that Luty plans to destroy Earth by letting a new kind of nanomachine eat the planet, turning everything into a computer simulation in which Jeff Luty will be God. It's time for a revolution, to be staged at the ExaExa plant whence the nants will emanate. Jil used to work there, she knows the place.

On the good side: Jayjay, Thuy, Kittie, Nektar, Craigor and Jil. Some of the Mirrorbrane "angels," the beezie AIs from the orphidnet, plastic robots run by the good beezie AIs. The Godlike Big Pig.

On the bad side: Jeff Luty, ExaExa security guards, President Dick Too Dibbs's party henchmen and secret police, the Patternists.

On the eve of the battle, Jayjay's missing friend Sonic appears, but actually it's a piezoplastic android copy of him. Thuy was just about to come back to Jayjay, but the Sonic android spoils the moment — and also ruins Jayjay's plans for the battle.

Although the good guys attack the ExaExa plant, the attack goes awry. Craigor is killed, alienating Jil from Jayjay. Jayjay himself injured; Thuy takes pity on him and saves him from being killed by the enemies.

Angelic aliens show Thuy and Jayjay the way to the Mirrorbrane.

Proposal, Version 2, Chapter 4 Outline: The Mirrorbrane

In the Mirrorbrane, Jayjay and Thuy fall back in love for good. It's like Sixties San Francisco there, only Jayjay and Thuy are midgets — that is, tiny, elf-like figures.

The Mirrorbrane is a higher-physics "brane" (or parallel hypersheet of spacetime) coupled to ours. A Mirrorbraner on Earth is a misty, glowing spirit that inhabits special natural spots like glens and waterfalls; an Earthling in the Mirrorbrane is like a dense and powerful gnome who can walk through walls.

The Mirrorbraners' physics doesn't support electronics; they have electricity and vacuum tubes and electric guitars, but no transistors and no real computers.

There is a thought/memory duality in play. Mirrorbraners have good memories but need help in thinking; Earthlings think a lot, but need memory devices to help them.

The Mirrorbrane is the opposite of the nanocomputer-infested Earth. The inhabitants have a type of telepathic contact with each other and with the forces of nature. But these mental contacts are wholly non-verbal, non-logical, non-digital — the opposite of the word-based orphidnet on Earth.

Thuy and Jay meet Ond and Chu, who went to the Mirrorbrane from Earth earlier.

The Mirrorbrane has an entrenched theocratic government run by individuals like Tibetan lamas: skilled in intricate non-verbal meditation techniques. These lamas view logic as a snare and a delusion, and they frown upon Mirrorbraners' occasional hops over to Earth as strongly as an Earth-based fundamentalist might frown upon an acid trip.

Although the average Mirrorbraners love Earth and think it's fascinating, their high lama has conceived the idea of destroying Earth so that the Mirrorbraners will all

focus upon their traditional religious duties. He has formulated a plan to “exorcise” Earth, effectively destroying it. With the help of the colorful, autistic Chu, Jayjay and Thuy learn an intricate “memory mantra” from the lamas and take this knowledge back to Earth, bringing Ond and Chu along.

Proposal, Version 2, Chapter 5 Outline: Panpsychism

Thuy and Jayjay grasp the meaning of the lamas’ memory mantra. Its rhythms act as a universally applicable program that allows natural processes to “remember” what they’ve done. Put differently, the memory mantra activates Higgs-field dark-energy vibrations that the beezies can fasten to any Earthly process, using the memory to hold their personalities, and using nature to compute their thoughts. The beezies abandon the soon-to-be-doomed nanocomputers of the orphidnet and download themselves onto physical processes, just as the Mirrorbraners have been doing all along.

Suddenly, intelligent human-friendly computation is everywhere: in wind, in trees, in water, in the currents of the air. You can see everything simply by tuning in. The beezies have become *genii loci* — spirits of place. And the Big Pig has merged with Gaia.

Just after the physical orphidnet is becoming irrelevant, Jeff Luty and the Homesteady Party wipe out the orphidnet. But now when the evil faction releases their newly designed nants, these killer nanomachines are pinched out of existence by the intelligent flexing of the beezie-inhabited natural world: Earth is defended by the once-digital gnomes, sylphs, undines, salamanders, and dryads that now inhabit earth, air, fire, water and trees!

Jayjay and Thuy are happy in love. Jayjay adapts his antigravity technology so people can use it to levitate on their own. Kittie is still with Nektar, and she and Thuy are going to collaborate on an artistic masterpiece. Ond falls in love with Jil, and Chu is happy to settle in with Jil’s family too.

Humanity has won back a natural birthright that had been lost in the mists of time: telepathy, clairvoyance and levitation. Earth has evolved to become a Class III psionics civilization. And, as we learn in the final, teaser scene — there are other such civilizations out there.

May 15, 2006, Prediction of Chaps 4 and 5

I pasted in the following paragraph after the end of Chapter 3, when I was trying to sell it to *Asimov’s* as a novella.

And then? In the Mirrorbrane, Thuy would find a surprising means of salvation for her benighted, computer-ridden Earth: the dreamcatcher technique of the Mirrorbraners would prove to be the key. For the dreamcatcher was based upon a pervasive, analog form of dark-matter memory, and by harnessing this ubiquitous form of RAM, any gnarly natural process could become as powerful as the most advanced digital computer. After Thuy returned, both traditional and quantum computers would wither away: for any given computational task, it would be enough to study, say, a campfire, a brook, or the wind-rocked branches of a tree. The genial Big Pig would accept Thuy’s new technology; the Pig would make her peace with

Gaia and settle into the warp and woof of natural world. And, yes, Jayjay would be waiting for Thuy.

Unused Ideas For Scenes

Rebel Angels Predicting Thuy's Discovery of Chu's Knot

Perhaps Thuy has a knack for turning scenes and emotions into music and that's suggestive? Maybe some really powerful scenario engine is predicting Thuy's discovery? Possibly the prediction is a self-fulfilling prophecy, a fixed point in a web of logic.

Luty in Topping's Office

Luty comes blowing in through the teleportation grill. Congealing. He has ants all over him, they're relatively big and clunky prototypes of some new nanomachine. They are orphidkillers. They are crawling all over Luty's face.

Luty presents himself as not all that bad a guy, a misguided geek. He claims not to know who made Sonic kill Topping (though really it was him).

"Come on, Sonic," says Luty. "You're coming with me. And we'll hide the body." Luty and Sonic disappear through the gate with the body.

[But why would Sonic go along? And having one pulse through the gate is enough for the chapter climax, more would be anticlimax.]

Metapainting/Metanovel Show

Craigor is sniffing around Thuy, she rebuffs him, but he helps her get some publicity anyway and helps her into a show called Metapainting/Metanovel. The show also includes an exhibit by Kittie. Kittie used to paint murals on vans; now these extend into virtual reality landscape, and thanks to her connection with Nektar, she is in the same show as Thuy. Kittie has been fixing up her SUV with the shoons helping. She's hooked into another free SUV for conversion, she has a little biz going in Nektar's garage. She gets into bigger kinds of VR painting; she's a metapainter.

Riot in DC

They start a riot outside the Capitol to block the illicit installation of the appointed unelected Dick Too Dibbs — like people should have done *both times* against Bush. Overturning and burning cars. "Stop the Sham!" Troops clear the demonstrators away. The Inauguration is gonna go down. "The Sham of I Am!"

[No, don't do this (it's too much a case of an old Lefty (me) getting his rocks off), instead have Too Dibbs be kind of good.]

Sneaking Into ExaExa Via a Water Pipe

They swim into ExaExa via a heat-exchanger intake pipe that runs down into the Bay? Too long a swim, how would they breathe, and on the inside, the pipe is just a heat exchanger, so they can't get out of it. I don't think I can make this work, or if I could it's tedious, and I have more important things I want to cover in the remaining wordage for Chapter 3.

Fight as Double-Page Spread

On the good side: Jayjay, Thuy, Kittie, Nektar, Craigor and Jil. Wonda and Azaroth. Lama Gladax. Some beezie AIs from the orphidnet, some shoons run by the good beezie AIs.

On the bad side: Jeff Luty, Andrew Topping, ExaExa security guards, some Homesteady party stooges. Beetle-run sudocokers. A few beezies and some shoons as well, sadly enough.

The Stinky Cave

Given that the golem farted in Metotem Books, the Big Pig could threaten to have a golem fart in that subterranean cave. But that's too clownish, also too disgusting to think about. The cave is kind of solemn.

The Heavy Eye

Mirrorbraners are reluctant to have us visit.

Because we're bulls in a china shop. There was a disastrous Mainbraner visit early on. The Cat Ba Imp. Duc and Anh brought a guy over during the War in Vietnam, and he went ape. It was supposed to be a secret that *they* brought him, by the way, but people were suspicious of them, as the Imp came from the vicinity of their pagoda near Haiphong.

Lazy eight is embodied in a concave mirror called the Heavy Eye.

The marble or jade Water Buddha is in a pagoda in Mirrorbrane Golden Gate Park, San Francisco, a gift from North Vietnam. There's a pond around the pagoda where Vietnamese water puppetry is performed. The Buddha is one and a half Mirrorbraners high — that is, ten feet for them, and it looks about 60 feet high to the humans.

Mounted in a kind of fez atop the Buddha's forehead is a Heavy Eye. This is a six inches across relative to the Mirrorbraners (which is a meter across for us) with three holes at the edges that can serve as handles for the little Mainbraner hands.

The Heavy Eye is preternaturally smooth, almost slippery. Metallic, yet crystalline, like hematite. It's concave so that virtual images hang in front of it. It's heavy enough that three Mainbrane humans can barely lift it: some three hundred fifty pounds, which is like a ton to the Mirrorbraners.

The Heavy Eye is from the Halong Bay, it was found in the 1960s.

After witnessing Hiroshima, the planetary mind of Mirrorbrane Gaia came to understand that a parabolic mirror reflecting an atomic bomb blast could focus enough energy to unroll the eighth dimension. So "MirrorGaia" made the Heavy Eye and placed it where she thought there might be a blast and where there might be some Mainbraners coming through: near the port of Haiphong in North Vietnam, where the cuttlefishers were going through the Mainbrane regularly. She was hoping the Heavy Eye could get over to the Mainbrane before the blast.

A cuttlefisherman in the Halong Bay found the Heavy Eye near Cat Ba island. It's not like normal matter. MirrorGaia gathered heavy matter from Earth's whole mass, migrated it to one spot and fused it.

The fishermen placed the Heavy Eye in the forehead of the great marble Water Buddha in the Tra Phuong Pagoda. And the Mainbrane cuttlefishing continued. But still no Mainbraners appeared.

After Hanoi won the war, the Heavy Eye began showing images of an A-bomb bomb blast. The North Vietnamese donated it to San Francisco as it made them uneasy.

The U. S. was happy to accept the Fisher Buddha with the glittering Heavy Eye as a symbol of good will. The material of the eye was determined to be unique. They installed it in a pagoda with thick stone walls. The pagoda sits in a pond.

A couple called Duc and Anh accompanied the Water Buddha as its custodians. Duc was the pagoda priest and Anh was his young wife, pregnant, aged 20. Duc spent two hours every day polishing the Heavy Eye, and later Anh and then their son Quang did this, and then Quang's son Duong who preferred to call himself Azaroth.

Anh gave birth to Quang when they arrived in 1946. Duc died soon after they came. Anh took over the care of the San Francisco shrine, and passed the work on to Quang, who planned to pass it to Azaroth.

The cuttlefishers of Vietnam were always fishing in the Mainbrane.

They had eaten the cuttlefish on the Mirrorbrane into extinction. They were as greedy and short-sighted as us Mainbraners dragging nets across the bottoms of the deep sea. Omnividence made the extermination possible.

The Heavy Eye tells Quang it wants to go to the Mainbrane.

Quang is the only Mirrorbraner who understands what the Heavy Eye is, as it talks to him. His telepathy block keeps this secret.

The Heavy Eye wants to be fetched by the members of the other world, not to be carried there invasively. It will take three Mainbraners to carry the Heavy Eye. It would be difficult in any case for the Mirrorbraners to move the one ton item. The Heavy Eye's task is to weave back and forth between the branes, bringing lazy eight to pairs of planets, and then moving on to a fresh pair of planets.

The Heavy Eye encouraged the cuttlefish imports in the hope that Mainbraners will follow.

Quang knows this well, like Duc before him, he talks to the Heavy Eye.

Anh and Duc and then Quang encouraged a cuttlefishery in Mainbrane, secretly hoping that in time some Mainbraners will come over like the Heavy Eye wants. They got the Cat Ba Imp to come, which was a disaster.

Quang learned there were cuttlefish in the Mainbrane SF Bay, convenient and unexploited, and began sending locals there, among his cuttlefishers were his son Azaroth (he was born Duong, but changed his name.)

The Heavy Eye Buddha is hidden.

The Heavy Eye Buddha is locked in a thick stone-walled chamber that only the Mainbraner gnomes can tunnel into. Quang in fact wants the hand-off to be a robbery so he's not criticized for losing the Heavy Eye. The temple is something of a tourist attraction.

Thuy, Ond, and Chu carry the Heavy Eye to our brane.

With Thuy there they can carry it. When they pick it up, the grips grow ridges. The thing is alive. "It's an I and an Eye."

I like the idea of my characters fetching it like Prometheus getting fire. Stealing the idol's eye is a power-chord of adventure fiction.

The Heavy Eye can unroll the eighth dimension if you feed it an atomic explosion.

The Eye shows Thuy an image in the mirror; shows her an exploding A-bomb. Jayjay has told her something, and now she understands all at once that setting off an

A-bomb near the parabolic mirror of the Eye will focus enough energy on the focus point to unroll the eighth dimension.

She pushes the button and sets off the A-bomb, though Jayjay is freaking out.

The Heavy Eye soaks up the A-bomb blast.

It uses a Thirring field. Focuses the energy to unroll the eight.

The Heavy Eye has been present on Mirrorbrane Earth forever; a cuttlefisherman off Hiroshima found it. It's not like normal matter.

Up until WW II, the Water Buddha with the Heavy Eye was in a Buddhist temple on an island port near Hiroshima. The Cat Ba Imp came from there.

After the Hiroshima bomb blast, the Heavy Eye began showing images of the bomb blast. The Japanese donated it to San Francisco as it made them uneasy.

The U. S. fleet was happy to bring the big Buddha with the glittering Heavy Eye to SF as a trophy. They installed it in a thick stone-walled temple, as the material of the eye was determined to be unique.

A couple called Duc and Anh accompanied the Water Buddha as its custodians. Duc was the temple priest and Anh was his young wife, pregnant, aged 20. Duc spent two hours every day polishing the Heavy Eye, and later Anh and then Quang did this.

She gave birth to Quang when they arrived in 1946. Duc died soon after they came. Anh took over the care of the San Francisco shrine. Later, in 1966, aged 40, she had an affair with a young American hippie, and gave birth to Gladax. Gladax was a porn performer for awhile. (She'd undo mental blocks to allow access.) Now Quang is 92 and Gladax is 72.

When Thuy jumps across, Azaroth meets her partway in the Bulk and guides her to Golden Gate Park.

Azaroth tells Thuy she's going to get in trouble with Gladax for coming, but that Quang told Azaroth to get some Mainbraners to come. He says he can stay with Azaroth, which is where Chu is staying. But she better look out for Gladax.

The temple of the Water Buddha is nearby with puppets in the water. The Buddha has a third eye that's a remarkable concave mirror.

The gang feeds Thuy. The food is like clouds to Thuy, like cotton candy, she has to eat a whole big insubstantial hamburger two feet across to get full. The Mainbraners are also eating broiled Mainbrane cuttlefish; they say it gets them high. Thuy eats some of that too, it's just normal to her.

Gladax shows up, scolding Thuy. Gladax is dignified, a Black woman, a force to be reckoned with, the mayor in some sense of the San Francisco. She is a living network, the people's will. Ond is with her. Ond is kind of spaced out, Thuy doesn't like his vibe. Ond loves it here now, he's into the living Web.

Quang tells Thuy that his Heavy Eye could get rid of the nants — but then says she can't have it. He hints around that it would take three people to carry the Heavy Eye.

A fake crisis is staged to distract Gladax and get Ond away from her. Azaroth, Ond, Thuy, and Chu go to Quang's pagoda.

Ond, Chu, and Thuy steal the Heavy Eye. They have to rush as they fear Gladax's coming. The Eye is showing them things.

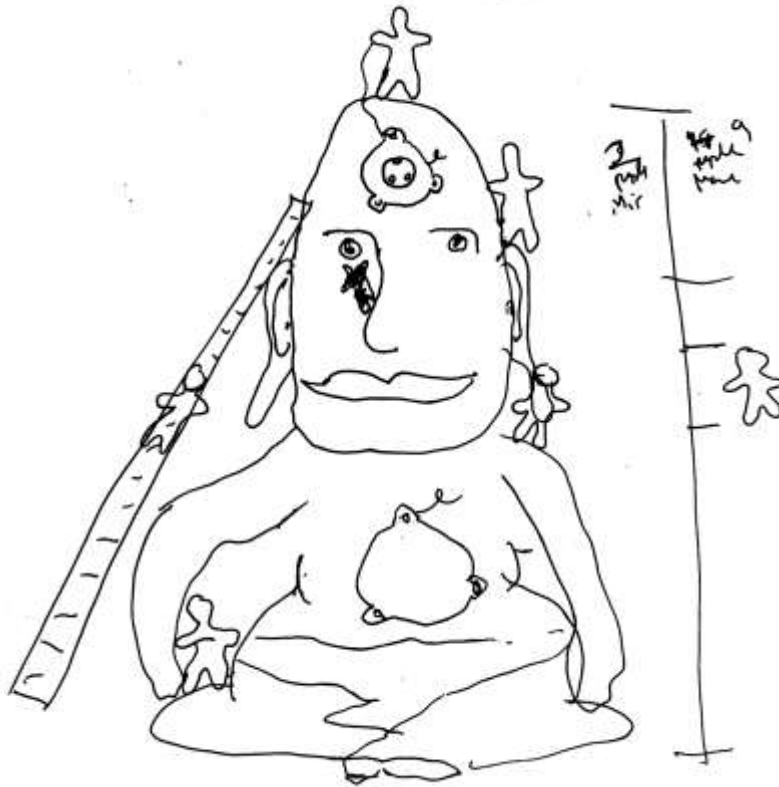


Figure 20: Stealing the Heavy Eye of the Buddha

Coming back, they get bogged down in the subdimensions, the heavy Idol's Eye is dragging them down. They're menaced by the sentinels in the Bulk zone between the worlds, bird-headed beings like the Egyptian god Thoth. Luty is with the Sentinels.

Back in the cave, the Heavy Eye shows an image in the mirror; an exploding A-bomb. Thanks to something Jayjay just told her about the eight dimension, Thuy understands all at once that setting off an A-bomb near the parabolic mirror of the Heavy Eye will focus enough energy on the focus point to unroll the eighth dimension.

Thuy pushes the button and sets off the A-bomb, though Jayjay is freaking out.

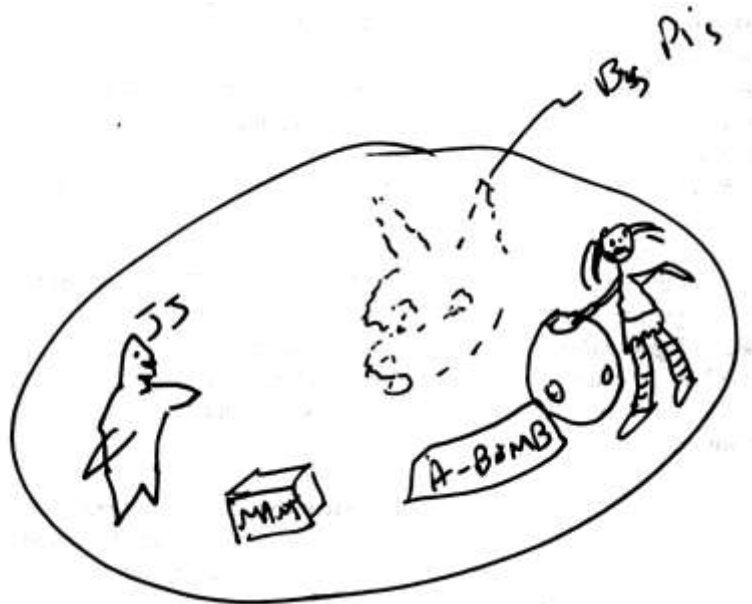


Figure 21: Thuy Catches the Bomb Blast in the Heavy Eye.

The Heavy Eye sucks up all the blast force and radiation (see the [Hiroshima story plan](#)); and unrolls lazy eight.

Deleted Fragments

Dyson Lag

The twenty-five-minute light-speed lag across the Mars orbit will be the one thing damping the process . But it'll spread fast anyhow.

Lureen Does Luty

Thanks to the orphidnet, she could see the insides of all the neighbors' houses. She'd always wondered about that Lureen Morales in the mansion at the very top of the hill. Lureen was famous for her coarse sex-vlog, *Caliente*. She'd even slept with the former Nantel CEO Jeff Luty before he'd dropped out of sight: Luty with his crooked smeary-lensed glasses, his greasy ponytail, his thick lips chapped by his nervous tic of licking them every few seconds. Luty was so germ-phobic he'd put a latex sheet over Lureen's mouth before kissing her. And when they were done, he'd presented her with a boxed and mounted giant beetle. The tape of the absurd encounter was an underground classic.

Decohering the Mirrorbraners

[Originally I had the notion that humans could decohere the Mirrorbraners, that is, make them disappear by asking them lots of questions. This recycles an idea from Frek. I decided to drop the notion as it adds, I think, more additional complication to already fairly complex world-mechanics. I'd wanted this feature so that Ond could save Chu from Gladax (by decohering her with questions), but now

I'm humanizing Gladax, and having her simply give in to Ond's pleas for mercy and his promise for future help against the nants. Below are a series of passages I'd had involving the decoherence defense.]

The angels usually disappear if you watch them closely — or if you ask them a lot of questions. It decoheres them. But thanks to our quantum-computing orphids, the orphidnet can show the angels without melting them away.

So ethereal a being could only be a coherent quantum-mechanical macrosystem, therefore Ond set to work decohering her. He knew that the best way to destroy a complicated quantum state is to closely observe it, that is, to ask a lot of questions about it. Ond subjected the alien to a barrage of questions and measurements, pinning down her sex, mass, energy, age, skin color, background, family size, voice timbre, food preferences, past ailments, education... Finally, with a sound like a locust's abrupt chirp, Lama Gladax flipped from our world back to the Mirrorbrane she'd come from.

If the angels come for you again, remember to drive them away by asking lots of nosy questions. You have to keep after them, is all.

In any case, if the angels suddenly turned mean, they wouldn't be able to get very deep into Chu's brain because he'd learned from Ond to ask them lots of questions if they came close. That was important to keep in mind.

Who Made Who?

"The angels made our world," said Craigor, the words jumping unbidden into his head. "Oh, that's creepy. The big angel messaged that to me. Gladax. She says we shouldn't try to go to their land."

"We made *their* world," shot back Jil, quick as a knife. "I said that. We can do whatever we want to. Don't let them get to you, Craigor." She had a quick mental image of two sheets of reality caressing each other, each of the parallel branes causing the other to glow.

Intro to the Short Story "Postsingular" Version of Chap 2

The Singularity happened when, encouraged by his business backers, President Dick Dibbs sent an eggcase of nants to Mars. Nants were self-reproducing nanomachines: solar-powered, networked, capable of gnatlike flight, and single-mindedly focused on transforming all available material into more nants. In a couple of years, the nants had eaten Mars, turning the red planet into a Dyson sphere of a duodecillion nanomachines, a three-millimeter-thick shell half a billion kilometers across, with Earth and the Sun trapped inside.

The stars were hidden by giant ads; in daytime the ads were a silvery background to the sky. Dibbs's backers were well-pleased. And behind the scenes the nant swarm was solving a number of intractable problems in computer science, mathematical physics, and process design; these results were privily beamed to the nants' parent corporation, Nantel. But before Nantel could profit from the discoveries, the nants set to work chewing up Earth.

At the last possible moment, a disaffected Nantel engineer named Ond Bergman managed to throw the nants into reverse gear. The nants restored the sections of Earth they'd already eaten, reassembled Mars, and returned to their original eggcase — which was blessedly vaporized by a well-aimed Martian nuclear blast, courtesy of the Chinese Space Agency.

Public fury over Earth's near-demolition was such that President Dibbs and his Vice President were impeached, convicted of treason, and executed by lethal injection. But Nantel fared better. Although three high-ranking execs were put to sleep like the President, the company itself entered bankruptcy to duck the lawsuits — and re-emerged as ExaExa, with the corporate motto, "Putting People First — Building Gaia's Mind."

For a while there it seemed as if humanity had nipped the Singularity in the bud. But then came the orphids.

Jan 2, 2006. Postsingular Story Intros

For a time, I'd planned to include my two postsingularity stories in a story anthology — as opposed to using them as chapters of a novel, which is what I'm now thinking I'll do (see [April 3 - 4, 2006, writing journal entry](#)).

But I'd written some little anthological intro notes for the stories, and I don't want to lose those notes, so here they are.

Note on "Chu and the Nants"

Written September 19, 2005.

Appeared in *Isaac Asimov's Science Fiction Magazine*, June, 2006.

In the summer of 2005, I read *Accelerando*, a collection of linked short stories by Charles Stross (Ace Books, 2005). These stories had a tremendous effect on me; Stross showed that it's possible to go ahead and write SF that takes place after the Singularity.

As most readers will know, the Singularity is a notion invented by SF writer Vernon Vinge in a 1993 talk — to see the talk, just search the web for "Vinge Singularity". Vinge pointed out that if we can make robots as intelligent as we are, then there seems to be no reason that the robots couldn't plug in faster processors and bigger memories to then be *more* intelligent than people. And then — the real kicker — these superhuman robots or can set to work designing still better robots, setting off a chain reaction of ever-more-powerful machines

Some timid souls have suggested that SF writers and futurologists must stand mute before the Singularity, that there's no way for us to imagine the years beyond such a cataclysmic change. But, hey, imagining the unimaginable is one of the things SF is for! And Stross' *Accelerando* plows right past the Singularity and deep into some very bizarre and fun-to-read-about futures.

In *Accelerando* the solar system has become concentric Dyson spheres of computing devices with only our Earth remaining like "a picturesque historic building stranded in an industrial park." p. 251. And some minds in the shells want to smash Earth, simply to enhance their RAM and their flop by a few percent.

This struck me as being no different, really, from people wanting to fill a wetland to make a mall, to clear-cut a rainforest to make a destination golf resort, or

even to kill a whale to whittle its teeth into religious icons of a whale god. I was outraged. But also very intrigued by the idea.

So I wrote “Chu and the Nants” to describe a situation where people come to their senses and realize, just in the nick of time, that it’s really quite wrong to smash Gaia to bits to make a wasteland of smart pebbles.

Sometimes it takes me quite awhile to find the right market for one of my short stories, so I was pleasantly surprised when Sheila Williams at *Asimov’s* accepted “Chu and the Nants” within a week of my mailing it to her.

Note on “*Postsingular*”

Written December 6, 2005.

Appeared in *Isaac Asimov’s Science Fiction Magazine*, September, 2006.

After finishing “Chu and the Nants,” I had a feeling that I’d flinched from staring into the Singularity as hard as I wanted to. The Singularity is a bit like the sun or like one’s sense of immediate consciousness, in that it’s hard to stay focused on it. It takes an effort to keep coming back to analyzing how it might feel to live in a world where a Singularity has taken place.

“Postsingular” is a sequel to “Chu and the Nants” in which I manage to stare into the sun a bit longer than the time before.

One of the tech ideas in “Ond and the Orphids” relates to the RFID or “radio-frequency ID” chips which manufacturers are on the point of affixing to every object they produce. My SF writer friend Bruce Sterling is fascinated by RFIDs, and talks about them a lot. He calls them “arphids.” So, naturally I had to go Bruce one better and introduce “orphids” into my tale.

Another SF in-joke here is that Charlie Stross sometimes has his characters talk about running a “timing-channel attack on the computational ultrastructure of spacetime.” After I’d turned to the *Wikipedia* to find out what the hell that even means, I naturally wanted to find a way to work a timing-channel attack into my next story — and I did.

“Postsingular” appeared in *Isaac Asimov’s Science Fiction Magazine* soon after it’s prequel, “Chu and the Nants.” After selling these stories, I still hadn’t had enough of thinking about the Singularity, so I decided to write a whole novel that is a sequel to these two linked stories. And I felt like *Postsingular* would be a good title for the novel as well. (Note that the story “Postsingular” is *not* included in the novel *Postsingular*, which begins thirteen months after the events of the story.)

I should also point out that the versions of “Chu and the Nants” and “Postsingular” that appear in this anthology are slightly different from the versions that appeared in *Asimov’s*. The reason for the differences is that, after getting started on my novel *Postsingular*, my notions of things changed a bit, so I went back to alter these two prequel stories to make them more closely match the novel — for instance, in *Asimov’s* the stories are loyally set in my home town of San Jose, while in this anthology the stories are set in the somewhat more colorful city of San Francisco so as to match the setting of the novel.

I like using the word “postsingular”. To me, using the word signals that I’m doing my bit to move SF past any superstitious fear and paralysis in the face of the changes coming in the next hundred years. Never let up; push harder!

Heavenly version of Mirrorbrane

She was in the Mirrorbrane, with Chu and Ond beside her, floating amidst gauzy white mist. Yes, the place looked like heaven, with mounds and castles of clouds and pyramidal rays of light, but the three of them were the only angels here. Had they died? Where were the Mirrorbraners? And where was Bixie?

Over and over Jil called her daughter's name until finally —

"I'm right here," came the sweet voice from a cute, puffy cloud directly overhead. A moan of relief escaped Jil; she stretched up her arms and Bixie dropped into her arms, nearly knocking her down.

"It's fun here," said Bixie, leaning against Jil's shoulder, her arm around Jil's waist. "I can fly. I'm glad you came, Mom. I was lonely."

"I want to take you home now," said Jil, hoping this were possible. The orchids on Jil's skin were inactive, if they were still present at all. Certainly the links to Earth's orphidnet weren't working here. So how would she access that magic blue spaghetti code?

Anxiously Jil regarded Ond and Chu. They were peering down through a hole in the clouds at a landscape not all that far below them.

"Hi, Bixie," said Chu, glancing over at them. He favored Bixie with one of his rare smiles.

"Can we go back?" Jil asked Chu.

"Probably," said Chu. "I know the code by heart now. I simplified it. The blue spaghetti pattern was just a special kind of knot." He rummaged in his pants pocket and found a piece of string. "I can make the knot. It'll take a minute."

Leaning over the gap in the clouds, Jil saw a town something like San Francisco, as if seen from an airplane heading in for a landing. The San Francisco Bay geography was the same, but the city sprawl was not so far advanced. The cars were big and curvy, and the "angel" Mirrorbraners looked to be regular people in colorful clothes.

"It almost looks like an earlier time," mused Ond. "Like the Twentieth Century. We'll fly down and check it all out, Chu."

"Won't they chase after us?" asked Chu. His fingers were weaving his piece of string into an intricate Celtic-style knot.

"I'm guessing that *we'll* be the ones who look like angels in the Mirrorbrane," said Ond. "Glowing, hovering, big, hard to see. We'll haunt the locals, we'll make some heavy appearances. First of all we pay back that Mirrorbraner who was poking you, Chu. Teach her some religion! We'll get concessions, make some live-and-let-live deals. I figure to spend a few years here — till things back home calm down. Will you keep me company, son?"

Chu Loves Bixie

Jil could see that Chu was as smitten with Bixie as Ond was with her — though of course the kids were only twelve and ten. This full-on telepathy showed you more than you wanted to know.

Coming Down

The rain on the back of Jayjay's neck was melting the *mythos* pretty damn fast.

Wheenk

Not to mention that tripling of the *wheenk* was a quote from Thuy herself, as *wheenk wheenk wheenk* was a term she used to describe novels in which the main character is bitching and moaning for some desired emotional outcome on every single page — Thuy thought about writing a lot; she wanted to be a novelist.

Burroughsian Attack Ad Against Lampton

[Inspired by *Yage Letters*.]

A flicker, a pop, and control of this particular President Bernardo icon had shifted into the hands of his political rivals. Wearing a slack, imbecilic grin, the President dropped his pants, squatted on the sidewalk, took a crap, wiped his ass with a pocket-sized American flag, and then fumbled in his crotch to begin—

“Hurry up!” called Kittie, looking back at them. “We’re gonna lose the pancakes. Oh, what is *that* supposed to be?”

“Homesteady Party attack ad,” said Jayjay, looking away from the degraded President Bernard Lampton. “They’re pumping out all this viral adware for the election.” Lampton’s image duck-walked towards Kittie, the President leering up at her as he fondled himself.

Lampton and Oil

The beezyes were helping Lampton’s Common Party in return for his having set in motion the steps to shut down the use of oil and gasoline nationwide. The Homesteady Party was greatly exercised about the oil, and with the presidential election next month, Lampton’s beezyes were being extra helpful.

In the SUV

“They use us for memory units, what it is,” said Thuy, handing Jayjay a fist-sized piece of chocolate sweetness. “That’s why the Big Pig passes us those movies. I think the beezyes to it too, but you just don’t notice their downloads.”

Gnarly Food

The chicken and spinach foam had tasted good, but the yam and shrimp aerogel had been fairly nasty — thanks to the fact that, Jayjay had realized to late, the aerogel had been touching an emptied-out cabernet-enema tube.

Jose started a competing restaurant down the street called MouthPlus. Ripoff copycat that he was, he took most of Nektar’s new ideas with him and, pig that he was, he pushed them over the edge. You could order an intravenous food drip at MouthPlus, a food or wine enema and certain of the wait-persons were even willing to provide customers with appetizers pre-warmed in their own body cavities — actually this only happened a few times before the Board of Health shut the practice down, but the buzz gave MouthPlus an annoying amount of heat.

Like other loyal viewers of *Founders*, the Posse occasionally rooted through the garbage cans at Puff. Some of the entrees came in emulsified form, resembling pastel blobs of whipped cream. The chicken and morel mushroom foam had tasted good, but the yam and sweetbreads aerogel had come across rather nasty.

Avatar-Style Orphidnet Costumes

[I decided not to bother with the orphidnet avatars, like why wouldn't people just look like themselves. The fancy costumes feel kind of labored and been-there-done-that, kind of 1990s.]

The other Posse members hopped into the orphidnet too: virtual Kittie looking like this one particular twentieth-century pipe-smoking cartoon babe Moonbeam McSwine that she enjoyed painting on the sides of electric vans, Thuy dressed as usual but holding a keyboard-enhanced violin resembling a flattened human torso with sharkbites taken out, Sonic wearing the body of a horned red devil complete with arrow-tipped tail, and Jayjay like a snow monkey with glowing blue eyes.

Nant Reveal

The beezies just helped me figure out what those beetles are. They're simulations of the original nants, what it is. Someone — probably the Homesteadies — set them loose in the orphidnet a few days ago. And the beetles have been working on hacks for controlling people, with an eye to getting us to go for the nant thing all over again. You were one of their first test-cases, Nektar. But I got some beetle fleas from Professor Prav Plato. It's the same Trojan flea hack that Ond Bergmann that used against the original nants. The fleas bite the beetles and they run backwards.

Thuy Misquotes Leary

"She's rehearsing a metasymphony with the Kazakhstan orchestra," said Thuy loftily, her high pigtails swaying. "I'm going to sample it for *Metotem*. Don't look so insultingly blank, you know damn well I'm talking about my metanovel. I've been collaging in all these great sounds and images and ideas. I'm just not ready to show it to anyone yet. Tune out, turn in, drop on." It was typical kikkie to fuck with the word order of clichés, especially typical for Thuy, who thought about language all the time. She stuck out her tongue at Kittie and wagged it. "Am I 'hot' yet?"

Encrypted Instant Messages

With everything visible and audible via the quantum-entangled surface-mesh-monitoring orphidnet, the one way to have a private conversation was by scalp-to-scalp messaging. And the orphidnet supported a routine for uncrackable quantum encryption. A potential receiver was absolutely unable to read a sender's quantum-encrypted instant message unless the receiver's unique mesh and location had specifically been attached to the message by the sender. At Puff, Nektar and the waiters exchanged sarcastic instant messages about the customers all the time.

Mirrorbraner Snatches Corpse

[I decided to save the 4D dwindling effect for the end of the chapter when Luty takes Sonic from the Armory to the ExaExa labs, or maybe not use it at all, as I've used it before. Also I don't want this infection to be like the beetles at all.]

Jayjay studied into the orphidnet, looking to understand what was going on. The computational space of the Grandmaster's corpse was a massive nest of virtual beetles — already evolved into a state resistant to the beetle-fleas. The beetles looked

more and more like prototypes of the deadly nants, somehow being modeled by viral software in the mutant orphids devouring the corpse. Within the orphidnet, the healthy orphids were like tiny fighter planes attacking the amok nanomachines.

Jayjay felt a warm breeze on his face; in the orphidnet a thirty-foot-high figure was standing over them all. A Mirrorbraner! The glowing humanoid form reached down and cupped her flickering hands about the corpse.

The body shrank — first to the size of a child, then to the size of a dog and then to the size of a rat. The smaller the corpse got, the faster the colors swirled and then — *pop* — Grandmaster Green Flash was gone, and so was the Mirrorbraner.

“An angel!” screamed a fat woman on the sidewalk. “An angel carried him away!”

“Hypertunnel,” said Sonic, staring at the spot on the sidewalk where the body had disappeared. “The Mirrorbraner carried the Grandmaster away into the fourth dimension. In Doodly Bug that’s what it means when someone shrinks.”

Jil and the Mirrorbrane

By the way, when Ond and Chu had fled to the Mirrorbrane, they’d temporarily taken Jil Zonder and her daughter Bixie with them, although Jil and Bixie had jumped right back. This was another reason Jayjay wanted to get close to Jil.

Buddha’s Messengers

And now he was seeing Grandmaster Green Flash lying there dead. Sucked dry by the Pig.

“Leaving his sheltered palace, the unworldly twenty-nine-year-old Prince Siddhartha met four divine messengers that were to change his destiny,” intoned Thuy, getting all arty. “The first three were an old man, an invalid, and a corpse. The fourth messenger was a wandering ascetic, who revealed the path of non-attachment, whereby all suffering can be transcended.”

“Short version,” said Kittie. “(1) Life sucks (2) and then you die; (3) get over it and (4) chill.”

“Shut the fuck up,” said Sonic, kneeling beside Grandmaster Green Flash. “This guy was the best.”

Thuy Disappears At End of Chapter Two

[This was my March 9, 2006, take on the ending of Chapter Two. I was using the “abducted girlfriend” pattern to be followed by the “rescue the girlfriend” pattern. But then I decided that (a) I really wanted to keep Thuy out in the city so as to see the postsingular world through her eyes and so as to develop a romance between her and Jayjay, that (b) Sonic is similar enough to Jayjay that I better move him out of sight so he doesn’t upstage Jayjay, and that (c) it would be better not to kill Topping right away, as I’ll be needing a heavy villain again a few times in the story.]

“It’s out of the question,” said Thuy. “Business 2.0 censors in my head? All my creativity would be gone. I’d have nothing to live for.”

“No, then,” said Kittie before Jayjay could, playing the leader again.

“This is the part I like best,” said Topping, his eyes lighting up for the first time. He fainted to the right, then darted to the left, scooping up Thuy and bodily carrying her to the grilled wall. The hum behind the grating rose an octave in pitch.

Thuy cried out, trying to twist away, and the others jumped to their feet, ready to charge Topping.

"One step closer and I mince her," said Topping, holding Thuy against the grill wall. "Don't think I won't." A stiff breeze was drawing across the room into the grating.

Thuy whimpered; Jayjay saw red. He dove for Topping's waist, expecting to jar him onto the floor with Thuy in his arms. Error. Instead of falling away from the grill, Topping fell towards it, pressing Thuy hard against the grating. The equipment roared; Thuy disintegrated into tiny cubes that were broke into yet-smaller blocks by the inner grills, her particles whirling into the dark hole's maw. Oddly enough, there was no blood. And then Thuy was gone. Topping sprang free from Jayjay's stunned grip. Kittie's screams were harsh and rhythmic.

"Next?" said Topping, pulling his pistol from the shoulder holster beneath his coat. Perhaps distracted by Kittie's shrieks, he was slow in registering Sonic behind him.

Sonic leapt onto the big man's back, digging his powerful fingers into the thick throat. Topping tried to reach around to aim his pistol at Sonic, but Jayjay hit the big man's arm hard, knocking the gun loose to skitter across the floor and dissolve against the gratings.

Topping was fighting hard, tearing at Sonic's hands. Jayjay caught Topping in a bear-hug, holding his arms down, letting Sonic finish his work. The heavy body slumped to the floor.

"You killed him?" sobbed Kittie. "This is all wrong."

"Self-defense," said Sonic.

"Get rid of the body," said Jayjay, expecting staffers to burst into the office any minute. "Push him into the grating."

"Thuy," keened Kittie. "Thuy, Thuy, Thuy."

Topping went through the grill as readily as Thuy had. His form broke up bloodless cubes that split and split again as the pieces went deeper in. And once he was gone, the machinery stopped. The gratings weren't all that sharp. Peering through the local orphidnet, Jayjay still saw only machinery back there — no ground-up bodies. Thuy and Topping had been atomized by some bizarre physical forces and transported to who knew where. Fruitlessly Jayjay banged a chair against the grating.

"Let's bail," said Sonic.

Some kind of signal must have escaped the office when they opened the door, for alarms sounded. Jayjay heard rapid footsteps running up those metal stairs. But the wasted clients behind the monitors only watched.

"Up thar!" urged Prescription John, pointing to the ladder and trapdoor where the computer cable went up to the roof. "It ain't locked."

Sonic led the way, and Jayjay took the rear, with Kittie in the middle. It felt good to get out back the open air, to get back in touch with the entire orphidnet. Hoping against hope, Jayjay set his beezies to searching the area for Thuy — to no avail. Where was she?

"You killed her, asshole," said Kittie. "It's all your fault."

"Don't be so sure," said Sonic. "That grill — we don't know what it was."

"I'm gonna find out," said Jayjay. Thuy couldn't be dead. It was impossible. He wasn't even going to consider grieving.

A police siren was approaching. The three made their way to the other side of the Armory roof and began working their way down the outside fire escape.

"I'm going back to Nektar's," said Kittie. "You're not welcome, Jayjay. I never want to see you again."

"You got it," said Jayjay. "I'm gong to Jil's boat. How about you, Sonic?"

"Stay with me, Sonic," Kittie said quickly. "We'll still be the Posse. We'll fix up that van."

"Okay," said Sonic. "I don't like boats."

Down on the street, Kittie and Sonic headed back towards Nektar's, and Jayjay got the BART line towards the South San Francisco dock.

"*Wheenk*," he said to himself, missing Thuy. "*Wheenk, wheenk, wheenk*."

Blocking the Timing-Channel Attack

I had Azaroth saying this to Thuy in her flashback in Chapter 3. But it's too much info in that context, which is already something of an infodump. And I already worked this into something Jayjay said in Chapter 2. Maybe I'll mention this again in Chapter 4.

"No hope of doing a timing-channel attack like Chu did, by the way. Aunt Gladax decrees that from now on all our shadowcasts have to take exactly half a second. Not that a glowy creative woman like you would take that kind of route."

Thuy on Blowback

Thuy had a feeling that writers who talked about blowback all the time were just hoping to avoid the work of grappling with their real selves in the real world.

Forker

At each corner Q turned right/left; Q greeted/ignored each person he passed; and when Q went into a restaurant he ordered everything on the menu. Needless to say, Q's sex-life was complicated.

Carla Standard's Metanovel (Version 1)

Intense, lipsticked, nail-biting Carla Standard used what she called a godseye viewpoint, showing multiple points of view as seen in the mind of a single omniscient observer. Her tightly plotted *Fun Bums* was about a runaway girl's coming of age after the mysterious disappearance of her kikkie boyfriend. Rather than cutting between characters, *Fun Bums* included continuous tapes of all the main characters' lives. With a bit of practice a user could master Carla's fused godseye view, experiencing all the characters at once, seeing simultaneously through the simulated minds of mother and daughter, lover and beloved, cop and fugitive, alien and abductee. As an extra twist, Carla had made all her characters look like famous cartoon characters. In order having to animate the cartoons from scratch, Carla had sampled the data streams of homeless street kikkies, beezie-processing them wrap her designs around the armatures of the unwitting players' orphidnet meshes. When Thuy had gone through *Fun Bums*, she'd found that Carla had used data streams from Thuy and Jayjay's romance, making them look like Donald Duck and *ugh, ugh, ugh* the infantilized anime girl Sailor Moon. Carla had repurposed, for instance, the moment last spring when Jayjay and Thuy had stood under a flowering plum tree off Mission Street, Jayjay shaking the tree to make the petals rain down on Thuy. Where Jayjay had been funny and cute, now he was a comic orange-beaked waddler, and where

Thuy had been full-lipped and tender, her *Fun Bums* mouth was an immobile triangle of witless joy. Nosy Carla had included their breakup as well, Thuy hung-over from the Big Pig, her leg-warmers in disarray, hysterically screaming at Jayjay in an alley, poor Jayjay's tailfeathers nervously twitching and his fingers adjusting his little jacket. Thuy was miffed that Carla had made Jayjay more sympathetic than her; she suspected that Carla had done this as an oblique way of flirting with him. Not that Thuy any claim over Jayjay anymore. Oh, why did she miss him so much?

Crazy Jil

"I'm glad you didn't watch Jayjay and me on *Founders*," said Jil. "The kids saw some of it, which was horrible even though, in a way, it shouldn't have been that much worse than them peeping at Craigor and me, which I know they've done a few times. It's hard to imagine how the new generation will end up. Jayjay and I stopped having sex after Bixie had a screaming fit and slugged him in the crotch. She was yelling, 'Gross dusty ballsack.'" Jil shook her head and laughed. "Bixie's eleven," she added. "Girls are wonderful when they're eleven. Remember that age? It's before life beats you down."

"Why dusty?" said Jayjay. "I never understood that. This all happened two months ago, Thuy. The main reason I stayed on the boat was because of Azaroth, that Hibraner friend of yours. He always turns up here. He catches cuttlefish and sends them to the Hibrane to eat. Azaroth has been helping me get good at physics. Not that he's a scientist. But he remembers stuff for me. And Craigor likes me now that I'm letting him teleport."

"Ratings spike," said Jil, her mouth curved into an ironic, coquettish line. She snapped shut her silver box and shoved it back in her pants. "Feel the hitcounts? Time to promote your metanovel. Is it *Wheenk*? I didn't say that Jayjay and I broke up, Thuy. I just said we stopped having sex. Jayjay's very cute. I love his penis. He makes me feel young. Not like that faithless ham I'm married to." Thuy now realized that Jil had been doing sudocoke in her bedroom. She was wasted, saying any old thing.

A Beak From A Higher Dimension

For a fish drifting calm beneath a glassy water ceiling, what could be more unexpected than a darting bill from above? The beak symbolizes terror from a higher dimension.

Electric Shock for Shoon Ant

[I decided not to use this scene after I remembered that I had Bela and Paul make similar use of an electrical cord (although for a different purpose) in *Mathematicians in Love*. Instead I had Thuy get a blow torch from the pho chef.]

"I'm teaching that ant a lesson," said Thuy. She took the beer-ad lamp off the wall, unplugged it, cut the electric cord right by the lamp, split the two wires apart at the cut end, peeled an inch of insulation off the two wires, stuck the plug back into the socket, and sat down, holding the two charged copper fangs at the ready.

The ant came in on the heels of a sloppily dressed white guy, who was wildly surprised to have a four-foot-long plastic ant push past his legs and into the restaurant

like a hungry dog. The man shouted, and the diners looked up, some of them jumping to their feet and heading through the kitchen for the back door.

"Here I am," Thuy shrieked at the ant. "Come and get me, motherfucker!"

Jayjay understood Thuy's plan; he stood behind her, watching with an expectant grin, ready to jump in if things went badly.

But things went well, at least for Thuy, although, yes, rather badly for the ant. When the ant reared up to attack, Thuy poked the two bare electric wires into the ant's yielding piezoplastic belly. The creature's body twitched and danced; her neural system shorted out; she fell over dead on her back, with a foul-smelling puddle dripping from the tip of her abdomen.

Metamorpher Teleportation Method

On February 28, 2007, during copy-edits, I changed all of my old "metamorpher" talk to "interpolator" talk. Rather than Jayjay purely inventing teleportation, he invented a way of using interpolation to fill in a somewhat sparse orphidnet image to the point where it's so real you can teleport there.

Here's the altered metamorpher passages, with the page numbers that were in the February 2007 version of the double-spaced manuscript.

p. 186. Thuy followed Jayjay's link to the gently rocking deck of the barge-like *Merz Boat* with its central cabin like an oversized loaf of bread. She had a moment of double vision: water waves flowed across the alley walls. And now Jayjay linked her to a striped, silk-spinning caterpillar weaving a web from point to point, binding the alley and the seascape together. The network of links encased Thuy, wrapping her up like a pupa. She was neither here nor there, all of her particles were synch with each other, temporarily free of the outside world. She felt very tiny, she was falling—where? The pupa casing split open. With a thump, Thuy and Jayjay landed on the soft deck of—

p. 189. "I invented a new family of quantum mechanical operators," said Jayjay. "I call them metamorphers. You saw one just now, it looked like a caterpillar. I cracked teleportation on a Big Pig trip. But nobody gets hold of a metamorpher unless I give them a one-time link. I'm beginning to build buzz for teleportation, and pretty soon, I'll be taking my service public. The vibby thing is, whatever you're carrying gets teleported right along with you."

p. 190-191. "And now I've invented my metamorpher teleportation technique. It's much hipper than the Armory-to-ExaExa kludge that Luty set up with those gratings. Prav Plato says I should publish my work as a physics paper, but I'm thinking I should keep the details secret and get rich by selling one-time access links."

p. 211-212. "It's a renormalization of the entanglement matrices of the Einstein-Podolsky-Rosen field," said Jayjay. And then he laughed, proud of how he could shuck the physics jive.

In the long cabin, Jil and Craigor's voices were rising in argument.

"Come on, smart guy," Thuy told Jayjay. "Entangle our butts outta here."

"We'll do the hop like before," Jayjay messaged her. "You visualize both places: your source location and your target. Thanks to the orphidnet you can get the

real-time target images just right. And the secret sauce is this algorithm of mine that generates the metamorpher for a particular hop.”

Thuy focused on her calm, dry room in Nektar’s garage. She overlaid it with the dank, crooked hut Jil had lodged them in. Jayjay passed her a metamorpher: a glowing larva that darted all over the images, sewing them together. Thuy’s bedroom door was the igloo’s window; her kitchen sink was a bump on one of the little hut’s curving walls; the street sounds of San Francisco were nanomapped into the splashing of the sea. The metamorpher sprouted feathery antennae and buckeyed wings, then drew the links tight around Thuy. She felt herself folding in upon herself, becoming a single hypercomplex particle. Somewhere in the distance she seemed to glimpse an endless sea. Where was she? Her mind and body blossomed out.

p. 215. The clack of plastic chopsticks overlaid Thuy’s bedroom, the rich smell of spicy broth, the slurp and chatter of the diners. A metamorpher humped about the scene like a hyperkinetic inchworm, linking everything with silken strands, wrapping Thuy like a mummy. The world grew fuzzy and Thuy’s particles meshed together into a single subtle wave. Somewhere high above Thuy her bedroom door creaked open. Where was she now? She spread her wings and—*pop*.

Big Pig as Burning Bush

The burning bush seemed to grow to an immense size. A crystal sea of waves crashed violently at its roots, sending up wobbly drops of foamy spray, each drop ideally rendered. Above the bush were dark clouds enlivened by bolts lightning. A million beasts of the sea and the sky and the fields circled the burning bush, singing the praises of the Big Pig.

Flash Bang Grenade

Blessedly, someone further back in the crowd chose to lob a flash-bang device. Azaroth saw it coming and broadcast a warning to the three. They got their eyes closed and their ears covered and threw themselves on the floor. The stun-weapon flattened all the others in the lobby. Moving fast, Sonic grabbed a blinded cop’s pistol.

Why Mirrorbraners Want Cuttles

“We don’t have cuttles in the Mirrorbrane. That’s one of the funky little diffs between our worlds. The meat’s good and chewy. And cuttle ink has that sepia tint, you mind, but it’s also got smell-numbing tyrosinase, feel-good dopamine, and iridescent rhodopsin, all in a base that lets it soak through a Mirrorbraner’s skull. The mix is a special tonic, makes you glow. I’ve been checking out if maybe some of your rogue nanomachines could replace cuttlefish extract — like those ones on Grandmaster Green Flash? But so far, nothing gets you as starky as cuttlefish ink.”

Mirrorbrane Teleportation (Lama Lessons)

“When you’re teleporting around on the Mirrorbrane, how do you see your target location?” asked Jayjay. “You don’t have the orphidnet.”

“You and your machines,” said Azaroth with a laugh. “But that’s what makes Mainbrane gnomes so vibby. How we teleport at home? We feel through the point at

infinity. Lazy eight. An unrolled eighth dimension with a Zenonian metric — that's what Ond and Chu say, anyhow."

"I'm gonna be needing hella many lama lessons," said Jayjay.

Mirrorbrane Teleportation Via Insect-Like Metamorpher Agents

[Initially I was using things like moths as the teleportation facilitators, but then I changed it as I wanted to bring in the notion of cohering to become a particle just larger than the Planck length. Here are the original teleportation descriptions.]

Thuy followed Jayjay's link to the gently rocking deck of the barge-like *Merz Boat* with its central cabin like an oversized loaf of bread. She had a moment of double vision: water waves flowed across the alley walls. And now Jayjay linked her to a glowing dot, an egg that became a larva, a silk-spinning caterpillar weaving a web from point to point, binding the alley and the seascape together. Thuy's mental center flowed across the web. The caterpillar became a Buckeye moth; it beat its wings, and with a thump, Thuy and Jayjay landed on the soft deck of—

Thuy focused on her calm, dry room in Nektar's garage. She overlaid it with the dank, crooked hut Jil had lodged them in. Jayjay passed her a metamorpher: a glowing striped larva that darted all over the images, sewing them together. Thuy's bedroom door was the igloo's window; her kitchen sink was a bump on one of the little hut's curving walls; the street sounds of San Francisco were nanomapped into the splashing of the sea. The metamorpher sprouted feathery antennae and buckeyed wings, and then flapped, precipitating a self-observation, a quantum-collapse.

The clack of plastic chopsticks overlaid Thuy's bedroom, the rich smell of spicy broth, the slurp and chatter of the diners. A metamorpher humped about the scene like a hyperkinetic inchworm, linking everything with silken strands. As Thuy's bedroom door creaked open, the metamorpher spread its wings and—*pop*.

Where To Put the H-Bomb

"We'll set the bomb up somewhere else, though," said Thuy. "How about Houston, Texas? I wouldn't want to trash a valuable place like Easter Island."

Thuy Teaches Hospitality

But the father was mad. His arm was arcing down ever so slowly towards Thuy's head. And it hadn't even been his steak that Thuy had eaten. To teach him a lesson about hospitality, she walked out of his reach, pulled down her tights and laid a little turd on the edge of his plate.

Hibrane Jesus

It was a cool and cloudy afternoon of Christmas Eve, which was what had sparked this line of thought for Thuy. "They have a version of Christ in both branes," she continued. "We have Jesus on the Cross, they have James on the Triangle. Close enough. Do you think there's two Onds, two Chus, and two Thuys?"

Gladax's Addler

She held up a nasty looking implement resembling a blood-stained hatpin.

Gladax leaned closer, holding up the long, brown-spotted pin and humming to herself.

How Teleportation Works

“How does teleportation work?” she asked Ond.

“Teleportation works by getting mixed up about where you really are,” said Ond. “In quantum computation, we use the word ‘coherent’ to mean mixed up. The usage is opposite of what you might expect. It’s like if you’re sufficiently coherent you can’t talk at all. If you’re sufficiently coherent your whole body folds up into a single wave function. As if you were this one exceedingly complex electron.”

“I’m not an electron,” said Chu. “I’m a Higgs particle.” He giggled and made pig noises. “*Oink, squeal, wheenk.*”

“Alright,” said Ond. “And I’m a quark. Thuy can be the electron.”

“I’m dark matter,” said Thuy, getting into the silly jabberwocky game. “So what’s that ocean?”

How the Harp Ruins Telepathy

Telepathy had just become as impossible as reading a book through wind-ruffled water.

Extra Bits Concerning Jayjay’s Sixty-Year Dream

So what the Big Pig did was to run a simulation of Jayjay in a virtual world, complete with the requisite third-order mental model of Jayjay watching himself reacting to the simulated events.

Less skilled people got along selling software services to beezie agents: performing tasks like pattern recognition and predicting other people’s behaviors. You could even pick up some bucks by making your life’s memories available for repurposing: anecdotes, emotions, visions and the sounds. But some people were having trouble making any money at all.

The beezie agents were perpetually engaged in intricate hacking maneuvers to take over more nants, as at the bottom-line level, crunch and mem were based on the processors and solar cells of the nanomachines that Earth had shattered into.

For this he was, incredibly for a high-school drop-out, awarded a Nobel Prize—at this point people were still keeping up many of the old Earth traditions.

Luty Turns into Rudy

His face rippled like a puddle in the wind, then settled down to a more handsome version: his glasses symmetrical and horn-rimmed; his hair clean and cropped; his lips clear of balm and chapped skin; his wrinkles gone; his skin pink instead of gray.

Reading Notes

Vertosick's The Genius Within

Jan 24, 2006. I've been off for a week in the Sierras with Sylvia, XC-skiing every day. Not writing much; this is a real vacation. But now as the week draws to a close, I'll type up some remarks about a book I've been reading.

I've been reading this biology book that my friend John Walker likes: Frank T. Vertosick, Jr., *The Genius Within: Discovering the Intelligence of Every Living Thing* (Harcourt, 2002). Walker wanted me to read it while I was writing my *Lifebox* tome, but when this reccy came in, I was fed up with doing research. Now I finally have time and energy to tackle it.

The guy is a tendentious, autodictat neurosurgeon, he calls himself a "fringe thinker." He pushes his ideas very hard and when he writes about my particular areas of expertise I can see that he's misusing some words a bit, e.g. "nonlinearity" and "emergence." But by the middle of the book he'd won me over. Walker was right; *Lifebox* could have used some of these ideas. Oh well, I'll use my new insights somewhere else.

Vertosick argues that the following are intelligent systems on a par with a human brain:

- (1) the enzyme-mediated network of chemical reactions in a cell,
- (2) the hyper-evolving race of bacteria,
- (3) the vertebrate immune system.

In each case the system has a kind of long-term memory.

- (1) the current attractor basins of the individual reactions possible in the cell (that is to say, the kinds of tissue forms that a given cell is capable of becoming),
- (2) the gene pool of the bacteria,
- (3) the antibody-forming white blood cells (leucocytes), which in fact have individually differing DNA, the bodies leucocytes acting as a library of antibodies capable of recognizing and locking onto antigens.

Note that the notion of long-term memory being important for intelligence is one of Walker's hobby-horses, and is a concept that I've in fact worked into my *Postsingular* novel proposal.

What if Earth's system of clouds had long-term memory? Would they begin acting differently over time? Or brooks? I have a long-term memory, as does the human race, and we don't actually change our behavior all that much. I type. My fingers moving around are as patterned-but-unpredictable as the waving of a pennant in the breeze. But close observation reveals that my finger-twitching in 2006 is rather different from what it was in 1986. Certain strings have different frequencies (my vocab has changed).

Looking at a video of a tree branch waving in the wind, you'd be hard put, in our world, to say when the video was made. Not so if you look at a video of a person talking. Or at the genome of a bacterium.

With a memory, history has a direction.

When I mentioned to Sylvia that fire, air, and water were slated to acquire memories in *Postsingular*, she said, "That's sad." Meaning that one doesn't like to

imagine Nature changing. Particularly not if it means becoming more like a computer. So maybe in Vol II or the last chapter, I ought to undo that development? Or at least face the issue of it being a downer.

No, I really have to let it into my heart and make it somehow be a good thing. Panpsychism doesn't necessarily mean the world is more like a computer. But, I guess it does make the world less care-free.

Vertosick advocates a notion of "fluid networks," where he's using "network" in the same sense as its used in "neural network." He wants to argue that, for instance, a cell full of interacting protein reactions is akin to a neural net: richly computing and trainable.

Recall that in a traditional kind of neural net (like the human brain), we have neurons (brain cells) connected by links (axons in the brain) and each link has a weight attached to it (the quality of the synapse where a given output axon meets the input dendrite of another brain cell). The artificial computer-based neural nets that we use for tasks like face recognition are set up in a similar way: computer neurons, unidirectional links between them, and weights upon the links.

Party. When speaking of his fluid neural networks, Vertosick discusses the analogy of a party: the guests are the neurons, and the links are their encounters with each other, and the weights on the links represent how strongly a given person wants to talk with another.

This particular fluid-network paradigm is the same as an agent-based simulation proposed by Kee Dewdney in one of his "Computer Recreations" columns some fifteen years ago. The agents are scattered on a grid of cells and they measure their mutual distances by using, let us say, the taxi-cab metric (the distance between A and B is the sum of the horizontal distance and the vertical distance). Two agents cannot occupy the same cell, so the distance between two agents is always at least one. Each agent assigns a positive or negative preference weight to each of the other agents — call this list of numbers a given agent's preference vector. We define the happiness contribution that a given agent A gets from another agent B to be the preference weight that A assigns to B, divided by the distance between A and B. Being close to someone you admire provides a large positive happiness contribution, being close to someone you detest gives a negative happiness contribution. An agent's happiness in a given cell at a given time is the sum of the happiness contributions that it would feel in this cell from the other agents. At each update of the parallel simulation, each agent computes the happiness value to be found in each of the potential cells in its immediate three-by-three neighborhood, and it moves to the cell that makes it happiest. (To prevent conflicts, let's suppose that if, on a given update cycle, two or more agents want to move to the same cell, they don't move on that particular cycle at all.)

Over the years, I had my CS students program and run party simulations several times. As I recall, all of the examples I saw turned out to be class one or class two computations in which the positions converged to something like a final fixed state, although occasionally a few of the agents might regularly oscillate back and forth between a couple of positions. These final states are, in other words, point attractors or periodic attractors.

The party simulation can be viewed as converting position inputs into attractor outputs. That is, as an input you can specify some or all of the agents' positions. and then the output is the fixed or periodic attractor state that the system settles into. The

point that's important to Vertosick is that if the weights in the agents' preference vectors happen to be properly tuned, it may be that the system encodes a *useful* map between inputs and outputs. Indeed, Vertosick argues that evolution has set up our cells and our immune systems to encode useful maps.

Gnarly Party. Let me mention a further line of thought. In and of itself, a party simulation seems unable to produce gnarly class three or class four computation — which is what I consider to be the hallmark of intelligence.

Would it be at all possible to get class four unpredictable behaviors out of a party simulation style computation? One way would be if the agents were allowed to perturb their preference vectors, that could keep the thing from settling down. Indeed, Vertosick says, "Living, intelligent networks modify their connection weights in response to external training." (p. 168) And he makes the point that our brain's neural network's weights are in fact changing as time goes on.

How might we make the party simulation come alive? Suppose that every so often (and certainly whenever the system has entered a loop or a fixed state) we have each agent alter its preference vector. What might be a nice deterministic rule for an agent A to use in changing its preference vector? Suppose B is another agent. Suppose that A compares A's happiness to B's happiness. If B's happiness is greater than A's, then A increases the weight it assigns to B; if B's happiness is less than A's, then A decreases the weight it assigns to B. This is a match for what happens the world, by the way: we want to be around the winners; we want to avoid the losers. Note, by the way, that this schema for altering the preference vectors guarantees that the happiest agent K will become less happy, as K will be downgrading its weights for the less happy petitioners clustered around it, making them more odious, making K's total happiness less.

Note that the party-simulation-with-periodic-preference-vector-alteration is a slightly more complicated computation, but is equally deterministic. But this one is probably class four. I guess cell-plus-evolution or immune-system-plus-infections are also class four, although here we don't have deterministic computations: there's a random external input from evolution or from infections.

Cell. Vertosick wants to see the individual proteins as the neurons, and their occasional chance encounters (possibly leading to reactions) as the links, and then here the weights placed on neuron-to-neuron connections is the relative availability of relevant catalyzing enzymes within the cytoplasm. Alternately, he also suggests we consider a higher-level view under which the reactions themselves are the neurons, and their connecting links correspond to one reaction's outputs feeding another reaction's inputs, and the link weights could be once again the relative concentration of catalysts that promote a certain protein being used in a given reaction.

I don't think Vertosick wants to say that a cell learns things. What we're looking at here is, rather, an explanation for cell differentiation. Keep in mind that each of your cells (other than the leucocytes) has the same DNA: skin, brain, muscle, bone. The cells in the differing tissues have each settled into a different attractor. What makes the system so "smart" is that the interaction weights between a cell's component reactions are tuned just so that the cell encodes a sensible map from environmental inputs into the outputs that represent the cell having settled into one or another tissue type.

Immune system. He also wants to see the immune system's "neurons" as the leucocytes, but here the analogy is a bit weaker as, so far as we know, the leucocytes don't directly interact that much — unless, as Vertosick speculates, there are "hidden

leucocytes” that do in fact interact with other leucocytes, e.g. by using one leucocyte’s activation as a trigger to activate a similar one.

Certainly the immune system learns in the sense that antibodies are formed to countervail against infecting antigens. But I don’t think the network analogy holds up too well for this case.

Randall’s Warped Passages

Lisa Randall, *Warped Passages* (HarperCollins, New York 2005).

[Note that this was my blog entry (with pictures) for Feb 1, 2006.]

*The higher space in between branes is called the *bulk*.

*In the Standard Model, particles come in three increasingly massive and increasingly rare generations or flavors, shown in the table below with twelve particles. Collectively the particles in the table are all known as fermions.

Each column contains particles with the same charge, sometimes spoken of as different flavors of the particle type. Only the quarks are subject to the strong force by the way.

	Quarks		Leptons	
Charge	+ 2/3	-1/3	0	-1
First Gen	up	down	electron neutrino	electron
Second Gen	charm	strange	muon neutrino	muon
Third Gen	top	bottom	tau neutrino	tau

Fermions

To make things worse, all the fermions except the neutrinos come in left and right handed forms — the neutrinos are only left-handed. So that’s 21 particles. Only the left-handed particles experience the weak force. The weak force can interchange the paired left-handed fermions .

And, for each fermion, there’s an antiparticle or antimatter form. So that’s 42 particles. And, each quark or antiquark comes in three colors: red, green or blue for the quarks, and antired, antigreen, and antiblue for the antiquarks. So since we already had 24 kinds of quarks (6 times two handednesses, doubled for matter/antimatter), we now really have three times that many quarks, making 90 kinds of fermions in all.

By the way, particles made from quarks (and their force-mediating gluons) are known as [hadrons](#), thus the name of the planned “Large Hardon Supercollider,” whoops, “Large Hadron Supercollider.” The most familiar hadrons are in fact *baryons*, which are the hadrons made of three quarks, e.g. the proton made of two up quarks and a down quark, and e.g. the neutron made of one up quark and two down quarks. *Mesons* are made of one quark and one anti-quark. Examples of mesons are the pions (or pi mesons) and the K mesons.

And there are particles to mediate the force exchanges. The first three rows are collectively known as gauge bosons.

Electromagnetic	photon
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Weak	weak gauge bosons: W ⁺ , W ⁻ , and Z
Strong	gluons: eight forms consisting of eight of the nine possible color/anticolor combos.
Gravity	graviton

Table 7: Bosons

So combining fermions and the, I think, 13 bosons, it looks like we have 103 particles.

As if this still weren't screwed up enough, there's a theory called supersymmetry under which all the quarks and leptons in the Standard Models are paired with bosonic superpartners. In this jabberwocky world we get these kinds of matches.

particle	superpartner
electron	selectron
quark	squark
top quark	stop squark
photon	photino
W boson	wino
Z boson	zion
gluon	gluino
graviton	gravitino

Table 8: Superpartners

So if everything has a partner, we're looking at 206 particles now. Oh, and you have to feed the Piggies as well. I mean Higgs. What a mess. Do these people know what they're talking about *at all*? If today's particle physics was a computer program that a student had turned in to me, I'd tell him or her to throw out the code, make a clean class diagram and start over.

"In fact, because of the uncertainty principle, particles will do whatever they can get away with for as long as they can." p. 226

Yeah, on top of everything else, there's supposed to be a field called the Higgs field which carries with it a very massive particle called the Piggy Particle, *stop that*, I mean the Higgs particle. Well, maybe there's two Higgs fields and a Higgs₁ and a Higgs₂ particle. Oh, and there better be a Higgs boson as well to mediate forces among the Higgs in the pen. And maybe the Higgs is associated with a very massive GUT particle of the "GUT scale mass, about one million billion GeV." In symbols, that's 10¹⁵ GeV.

GUT stands for Grand Unified Theory, and the GUT mass is a mass/energy level at which the Weak, Strong, and Electromagnetic forces might melt together. Prof. Randall talks about the GUT scale mass a lot, by the way, but never says in plain words how heavy it is. Turns out a GeV (gigaelectronvolt) is about [the same mass/energy](#) as a proton or neutron at rest (the two are very close in mass). Now, the

mass of proton is very roughly 2×10^{-27} kg. So if we multiply 10^{15} times that, we get the fabulous beery blow-out let-it-all-hang-out GUT mass to be 2×10^{-12} kg, or 2 billionths of a gram. Two nanograms, and that's heavy on the particle scale, some guys actually made a [micrometer-scale silicon device](#) that weighed in the nanogram range.

There's an even heavier mass/energy level called the Planck energy, which is where gravity fuses with the other three forces and space and time melt like Dali watches. This is 10^{19} GeV, ten thousand times the size of the GUT scale mass/energy, so that would be 20 micrograms. Note that Swiss chemist Albert Hofmann's initial historic dose of [LSD](#) was 250 micrograms. So the Planck mass is about the tenth of a hit of acid. That's all it takes to make space and time turn into wacky taffy.

There are some vexing issues in particle theory these days, although I don't quite remember what they are. Some thing about supersymmetry breaking, and something about why it is that the GUT mass and the Planck mass are so different. The difference has to do with gravity being so much weaker a force than the other three. Physics would look simpler if all four kinds of forces were about the same strength. Flavor-symmetry breaking is another problem, whatever that means. Not *my* problem!

One attempt to explain the proliferation of particles involves using strings made of curled hyperspace. The strings have a bunch of extra dimensions that the physicists waste by curling up or compactifying into tiny curls. Maybe 11 or 26 dimensions, counting the four of spacetime.

In what's known as superstring theory, you can curl up the extra dimensions in different ways, and each method makes what's called a Calabi-Yau manifold. The popular new theory is M-theory, an 11-dimensional theory which includes superstring theory and 11-dimensional supergravity. M might stand for magic, mystery, or membrane (or brane for short), even the inventor Ed Witten claims he isn't sure. It might be able to get away with only ten dimensions.

The tension of the strings or branes determines their mass and energy. But there's no obvious bound to the tension, so we end up with more and more generations of fermions.

The vacuum energy of our cosmos is also known as the [dark energy](#) or the cosmological constant. It's supposed to account for about 70% of the mass of the universe. And nobody knows what it is.

It could be that there exist two or more parallel branes, or sheets of spacetime with their concomitant rolled-up Calabi-Yau string dimensions. Our world could be the result of two tightly linked branes separated perhaps only by a tiny distance expressible in terms of the Plank length of 10^{-35} meters. The higher-dimensional space in between the branes is called, once again, the bulk.

What links the branes? Supposedly the graviton can move through the bulk between the two.

Bosons and fermions might be strings that stretch from one brane to the other, so-called open strings. The gravitons, on the other hand, could be closed strings, wrapped around in loops like bagels. That's why gravitons can move through the bulk

on their own, unlike all the other particles, which are like vibrating clotheslines across the bulk alley separating the neighboring brane buildings.

Lisa Randall is interested in braneworlds, that is, arrangements of branes that make some sense out of the current morass of particle physics.

Her first idea was to sequester all those weird superpartner particles off on a brane of their own, but very close to ours, perhaps only a few hundred Planck lengths off. She works with people with odd names like Graham Kribs, Zacharia Chacko, and Markus Luty.

She speculates that if the extra dimensions of string theory exist there should be still more particles called KK (for Kaluza-Klein) particles. A KK particle might consist, say of a closed string that's wrapped around one of those extra dimensions like a rubber band on a toilet-paper roll.

Her favorite braneworld uses what she calls a warped dimension. As before we have our brane and another brane, which she calls, respectively, the Weakbrane and the Gravitybrane. They're separated by a fourth spatial dimension or, if you prefer to put it another way, by a fifth dimension outside the four of spacetime. I'll just think of it as the good old SFictional fourth dimension of A Square.

The gravitons spend most of their time on the Gravitybrane and only occasionally turn up on the Weakbrane, which is why gravity is so weak in our world. The fermions are, as usual, strings stretching between the two branes. The brane are quite close together again, only a few hundred multiples of the Planck length.

The warp factor has to do with a shrinking field that pervades the bulk space between the Weakbrane and the Gravitybrane: "objects getting bigger and lighter as you move away from the Gravitybrane and approach the Weakbrane," p. 297. In effect, the Weakbrane is an exponentially stretched-out copy of the Gravitybrane, which is why gravity feels so weak in the Weakbrane. Here's her Figure 82, p. 399.

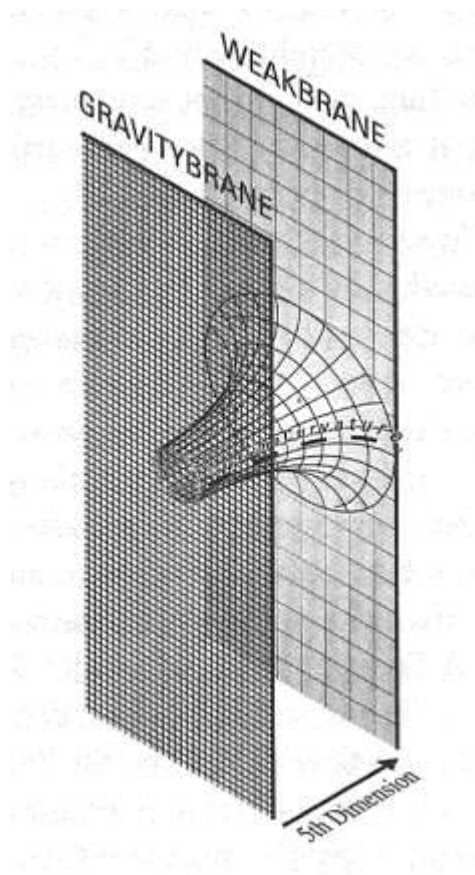


Figure 22: Two Branes

In my novel, I'm planning to speak of our home Weakbrane as the Lobrane and of that other parallel other Gravitybrane universe as the Hibrane.

It seems to me that that if a being travels through the bulk from the otherworldly Hibrane or Gravitybrane to our home Weakbrane or Lobrane, the creature will be very large and tenuous when they show up, with their path matching that of the trumpet-shape in the picture. They show up like a gauzy angel. Conversely if a being travels from our Lobrane or Weakbrane to the Hibrane or Gravitybrane, they arrive in a compact dense form: like a goblin.

From a chapter called "The Warped Annotated 'Alice'". "The [Cheshire Fat] Cat was keeping tabs on everything in the city, which was greatly facilitated by his skill at catching people unawares — especially surprising in light of the Cat's enormous bulk. The cat loved to explain that he owed this skill to his ability to disappear into the bulk, but no one ever understood what he meant." p. 415

The Cheshire Fat Cat is the graviton. But where's that squealing Pigge particle? Wheenk, wheenk, wheenk.

Obscure picky comment: By the way, although I think Lisa Randall would agree with my notion of a person growing as they move from Gravitybrane to Weakbrane and shrinking when doing the opposite motion (judging from pp. 415-416), I think the caption to her Figure 85 (which is not the figure shown here but a

different one in the book) must have mistakenly exchanged the words “Weakbrane” and “Gravitybrane”.) Well, in any case, I’m gonna warp it like I said.

Lisa Randall also suggests that we can do away with the Gravitybrane and simply have an infinite higher-dimensional bulk space with a certain kind of probability distribution for gravitons.

As an SF writer, it’s always gotten my goat how physicists help themselves to heaping platefuls of our long-sought after higher dimensions, and then can think of nothing better to do with them than curl them up in to Planck-length invisibility. I appreciate Lisa’s push to give us some big higher dimensions.

She also raises the possibility that space’s dimensionality might vary from location to location, and in closing mentions that, hey, we don’t really know what we even mean by a dimension.

I sent a link to my blog entry to Lisa Randall, calling her “Lisa” in my email, and she wrote back a friendly although cautiously formal note on Feb 5, 2006:

“Hi

That’s rather good. You seemed to really get it right.

The one comment I’ll make is that the warp factor is enormous because it’s an exponential. An exponential of a number like 30 is in fact quite big-

But you seemed to get most of the physics right.

Rewarding for me to know one can understand everything. Thanks for forwarding.

Best, Prof Randall”

Phil Dick Bio

[I made this into a blog entry, on Feb 6, 2006.

<http://www.rudyruker.com/blog/index.php?m=02&y=06&d=06>]

I just finished reading a gripping although somewhat depressing biography of one of my literary heroes, recently reissued: *Divine Invasions: A Life of Philip K. Dick* (Carroll and Graf, 1989, 2005 New York), by Lawrence Sutin. A page-turner of a book, almost like a novel.

The depressing aspect has to do with how many character flaws and psychic disabilities Phil had. But the book has some nice quotes from Phil about his writing style. I’ll page-number the quotes according to where they appear in the 2005 edition of *Divine Invasions*. I’ll start with two quotes about what I’ve come to call transrealism.

“I want to write about the people I love and put them into a fictional world spun out of my own mind, not the world we actually have, because the world we actually have does not meet my standards.” p. 4.

“And I always think, well, the ultimate surrealism ... is to take somebody that you knew, whose life-time ambition was to sell the largest television set that the store carried, and put him in a future utopia or dystopia, and pit him against this dystopia, or place him in a position of power.” p. 54.

I think I’m becoming a bit less transreal as the years wear on. As a writer’s craft grows (and his or her friends get older and less interesting), he or she perforce

moves beyond simple character-to-friend identifications. It becomes more fragmented, you piece together fake people from shards.

In my current novel *Postsingular* I'm been experimenting with Phil's multiple third-person viewpoint technique, where he switches, sometimes on the same page, from seeing through one person's eyes to another's. Speaking of *The Man in the High Castle*, biographer Lawrence Sutin puts it this way, "The third-person voice is used throughout, but in an intimate, hovering matter, with characters shifted quickly into and out of prominence." In a letter quoted in the bio, Phil says where picked up this technique.

"In the forties I got into novels written around that time by students at the French Department of Tokyo University; these students had studied the French realistic novels (which I, too, had read) and the Japanese students redesigned the slice-of-life structure to produce a compact, more integrated form ... When I went to write *The Man In The High Castle*] I asked myself, How would this novel have been written --- with what structure --- if Japan had won the war? Obviously, using the multiple viewpoint structure of those students..." p. 114.

Note that, if done ineptly, this technique leads to what's denigratingly called "wandering viewpoint" --- a common flaw in the work of tyro writers. But Dick can make it work as does, for that matter, Thomas Pynchon. I'm a little scared of the technique, and usually use a chapter break or a *** section break to separate the switch between active character-views.

Another artistic trick of Phil's that interests me is that you should fold together two plots into one book to have a really lively novel, a book that's what I call unpredictable, gnarly, and class four. I read the following injunction of Phil's years ago, and I often think of it when I'm planning a book. To make a book *cook*, you want two plots, not one.

"Every novel of mine is at least two novels superimposed. This is the origin, this is why they are full of loose ends, but also, it is impossible to predict the outcome, since there is no linear plot as such. It is two novels into a sort of 3-D novel." p. 256

Phil was into the notion of having someone's mind permeate all of reality; he does this in *Ubik* and in *The Three Stigmata of Palmer Eldritch*.

"So Runciter and *Ubik* equals Palmer Eldritch and Chew-Z. We have a human being transformed into a deity which is ubiquitous ... Salvific information penetrating through the 'walls' of our world by an entity with personality representing a life- and reality-supporting quasi-living force." p. 154.

You might call it monistic panpsychism. I'm planning for a more pluralistic panpsychism in *Postsingular*. Although I guess there could be the underling cosmic minds of the three forces that I might call the Big Pig, the Crooked Beetle, and Gaia.

The biography has some more background about the endlessly-discussed November, 1971, break-in at the house in San Rafael where Phil was living with speed-freaks. It could have been that one of Phil's slushed housemates ripped him off. But he enjoyed spinning out a lot of alternate theories. My favorite: "Had certain ideas in his SF come too close to eliciting interest in his files? Also a disorientation drug (code name '*mello jello*') had been stolen from the army, which was looking for

leads to recover it.” p. 184. I love that drug name: Mello Jello. Right up there with merge, snap, quaak, sudocoke, ZZ-74, Substance D, Chew-Z and Can-D.

Phil transmuted the whole San Rafael experience into *A Scanner Darkly*, my all-time favorite of his books. I think it’s maybe the funniest book I’ve ever read, right up there with Burroughs’s *Yage Letters*. But it’s also tragic, which is what makes such a masterwork. It’s transreal to the max, although Phil in the afterword says, “I myself, I am not a character in the novel; I am the novel. So, though, was our entire nation at this time.” p. 201.

As for the pink light stuff after *Scanner Darkly*, I’ve never enjoyed that very much. To me, the novels begin to feel a little sober-sided, a little tendentious, and less multileveled and witty than before. It could have been that Phil was at some level putting us on. In one of his letters he imagines, not without a certain grim satisfaction, the following reaction to *Valis*:

“Too drugs, saw God. BFD.” p. 260.

With “BFD” of course standing for “big f*cking deal”. Like William Burroughs, Phil Dick had a pitch-perfect ear for street slang so real-sounding that it extrapolates well into the future. Hipsters are eternally still trying to be as far-out as Bill’s junkies and Phil’s heads.

All biographies end sadly. The tears of things. The human condition. The dark beauty of the death sentence we labor under.

Synchronistically enough, the day after I finished reading Phil’s bio, my SF-writer friend Michael Bishop sent me a copy of his book *The Secret Ascension: Philip K. Dick is Dead, Alas* (Tor Books, 1989) --- which starts up with Phil being felled by a stroke at age 53 ... and with a new version of him leaving his body and coming to hang out in Bishop’s home town in Georgia. A lot of SF writers ended up writing fictional things about Phil, so powerful was his influence.

In 1991, in the wake of getting the Philip K. Dick award for *Software*, and again for *Wetware*, I wrote an essay “Haunted by Phil Dick”, alleging that I’d twice encountered his ghost. In this piece I was trying to sound a little badder and wacker than I really am. Phil knew all about striking a pose in his interviews. I was doing a Phil.



Figure 23: The “High Castle” Where I Write

Looking over Phil’s colorful, tumultuous bio, it’s hard not to feel like something of a cautious bourgeois. I do prefer having a relatively stable life; I think it gives me more energy, and better control over my work. But something also whispers, “So far, and no further? Raise the stakes. Push it like Phil.”

He was a Romantic artist, a doomed poet, a master stylist, an SF hero.
I love you, Phil.

Seth Lloyd, Programming the Universe

Subtitle: A Quantum Computer Scientist Takes On the Cosmos (Knopf, 2006).

[url=<http://www-me.mit.edu/people/personal/slloyd.htm>]Seth Lloyd[url] is a 46 year old professor at MIT, specializing in quantum computation and quantum information theory. He’s best-known to the public for two articles in the *Scientific American* about quantum computing, most recently, “Black Hole Computers” in November 2004, co-written with Y. J. Ng. See also his more technical “Computational Capacity of the Universe,” [url=<http://arxiv.org/abs/quant-ph/0110141>] online[url]. Another link: Kevin Kelly interviews Lloyd in the March, 2006, [url=<http://www.wired.com/wired/archive/14.03/play.html?pg=4>]Wired[url].

He starts the new book, *Programming the Universe*, like this: “The universe is a quantum computer. ... What does the universe compute? It computes itself.” [p. 3]

Rather than thinking in terms of matter holding information in terms of impossible-to-precisely-measure analog numbers like position or velocity, Lloyd suggests we think in terms of crisp quantum values that atoms can have; like “spin up

vs. spin down” or “ground state vs. excited to discrete level so-and-so.” In this view, each particle in a physical system codes a few bits, and when the particles interact, we get a logical operation between the bits. Whenever particles bump each other, its in effect a quantum logic gate.

He has some good material about superposed states; the weird thing about quantum information is that a quantum bit or qubit can be in a superposed stated of partly 0 and partly 1.

Lloyd keeps his eye on the universe though. He suggests there is only one possible state for the start of the universe; it starts out with no bits of info at all. And the universe computes itself from there. Why, he wants to know, is the universe relatively complex looking without being boringly orderly (too cold) or totally random (too hot)?

Lloyd draws on the analogy of monkeys who are pounding away not on typewriters, but on keyboards that input code to a computer. The laws of nature are the computer. And the monkeys are inputting possible programs. Now, as it happens, lots of short programs generate nice-looking complex patterns. These are what Wolfram calls the Class 4 computations; the ones that I call gnarly computations. Water, fire, clouds, trees, these are all examples of natural computations that, given any of a wide range of inputs, will generate much the same kinds of patterns.

In Lloyd’s words, “Many beautiful and intricate mathematical patterns — regular geometric shapes, fractal patterns, the laws of quantum mechanics, elementary particles, the laws of chemistry — can be produced by short computer programs. Believe it or not a [programming] monkey has a good shot at producing everything we see.” [p. 184]

Lloyd has a nice description of Chaitin’s algorithmic complexity and Bennett’s logical depth, something I wrote about myself in *Mind Tools*. Bennett is amazing, he’s come up with so many important ideas, and Chaitin’s no slouch either. Lloyd uses Charles Bennett’s term “algorithmically probable” to refer to patterns that have a short program, and thus a high likelihood of resulting from randomly picked little programs.

He then says, “For the computational explanation of complexity to work, two ingredients are necessary: (a) a computer, and (b) monkeys. The laws of quantum mechanics themselves provide our computer.” [p. 185]

Actually, as I have doubts about quantum mechanics, I’d say that maybe we can just say the “laws of logic,” rather than “laws of quantum mechanics.”

The really debatable issue is what the monkeys are.

Stephen Wolfram would argue that the universe is ultimately deterministic; think of his beloved cone-shell type cellular automaton rule 30, which starts with a single bit, and spews out endlessly many rows of random-looking scuzz. So the random-looking seeds that feed into the universe’s computation aren’t in fact really random, they’re pseudorandom sequences generated by a lower level randomizing computation. In this view, there is only one possible universe.

I want to say, “Mektoub. It is written,” but that’s not quite accurate, as that phrase suggests that some divinity wrote out the history of the universe before it happened. It’s more that “It is programmed.” The underlying pseudorandomizer is a deterministic rule like CA Rule 30, and it feeds inputs into the universal computer that then generates the complex lovely patterns of the world.

Now, Lloyd, being a quantum mechanic, prefers to say that the “monkeys” are quantum fluctuations. One of the problems in this view is that it we aren’t

philosophically satisfied with the notion of completely random physical events. We like to see a reason. The way quantum mechanics gets out of this is to say that since there's no reason for a particular turn of events, it must be that all possible turns of events happen.

This is the multiversal view. Since there's no reason that, say, bit 0 rather than bit 1 should pop up as the fluctuation found at a given instant, Lloyd would suppose that there are two universes, with 0 on the one hand and 1 on the other hand. Unlike David Deutsch, however, Lloyd isn't interested in pushing the alternate universes as being truly real.

Lloyd sidesteps a move that I find intellectually unsatisfying. That is, he avoids falling back on the anthropic principle. If you suppose that all possible universes exist, then the question arises: why do we happen to be in a universe where everything is just right for humans to have come into existence? The anthropic principle says, well, the world is the way it is because if it weren't, then we wouldn't be here.

Lloyd seems to say, rather, that planets and trees and people are algorithmically probable. Things like us are fairly likely to occur in any gnarly class four computation, and all the universes, being universal computations, are potentially gnarly, and in fact a large number of random seeds will produce gnarly.

But, being a quantum mechanic, Lloyd doesn't give enough consideration to the ability of deterministic computations to generate what Wolfram calls "intrinsic randomness," indeed, on p. 50 he writes, "Without the laws of quantum mechanics, the universe would still be featureless and bare." That's not true. If you look, for instance, at any computer simulation of a physical system, you see gnarly, but these simulations don't in fact use quantum mechanics as a randomizer. They simply use deterministic pseudorandomizers to get their "monkey" variations to feed into the simulated physics. We really don't need true randomness. Pseudorandomness, that is, unpredictable computation, is enough. There's no absolute necessity to rush headlong into quantum mechanics.

[As a side excursion, Lloyd has a nice discussion of Maxwell's demon and of entropy. He speaks of useful clean information as free energy and unusable messy hidden information as entropy, an interesting way to break the two up. He says a little about the Einstein-Podolsky-Rosen paradox, but I was disappointed that he didn't bring in what I consider to be a very neat solution by David Deutsch.]

Getting back to the debate between classical and quantum realities, Lloyd argues that the physical world can't be well-simulated on digital classical computers because if you take a quantum system, then the system's variables are generally in superposed states, so that if you have a system of, say, 300 atoms, and each atom's spin is a qubit (quantum bit) that's a superposed mixture of up and down, then to properly simulate what happens digitally, you really need to simulate all possible 2^{300} pure states that the system could be in, and this is an impractically large number.

Therefore, says Lloyd, digital classical computers can't simulate physics.

We could of course turn the argument around and say that if we believe that the universe results from a digital classical computation, then it must be that quantum mechanics is mistaken in thinking that systems really are in superposed states, for otherwise there would be too much work for the real ongoing digital classical cosmic computation which we can "plainly see" is happening all around us without slowing down.

In other words, I feel that Lloyd points out an inconsistency between the two beliefs, but he hasn't proved that his version is correct.

This said, it's nice to read about how nicely quantum computers can simulate physical systems. And I'm tempted to lighten up and let the quantum in to my heart. I'll be doing that provisionally in any case in *Postsingular* which uses quantum computers. There's no market in being a reactionary sorehead after all.

Coming back to Lloyd's main point, the idea is "In the computational universe ... the innate information-processing power of the universe systematically gives rise to all possible types of order, simple and complex." Here, again, I'd stress that there's no need for quantum computation per se to reach this conclusion. Because the laws of nature are a class 4 or gnarly computation they necessarily generate interesting structures that lie at the interface between on the one hand the Charybdis of predictable repetition and, on the other hand, the Scylla of random uninteresting scuzz.

By the way, I seem to recall that Charybdis was the sullen ocean-swallowing personification of a whirlpool near the Straits of Gibraltar and Scylla was the many-headed snapping personification of a shoal of sharp rocks near the whirlpool.

Charybdis, in that she pulls her inputs always to a single drowned point at the center of a vortex, is a good image of "too cold" computations that squeeze you down to constancy or periodicity. Scylla, in her savage punching-holes-in-the-hull aspect, is a good image of a "too hot" computation that tears everything to shreds.

Lloyd suggests what looks like a promising method for deriving general relativity from a quantum computational view of the reality. But perhaps its not so different from Wolfram's more classical notion of reality as a network rewriting system that produces curved space itself.

[On p. 202, he makes a nice point, that is, since catalytic chemical reactions can carry out COPY, NOT and the AND operations, we know that chemistry is computation universal. I wish I'd thought of saying that in my [\[url=http://www.rudyruker.com/lifebox\]](http://www.rudyruker.com/lifebox) Lifebox[/url] tome!]

Bottom line: the universe computes itself, and there's nothing particularly surprising about the level of complexity that we find around us, as this is typical for computations.

I'm science-fictionally intrigued with the idea of the big computation making up a kind of mind, and Lloyd also speaks to this: "Some of that information processing, like digital computation can resemble thought. But the vast majority of the information processing in the universe lies in the collision of atoms, in the slight motions of matter and light. Compared with what is normally called thought, such universal 'thoughts' are humble: they consist of elementary particles just minding their own business." [p. 211]

But in *Postsingular*[/i] I'm gonna find a way to wake objects up...

The Lazy Man's Guide to Enlightenment

Thaddeus Golas (1971, Seed Center)

The Heavy Eye talks to Quang, it wants to go to Loblane. I think of a fable at the end of *The Lazy Man's Guide To Enlightenment*, to the effect that the jewel of enlightenment must be given away. It's on p. 78, and it goes like this (abbreviated).

A King had a magnificent jewel. A thief stole the jewel and ran to hide in the forest. The thief stared with joy into his jewel and he saw the face of the King.

"I have come to thank you," said the King. "You have released me from my attachment to Earth. I thought I was freed when I acquired the jewel, but then I learned that I would be released only when I passed it on, with a pure heart, to another. Each day of my life I polished that stone until ... the jewel became so beautiful that you stole it, and I ... am released. The jewel you hold is Understanding ... It's beauty comes of the consciousness that others have of it. Honor that which gives it beauty."

Yage Letters Redux

William Burroughs and Allen Ginsberg, edited by Oliver Harris, (City Lights 4th edition, 2006).

[From a June 19, 2006 [blog entry](#).]

William Burroughs's *Junkie* came out from Ace Books in 1953. When I later went to publish my first novel, *White Light*, I sent it to Ace partly because I knew they'd published Burroughs.

Junkie book was bound in a 69-style double edition with a "balancing" book, *Narcotic Agent*. My book dealer friend Greg Gibson gave me this rare edition a few years back. I actually removed the book from its plastic bag to read *Narcotic Agent*, told Greg, "It wasn't all that bad," and he's like "You *touched* the book? You took it out of its *bag*?"

Be that as it may, *Junkie* has an appendix with a description of various drugs Burroughs had taken at that time, and the prophetic closing sentence is "Yage may be the final fix."

In 1963, City Lights published *The Yage Letters*. I first read the book in 1965, when I was a sophomore in college. It struck me then as one of the funniest books I'd ever read — Burroughs's jaded laconic descriptions of people and scenes are priceless.

Also the book has Allen Ginsberg's incredibly heavy letter about his yage trip in Peru seven years later, June 10, 1960. For a while he's filled with this intense fear of death, a sense that he's dying right now, "...as if in rehearsal of Last Minute Death my head rolling back and forth on the blanket and finally settling in last position of stillness and hopeless resignation to God knows what Fate..."

Some of you will understand that this is in some sense funny. I lifted the vision for a scene where my character Sta Hi Mooney is having an acid trip on the beach in my novel *Software* and he thinks he's dying. "A film came to mind, a film of someone dying on a beach. His head rolled slowly to one side. And then he was still. *Real death*. Slowly to one side. *Last motion*."

There's a nice new (fourth) edition of the book called *The Yage Letters Redux*. I bought it at City Lights last week with Ferlinghetti himself behind the counter. I introduced myself and said I'd been thinking of him on Bixby Bridge coming back from [Big Sur](#) last week. He said he still has his cabin there, was going down for the weekend, and still doesn't have electricity.

The new Yage editor Oliver Harris(an American Lit prof in England) has just published a fascinating essay that overlaps with his new introduction. The essay is in a literary magazine called Postmodern Culture; you can find "Not Burroughs' Final

Fix: Materializing *The Yage Letters*" [online](#). I gather that it won't be there indefinitely.

The essay includes some interesting images of original appearances of sections of the novel; which Burroughs published in various small magazines. Turns out *The Yage Letters*, wasn't really a direct transcription of actual letters; it's more that Bill combined letters, journal notes, and essay material to create the illusion of an epistolary novel.

This particular "July 10, 1953," yage letter is important in the Burroughs canon; it's the last of his 1953 "letters" in the later editions *The Yage Letters*. Actually it didn't appear in the first edition (1963) of *The Yage Letters*, probably because by then Burroughs had lifted this passage to use as part of *Naked Lunch* (1959) called "the market." But, as Bill wrote the letter one morning while coming down off a night of yage it makes sense to have it in *The Yage Letters*.

Two great lines from this letter:

"Yage is space time travel."

"A place where the unknown past and the emergent future meet in a vibrating soundless hum."

That second line uses a phrase from his February 28, 1953 yage letter, describing the upper Amazon jungle near Mocoa, Colombia. "The trees are tremendous, some of them 200 feet tall. Walking under these trees I felt a special silence, a vibrating soundless hum." What a wonderful image for how telepathy might feel.

I've always thought of science fiction as an extension of Beat literature.

Speaking of telepathy, Allen's yage letter of June 10, 1960, talks about "radiotelepathy," which was a phrase I used in my novel *Saucer Wisdom*.

One of the nice things in *The Yage Letters Redux* is that it includes a longer journal note of Allen's about the same yage trip. Here he writes of beginning "to sense a strange Presence in the hut --- or a Being I am blind to habitually --- like a science fiction Radiotelepathy Beast from another Universe --- but from the series of universes in which I do temporarily exist ..."

Allen's letter and journal note have really wonderful musings upon the psychedelic experience; he has great flashes like, "I was a vomiting snake ... the Serpent of Allen, covered with aureole of spiky snakeheads miniatures radiant & many colored around my hands & throat ..."

But heavier than the flashes are his repeated expressions of a core mystical revelation: God/the universe/everything/everyone is a One/Many mind accessible to all, and there is nothing arcane or unusual about this fact, it's staring us in the face all the time, and there's no secret, nothing to know, this is all there is, divinity is here and now.

"...the realization that we are set there to live and Die, and all man set here together in different bodies in a web of realization of the same fate..."

"... we, here, are it, the great Presence we are the great Presence of the Universe ... God himself knows no more than we or I why he was born or where he is going..."

"...this same ancient and familiar mystery Universe..."

"The familiar creepy sexy nosey personal intimate old-known, special re-realization of the Joke sweetness of Illusion fading into the Great Black Asshole of one-Mind one-Love cat-faced snake-faced dog-faced man-faced Mandalic Universal

Newspaper Busybody Gossip God. All mine, all everybody's, all everything's. And what else could He be but He Himself?"

This is all pure gold in terms of my current work on my novel *Postsingular* where I'm imagining life in a telepathic parallel world called The Hibrane.

The vibrating soundless hum.

Writing Journal

Aug 1 - Sept 5, 2005. "Stross's Accelerando" for NYRSF.

In August I was reading Charles Stross's book of linked short stories *Accelerando*, just as I set off on a trip to Europe. It made me wish I had been stopping off at the Worldcon in Glasgow en route to Geneva.

[The book is browsable online at http://www.accelerando.org/_static/accelerando.html, although Charlie prefers that you save this copy locally to your desktop rather than reading it on his server. Or, even better, buy the paper book.]

My laptop died just before my trip, so I wrote most of these notes up by hand in a spiral notebook, later typing them up and editing them.

Stross's chapter "Tourist" features a guy who's in the transreal equivalent of my current laptopless situation: someone steals his net-linked glasses, which plays the role of what I call an uvvy in my fiction, an uvvy being something that feels like a telepathic cell phone.

Charlie slobbers over the sysop weenix details of the device so much that I didn't immediately see it as an uvvy. His odd techie language makes the device seem more exciting, makes it new — my characters don't get into the webcruising, data-mining, and agent-launching aspects that Charlie describes them doing. I'd never thought of using an uvvy for that.

Like, doing a Google Desktop search for a file on my machine amounts to launching a little agent to fetch something from my non-brain memory. The uvvy as intelligence amplifier.

Charlie does a great job at bemoaning the horror of losing one's computer connection. "His brain is like an ancient car engine with damp spark plugs, burning over and over without catching fire." p. 76. "Is this what consciousness used to be like? It's an ugly slow sensation." p. 84. "With his metacortex running in sandboxed insecure mode, he feels *blunt*. And slow. Even *obsolete*." p. 92. [Page references are to the hardback edition, Ace Books, (New York 2005).]

The book has lots of lovely little touches, what I sometimes call "eyeball kicks" in homage to *Mad* magazine artists like Bill Elder who always filled their frames with supplementary treats. I'll list a few of the incidental yummys that caught my attention in *Accelerando*.

*SF in-joke: a street drug called sensawunda, p. 102

*A galactic router (like an internet router), a device that connects our region to a network of point-to-point wormholes spreading through the far reaches of the universe. Here's a description of it worthy of a mathematician. "Strings of nacreous

spheres curl in strange loops around a hidden core, expanding and turning inside out in systolic pulses that spawn waves of recomplication through the structure.” p 177.

*He has a 3D printer which effectively clones objects. Many of us have written of such devices, but I particularly liked Stross’s explanation of how his works. “..it creates coherent atom beams, from a bunch of Bose-Einstein condensates hovering on the edge of absolute zero. By superimposing interference patterns on them, it generates an atomic hologram, building a perfect replica of some original artifact...” p. 124. The kill-joy quantum physicists do claim to have a “no-cloning” theorem, which means the copy can’t have the exact same quantum states, but never mind.

*A great new way to save fuel on interstellar flights. Send the people in the form of simulations running inside a computer/spaceship the size of a Coke can. The people are well aware of this, and jokingly refer to themselves as “pigs in cyberspace.” p. 193. One wonders: why not just send them as radio waves of information and skip the Coke can? A problem then is that you need some kind of unzipper or instantiator at the target end, although, if you want to push plausibility, you can suppose (as I did in *Saucer Wisdom*) that the personality-bearing waves can double back on themselves near inhabited planets and unzip on their own.

*New kinds of beings: “human/corporation half-breeds” and “slyly self-aware financial instruments,” p. 168. Charlie is great at bringing business to life. What could be more soulless and evil than a sentient corporation? The more I think about this, the more sense it makes. A corporation even has a sense of self --- they’re always talking about their public images.

*As a fascinating throwaway, he speaks of *neuron* stars (not *neutron* stars), “strange matter suns structured for computing at nucleonic, rather than electronic speeds.” p. 223.

*He coins a new term: one *avabit*, which is Avogadro’s number of bits, about 6×10^{23} bits, which he pegs as about 10^{23} bytes (since 6 is about 8). This makes ten sextillion bytes, or ten yottabytes. (It goes giga, tera, peta, exa, zetta, yotta, xenna, watta.) A few-gram chunk of matter has Avogadro’s number of atoms in it, so if you imagine storing a bit per atom, you are thinking about an avabit. Actually he’s being over-cautious here. According to Seth Lloyd, “Computational Capacity of the Universe,” <http://arxiv.org/PS_cache/quant-ph/pdf/0110/0110141.pdf>, a few-gram piece of matter holds 10^{28} bits, and you can actually store something like a hundred thousand bits per atom.

*Speaking of fanciful measures of computation, Stross talks about “exaquops,” on p. 312, meaning quintillions of quantum-computation operations. A lovely word.

Accelerando is reminiscent of Bruce Sterling’s *Schizmatrix*, the linked series of tales confidently outlining a machine-ridden near future.

Stross’s character Manfred Maxx is like a Sterling or even like a Heinlein character, a “competent man.” This is at the other extreme from Dickian protagonists, who are often paralyzed by depression.

I tend to write somewhat passive kinds of characters, like Dick’s, although they tend to be bubbling with schemes like Stross’s. For instance, my Alwin Bitter in *The Sex Sphere* and Jerzy Rugby in *Hacker and the Ants* tended mainly to react to events that others initiated, and I’ve been criticized for that. But in *Mathematicians in Love* I made my character Bela quite proactive and confident.

The risk with “competent man (or woman)” characters is that self-confidence can shade into egotism, know-it-all-ism and can become a form of auctorial self-aggrandizement. I’ve seen this happen to some authors over the years.

The danger with tormented-type characters is that you end up with no action and lots of whining. I think of the title of a (quite unrelated) work by dada-minimalist-brute-art assemblagist-sculptor Josef Beuys, “Zeig Deine Wunden,” meaning “Show Your Wounds.” See my travel-in-Munich essay mentioning this, <http://www.t0.or.at/0ntext/ruruscl.htm>. The Sacred Bleeding Heart of Your Humble Author.

Stross has good villains. Pamela the dominatrix-wife. And the lawyer.

In the book’s future, amok nanomachines egged on by disincorporate geeks are disassembling Sol system’s planets to build Dyson shells of “computronium” around the Sun. Computronium is “matter optimized at the atomic level to support computing.” The computronium is characterized, I suppose, by being programmable in Java, Unix, or perhaps in a quantum-computing operating system: Qunix.

But I think computronium is a spurious concept. Matter, just as it is, carries out outlandishly complex chaotic quantum computations just by dint of sitting around. Matter isn’t “dumb.” Every particle everywhere everywhen is computing at the max possible flop. I think we tend to very seriously undervalue quotidian reality.

In *Accelerando* the solar system has become concentric Dyson spheres with only Gaia remaining. And some minds in the shells want to smash Earth, simply to enhance their RAM and their flop by a few percent.

To me this seems no different, really, from greedhead developers wanting to fill a wetland to make a mall, to clear-cut a rainforest to make a destination golf resort, or even to kill a whale to whittle its teeth into religious icons of a whale god. Poor beggarly Earth is like “a picturesque historic building stranded in an industrial park.” p. 251

To most of us it seems obviously wrong to smash Gaia to bits to make a wasteland of smart pebbles, into Intel chips with wings. It’s interesting to try and figure out exactly what is so wrong about replacing real reality with virtual reality. This is a new SF issue to gnaw on.

Stross is aware of how evil his idea sounds, “When he announced that he was uploading, I figured out that all he really had was a life-hating anti-human ideology he’d mistaken for a religion. The rapture of the nerds and the heaven of the AIs.” p. 270. Later, “The Rapture of the Nerds has been followed by the Resurrection of the Extremely Confused.” p. 318.

Would the transfer to VR even work?

One apparent problem is that familiar simulated realities don’t match the richness of actual realities on the cheap. What I call Wolfram’s Principle of Computational Unpredictability (PCU) tells us that there are no shortcuts for nature’s computations. Fully simulating N particles over K years will take, no matter how you slice it, a system using on the order of N particles for a period on the order of K years. You’re not gonna be able to crush it down to log(N) particles for log(K) years. That’s what it means when Stephen Wolfram says most computations are “irreducible” --- or what I prefer to term “unpredictable” in my forthcoming *The Lifebox, the Seashell and the Soul* (Thunder’s Mouth Press, October 2005).

In most computer sim worlds there will be shortcuts, compromises. Things like bitmapped wood-grain or linearized fluid dynamics. *Flintstones*-style-repeating-backgrounds, the same tree and bush every ten meters along the side of the road. Even a chaotic, emergent computation like the Mandelbrot set is ultimately monotonous. And remember that, if you *don't* take any shortcuts, then the sim world will need to use about the same RAM and flop as the world being modeled. This is what it means, once again, to say that Nature is unpredictable.

Feasible sim worlds seem doomed to be dippy Las Vegas/Disneyland worlds -- mini Europe, the Jungle ride, Grand Theft Auto. And the feasible sim people are likely to be equally thin, like TV soap-opera characters.

But wait, if you *do* smash the whole planet into computronium, you have potentially as much RAM and flop as the intact planet possessed. The same amount of mass, after all, So we could be looking at a sim with no compromises, no shortcuts.

Yet I feel as if there's a catch. Something is lost when you smash Earth into dust. It's the programming that you lose. Setting up the deep pattern of reality isn't done cheaply. An Earth-amount of matter with no high-level programs running is like an exabyte exaflop computer with a blank hard disk. Like a human-equivalent robot with no software in it.

Well, maybe the nanomachines copy all the software that's embedded into Earth's biosphere and geology. The forms and processes in every blade of grass, in every bacterium, in every pebble. Like Citizen Kane bringing home a European castle, dismantled into portable blocks. Like a Japanese tourist taking digital photos of his disassembled California cheeseburger's component parts.

So we'd have nanomachines nosing around, measuring things --- like new tenants impatient to take over our property.

I'm thinking, though, that if you smoothly transmogrify a blade of grass into some nanomachines simulating a blade of grass, then you might not have to measure the grass. Its components might be left sufficiently intact to be there in the computronium.

But as I mentioned before, quantum mechanically, the pebble or the blade of grass already is a computer. So why bother grinding everything up? The nanomachines want to, the little creeps. Also, by tearing up Earth's surface they can get at the less-valued but just as useful mass lying below.

Just for fun, let's do the numbers on some Dyson spheres.

Suppose with Stross that, rather than ferrying mass in from the outer planets, we make a Dyson sphere by breaking up a planet and spreading the mass into a sphere with the same radius as the planet's original distance from the Sun. By the way, a Dyson sphere would be made of separate tiles, rather than one smooth bubble, as the bubble would break up into pieces due to the rotational stresses. See <http://www.nada.kth.se/~asa/dysonFAQ.html> for much more about this. How thick could the tiles be?

Earth has a radius of 6,300 kilometers, and its mean distance from the sun is 150 million kilometers. Firing up *Mathematica*, I compute the volume of Earth and divide by the surface area of a shell with a radius the size of Earth's orbit, and I find that the mass of Earth would make a shell this size with a thickness of some 3.6 millimeters. Grinding Mars and Venus into dust to cover spheres (or ellipsoids) of

their own orbit size would yield shells of thickness 2 mm for Mars and 5 mm for Venus. These thickness are more than adequate for nanocomputers.

Stross talks about *nested* Dyson spheres, by the way, the idea being that the inner ones radiate out their waste energy to the outer ones.

Stross makes a game effort to imagine the superintelligent minds in his Dyson shells.

He reasons as follows: “Put ... together signaling and introspective simulation, and you’ve got human-level consciousness.” p. 376. “A posthuman can build an internal model of a human-level intelligence that is as cognitively strong as the original. You or I may think we know what makes other people tick, but we’re quite often wrong, whereas real posthumans can actually simulate us, inner states and all, and get it right.” p. 377

And then he speaks of “A million random human civilizations flourish in worldsapes tucked in the corner of this world-mind.” p. 200.

Note that, along these lines, a posthuman can “remember” one of us in the same sense that the Good Thief meant when he beseeched Jesus, “Lord, remember me when thou shalt come into thy kingdom.” A supernal catlike being named Aineko remembers one of the dead characters back into existence in this fashion. Here’s a great mathy line: “...a shadow of Aineko’s huge algorithmic complexity [is] hanging over the household, like a lurching nightmare out of number theory.” p. 387.

What would the superintelligent beings do? They seem to spend a lot of time acting like corporations. Whole supercivilizations are destroyed by “Business 2.0” scams akin to dot-com crashes and pyramid schemes.

And some of the others are bent upon probing ultimate reality. Already near the start of the book, we hear that “...an alien superpower – maybe a collective of Kardashev Type Three galaxy-spanning civilizations – is running a timing channel attack on the computational ultrastructure of space-time itself, trying to break through to whatever’s underneath.” p. 21

And, again, at the end, Stross remarks that, “They’re making changes on the scale of an entire galactic supercluster, and they appear to be coordinated. They did get out and go places, and their descendants may still be out there. It looks like they’re doing something purposeful and coordinated, something vast – a timing channel attack on the virtual machine that’s running the universe, perhaps, or an embedded simulation of an entirely different universe.” p. 347.

The notion of hyperintelligent galaxy-spanning beings laboring to “access the [reality] simulation’s parameters” suggests what I think could be a mistakenly serial view of our parallel-computing reality.

The parameters would *not* be in one tweakable place. They’d be everywhen and everywhere, like local parameters in the cells of a body, or in a cellular automaton. Think of gene therapy. You need to change all, or most, of the body-cells’ DNA. Well, maybe the reality tweakers would cook up an infectiously spreading modification.

What reality changes would we want anyway? Well, how about increasing Planck’s constant so that, like in *Master of Space and Time*, you can wish things into existence.

Of course to some extent a utility fog of nants is already a means of making wishes come true. I don’t much like this gimmick though. The idea of chips-with-

wings holding hands to “weave” your glass of beer (or whatever) like army ants making a bridge seems too literal and kludgy. I’d rather see something more telepathic, more quantum mechanical, like the “vaaring” technique I describe in *Frek and the Elixir*.

Another thought on Stross’s notion of galactic intelligences trying to hack the universe. Even a galaxy-spanning intelligence is still so much less than the universe. I’d say a regular solitary mad scientist has as good a chance of altering reality’s params as does a galactic hive-mind. Relative to an IQ of a googol, the difference between an IQ of 170 or a million is very small.

Come to think of it, the simulation rule could be, after all, rather simple, with the world’s gnarl being emergent. So the IQ 170 loner really should be able to crack the code.

Suppose I’m a sim in a reality computation. How do I affect the computation simulating me? How can a sim move up the chain to affect the higher level? How can the virtual machine affect the host machine? Well, think of a virus that overwrites the BIOS. Or a program that stops the computer’s fan and melts the chip. Or a program that screws with the electrical power module and pulses it to produce changes in the system.

As an SF writer, I’m a little tired of hearing about the Singularity. It’s become an article of faith about the future, a bit like VR in the 1990s, or space stations in the 1960s, or nuclear war in the 1950s. As a perennial rebel, my sense is that widely held beliefs about the future are always wrong.

This said, I think one of the really great things about *Accelerando* is that Stross looks the Singularity in the eye and works out what it might be like. He makes it all the hype worthwhile. *Accelerando* is a magnificent series of thought experiments, playing the greatest and heaviest of SF power chords.

But there is a drop-off in quality in the later chapters of *Accelerando*. He’s reaching the limits of what he can think about, and he’s shying back. They never really do much with the — marvelous conceit! — galactic router.

Another problem is structural: making a novel out of a linked series of independently published stories means that by chapter nine, you’re spending half the story recapping the previous ones. And it takes on this gloating-over-prior-inventions quality. “Remember two years ago when I actually had an idea? Let’s savor it yet again. Yep, I call it a ‘triangle’. Isn’t it neat? Three corners and three angles. Wow.” *Return to Return to Return to Sensawunda-world*.

But I can also see that he might not have felt like taking the time to smooth the repeated lumps away.

[I sent a polished variation of these notes as an essay to *The New York Review of Science Fiction* on Sept 5, 2005.]

In my *Locus* interview (Sept, 2005), I said the following about Stross:

My feeling is that nature already embodies superhuman intelligence. Although I love Stross’s *Accelerando*, it’s a mistake to speak, as he does, of “dumb matter”. No matter is dumb. Matter is carrying out outlandishly complex chaotic quantum computations just by dint of sitting around.

Charlie raises the wonderfully outrageous notion of smashing dear Gaia into nanocomputers that act like Intel chips with wings. That's like razing a forest for a shopping center, or carving Earth up into adding machines. Or killing a whale to whittle its teeth into religious icons of a whale god. It's interesting to try and figure out exactly what is so wrong about replacing real reality with virtual reality. A new SF issue to gnaw on. I think we tend to very seriously undervalue what we have here.

In the further future, our kinds of machines and tech may fade away. Biotech is after all the ultimate nanotech. And what if we could telepathically tune in on nature's computations. The souls of stones. Science fiction can help us carry out the thought experiments to understand. It's the greatest art form ever invented, the divine offspring of surrealism, philosophy, high lit and the comic strip.

Aug 1 - Sept 23, 2005. "Chu and the Nants" for Asimov's.

[I began these notes up in my spiral notebook on the trip to Geneva and Budapest, reacting to Accelerando.]

Aug 3. I'm intrigued by the problem of finding a futuristic alternative to Stross's digital singularity. The paracomputation route? Learning to hear the alien beings already present in nature. The souls in the fluttering leaves. We denigrate nature because it's *done*, already finished and polished and functional. We only notice our *unfolding* new tech. Stross repeatedly speaks of "dumb, non-computing mass." But *everything* is computing already, according to universal automatism. How to make that SFictionally interesting? Well, that's something I took on in *Mathematicians in Love*. But now, with that book written, I feel, as I always do, that to some extent I missed the mark. So maybe I'll try again.

Looking at the swaying willow branches, the wobbly big leaves of the catalpa, the clouds. Computation without the buzz. I see the Vingean singularity as evil, as an Armageddon where beige, rectilinear machines try to eat the green, vibrant world. I want to dramatize the decisive defeat of the digital demons.

The advent of paracomputation and the fading away of the pixelized digital paradigm. Perhaps work this in: Walker says that intelligent computation is all about *data access*, not just carrying out ALU ops and dancing the instruction pointer around branches and loops. Or maybe I'll save the hylozoism-RAM = dark-matter idea till Frek 2.

Aug 4. False path: Maybe we could hollow out the crap from inside the Earth and make, like copies of the Earth? Or use the crap to fill the rest of Earth's orbital sphere --- like all but a band in the plane of the ecliptic --- with matter, maybe containing lots of copies of Earth. One plot point would be: you need something to replace the gravity of the missing mass. Maybe the Bekenstein bound comes into play, that is, the info in a system is on the order of the *surface area* of a sphere enclosing the system. (Not on the order of the *volume* of the sphere, as one would expect.) So we could info-map Earth's core onto a rigid dark-matter hollow sphere. And then throw the innards as a sop to the computronium munch-bugs. Like throwing a grandpa to the wolves. We don't want to do the same to Earth's surface as it's so richly programmed with the logical depth of a billion years. Also it's very well-tuned to our organic I/O. And are the innards really worthless?

I call this a false path because I want to *beat* the machines, not *appease* them.

I want a story where the heroine saves the Earth from the nanomachines.

Aug 24. The paracomputing water in the Gellert pool in Budapest reminds me again that there's no "dumb matter." Story idea: some of what Stross calls "Vile Offspring" (meaning evolved machines with no regard for humanity) are just about to smash Earth into nanomachines and two hippies stop them.

At the hippies' behest, perhaps space twitches its skin like a mare annoyed by horseflies, and the nanomachines — I'll call them *nants* — are gone, subsumed into dark matter. I see this as, like, an "answer song;" I'm thinking of the way that a pseudo-folk group called The Spokesmen recorded "The Dawn Of Correction" as an answer song to Barry McGuire's hit, "The Eve of Destruction."

The hippies are using biotech, living in a tree house.

Plotline. Hippies in a tree house, Nektar and Ond, they're watching video on the walls. The sky is odd because of the nanomachines. The nants are running scrolls and gliders — obsessions and trains of thought. A Palmer-Eldrich-type face in the sky offers free uploads to all. Earth is slated to be dismantled. Nants are poking around, measuring things for coding-up, they're like impatient new tenants wanting to move into your apartment.

People are going over, discorporating, uploading. One of the family's children goes over, his name is, let us say, little Chu. They see the child on the wall-videos, he seems happy.

To give the story the kind of corny, Hollywood, after-school-special quality so common in "Year's Best SF" tales, I'll make Chu autistic.

Let's say that the copying has to be destructive due to the quantum-mechanical no-cloning theorem.

Open the story with Chu POV, Chu sees the sky, the face talking to him, his friends' faces, he agrees to discorporate, the air around him twinkles, it takes a few seconds as there's a time-lag between sky images and Earth.

Cut to Nektar's p. o. v. She sees Chu's body puff up, he becomes an eggcase of nants, he bursts, the glittery razor-sharp winged nants fly up to the heavens.

Nektar's friend Gonder has been meditating on a Zen koan expressing the QM measurement problem, like: "What was your original face before you were born?" But we'll use "The square root of not." Now Gonder has the solution. Objects collapse their own state functions. Maybe the wind and flag koan fits in as well. Gonder says that solving the koan is like falling asleep while you're awake.

"Aw, she's high on conotoxins," protests Ond. "She's full of crap."

But that night Nektar has a dream and she wakes up knowing how to ask space to twitch. Or, no, she wakes up knowing a nant-killer thought-virus using the square root of not. An antinant koan.

The tree speaks. The stones. Everything is alive. Gaia knows.

"Save us," say Nektar and Ond to Gaia.

Space twitches — or the antinant koan-virus catches on — and the nants are gone, first here, then there, then everywhere, they disappear in scrolly patches. They see Chu screaming on the video screen, pixelizing, fading.

"Now look what you've done," said Ond.

"Pass the bong," said Nektar.

Maybe they get Chu back. But he's undead, monstrous, puffed up, still an eggcase of nants. Nobly he immolates himself.

Aug 15. How will the sky look if the planets other than Earth have been pulverized into nants?

Any two great circles cross, therefore every orbit must cross the ecliptic.

The only way to assure unobstructed sunlight on Earth is by synchronization and orbit-planning, that is, the nants have to time their orbits so that they're never within the tubular region of space connecting Sun to Earth. This is of course a slight hassle for the nants, and they resent it like industrialists bridle at environmental safeguards.

There will be some backscatter from the inner-planet-nant-shells, causing a bright halo around the Sun. At dawn, you'll see the Venus shell (and perhaps the Mercury shell) before the sun, and then you'll see a ragged edging with a hole for the sun.

At night, any earthling is perforce facing away from Sun and the inner-planet Dyson spheres; but will be facing the outer-planet Dyson spheres, that is the nant-spheres made by crushing Mars, the asteroids, Jupiter, etcetera. You'll see a shimmering wall of nanomachines. No stars. Closed in. Captured. In an enormous room. Faces on the wallpaper, BZ scrolls. Ads! The heavenly kingdom. Deeply bogus. The ultimate McDonaldsization.

You'll see targeted ads for individual communities, maybe even for individual people. In principle there are enough nants so that scattered cohorts of them could angle their light to show something different to each person on Earth.

The neighbors are gone.

It's not quite satisfying if the counterforce is just meditation. Maybe Nektar is into quantum computation — it's like knitting. Use a dark matter crochet-hook.

Why wouldn't the matter in Venus, Mars, etc., have objected to being turned into nants? Why would just Gaia's matter get riled up? Something to do with quantum error-correction, maybe. Or maybe someone has to *ask*. And the earthlings do ask, that is, Nektar and Ond ask.

I'm not so sure about the nested shells. For if we have a Venus shell, then only infrared light will radiate through, and the Earthlings won't be able to see those dramatic images on the Mars shell that I want to have as a major eyeball kick. But if there's only a Mars shell, then why do the nants want to crush Earth first? They're systematic, let's say.

Giving up the Venus shell is a bit sad too, as then I don't get to have the sun glimpsed through a hole in the sky, and don't get to discuss the nants annoyance at having to avoid shading Earth. But I think I need the Mars shell more.

I think the Mars shell would actually show "through" the blue sky. The moon does, after all, and the albedo of the nants could well be as high as that of the moon. That would be very sick (in the good sense) — seeing the ads all day as well as all night.

I see the images as being so detailed that they're velvety. And very rapid fire. Like Lewine's face the day I took peyote and stared at him: the history of world art in forty seconds.

Aug 16. Suppose that space has been already considering getting rid of the nants. Blocks of them have been disappearing, flipping back into matter or into dark matter. Venus comes back maybe, or part of it. The nants are fretful, anxious, panicky, they feel they need Earth's mass right *now* so as to amp up their flop.

Aug 17. Maybe the nants have buckytube DNA. If matter and space can rebel, why haven't they done so before? Maybe they did?

God, prayer, shrines, dark energy.

Do astronomical objects ever reassemble themselves? Suppose that someone sees this happening through a telescope. And then the nants get really scared.

I have a vision of matter as an iceberg-tip sticking up “above” space with a big base of dark matter below.

Certainly gravity works to reassemble objects. And chaotic resonances, e. g. the Great Red Spot on Jupiter and the spokes in Saturn’s rings.

Maybe we’ve got a sword-in-the-stone deal. Someone has to ask, someone has to clasp the haft and pull. Gaia *grew* people expressly to be the canaries in the coal mine. We’re specialized sensors for Gaia, only we can pull the sword from the stone and spark space-and-mass to crush the nants.

The nants are themselves a virus attacking the universe’s computation. The universal computer’s sysops have antinant ware — that’s the kicker, it wasn’t just Nektar’s koan that killed them, it was more that her koan activates the big cleaner.

So at first the koan is working, and then its losing, and then the Kosmos helps.

Aug 18. The planets have souls. Already there’s been some trouble for the nants from Mercury and Venus.

Nants are stupid consumers. Flockers.

A dark matter shadow of a demolished planet persists in subspace for a time.

The nants feel pity for us? Never. They’re developers, Republicans, greedheads.

Planet Earth fights back; she gets her big sister Space to help.

Aug 23. I still need a gimmick in the “Nektar and the Nants” story, a means for Ond and Nektar to eliminate the nants. The other day I flashed that it could be something Borgesian, an amulet like the *zahir*. Have the amulet be alive, though. Have it be a dark-matter alien. It’s an eye in a pyramid, like the old-time image of God. Name is Aum.

Nektar chants Aum into our reality. Aum congeals in the air. Call the story “Aum,” maybe.

Or could they simply wipe out the nants with a computer virus. A Zen QM koan, “The Square Root of Not.”

More commercial to have a hard science fix.

Aug 24. What would be special about Nektar’s meditation session that would cause Aum to pop over from the flipside of space? Nektar is doing a hive-mind thing, maybe. Like a global prayer for peace.

Keep in mind that the readers know that planet-wide “Meditate for ____” programs have never achieved jack in the past. Acknowledge that, have someone mention it, even. Bu this time it’s different. Why?

This time the meditators are really tightly linked. Free-ranging local nants are spying on everyone, and humanity is networked in realtime by the nants. Like by *uvvies*? No, by what they see, by the nant display in the sky. Naw, this won’t work because of the several light-second lag distance between Earth and the Dyson sphere that used to be Mars.

Would be nice, thought if the nants produce their own fall. The display could do something to humanity’s hive mind, amplifying and laser-purifying it, not by hive hookup, but just by letting us tune in on them a little bit.

And Aum awakens and appears, then dimensionally judos the nants into dark energy. Or we think of the killer koan, and that works for awhile and *then* Aum awakes and loads the antinant ware.

August 31. Sunrise with the nants in the sky. The nants won’t be bio-based, it makes a better contrast to have the nants be razor-sharp, glittery digital chips. Makes

the nants more clearly anti-life, more clearly the symbol of soul-deadening industrialization.

What if all the matter wakes up at the climax. Rather than disappearing, the nants become truly alive. Like people shrugging off their social conditioning.

Sept 3. I talked it over with Rudy, Jr., walking around Merritt Lake in Oakland, and he suggested having the sun turn off for a minute; his idea was that the nants might lack batteries or non-volatile RAM, expecting, as they might, to be eternally basking in radiation. But that doesn't seem like a sure thing, also it's a big stretch to make that happen. Gaia asks Sun to turn off?

Better, Rudy suggested ideas about the nant-killing computer virus. A Trojan flea that gets inside each nant and has them all chirp at one and the same moment (assume they each have the same synched atomic system clock). The simultaneous overwhelms their receptors, blinding them, they bump into each other, and now let's say a chaotic crash can take place, ending with them globbed up into a rough planet again.

If the fix is then fairly simple, I might complicate the story a bit more by building up the Chu conundrum: to save the Earth, Ond and Nektar must kill the system running the last vestige of their sun. Staring unhappily at the now empty sky. Chu was gone.

"No," the breeze seemed to whisper, "I'm still here."

I did a computation in a *Mathematica* notebook "Dyson Sphere.nb" to figure out how many nants you'd have. Mars would make a shell about 3 mm thick in its orbit.

Sept 7. How do they send the virus to the nants? Maybe Chu takes it to them. He's autistic, he likes to chant things. Chu doesn't normally talk at all, he just echoes words, like a parrot. He has tantrums. He loves video. Ond turns the antinant virus-koan into a chant that he gets Nektar to teach Chu.

The nants are eating Earth, bit by bit. Some of them live underground already and stream out of the shaft like bats out of a cave. They glitter, iridescent, a cloud of light.

As the nants eat things on Earth they proudly display the new items on the surface of the Dyson sphere that was formerly Mars.

Some people are holed up, they don't want to go over. They have sequestered themselves in a zone or a building where they are broadcasting nant-jammer gigahertz radio waves.

Ond lives with Nektar and her autistic son Chu. Chu likes the nants, he watches video all the time, the neighbor boy who used to play with him has gone over. Chu goes outside and is devoured by the nants.

Ond has figured out an antinant virus. But they won't accept upload signals of course.

Nektar can see Chu on TV and in the sky. She talks to him. Ond doesn't care that much about Chu. But he sees an opportunity. He turns his virus into a mantra, a chant, and Nektar sings it to Chu. Chu unwittingly passes it on to the nants.

The nants compute their return path and reverse their motion. They chirp in unison, blinding themselves. They're dead. Nektar is upset at having in a sense killed Chu.

But now they notice Mars is coming back together. And eventually Chu will be back too.

Sept 12. I started writing.

Sept 19. So I ended up writing a more humane version of this story, and Chu became kind of the main character, so while I'd started out thinking of it as "Nektar and the Nants," it became "Chu and the Nants." I read it to my philosophy class, and taped that and posted the reading as an mp3 for podcast kicks. And then I polished it a bit more and mailed it to *Asimov's*.

Sept 23, 2005. I'm very stoked today. I got an email from Sheila Williams at *Asimov's* saying she like Chu, found it "fun and sweet," and wants to buy it. And I only mailed it out Monday, three days ago. Now *that's* the kind of response I like to see! Maybe I'm onto something at last. Finally I'm getting into the SF club, maybe.

Following up on Stross's themes is good, I'm engaging in a relevant dialogue about contemporary SF ideas. And it was good putting the autistic boy in the story, gives it that emotional core that people like.

Sept 19, 2005. Planning a New Story Anthology

I put all the stories I've written since *Gnar!* into an anthology file called, tentatively, *Power Chords*. I'm thinking why not focus on stories for awhile and get enough heft for a volume before I go into *Frek 2*. I feel inclined to hang around the outskirts of the village, taking day hikes, rather than setting on another Long March so soon again.

Regarding *Power Chords*, I have 65,000 words, if I pick up some 7,500 words by including the "Six Thought Experiments" from the *Lifebox* tome — though maybe that's overexposure for these pieces. But I could probably get away with it. Regarding permission, there wouldn't be a problem if I were to publish this story collection with, as would be likely, John Oakes at Thunder's Mouth, the same publisher as *Lifebox*.

Seems like a book ought to be at least 85,000 words. So I'd need to write 20,000 more words worth of short stories.

"Chu and the Nants" was only 5K. I sometimes tend to get into making my stories very laconic and concise. But there's a lot of set-up getting ready to write a story, and more effort in selling it. So it's easier in terms of effort-per-word to write fewer longer stories rather than more shorter ones. Like it's easier to teach at a university that uses semesters than to teach under a quarters system. Fewer startup/shutdown costs.

Seems like I'd need maybe three more stories, give or take one, depending on the lengths.

Slight anxiety that writing so many stories in a row could ruin me for novel-writing. Like masturbating too much might ruin someone for making love to a real, live human partner? But that's not actually the case, re. masturbating vs. real sex, is it. You rebound, hornier than ever.

So, okay, what story ideas do I have? Keep in mind that, likely as not, I'd want to combine several of these into one story. Recall P. K. Dick's dictum that he got his best tales when he combined two different story ideas. Some of these ideas are about hooks or devices, some are just about settings. I'll make a section of story ideas.

Once I have ideas, put some elements together, maybe, and get a novella or a novelette.

For the purposes of the Nebula Awards, the categories are defined as follows:

Short Story — 7,500 words or fewer

Novelette — 7,500 - 17,500 words

Novella — 17,500 - 40,000 words

Novel — 40,000 words or more

I could finish off *Power Chords* with a novelette of length, say, 15,000 and then another short story.

When I hear that word “novelette,” I always think of *Laugh In* during the late sixties; they had this parody sportscaster character called Big Al, who came on as if drunk and foppish, and he’d interrupt his routine by holding up a little bell and tinkling it and saying, “Featurette!”

I am thinking of calling the anthology “Postsingular” in honor of the postsingularity stories I’m planning to write. (Later I decided to use this title for a novel; and changed the anthology’s title to, at least for a time, *Thought Experiments*.)

Sept 20, 2005. Story Ideas.

URL to Nowhere, an idea I discussed with Bruce Sterling a bit, but never pursued. A character has IDs on all of his/her objects, and some of them get lost anyway, and s/he figures out the lost things are in the fourth dimension. Goes to fetch them by getting lost. Like that Captain Beefheart song: “she’s gonna get lost — and found.”

Paracomputation. After the Singularity, a cluster of supernal machines turn into a pond, a breeze, a tree, and a campfire. And stay that way. It’s interesting enough. Doing nothing is truly more interesting than rushing around like a fidgeting monkey. The characters see ultimate reality and end up back at the campfire by a pond with a pine tree. “I only learn to be contented,” as it said on the fountain by the Zen garden at Ryoanji in Kyoto. And they realize it’s all happened before. But now they can talk to the stream, the trees, the fire. That’s too limp an ending. For a real SF hit, I need to embrace the SF and further it, and not be a nay-sayer.

Talking to dark matter, as I discussed in the Aug 31, 2005, entry, to wit: dark matter is the RAM that makes daily physical paracomputation be more productive. Mind is everywhere; you *can* talk to a tree. There is a truly “universal” bus that plugs into the hidden RAM of anything, the “dark universal bus, call it a DUB. That wouldn’t be a bad story title, “The Universal Dark Bus.” But I’ll save that for *Frek 2*.

Interstellar Space Colony. Maybe go far into the future and they’re in a space colony, like in some other galaxy, they got there in a Stross soda-can. They went through his router. Don’t hold back, man. Really make it SF. We’re on Tsitsli, a planet in the Horsehead Nebula.

Timing Channel Attack. That’s such a big topic, I’ll discuss it in it’s own section.

IA (Intelligence Amplification). Ditto.

Sept 21, 2005. Thoughts on the SF in Cloud Atlas

I’m reading “An Orison of Sonmi-451” in this great book *Cloud Atlas* by David Mitchell. It’s a lovely tale. Very serious, but not humorless. Odd in good ways. It’s about cloned slaves in a future fast food place with the “logoman” Papa Song, I guess he’s a hologram, he stands on a plinth and gives them exhortatory morning sermons and later in the day entertains the customers. He’ll, like, pretend to

surf on waves of noodles, or throw holographic boomerang “fire éclairs.” What makes the style really great is that the person describing this, the “ascended” (= become intelligent) clone Sonmi has a very flat, matter-of-fact, wise tone, and doesn’t see any of this as funny. Even though it is satirical. I guess *Brave New World* was like that, satirical and, if you think about it, funny, but with the events treated in all seriousness by the protagonists.

The Cloud Atlas is actually six short novellas (or long novelettes), about 20,000 words each, arranged in this curious 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.

The Sonmi story has quite a bit of action, a real narrative arc, indeed all of them do, one or more drastic changes occur in each of these stories, it’s not like in a short story where you kind of set something up and see what comes outta that and your done. So if I want a novelette or novella, I’d have to be doing some plot-outlining work, just like I do in my novels.

The fifth and sixth novellas are both science fiction. I’d been prepared to spit on the slumming literary mandarin, but, hell, they’re damn good. Number six, “Sloosha’s Crossing and Everything That Came After,” Reminds me of Russell Hoban’s *Riddley Walker*. In both this and the Sonmi story he uses nicely tweaked futuristic forms of English.

Sept 22, 2005. Recycle Twinks?

The “Sloosha” story in *Cloud Atlas* is post-holocaust, and it set me to thinking about my unfinished Spring, 1982, novella-length work in this genre, *Twinks*.

Might this be salvageable? As I recall, I had introduced quite a few characters and was complicating things nicely, but didn’t have a middle or an end for the book. What if I went back in there and just rounded it off as a novella? One downside here is that “Twinks” was written during the unhappy period in Lynchburg, Virginia, when I was losing my teaching job and my marriage was (temporarily) on the rocks. Resurrecting the story might dredge up some painful/embarrassing memories.

Well, I know where the typescript is, right on the bottom shelf of my bookcase. I could take a look. I don’t have it on disk, as at that point I hadn’t even gotten my first machine — soon I’d be using PeachText with the CPM operating system on big floppies.

I got out the manuscript and tried a little OCR on it, kind of a hassle, though maybe I could (boring computer nightmare #13237) improve the performance. The OCR ware I was using came free with my HP scanner. I suspect there’s gotta be better wares.

Or I could type it up by hand. But, you know, the little bit of it that I read just now doesn’t look that great. It’s kind of like a prisoner describing his jail, pitiful Ru transreally writing about Lynchburg. I could radically rework it. But then I’d be in some sense bowdlerizing and discarding the somewhat historically interesting past manuscript.

As a geek and a completist, I’m kind of wanting to get it into electronic form. The OCR methodology is also worth pursuing so I could get my early paper journals into files as well.

But, ugh, why bother with *Twinks* for now.

If I can sell to Asimov’s all of a sudden, why muck around with a bitter twenty-year-old leftover like that. Let’s try and do something like Chu again.

Sept 25, 2005. Timing Channel Attack. More Story Ideas.

I want to get to the Strossian “...alien superpower – maybe a collective of Kardashev Type Three galaxy-spanning civilizations – running a timing channel attack on the computational ultrastructure of spacetime itself, trying to break through to whatever’s underneath ... [yes,] something vast – a timing channel attack on the virtual machine that’s running the universe, perhaps, or an embedded simulation of an entirely different universe.” What the fuck *is* a timing channel attack? It’s great, Charlie just says it, and we feel like it means something even before we know any details.

I searched the web, a timing channel attack is a type of side channel attack, which is any attack that uses something other than math, like it measures how long the machine takes to encrypt something, or listens to its sound, or watches its power consumption or RAM use. The idea is that, e.g. if I eavesdrop and see a lot of y get coded into $y^x \text{ MOD } n$, and n is known as well, then I can guess the bits of x one by one from the timing info (the “0” bits of the exponent use less time than “1” bits). See <http://www.cryptography.com/resources/whitepapers/TimingAttacks.pdf>

And see the more general paper about other kinds of side channel attacks <http://www.schneier.com/paper-side-channel2.pdf>

Side channel attack: given In, Out, and a computation P, guess the algorithm for $P(\text{In}) = \text{Out}$, given some external information $\text{Info}(P, \text{In}, \text{Out})$ about the physical process $P(\text{In}) \rightarrow \text{Out}$. Maybe you’re given a lot of $\text{Info}(P, \text{In}, \text{Out})$ data.

On the face of it, it seems that our universe is an Out that results from an unknown In using an unknown P. We might require that In be minimal, say a single bit, the number 1 (remember that, say, Rule 30 can generate gnarl from one bit.) The world changes over time, so we really have $P(\text{In}, t) = \text{Out}_t$, so it’s really $\text{Info}(P, 1, t, \text{Out}_t)$ that we’d want to be looking at, for lots of t , and lots of world-states Out_t . But it doesn’t make sense to rederive the whole universe.

Let’s go back to the $P(\text{In}) = \text{Out}$ notion where the In are states we encounter, and the Out is measured when $\text{IsTargetState}(\text{Out})$ is true. And then it make sense to observe $\text{Runtime}_P(\text{In}, \text{Out})$. Maybe we find that a certain kind of quantum measurement uses different amounts of time (or energy) to settle down, depending on the In state. We view the evolution of the universe as a progressive encryption, each later time encrypts the earlier times.

So in my story, some people are doing a side channel attack to figure out the ultimate reality program. Or they use the channel attack info to *go* to the deeper reality. Or both. They’re called reality hackers, natch, just like the old Mondoid phrase.

Suppose some diaphanous alien spirit-creatures have to check in and out to travel back and forth between here and the other, realer, subworld — call it the fab, because this is the level that in some sense manufactures our level.

Suppose I am able to monitor the — call them silfs — going from here over to the fab. I can time, let us say, the interval between the silf saying “Go” and the silf wavering and disappearing. The silfs are being encrypted and I can see how long the encryption time takes. Problem here is that the data in a silf is so big and gnarly, so it’s hard to write it in binary and get the timing per 0/1 bit tested. Of course with the orphidnet mind, this would in fact be feasible.

Encryption isn't an obviously relevant notion for exploring the computational ultrastructure of spacetime, and still less does it open an obvious travel route to the world's deeper levels. How could the side channel attack give you information about the structure of the fab? How could it help you get there?

Suppose you slavishly encrypt your body just like a silf does and then hope that it simply *happens* that you'll then trickle down into some cracky-crack of spacetime. We won't do this so crudely, though, we won't turn ourselves into, like, radio waves as they did in *The Fly*. What we're gonna to is quantum-tunnel from a material body to an ethereal body.

Suitably encrypted data slides through the grill between worlds on its own. Like a beetle walking over a grating in such a way that it doesn't step on any of the separators. A thin man dropping between the bars of a curbside sewer drain. Yes.

Transforming or encrypting yourself with the silfs' process gives you an "ethereal body" which is, let us say, a congeries of subtle dark energy vortices. Catch: due to the quantum mechanical no-cloning theorem, you can have a material body or an ethereal body, but not both at the same time. So the first person who encrypts into ethereal form is taking a big chance.

A key element in the process is the quantum mechanical notion that if nobody is watching something then it smears out into a superposed state. Let's suppose that for a silf to travel between our universe to the fab (1) she superposes herself, turns off self-observation and spreads out into an indeterminate state, and then (2) observes herself in such a way so as to collapse into the ethereal or material form.

The observation method *is* the encryption method. A certain quantum-mechanical operator. It takes the form of a koan-style question. "A flag is flapping. What is moving: wind or flag?"

As well as the koan, the material/ethereal transformation routine embodies a mantra, an information pattern which is, in effect, a code number.

Quantum meditation.

Our universe and the fab are overlaid upon each other in the same space, separated by a tiny distance in the fourth dimension. In the ethereal form, this is the fab; in the material form, this is the universe. You perceive the one that matches your body.

I *would* like to make the point that we aren't running on some *one* computer. We're essentially parallel. Now, it seems as if space as substrate is a monistic operating system, so I think we'd need to have multiversal space. Wolfram speaks of space itself as emergent, okay, but there's something where something's happening antecedent to space. Wheeler called it pregeometry. It's right here, if you look in the right way.

So if we take the view that there are multiple universes in the pregeometry and each space instant is a collapse of something in there, then the perceived time intervals matching clock intervals of one minute could tell us something about the complexity of the computation, assuming that the mind's perception of perceived time matches how much is going on in superspace.

Sept 26, 2005. Intelligence Amplification.

So suppose we have a superintelligent web of tiny machines with an enormous net RAM and flop, with tons of data, and with smart agents living inside it. The Web, in other words, but more so.

And now suppose that we plug into it and get smarter. How will this feel?

Plug in how?

I could use my usual “uvvy,” a soft plastic computer you wear on the base of your neck and it reaches into your brain with magnetic vortices. You can take it off, which is important, as no reasonable person wants to be permanently plugged in.

Or some nanomachines called “arphids” get into your hair like lice and can diddle your brainwaves. A different kind of uvvy.

But maybe people are initially leery of the uvvy and the arphids. They could get by with what I call “stunglasses,” glasses with a heads-up display overlaid. These could even be contact lenses. And you could have tiny sensors on your finger joints so you can type in the air, or not even type, just make those cool cyberspace moves like Keanu did in the 1998 movie of Gibson’s story “Burning Chrome.” And we can also suppose the system has speech recognition and you have earphone buds perched in the porches of thine ears and a mike taped to your throat.

Everyone is mumbling and twitching and wearing flickering contact lenses. Not all *that* different from people listening to podcasts on iPods and checking email on Treos while riding BART.

But *how does it feel* to plug into a system that’s say, a million times as smart as a person. You can have agents for yourself in there doing searches, computing things. Of course if they’re so frikkin’ smart, why would they obey you?

When you plug into the supercomputing web, it’s like you go out of yourself into the seamless web mind, and then you come back. Some thoughts you can’t remember until you’re plugged in. You just remember links. You can speak by exchanging links. But real physical life goes on.

When you unplug and go outside, you’re the same. Having supercomputation around doesn’t really change things much when you’re offline and being yourself. People are still the same as in Bruegel’s time. At least this is the situation I need in order to write a story about these people.]

Maybe it’s not so common to be off-line, though, maybe getting off-line is a kind of luxury, like going to the countryside.

You merge into the Big Web and later you come back out. This is good practice, by the way, for learning how to quantum meditate yourself into a superposed quantum state and then collapse back --- possibly into a different eigenstate than the one you started in; I’m thinking of ghostly spirit-like “silfs” who flip between the material and ethereal world in this fashion.

Sept 29. I posted the preceding paragraphs on my blog and asked for comments. And here’s some of the responses.

Natalie: Merging into the arphidnet is not so different from sleeping and having a dream where you pool together into the collective unconscious of the hive

mind, and not so different from merging with God, or maybe not so different from paying close attention to the world.

Footboots: People might react to the arphidnet with: (a) Worshipful awe, being struck dumb in the overwhelming presence of divine mind, leading to a kind of religion, with plugging in a sacrament; (b) twitching, not just mental but physical, extra muscle-controlling cells being recruited into thinking when plugged in, it's ecstatic like crack; or (c) resonance and enrichment where every word, diagram, thought or feeling brings along a rich association of footnotes and commentary.

Jon: Some humans will commit suicide, having now "seen it all." Some will have nervous breakdowns from overload.

David Orban: The arphidnet itself wants to continually have new ideas otherwise it feels it's stagnating.

Mac: It will feel psychedelic. We might want to have arphids inside the brain to smooth the interface. Perhaps society would become more pastoral as the arphidnet could take care of everything.

Moby Dick: Maybe the arphidnet has both a waking state and a sleeping state. Or perhaps it can get high. Plugging in to the arphidnet would feel different if you caught it when it was asleep.

David: Sometimes it would feel like you were continually being interrupted and distracted by all the other agents in the arphidnet colliding with you.

Anonymous Forthisone: It might be similar to the experience of tripping with someone and you feel like you are melding your minds. But now you'd be melding with all the other people who are plugged into the arphidnet.

Nov 25, 2005. Sitting in SF.

Sitting in the sun on a Folsom Street stoop, waiting for Rudy, Jr., I make notes for this entry on my pocket-scrap of paper.

I really don't know what I want to write next. In a way, I'm enjoying not having a project. It's like being unemployed. Or retired. Do that memoir? Or maybe another novel

Nov 26, 2005. "Cobb Wakes Up" for Other.

This funky, sexually ambiguous little SF magazine called *Other* wanted a story by me, and I unearthed an unused chapter called "Cobb Wakes Up" that I wrote when starting *Realware*. So I got that out there. More exposure for me, and more words for the antho, hurray!

Sept 26 - Dec 6, 2005. "Postsingular" Story for Asimov's.

Let's start with an outline. Originally I was gonna cast this novelette-length (i.e. 10,000 words plus) story into four chapters, although later I decided to break into variable-length numbered sections. I'll leave the chapter headings in place, with some numbers as well, though in the end, the numbers here aren't gonna match the numbers in the story as I ended up doing it.

"Postsingular" Story Section One

1.

Backstory about Ond, Chu, and the nants.

2.

Jil and Craigor are living on a shallow-draft live-aboard scow in the South Bay waters. It's a beat-up pancake-like yacht propelled by smart plastic cilia on its bottom. Fairly inexpensive, the cilia are kind of grown in place, the yacht is very light material and has a pretty big area. Like a floating elliptical pancake with hair on the bottom. It's piezoplastic.

Jil and Craigor have two kids, a seven-year-old boy Momotaro and a five-year-old girl Bixie. It's a happy family.

The year is about 2050, maybe three years after "Chu and the Nants." So Chu is ten; he was seven at the end of that story.

[See Character section above for transplanted sketches of Jil and Craigor.]

The EPA's Vector Control Center pays Craigor a bit for helping to control the cuttlefish as well. The cuttlefish are a tolerated exotic from the Mergui Archipelago off Burma in the Andaman Sea and are, we'll learn, the preferred avatar-form for the parallel-world silfs when they take on material bodies. The Burmese and Thais were in some way aware of this; they have legends about magic cuttlefish who appear in dreams.

The cuttlefish are spreading a bit too fast, and the EPA wants to make a gesture of doing something. The EPA head is an industry insider appointed by the former president Dick Dibbs, so they certainly don't want to eliminate these profitable creatures.

3.

Jil has made a friend at work, a guy called Ond, he's a geek, the Chief Technical Officer, he likes her, not sexually, just as a friend. Ond's wife Nektar leaves him during the story, I think she takes off and leaves Ond for a chef called Jose she's working with. They have an autistic ten-year-old kid Chu — the family comes over to Jil and Craigor's boat to hang out and have supper sometimes, Craigor enjoys them, and Momotaro likes Chu, although Bixie doesn't, she thinks Chu is creepy.

Supposedly to help Craigor with his problem in gathering info about his cuttlefish, Ond says he'll Craigor some orphids to label each and every cuttlefish with an orphid. The EPA can thus learn the lifecycle of the Pharaoh cuttlefish so as better to control them. Orphids are domestic and tame, not a threat, says Ond. The furor over the nants has died down. But Ond's wife Nektar is violently against the release.

The first word I was going to use, arphid is a combination of *aphid* and *RFID*, as in Radio Frequency Identification Device. But I found out that Bruce Sterling is already using "arphid" specifically to mean today's RFIDs, so I better call my more futuristic jobbies "orphids."

The Martian nant sphere actually designed the orphids, so these are pretty cool devices. They're smart molecules which are quantum computers. Nantel and Nanosoft *did* get some work out of the nant sphere before Ond collapsed it. In fact they got the secret of AI as well as the orphids. We're in a postsingularity epoch. The singularity already happened, but people haven't twigged to this yet.

It would be too tedious to apply orphids to each object in some large ensemble by hand, but not to worry, the orphids can fly (they generate little electrostatic fields and hang-glide a room's air-currents or cruise the bay's water currents like smart dust or smart plankton), and they fan out and one lands on each thing in the area near where you release them. Like buying a sack of live lady bugs. The orphids actually *are* dust-motes, they're made of shed skin cells, or of dust mites; they have this smart molecule that can parasitize anything. The orphids are territorial, and there's constant

fighting among them, supposedly keeping it down to one orphid per, let us say, 0.5 square millimeters.

Craigor is excited about labeling his possessions, he visualizes some new kind of art. The orphids escape of course, as Ond knew they would (he doesn't have official ExaExa approval, as the execs are in CYA mode), and everyone on Earth is getting orphids, too.

Unlike the nants, the orphids are self-delimiting, but the orphids do spread quite a bit. They keep reproducing and settling yet-finer regions, like there will be an orphid on a cup's handle, its base, and one on each of its sides, pretty soon there's one on each triangle of an imagined millimeter-res tessellation of the shape. It's like those prodigiously ramifying ideal languages, tending towards a word for every single created thing. I think Pynchon (and surely Borges) write about this idea. Pynchon says something like: "the thorny thicket of language setting the namer at an ever-greater remove from the named." But the orphids do plateau at some reasonable density.

4.

The orphids get into your hair like lice and can diddle your brainwaves with magnetic fields. Like my uvvies. Nobody need web hardware, everyone is immersed. Even the kids.

The orphidnet is waking up, it's smart.

Ond is trying to put a positive political face on the event. He gives an press conference from the jailhouse steps. I use the opportunity to put in a geekin' infodump:

You end up with a very rich computational network. Say an average of twenty orphids above each square millimeter of Earth's surface (see my *Mathematica* notebook Dyson Sphere.nb) and we end up with 10^{22} or ten sextillion orphids. Ten zettaorphids. About 10^{12} or a trillion of them per person, if our population is ten billion or 10^{10} . And if we suppose, this being 2050 and after the nant-sphere singularity, we can suppose that the orphids are better than the gigabyte gigaflop nants, let's say that each orphid has a hundred teraflop and a hundred terabyte, and we're looking at a system with 10^{36} flop and byte, weaker than the nant-sphere, but nothing to spit on. Ten ubbaflop and ten ubbabytes, the square of the 10^{18} human exabyte exaflop level. Like replacing each person with the population of Earth. A duodecillion bytes.

ExaExa wants to control the orphid-data-mining ware, but the orphids give everything away for free.

Ond walks away from custody "Golden Man" style, wherever they reach for him, he's not there.

"Postsingular" Story Section Two

5.

The orphidnet is a locative planetary brain. Embodied object logic sensitive to the locations of real objects. The orphids do wireless, of course. They send a steady chirp of signals, "I'm here, I'm here, I'm here." Like a storm of bird song or cricket chirps.

That good nant-built AI clicks, crystallizes, works. The orphidnet is awake, and it's everywhere. And, unlike the nant-sphere, it's friendly to us.

Ond, Nektar, Chu, Jil, Craigor, Momotaro, Bixie — they all tune in on the vasty mentation of the superhuman web mind. It has a different effects on each of them.

Originally I was gonna write this as several long takes, one for each person, resetting back to the same temporal point when I switched to the next person. But this felt slow and repetitive, so I ended up chopping each take into short bits and arranging them in forward time order, leaving out an repetitions. It makes a nice effect, I think, a good stylistic correlative for the madness of the first night of the orphidnet.

Ond. He's exploring it, it's his workplace, he organizes, like a Christmas tree of ornaments there. He keeps an eye on Nektar. He's plagued by requests for interviews and information. Ond creates Ond2, a lifebox simulation of himself.

You can have agents for yourself in there doing searches, computing things. But after a bit, the agents get too smart and don't want to obey you, so you have to keep making new agents. Another problem is that it's hard to get much done in there, as you are continually being interrupted and distracted by all the other agents in the orphidnet colliding with you.

Chu. Plugged in all the time, he's at first twitching, not just mental but physical, extra muscle-controlling cells being recruited into thinking when plugged in, it's ecstatic like crack. He almost gets taken over by agents from the orphidnet, by other people or by autonomous AI agents. Ond shows him how to install a firewall.

Chu gets to know the orphidnet eddies. He begins to notice something behind it, he notices the silfs, he's talking about them in a creepy way. And he starts going over the unused cuttlefish-tracking data stream.

Nektar. She's curious about her neighbors, she sees all their stuff. She travels in VR orphidnet to Jose's apartment. He looks up noticing her. He's lying on the bed smoking. They fuck. A white rat runs by and they follow him down his rathole. They find themselves inside a church. A choir of orphids, and on the altar a pyramid with an eye. It recites the Beatitudes. Less techie people are reacting to the orphidnet with worshipful awe, struck dumb in the overwhelming presence of divine mind, leading to a kind of religion, with plugging in a sacrament, they think it's God. Nektar and Jose go to a back room and fuck.

They come off the run. Jose freaks out. He's "seen it all". He wants to kill himself if Nektar leaves him. Nektar decides to physically move in with Jose. She leaves him and sends a link to Jil.

Jil. Thinks merging into the orphidnet is not so different from sleeping and having a dream where you pool together into the collective unconscious of the hive mind, and not so different from merging with God, or maybe not so different from paying close attention to the world. When you plug into the supercomputing web, it's like you go out of yourself into the seamless web mind, and then you come back. Some thoughts you can't remember until you're plugged in. You just remember links. You can speak by exchanging links. But real physical life goes on. When you unplug and go outside, you're the same.

Jil invents a flickercladding Yoon Shoon Logoman called Happy Shoon. (I lift the neologism "Logoman" directly from the "Sonmi" story in *The Cloud Atlas*.) Happy Shoon hops around, Bixie likes to play with him. And Jil uses her orphidnet savvy to post ads for Happy Shoon everywhere. Happy Shoon becomes autonomous, quite smart. It's a lot like those Silly Putters I had Corey Rhizome making in *Freeware*. So maybe Jil gets into the doll biz.

One creepy thing, Jil is having dreams of the cuttlefish talking to her. And she finds out about the silfs. They live in another world that she calls the fab, and eventually they'll go to a level beyond that, the subfab — a real word for the spic-and-span basement of fab, which is a chip fabrication plant like ExaExa's.

Craigor. He sees his boat arrangements as a physical blog. For him, the orphidnet is a matter of resonance and enrichment where every word, diagram, thought or feeling brings along a rich association of footnotes and commentary. He notices that the orphidnet has both a waking state and a sleeping state, it's not always the same. And then he realizes this is due to quantum multiplicity.

Momotaro. Games, a place to see his friends. They play locative games.

Bixie. Imaginary friends. She gets kidnapped by the silfs. Like in "Mimsy Were The Borogroves."

6.

Meanwhile, "because" the orphids are quantum computers, they aren't collapsing the states of things. They aren't observers in the usual sense. They entangle. So a bunch of their tagged Pharaoh cuttlefish who happen to be silfs are free to tunnel over to the fab. Chu notices this.

Jil calls Ond about Bixie. She talks about silfs and fab. This dovetails with what Chu has been noticing, and with, indeed, what Nektar and Jose saw.

Ond talks about a timing channel attack on the computational ultrastructure of spacetime.

Scene with Craigor stoned sitting on his pancake scow in the South Bay, noting down in pencil how long each second seems to take. "What are you doing?" Jil asks. "I'm conducting a timing channel attack on the pregeometric computational ultrastructure of spacetime."

"You ninny," says Jil.

Chu learns to monitor the — call them silfs — going from here over to the fab. He can time, let us say, the interval between the silf saying "Go" and the silf wavering and disappearing. The silfs are being encrypted and I can see how long the encryption time takes. Problem here is that the data in a silf is so big and gnarly, so it's hard to write it in binary and get the timing per 0/1 bit tested. Of course with the orphidnet mind, this would in fact be feasible. They run some kind of timing channel analysis on the disappearance rates to figure out how to tunnel over there themselves.

A key element in the process is the quantum mechanical notion that if nobody is watching something then it smears out into a superposed state. Let's suppose that for a silf to travel between our universe to the fab (1) she superposes herself, turns off self-observation and spreads out into an indeterminate state, and then (2) observes herself in such a way so as to collapse into the ethereal or material form.

The observation method *is* the encryption method. A certain quantum-mechanical operator. It takes the form of a koan-style question. I think I'll use Shuzan's staff.

###

(Form 1) Shuzan held out his short staff and said, "If you call this a short staff, you oppose its reality. If you do not call it a short staff, you ignore the fact. Now what do you wish to call this?" [Quoted from <http://www.chinapage.com/zen/koan1.html>]

Note that in traditional Zen teaching, the penalty for a poor answer was a hard whack on the head with a short staff like Shuzan held.

The commentary on this koan says, "It cannot be expressed with words and it cannot be expressed without words. Now say quickly what it is."

D. T. Suzuki describes some variations on this koan in *Essays in Zen Buddhism* (1961 Grove Press, NY).

(Form 2) The masters generally go about with a kind of short [bamboo] stick known as a shippe, or at least they did so in old China. It does not matter whether it is

a shippe or not; anything, in fact will answer our purpose. Shuzan, a noted Zen master of the tenth century, held out his stick and said to a group of his disciples: “call it not a shippe; if you do, you assert. Nor do you deny its being a shippe; if you do, you negate. Apart from affirmation and negation, speak, speak!” p, 275.

(Form 3) Ummon expressed the same idea with his staff, which he held up, saying: “What is this? If you say it is a staff, you go right to hell; but it is not a staff, what is it?” p. 276.

(Form 4) Ummon once lifted his staff before a congregation and remarked: “In the scriptures we read that the ignorant take this for a real thing, the Hinayanists resolve it into a nonentity, the Pratyekabuddhas regard it as a hallucination, while the Bodhisattvas admit its apparent reality, which is, however, essentially empty. But, monks, you simply call it a staff when you see one. Walk or sit as you will, but do not stand irresolute.” p. 34.

###

As well as the koan, the material/ethereal transformation routine embodies a mantra, an information pattern which is, in effect, a code number.

Quantum meditation.

But they need the mantra. A big number. Chu figures it out. Chu always liked Bixie, he wants to help get her back.

“You know you have good transformation parameter if you see blue spaghetti,” said Craigor.

“Hail the fully goob-o-matic interface,” said Ond.

“Postsingular” Story Section Three

7.

They go to the fab: Jil, Ond, and Chu. Craigor stays home to protect Momotaro.

Subfab Wall. The silfs learn from us about how to do a side channel reality attack, which they hadn’t thought of, and as the people enter the fab, some of the silfs descend to the subfab level with Bixie still as hostage. The silf bounce back, but they left Bixie behind. They don’t reveal this to Jil, Ond and Chu yet. They say there’s no reasoning with the guys down in the subfab, it’s crazy monsters, like being in the sun, fuhgeddaboutit, it’s a mess down there, it’s pregeometric, it’s like hitting a wall. They wonder if there’s a subsubfab level too, wondering if it’s “Turtles All The Way Down.”

Reality hacking. Meanwhile Jil, Ond, and Chu in the fab can’t find Bixie. Ond wants to tweak our reality to make his life better; he wants Nektar back. Jil wants to make Earth a better world. But this manipulative behavior annoys the silfs, they feel it’s blasphemy to try and change our universe, which they consider their perfect work of art. An unparalleled act of cultural barbarism.

Expulsion from Eden. Chu helps to block the reality hacking, he doesn’t like change. Thus he wins over the silfs enough so that Jil and Ond can go back to the material plane instead of being executed. After the silfs evict them, they change the encryption code to be much harder so we can’t hack it again.

Refusal of the Return. Chu stays on in the fab, it’s like heaven for him.

“Postsingular” Story Section Four

8.

Only Two Turtles. Ond misses Chu, he wants to go back to get him, turns out with the orphidnet he can crack even the new silf encryption code. Craigor goes along this time, he’s curious. Pursued by the silfs, Craigor, Ond and Chu are forced to dive

down into the pregeometric level. And now, with an act of conscious renormalization, they see that the subfab is our world. We get a “paracomputation” ending. The campfire, the water, the pine are computing the fab which is computing our reality with its Big Sur campground, beneath the pines by the river running into the sea.

They hitchhike back to the scow in the South Bay.

“Where have you been?” asked Momotaro.

“Around,” said Chu.

And Nektar is back; Jil called her.

“Postsingular” Outtakes

The ANS Task Force is cosponsored by the U.S. Fish and Wildlife Service of Department of Commerce and the National Oceanic and Atmospheric Administration of the Department of the Interior.

“Ond’s so worked up about,” said Nektar, leaning forward in her red plastic chair. No two of the chairs on the *Merz Boat* were the same. “He won’t tell me. Like his wife has to sign a non-disclosure or something?” Two little lens-buds glowed on clips in her wavy mat of brown hair. “Forget about you, Ond. I’m excited about being on Craigor’s boat. You don’t mind that I’m vlogging your stuff, do you Craigor? Vlogging’s my new hobby.”

Jil noticed that rather than there being, say, one single orphid attached to her coffee cup, a few days into the orphid release, she’d find an orphid on the cup’s handle, two more on its base, one on the inside and one on the outside, plus another half dozen orphids on the cup’s sides, three on the outside and three on the inside.

It made her feel good to think about her recovery. Solid.

The cuttlefish data wasn’t going to matter to Craigor anymore, as nobody would be needing cuttlefish rhodopsin for frogeyes, now that everyone had orphids like smart lice boring magnetic spirals into their brains.

There were some other virtual kids there too, friends of Momotaro’s and Bixie’s and Chu’s friend Willy from next door. The best part of the hide-and-seek game was when Chu would find Bixie and squeeze into a little corner with her. It was like being the cuttlefish with his girlfriend, hiding from the flaming stars that wanted to eat them. He tried to show Bixie how to make a firewall, but she didn’t understand.

Being in the orphidnet is like merging with God. When you plug into the supercomputing web, it’s like you go out of yourself into the seamless web mind, and then you come back. Some thoughts you can’t remember until you’re plugged in. You just remember links. You can speak by exchanging links. But real physical life goes on. When you unplug and go outside, you’re the same.

He notices that the orphidnet has both a waking state and a sleeping state, it’s not always the same. And then he realizes this is due to quantum multiplicity.

“A cuttlefish disappeared!” announced Momotaro.

“First there were twenty-eight and then there were twenty-seven,” said Chu. “I looked away, and when I looked back he was gone.”

“I saw a twinkle in the corner of my eye,” said Momotaro. He put his fingers up by his mouth and wiggled them, imitating a flying cuttlefish.

“Men are immediately going to begin using the orphids to look at the exact intimate details of women’s private parts,” said Jil with a shudder. “Can you imagine how many hits, like, Kimmie Kross’s labia and perineum are going to be getting 24/7? Ugh. No publicity for me, thanks.” [Not that I included this line, but that name gets me. Later I changed the name to Tawny Krush, and made her the ex-girlfriend of Jeff Luty of Nantel/ExaExa.]

[This long outtake was my original draft for a too-complex ending.]

Jil was neither here nor there; neither now nor then. The chiming blue spaghetti clicked and she was in the Fab. Chu and Ond were there too. The place looked like hell: fire, flying shapes, glowing demons.

Before getting around to leading them to Bixie, the silfs wanted to show off. They told Jil, Ond, and Chu that they determined the nature of the human’s physical world. They had a thing like a giant moany-groany organ with multiple keyboards to alter human reality. Even though Jil was going nuts worrying about Bixie, Ond kept asking questions about the tweak interface.

The silfs ran off to take care of some emergency just then. Chu was spacing out staring at everything. Ond and Jil sat down on the organ bench side by side. Ond twiddled some keys and buttons, trying to make Nektar come back to him, and Jil went ahead and tried to eliminate the orphids, whom she was starting to view as a lot more trouble than they were worth.

“Blasphemy,” said a silf, coming back and noticing what the humans were on about. “Your universe is our perfect work of art. To alter it would be an unparalleled act of cultural barbarism.”

“Where’s Bixie?” demanded Jil.

Bixie — well, as it happened, the silfs had never before thought of doing a timing channel attack on the next lower dimension of reality themselves and, copying Ond and Chu’s technique just now, they’d managed to send a small party down to the level below the Fab — which they called the Subfab. They hadn’t been able to stay in the Subfab, but, sad to say, they’d lost Bixie down there. They’d taken her along lest the humans snatch her back.

“Then show me the way to the Subfab, God damn you,” yelled Jil.

“You don’t want to go there,” said a large female silf. “It’s crazy chaos, unmanageable, forget about it, it’s pregeometric, like hitting a wall. Though if we could get past it, maybe we’d find a nice Subsubfab level.”

“The world resting on a turtle standing on a turtle standing on a turtle,” said Ond. “Turtles all the way down.”

“You left Bixie there?”

“She wriggled,” said the big silf. “I dropped her.”

Jil’s physical attack on the silfs was creditable enough that they evicted her and Ond back to the material plane. But Chu stayed in the Fab. He was enjoying it there.

Of course then Ond wanted to go back for Chu. But the silfs had altered the encryption method so that the blue-spaghetti-and-chimes code no longer worked.

Drawing on the resources of the orphidnet, Ond got back to work and cracked the new encryption. The new code was a spiky mound of beet-roots with bagpipes and drums.

On the second trip to the Fab, Craigor instead of Jil accompanied Ond. The silfs were annoyed to see Ond back, they came at him as if to attack. Ond scooped up Chu and, fleeing the silfs, ended up diving down into the Subfab level, Craigor at his side.

At first they thought they'd go crazy. But with an act of conscious renormalization, Craigor observed that the Subfab was our world. Chu and the two men materialized next to a campfire by a river beneath a pine tree near the sea. And Bixie was sitting there by the fire too.

"The Subfab computing the Fab computing our reality is just a river running into the sea," said Craigor. "Nature is the ultimate computer."

"Where have you been?" asked Momotaro when the little party returned to the *Merz Boat*, just a little before dawn.

"Around," said Chu.

"Look who's here waiting for you, Ond," said Jil.

It was Nektar.

The orphids stuck around, and the silfs stopped messing with humans. After all, if the silfs bothered our world, we could bother theirs. For Ond and Craigor quickly figured out how to build a Fab-altering organ just like the one silfs had for tweaking our world.

The postsingular era was well underway.

"Postsingular" Story Progress Notes

October 10, 2005. I'm working on a series of short stories these days, inspired by Charles Stross's *Accelerando*. Like I said earlier, I sold "Chu and the Nants" to Asimov's, and now I'm in the midst of a longer tale, a novelette or novella, with working title "Postsingular," although maybe "The Reality Fab" would be better. Naw, these days, "postsingular" is red meat to the fen.

I'm out of my comfort zone on this story for several reasons.

(1). I'm doing omniscient narrator point of view, rather than my usual 1st person POV or close-in 3rd person POV where I see everything through one character's eyes and eavesdrop on that character's thoughts. In my omniscient POV, I could even be eavesdropping on all the characters' thoughts, flitting around from one to the other, but I'm leery of that, as I've seen it fail in some stories. On the other hand, some writers, e.g. Pynchon, get away with omnisciently peering into lots of people's minds. So I'd kind of like to try it. But I'm scared. So this makes me anxious about my writing today.

(2). I'm working at an unusual length, the novelette. I have this feeling of not wanting to put too much planning into "just a story," but of course that's biting me in the ass. At least I do have a plot.

(3). I'm trying to visualize the Singularity, and that's hard.

Stop kvetching and write. Can't. Okay, just revise the outline once again. That's what I was doing for a week or two before I started the story, revising the outline over and over. And now I'm stuck, 6,240 words into the story with the AI orphidnet emergent, so I need to outline. And then maybe I could paste capsule sketches of all the scenes to come into my story document, and that way I'd have some handholds up ahead to get me past the tricky bit I'm on now.

October 12, 2005. Bruce Sterling was here yesterday, and apparently he and some others already are using “arphid” to stand for RFID, or radio-frequency identification device. And I’d been calling the little nanomachines in my story arphids. But now I’m concerned it’ll look dumb if I try to repurpose the same name. Like the not-up-to-speed Dr. Evil in that Austin Powers movie saying he wanted the superpowers to give him ... a *million* dollars. He’s been asleep since, like, 1965. Like having my characters communicate by ... *portable telephones*. So what to do. I liked the social-insect sound of arphid. Termites, wasps, lice, mites, gnats. Turmites, wasps, nanolice, nanomites, gnants. Earwigs, everwigs. Irphids, orphids, urphids. I’ll use orphid.

October 16, 2005. Granddaughter Althea was visiting, also I was emailing with Bruce about a proposed story called “Hormiga Canyon,” also the revision requests for *Mathematicians in Love* came in. Now I’m writing again. I think today and tomorrow I’ll push a little further on “Postsingular.” I’m doing a somewhat modernistic section now, describing the arrival of the supermind via overlapping stream-of-consciousness accounts by three or maybe more characters.

November 13, 2005. I decided to nail *Mathematicians in Love* before going on with my story, also I had to travel to Wyoming and Massachusetts, so I “lost” a month of work on “Postsingular.” Bruce was so annoying in our preliminary emails about “Hormiga Canyon” that I put that on the far back burner. Quoth he, “I said that I like a tennis net about a mile high; but I didn’t mean boring, ragged old sci-fi tennis nets.” Arrgh. Last night I saw Bruce in a dream, though, and he was very nice and friendly. So maybe I’ll get back to him, but first I really would like to finish off “Postsingular.”

I’m finding it hard to get into this story again, it’s so long and complicated. I’m anxious about it. My original plot outline has too many things in it. The orphidnet itself is enough of a wonder, I don’t think we need to have the “only two turtles” or the “reality-tweaking” or the paracomputation things that I was shoving into the end. I could do a separate story on paracomputation, really, that might be a story I could do with Paul DiFilippo. And the “only two turtles” could also be a story on it’s own. I’m not even so sure about forcing in the timing-channel attack, but that really is one of the main things I wanted to get into this story, so I’ll stand by it. And I’ll keep the silfs in the parallel world who we can only see in the orphidnet, that’s kind of good too. And I think we can do a little excursion there and back as well, maybe that could lead to a new kind of space travel, which would be a nice place to end it.

November 14, 2005. So I ripped out some of the complicated stuff at the ending and am tightening it up. Just discovering the Fab and the silfs is enough of a wow, I think I’ll have the silfs kick them right back out. And save the adjustment to the orphidnet for yet another story — assuming I can sell this one.

I feel less anxious about the story today, maybe tomorrow I can finish it. I’m starting to think it’s pretty good. I got the changing POV kind of working, which has been interesting.

November 15, 2005. I decided to have a lynch-mob chasing Ond. People really would be angry at a guy who’s ruined the world. And give Dick Dibbs the gas chamber in the back story.

Call the other world the Mirrorworld instead of the Fab.

[On January 9, 2006, I changed this to Hibrane, to draw in this new higher-dimensional physics I’m reading about in Lisa Randall, *Warped Passages: Unraveling the Mysteries of the Universe’s Hidden Dimensions* (HarperCollins 2005).]

Dropping the La Hampan tweaking angle, think of the two worlds as symmetric. Invest in the so-called Ekpyrotic scenario, see http://arxiv.org/PS_cache/hep-th/pdf/0103/0103239.pdf, the Greek word ekpyrosis meaning “sudden conflagration.” Though note that ekpyrosis didn’t catch on among cosmologists. Be that as it may, it’s an image. Each world “made” the other.

If the silfs are like angels or ghosts on our world, we should be like that on the silfs’ world. Suppose, to make it graphic, that, in Hibrane, you see your surroundings as heaven, with silf reality down below on the ground.

November 16, 2005. I rewrote the end a few times, then did a full read-through and revision today. It’s just about done. I’m dropping the word “silf” for “angel” throughout. Just shy of 13,000 words. Right smack dab in the middle of novelette territory (7,500 - 17,500 words). Mailed it in to Asimov’s.

December 6, 2005. Happy news: today Asimov’s bought my novella “Postsingular.”

Nov 25 - 30, 2005. Next Up: Frek 2, Ware 5?

Frek 2.

I need to reread Frek 1, just to get it fresh in my mind. I should make note of usable hooks to tie onto, loose ends to extrapolate from, and special well-loved things I wanted to revisit.

Somehow I feel rebellious at the thought of writing Frek 2. The reason I feel rebellious is, I think, because my editor Dave Hartwell suggested that I set Frek 2 only a year later than Frek 1, and that I should avoid any heavy puberty/romance issues. But if I do that, I feel like I’m a wage-slave being required to “act nice,” never my forte. I’m like, hey, I did the one kids book because I wanted to, but that’s not where I want to spend my career.

I could relate to the project better if we jumped ahead to Frek as a high-school or college-age guy. Maybe 17 or even 22. Past adolescence and with the world a mystery to him. He’s wondering how to make his way, like Rudy, Jr., right after he graduated from Berkeley — when he moved up to Portland. I could relate to a scene like that.

I wonder if I could talk Dave into this, into having Frek by 22. Just because he suggested something in a single conversation doesn’t mean it’s set in stone. I should talk to him.

Frek moves somewhere different, away from Middleville, and is living alone, and maybe gets in with a bad crowd. He could be in Stun City, for instance. Or, better, a brand new city, perhaps a rainy seaport. He has a sense that his life’s great adventure is behind him. Maybe he starts drinking too much moolk. Maybe he stops being so nice. And then a new adventure happens.

Possible story keys: the toons rebel, they want to incarnate themselves into meat bodies (shades of the boppers in *Wetware*). With the Govs gone, there is no military force and no government, do things come apart? I can see the Grulloos rebelling as well. Perhaps they join up with the toons. Now that there’s no more genetic controls, and all the species can breed, everything’s up for grabs. Maybe it’s like jungle. A Cambrian explosion.

Surely the Unipuskers, Orpolese and some other species return to meddle in Earthly affairs.

Ware 5.

I didn't use wireless and the Net much in the earlier Wares, I suppose I need to make more of that.

Mainly I'm seeing Cobb in that UFO he departed in at the end of *Realware*. His adventures with the Metamartians, I think they were called. And near the end he can bring paracomputation to Earth. Call it *Everyware*?

Today I went by to visit Paul Mavrides and Hal Robbin, where I used to go and read each chapter of *Freeware* as I finished it. Being there helped me be stoked about the *Wares* again.

Nov 28, 2005. I Ask My Editor What Next?

I phoned Dave Hartwell to discuss possible angles on *Frek 2* or another *Ware* book.

Frek 2.

I mentioned my idea of having Frek be 20 years older in *Frek 2*. He pointed out that so much has been set loose at the end of *Frek 1* that it would be worth staying in that time period to see what unfolds. The biome has been liberated and is filling up with original species. The human race is in contact with two alien races, with more to come. And the entire world government (the Gov worms) has been dismantled. There's the ravages of the Shuggoths to repair. And only now is the world free from the branecasters and Orpolese masters. And surely the Grulloos and toons are about to rebel.

He also said there's something powerful in writing about a boy and a girl *before* they have sex, as would be the case with Frek and Renata still so young. A big part, after all, of the man-woman relationship is outside of sex. He suggests that maybe Frek's mother gets a new husband. Maybe the whole family moves to the city by the sea.

He said that by tapping into the monomyth I'd opened up a lot of story ideas. I said, "But there's no Monomyth II." He said, "You just do it over and over. The first monomyth story, *Amadis of Gaul*, had 157 monomythic sequels and imitations in the Middle Ages. You don't have to use the *whole* monomyth each time."

I said, "Maybe I don't feel like writing from the point of view of a twelve-year-old right now." He said fair enough, I could consider the *Ware 5* novel as well. He suggested I might go ahead and write a first chapter for each of the books and see which one I felt like pushing on with.

Ware 5

Regarding the new ware book, he said it would be hard to get Tor to buy the first four Wares, at least until the fifth one came out. He also pointed out that many readers will have read *Software*, but not the following three, and that they won't want to start in on a fifth volume without having read the first four.

I suggested maybe it could be set as a new cycle. I think I wouldn't use "ware" in the title, to make this clear. He thought that was a much better idea. He said I should start with all-new characters — something I actually did in most of the *Wares* already — and then have one of the old characters come back — that would be Cobb most likely. He also said that, as I'm good at writing adolescent characters, I might

consider doing it from the POV of an adolescent, as Stross did for several of the stories in *Accelerando*.

Postsingular Novel

Could I make the Chu stories into a fix-up novel? Or a series of novels?

I have set Chu up as stories, and I ran things on fast-forward. But suppose *Asimov's* doesn't buy the "Postsingular" story. What if I were then to expand this into a novel so as not to waste the writing?

For that matter, suppose that *Asimov's* does buy the story. Why not use it as a seed anyway? I see the Happy Shoon critters becoming human-equivalent in AI. Aw, better to just do that in a third story. Perhaps the whole Chu situation is too improbable to have to believe in for multi-book length. But, after all, isn't SF *about* improbable situations?

One caveat is that I'd begun thinking of the Chu stories as the backbone of my next story anthology, which I was even thinking of calling *Postsingular* after the second Chu story. I was seeing myself putting that story in the middle of the collection and putting a third Chu story last. But maybe just let the anthology wait for more random occasional tales to come in. And all it something else like *Power Chords* or, maybe better, *Thought Experiments*.

A Fresh Novel, Possibly Leading To a Series

I do like having a series to work on. I could simply set up a brand new world, maybe a bit like the *Ware* world, and have a series in there. It could be a postsingularity world, maybe like in the *Chu* stories.

But, *duh*, I've got a series already started in the form of *Frek!* Am I overthinking the situation? Tor will buy *Frek 2* for sure, and having it out will revive the sales of *Frek 1*.

Just do it.

Don't want to.

Nov 29 - Dec 6, 2005. "Panpsychism Proved" for Nature.

I have been invited to write a short-short SF story for *Nature* magazine, they want like 800 - 900 words. Idea?

I could do a thing with paracomputation, a candle flame computer, and dark energy is consciousness. I already tried to do that in *Mathematicians in Love* and I kind of flinched and looked away. I'd like to go back and nail it.

And then I had a fresher, more outrageous idea, which I called "Missing Numbers," and then "Base Camp Googol."

Then I decided it was too hard to make "Missing Numbers" work, at least for now. I can't quite see why a computer couldn't trample over the holes. Or do the holes have to be out in the numbers that are hundreds or thousands of digits long? But it's hard to get excited about those numbers.

Rather than going back to paracomputation, I turned to another pet idea of mine, panpsychism (meaning "every object has a mind.") I just read the first and last chapter of this new book I got, David Skrbina, *Panpsychism in the West*, as a matter of fact.

And I saw a nice way to write a story about panpsychism being “proved” by a woman who makes a telepathy device and accidentally tunes in on a rock instead of on a person. I got it all clear in my head, and wrote it quite rapidly today.

If *Nature* prints it, it’ll be funny if they use that title, too. Skrbina’s dream come true, no doubt. “Panpsychism Proved” right there in *Nature*!

Here’s a final twist I didn’t use: “With a little more work, Shirley might learn to make things do her bidding. And maybe then Rick would see.”

Nature bought it, so I’ve written and sold three stories in these last three months.

Dec 6 - 13, 2005. “Panpsychism” Essay for Edge.

What I need in order to get some one concrete book project to happen is some particular artistic/scientific goal that required, nay, compelled me to write the given book. I have to get into a state bordering on obsession to write a book.

One obsession I’m entertaining these days is the panpsychism-via-paracomputation notion (PVP for short) that every object is alive and conscious. In my story/thought-experiment, the objects begin behaving somewhat like people, due to their being infested by toon (or orphidnet or alien) software. The AIs want to be embodied.

PVP harks back, come to think of it, to a chapter in *White Light* where the objects are talking to Alwin (not that I thought of paracomputation, they were just doing it, maybe because they were in heaven). That original PVP chapter was somewhat inspired by a double-page drawing by R. Crumb in an early *Zap* showing animated kitchen objects: Sneezy Pete Pepper Shaker and the like. It always makes me high to think about panpsychism, every time I hold forth on it to a class, I feel like I’ve just taken a big hit off a joint.

The weak point revealed in Skrbina’s book *Panpsychism in the West* is that if you’re not careful, advocating panpsychism becomes simply a matter of watering down your notion of “mind” to apply to objects. But, with Skrbina, I want to claim that it’s a real sensual mind that you’re talking about in that rock, that pen, that finger, that dust mote, that hair, that napkin torn in half (two minds now). A materialist might say, hah, there’s no content to such a claim, but I pretty well demonstrated the falsity of that line of attack in my *harrumph* definitive thought experiment “Panpsychism Proved” (*Nature*, 2006).

Once we have panpsychic paracomputation working, we also open the door to all sorts of oddball intelligences infesting the objects. Could be the toons or orphidnet AIs, could be aliens in the form of cosmic rays (*à la Freeware*), could be “angels” from the Hibrane, could be elves from the subdimensions. I like this idea, though I’m not sure if it leads anywhere cool. The contents of your cupboards do a Thanksgiving Day parade around your kitchen, maybe the cleaver tries to attack you — and then what? Cart the giant yam away in a pickup truck.

The panpsychic routine could happen either in *Frek 2* or in the “Postsingular” series of stories.

I think the easiest thing for me to do next might be to go ahead and write a third “Chu” story, following up “Chu and the Nants” and “Postsingular.”

There is a bit of a worry that I'm "using up all my ideas" that I might use in Frek 2 — but, hey, let's just assume I'll keep getting new ideas. The more ideas I use, the more I get, anyway.

If I could keep the story-series bouncing, as a higher-end option I could end up with a Stross-style story-series/fixup-novel like *Accelerando*. The lower-end option is just to get the three stories and put them into an anthology with the other stories I have kicking around. And call my anthology *Postsingular* like the story to give it a contemporary buzz.

If I *were* to make a whole book's worth of Chu stories, then I'd need something else to fill up the non-Chu story antho, and then I wouldn't be able to call it *Postsingular* either. Well, we'll see how I feel after story number three, "Bixie and Chu."

At first I'd been thinking of having one of the three Chus at the start, one in the middle, and one at the very end of my anthology. Susan Protter thought it would be (polite pause) *unusual* to have the consecutive Chu stories scattered through the book. She may have a point. Better to just run them 1, 2, 3 right up front, makes the book look hot.

Psychically, it's a bit of work to keep writing stories. The big ramp-up for each one of them. The deflation of coming off the story. Like a series of one-nighters in place of a marriage. Of course if the stories are in a series, it's not quite as hard.

It occurs to me that a difficulty in publishing a linked series of stories is that I can't go back and put things into the earlier ones to prefigure things in the later ones, as I'd normally do with the chapters of a novel. Looking ahead to the notion of writing a trilogy of novels, this suggests that I'd want to be pretty thorough in outlining the trilogy in advance.

I wrote a little essay on Panpsychism as a response to the Edge Annual Question - 2006: "What is Your Dangerous Idea?" John Brockman got me to take out two references to other people. On his site, you're supposed to pretend you invented everything you say. Here's the final text:

Panpsychism. Each object has a mind. Stars, hills, chairs, rocks, scraps of paper, flakes of skin, molecules --- each of them possesses the same inner glow as a human, each of them has singular inner experiences and sensations.

These days I'm [a Wolframite universal automatist,] quite comfortable with the notion that everything is a computation. But what to do about my sense that there's something numinous about my inner experience? Panpsychism represents a non-anthropocentric way out: mind is a universally distributed quality.

Yes, the workings of a human brain are a deterministic computation that could be emulated by any universal computer. And, yes, I sense more to my mental phenomena than the rule-bound exfoliation of reactions to inputs: this residue is the inner light, the raw sensation of existence. But, no, that inner glow is not the exclusive birthright of humans, nor is it solely limited to biological organisms.

Note that panpsychism needn't say that universe is just one mind. We can also say that each object has an individual mind. One way to visualize the distinction between the many minds and the one mind is to think of the world as a stained glass window with light shining through each pane. The world's physical structures break the undivided cosmic mind into a myriad of small minds, one in each object.

The minds of panpsychism can exist at various levels. As well as having its own individuality, a person's mind would also be, for instance, a hive mind based upon the minds of the body's cells and the minds of the body's elementary particles.

Do the panpsychic minds have any physical correlates? On the one hand, it could be that the mind is some substance that accumulates near ordinary matter --- dark matter or dark energy are good candidates. On the other hand, mind might simply be matter viewed in a special fashion: matter experienced from the inside. Let me mention three specific physical correlates that have been proposed for the mind.

Some [Nick Herbert, Stuart Hameroff, and Roger Penrose] have argued that the experience of mind results when a superposed quantum state collapses into a pure state. It's an alluring metaphor, but as a universal automatist, I'm of the opinion that quantum mechanics is a stop-gap theory, destined to give way to a fully deterministic theory based upon some digital precursor of spacetime.

David Skrbina, author of the clear and comprehensive book *Panpsychism in the West*, suggests that we might think of a physical system as determining a moving point in a multi-dimensional phase space that has an axis for each of the system's measurable properties. He feels this dynamic point represents the sense of unity characteristic of a mind.

As a variation on this theme, let me point out that, from the universal automatist standpoint, every physical system can be thought of as embodying a computation. And the majority of non-simple systems embody universal computations, capable of emulating any other system at all. It could be that having a mind is in some sense equivalent to being capable of universal computation.

A side-remark. Even such very simple systems as a single electron may in fact be capable of universal computation, if supplied with a steady stream of structured input. Think of an electron in an oscillating field; and by analogy think of a person listening to music or reading an essay.

Might panpsychism be a distinction without a difference? Suppose we identify the numinous mind with quantum collapse, with chaotic dynamics, or with universal computation. What is added by claiming that these aspects of reality are like minds?

I think empathy can supply an experiential confirmation of panpsychism's reality. Just as I'm sure that I myself have a mind, I can come to believe the same of another human with whom I'm in contact --- whether face to face or via their creative work. And with a bit of effort, I can identify with objects as well; I can see the objects in the room around me as glowing with inner light. This is a pleasant sensation; one feels less alone.

Could there ever be a critical experiment to test if panpsychism is really true? Suppose that telepathy were to become possible, perhaps by entangling a person's mental states with another system's states. And then suppose that instead of telepathically contacting another person, I were to contact a rock. At this point panpsychism would be proved.

I still haven't said anything about why panpsychism is a dangerous idea. Panpsychism, like other forms of higher consciousness, is dangerous to business as usual. If my old car has the same kind of mind as a new one, I'm less impelled to help the economy by buying a new vehicle. If the rocks and plants on my property have minds, I feel more respect for them in their natural state. If I feel myself among friends in the universe, I'm less likely to overwork myself to earn more cash. If my body will have a mind even after I'm dead, then death matters less to me, and it's harder for the government to cow me into submission.

Nov 29 - Dec 12, 2005. "Base Camp Googol".

I began writing up this idea for a *Nature* short-short and didn't use it.

This weekend, (December 10, 2004) I saw my friend Terry Bisson read a story called "Billy and the Unicorn" at the "Writers With Drinks" reading at the Make Out Room in San Francisco. Terry was great. It was like listening to a Zen sage. Not an extra word, every word achieving the maximum effect.

And it struck me that maybe he could help me make "Missing Numbers" work. I've been overthinking it, and he might be able to clarify and simplify it. So I'm sending him the idea. (But as of Jan 3, 2006, he hasn't done anything with it. Now I wish I could get it back from him and send it to Paul DiFilippo.)

I was inspired by sitting alone at the Bear coffee shop on Santa Cruz Avenue the other evening, and a couple of the barrista guys were having a discussion about — something. One was offering the other fifty or even sixty dollars to do something boring. I didn't catch what the boring thing was, so when one of the boys spoke to me in a friendly fashion, I asked him. "He was wondering if someone paid me sixty dollars would I count out loud to ten thousand by ones. But it would be too stupid."

I did some quick calculations. You could probably count to ten thousand in the course of a long day. If a big number takes five seconds to say, in thirty years, which is a billion seconds, you could count to 200 million. Maybe if you rush, you could count ten million per year. Dividing by 300 we get thirty thousand in a day.

A guy, maybe he's an idiot savant, wants to set a record of counting out loud, and after about a year he gets to 12,345,678 — and he can't say this number. The numbers don't actually exist out past this level. Or maybe, better, the snag happens the first day.

Have any pinheads (or monks) actually done this? The Guinness World Records sites turns up no relevant hits on "count."

I like the counting idea, it's simple and funny. The number that he can't count to has to be unmentioned in the story.

But now there's a problem. Thanks to the fucking computers, it seems like most numbers less than a hundred or so digits long have been "mentioned," at least in the form of number strings that these evil devices spit out.

I could get into finding the first number not mentioned by computers, I could bring in a Web search for every integer that's ever been mentioned, looking for the first one that hasn't been. That's got to be the same as the one you can't count to or name. This is a bit paradoxical, in that if the search works, then it names that number, so the search has to start over. If there were some moderately large absolutely unnamable number, then every time you try to do an exhaustive computer search, something breaks before you're done.

I see a zoomable wall-sized computer display with a dot for each number less than, say, a hundred million. And a web crawler is searching out each digit sequence it finds on the web and marking it used on the display.

[In terms of what computers "name," do I include 9-digit SS numbers like 125-77-5155? Or ten-digit phone numbers (408)395-9999? The phone numbers would be, let's see, in the low billions 4,083,959,999. Surely they haven't all been used. But the SS numbers are only in the hundreds of millions, like 125,775,115, and there's 200 million Americans, so maybe they have all been used. Might as well be

generous and include these so it doesn't look like I'm cheating. Also credit card numbers, which are typically four quads like 5555 4444 3333 2222, or 5,555444,433,332,222. Or IP addresses are a 32 bit address, often written as four numbers separated by periods, where each number can be zero to 255. For example, 1.160.10.240 could be an IP address. Looked at differently 2^{32} is four billion, so there are four billion IPs. And some guys want to push it up in [IPv6](#), the new (but not yet widely deployed) standard protocol for the Internet, addresses are 128 bits wide, which, even with generous assignment of netblocks, should suffice for the foreseeable future. In theory, there would be exactly 2^{128} , or about 3.403×10^{38} unique host interface addresses. I believe that's three hundred unodecillion. This large address space will be sparsely populated, which makes it possible to encode more routing information into the addresses themselves.]

Restating my problem: Computers count past a billion all the time. My heart beats a billion times in the first thirty-five years of my life. So don't all the numbers less than a billion have to exist?

Blind spot answer: No, they don't. Perhaps it's artistic abdication to push the missing-number issue out to very large numbers that, we hope, never become in any way physically surpassed. The missing numbers have to be right in my characters' faces. We tend to think we mentioned them, but actually there was a little hole in time there where we skipped over them.

Hopping answer: At any given time, there are some rather small unnamable numbers, but perhaps their values change from second to second. Maybe the missing numbers faded in and out, multiverse style. Today's missing numbers are different from yesterdays.

Base camp answer: Maybe all the smaller numbers are glued in place, but maybe some nut is hoping to count numbers that have never been named before, so he decides to start counting at googol (which is a one followed by a hundred zeroes). He's like helicoptered himself up to the virgin snow, no tracks there. And he gets hung up. This would make for a great story title as well: "Base Camp Googol." And the missing number is googol and twelve million, three-hundred-and-forty-five thousand, six-hundred and seventy-eight.

10,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,
000.000.000.000.000.000.000.000.000.123.456.789. Call it G9 for short.

Why are certain numbers unnamable anyway?

Maybe the unnamable integers are like the unspeakable names of God — although — *please* — I don't want to end up echoing Arthur Clarke's been-there-done-that "Nine Billion Names" classic.

And — *ugh* — I don't want to get into *Hitchhiker's Guide* and the secret of the universe being the number 42. This is tough. It's very hard not to mention Adams's 42, as readers will expect it, and if I don't mention it they think I'm dumb. But if I do mention it, then my story may turn silly and dumb and just-kidding and slobbering and — *ugh, ugh, ugh* — become a parodistic jape rather than a profound philosophical satire. Talk about "the anxiety of influence!" Maybe I have one character mention *Hitchhiker's Guide* and 42, but another character viciously dumps on it, he or she cavils at "having my delicate mind-webs dragged into the pop-culture mud. This isn't some silly parody of science fiction. This is serious philosophy of science!" In any case, the fact that people mention 42 all the time indicates that it's not unnamable.

Though I guess the hopping answer could get out of this. “Is it 42?” “Sometimes, for a few seconds. But that one’s been pretty well trampled over. Like 23. A number that’s been missing a lot lately is, um — can’t think of it! I think it might be less than, ah, seventy. Maybe I’ll remember it tomorrow.” “I’ll go ahead and count to seventy. You can’t stop me.” A knock on the door. “What were we doing?” “I forget.”

The base camp answer is that it’s like when you draw a lot of lines out in different directions from the same point you get a black smudge around the start point but a bit further out there are white spaces. And G9 is one of the earlier gaps.

I think the kicker for the story can be that the pattern of the missing integers represents a kind of machine code for the universe itself. I’m thinking figure/ground. The very act of continually covering up for the missing number produces space, time, matter, and energy. The holes, by the way, are of course a fractal gasket, like an asymmetrical and somewhat random-seeming Cantor set. Coding a single infinite series which is unnamable. Perhaps it’s related to Rule 30? Or, no, better, it codes up an oracle for a version of Turing’s Halting Problem or, even better, the set of all true mathematical formulae.

They discover the pattern is an oracle for mathematical or even scientific truth? Try telling that to a average reader. “Huh?” Well, maybe you could say the entire future history of the universe compressed into a data set. That would be worth knowing, eh?

Would prefer to make it funky, with an eyeball kick.

Maybe a character jumps into the hole. He or she says — something. And disappears. “What did she say?” “Um, who?” “I can’t remember.”

An alternate kicker is that the increasing use of credit cards and IDs and IP addresses is somehow thinning out the cosmos. This would be a nice satirical touch. The number-skulling of the world is diluting reality, making it less intense. I’m thinking of concrete piers offshore whose presence damages the wetlands where life teems. Oh, fuck the sob story.

How about this kicker. Finding and focusing and obsessing on G9 makes it nameable. And this screws up the repeating tile that makes reality out of pure math. So certain things disappear. And to fix it, our hero jumps into a number hole, taking the knowledge of G9 with him. Maybe he tells us this tale first person?

Dec 8 - 12, 2005. A New Series of Novels.

Reading *Locus* last night, and thinking about the biz of SF, it seems really typical for writers these days to turn out trilogies. Hardly anyone seems to write a standalone novel anymore.

Now that I’ve released my emotional attachment to the *Ware* books — that series is done, Ru, it’s *so over* — I need to think of a new series. And there’s no real need for the series to take up in the *Frek* world. It could instead be a series in a new world. What world would I like to go to?

Maybe I should do the obvious thing: “the new space opera.”

With the *Wares*, I just kind of backed into it being a series. Each novel was very much self-contained. So I don't necessarily need a novel-to-novel arc. Though it would be nice.

What to call the project, the worlds, the individual novels? Pompous vainglorious pseudocosmic titles seem to be order of the day. New Earth, Dark Energy, Panpsychism. How about Transfinite, The Elf Dimension, Hylozoic. The Y3K series. Would be nice to have a gimmicky unifying name like **Ware* was. Some syllable that's in all the titles. verse or brane?

I see the Thesis, Antithesis, and Synthesis as a pattern, also I might want to put in the 17-decker monomyth as a story structure, using five or six stages per volume.

The year is 2222. We're well out in space, I think. Or on Mars.

Maybe I can actually set it in the *Ware* universe. A minus is that you don't want people to have to do homework to read a book. A plus is that it helps keep the old series alive.

The *Ware* world is certainly rich, and I could fold in some of the *Chu* stuff as well, so as to take the Singularity into account. Also have some *Frek*-style biotech too, but this is not in the *Frek* universe. I wouldn't want to have the Great Collapse (of the biome in 2666). *Frek* is a separate world.

Goops. They don't use piezoplastic anymore like for the moldies. That is they don't use oil to make it. They use some goo that's produced by biotweaked giant clams. Maybe clams have associations that are too crude and literal (i.e. vagina juice)? On the other hand, maybe I can let that go, it's gnarly, and the South Pacific clams really do have richly computational mantles. Drop the clams and just be growing the mantles, which are in fact colored by their resident colonies of algae. The beings with bodies made from the stuff are called goops. The mind of a goop can be (a) a robot-evolved AI, (b) a human, or (c) an alien.

Alien minds do crop up all the time. How did the Metamartians get to Earth in *Realware*, I can't quite remember? Was it just by decrypting into imipolex? I know they did that in *Freeware*, but was *Realware* the same? How did they turn up at the bottom of the ocean like that?

Chirping. That can be the means by which little Roo travels to Earth. I like Roo as the character's name. Roo Rockwell. He chirps. Chirping destroys the source body, there's no way around this, you can't use chirping to give yourself a second body. Naw. Would you need to chirp just to get to Earth from Mars? I mean that's such a drastic side-effect (becoming a goop) for a relatively short trip. But maybe that's the way it is.

Alla. I don't think we want the alla, that kind of destroys society.

Orphidnet. Not the actual orphidnet, but, yes a postsingularity level of intelligences in the web.

There's a family business; Dad grows goo for the robots, he farms the giant clam mantles. They aren't allowed on Earth. Dad is a goop, so is Mom, they used to be human, but had to leave their bodies behind to get out here, but due to old age, Roo chirps to Earth, and that makes him into a goop, too? Once you're a goop, it's hard to go back, although in principle you can tank-grow a clone and re-humanize yourself,

not that most people bother. The original never-gooped Earthlings are kind of snotty towards goops, though.

I always wanted to do Mars. It's terraformed now, sure. Remember Ian Watson's "Operation Warming Pan." They melt the polar ice and bring back the seas. Ah, yes, Mars, now *that's* something I'd like to write about. Although I suppose I'd finally have to read Stan Robinson's Mars series — I set *Red Mars* aside some years ago.

As I've been thinking about memoir so much, I wonder if this could be a transreal equivalent of a memoir. I could follow a guy's life. Maybe three volumes: ages 1 - 20, 20 - 40, 40 - 60.

Experimentation, Addiction, Recovery.

Or just follow, like the years 12-22, the key ages of my readership, perhaps. If I did one guy's whole life, it would be hard to maintain a single story arc for that long. Of course I could have the three (or more!) volumes be quite disparate. Have the guy be an eyewitness to history. Or, like in the *Wares*, just keep introducing new generations in each novel so we can always have some characters in their 20s or 30s.

I could at least make the first volume transreal, with "my" character Roo Rockwell.

I could make up this big table of equivalents. Louisville, Germany, California, mathematics, computers, pot, writing, teaching — everything in my life could have a correlative in this other universe. Like corresponding to that list we might have, respectively, Mars, Earth, inside the Net, pattern linking, uvvy to the orphidnet, stunglasses, VR creation, blogging.

If I tied it to my memoir, I'd have this:

(1a) I'm thinking of my year in Germany as a good place to start. Maybe he's going back to Earth from some new world.

(1b) And then the college experience, with a near-fatal accident on his home world.

(1c) And then marriage and grad school, math and acid. End volume 1.

(2a) Fatherhood.

(2b) He discovers himself as an artist.

(2c) He's dragged down by addiction and political intrigue.

(3a) He goes to participate in the great work.

(3b) Becomes a professor, a public figure.

(3c) Retires or maybe, for drama, dies nobly.

But that might not be the way to go. Another angle is it's someone in an ordinary town. And he learns to see it is a mythic, he sees the elves. And then he goes back to being normal.

Dec 9 -12, 2005. Monomyth For Trilogy.

I'm recycling this entry from my *Frek and the Elixir* notes, although I'm re-editing it here.

These are the different stages of the "Monomyth" as outlined in Joseph Campbell's *The Hero with a Thousand Faces* (Bollingen Foundation, 1949.) He puts the stages in three Groups: Departure, Initiation, Return.

Originally I was thinking to limit each volume of my projected trilogy to a single group of stages. I'd imagined titles like I: *Transfinite*, II: *The Elf Dimension*, III: *Hylozoic*.

As it actually worked, out I ended up running through the whole length of the myth in my trilogy Volume I: *Postsingular*. Probably I'll just run through the whole monomyth again for each volume.

After finishing the book, on September 13, 2006, I put in some notes about things in *Postsingular* that fit the stages.

Overall Arc.

(Group I) Hero undergoes training and preparation and travels to a special place.

(Group II) Hero is transformed.

(Group III) Gets something magical and brings it back.

[Group I: Departure]

1. The Call to Adventure

Herald, sign. Goal is a higher world or a special spot in the universe.

Frek: The UFO under the bed.

Postsingular: The nants.

2. Refusal of the Call.

Let the hero's companion or brother or sister be the one to refuse.

Frek: they destroy the UFO.

Postsingular: They destroy the nants.

3. The Helper.

The little dwarf or magic animal of fairy tales. Gives the hero a magic tool like a cloak or an amulet. Maybe it's his professor.

Frek has this very strongly as the dwarf/grulloo Gibby.

Postsingular: The Hibrans appear on orphid night. Azaroth in particular is Thuy's helper. Jayjay doesn't have a helper. Gladax is kind of a helper as well.

4. Crossing the Threshold.

A spooky enemy. A peyote freak-out. A woman whose knees bend the wrong way.

Postsingular: Orphid Night, leading to when they jump to the Hibrane at the end of Part I. Also when Thuy's head goes through the grill.

5. The Belly of the Whale.

Meet a woman in the whale who is the whale's soul. Convert yourself into radiation to travel. The "belly" is the state of being in the chiming nospacetime. Objects wake up.

Frek: He gets inside the alien UFO.

Postsingular: I skip this in the first run through, but then Thuy hits this zone as Subdee in Part IV, kind of out of sequence monomyth-wise. The cave interlude in Part IV is a kind of belly-of-the-whale experience for Jayjay, particularly as he has that sixty year hallucination.

6. The Road of Trials.

A series of trials, in which you are aided by tips from your helper or helpers. I remember an SF story where a guy had to face his own fears become physical. A hydra-headed monster.

The traditional fairy-tale number of trials is of course three.

Postsingular: Lots of trials! Getting the harp in Hibrane. Getting into ExaExa on the Lobrane.

[Group II: Initiation]

7. The Goddess

After completing the third trial, he meets the Goddess: The nurturing mother, viewed at a higher plane than sexuality. Possibly goddess appears as an ugly woman whom you kiss to deliver and make beautiful. The two mother aspects are united, the nurturer and the sex partner. The Wife.

Frek meets Renata.

In *Postsingular* the romance is Jayjay and Thuy. When they get back together at Thuy's reading would be this stage.

8. The Temptress

Coupled with or based on or evoking a disgust with the flesh. The punishing, ignoring, sexually active mother. The wife when you're tired of her and she's tired of you? The Millstone, the Termagant, the Virago, the Quagmire. Demanding, hysterical bitch. Being around the Temptress and her bad scenes makes a fella want to transcend already, and be pure info.

One who exploits sex against its natural purpose of love and procreation. Maybe Roo has an affair.

Frek: Yessica Sunshine.

Postsingular: Jayjay with Jil, Thuy with Kittie.

9. Atonement with the Father.

The father may appear as a beggar. An ogre as in *Jack and the Beanstalk*. True success is peace with father[mother], not his[her] murder. You get power.

Frek has this.

I don't do this at all in *Postsingular*. Missed a trick! I can make more of this stage in *Postsingular 2*.

10. Apotheosis.

Eternity=time. Love and forgiveness, peace to all. God is present in everything. Bodhisattva=Mother + Father; Androgyny.

The Buddhist Bodhisattva Avalokiteshyara, "Om mane padme hum" means "The jewel is in the lotus." Jewel/lotus is analogous God/World or Word/Flesh, as in "The World was made Flesh."

What's up with the Mother = Father thing? Campbell says we have the good mother, and the father seems evil because he invades, the father is one's first enemy, the paradigm of all enemies to come. But in a happy family, the father has good content too, he's the nurturing motherly father. In enlightenment, we expand the nurturing father notion and drive out the enemy father idea. So that we want to nurture our enemies. Expand this notion of father. See Father as a fellow human. This becomes possible after the Meeting with the Goddess (a girl other than Mom) and the Atonement with the Father (Dad is your friend). You're ready to be a nurturing father.

Most simply put: Roo becomes a father.

A second thing Campbell stresses is getting rid of desire. Hero loses (at least for a time) the ambitious desire to save the world. He's *there*. Later he'll be back on the quest, but for now there's nothing beyond the now moment

Form is emptiness, emptiness is form. This is the secret of kenner. Matter is a mode of nothingness. Saying it's curved space doesn't go far enough, you have to see

that the constituent curved space is itself nothing but thought. Thoughts thinking themselves. Eternity in the now moment.

After this apotheosis, choosing to go on and save the world is a compassionate act.

“The sound of bell is the sound of eternity throughout creation.”

Frek inside the sun and, more strongly, inside the time pool in the projection room.

In *Postsingular*, this happens twice, and out of sequence: when Thuy finishes Wheenk, and when Jayjay figures out how to play the Lost Chord.

11. The Boon. [The Miraculous Birth.]

A trophy, a magic wand, magic spell, a souvenir. The theft of fire from the gods. Hero pushes further than the power granted by the Father in #9, and now there's trouble. I'm thinking of some kind of key to roll back the forces of the Mall / Amerikkka, Inc. / Spam / Conglomerate. “Mentation.”

A wonderful baby.

He's ready to come home, but something is blocking him.

Frek: he gets the elixir.

Postsingular: Thuy gets the harp.

[Group III: Return]

12. Refusal of the Return.

Refusal: Hero might meet a guy who's stuck up in “heaven,” like a lotus-eater, like Jeremy Threackman in my “Pockets” story with Shirley. Maybe it's his father.

In *Frek* his father stays in the Planck brane.

I have a touch of this stage in *Postsingular*, when Thuy pauses on the way home and ends up in Subdee.

13. The Flight.

Flight: Possibly with the help of the gods, but more commonly with them chasing you. Jack from the Beanstalk.

Frek runs all the way home from the Planck brane.

Postsingular: Thuy running home with the harp.

14. Rescue from Without.

The world comes to get you, to bring you back. Perhaps the rescuer is some kind of commercial Mall-force sponsor, who's expecting to co-opt the hero.

Frek, the boy's dream of Renata rescues him.

Postsingular, Jayjay comes to rescue Thuy, who's stuck in Subdee.

15. Crossing the Return Threshold.

At first it's hard to be back. Rip van Winkle. A man unable to get back down off his horse. A Square speaking of Flatland as “that dull, level wilderness.”

Perhaps the hero is antimatter and can't touch anything, has to get his subdimensions flipped before he's able to touch things. Perhaps hundreds of years have passed. The Mall is still winning when he (or she) returns.

Frek: Fight with shuggoths.

Postsingular. Fight with Big Pig to block the new nants.

16. Master of Two Worlds.

The Higher Kingdom is a hidden aspect of our world. Hero has ongoing lasting access to the Beyond. The two as one. The hero presents an elixir which heals and restores the world.

4D. Dreamscape. Fractal subdimensions. Parallel world. Psychic world.

The Hero frees humanity — for now...

Frek: He gets the saucerians to help.

Postsingular: Jayjay and Thuy use the higher magic of the harp to unroll the eighth dimension.

17. Freedom to Live.

Perhaps the hero becomes an anonymous wanderer. I'd like that. Actually this happened to Cobb at the end of *Realware*. His work continues. Life goes on. A glimmering of a whole new cycle to begin further on.

Dec 14, 2005. Story, Anthology, Frek 2, Trilogy.

Today I was in yoga class and my teacher Jan kept talking about exhaling all the way, about "finishing it." And I was thinking, all right, finish things.

First finish the *Asimov's* story cycle, or at least round it off for now, by writing "Bixie and Chu."

Go ahead and use the paracomputation angle of putting AI into all sorts of ordinary objects. I'd been thinking of hoarding that idea for later books. But it would be a great resolution to the oil-pig vs. shoon war. Let the orphidnet AIs live in any old object. Perhaps Craigor could be making the objects.

Now, pervasive paracomputation shades into panpsychism. The objects were already alive. I kind of feel like making that idea fairly central in some other story. More on that below.

Once I have "Bixie and Chu" done, I can sell the anthology. I'm thinking I'll call it *Postsingular* after the little three-story cycle. Possibly include the as-yet-unwritten new stories with Sterling and Bisson.

Or maybe it makes more sense to keep out the postsingular stories for better use than in an anthology — it would be in some ways deceptive and ultimately disappointing to the readers if I were to label my anthology as if it were all postsingular stuff.

I think I can see doing a *Frek 2* after all. I found a lot of good starting points in the reread I completed yesterday. *Frek 2* would make sense in terms of my career. And after that I could maybe do something else before going to do *Frek 3*. After all, since *Frek 1*, I wrote both *Lifebox* and *Mathematicians in Love*.

If I can go inside the sun, I'll be happy. And I might reuse the AIs-into-objects idea that I'll be trying out in "Bixie and Chu." Or have the toons get kenner bodies.

After *Frek 2*, I'd like to get into a new novel series. Could I actually plan it as a trilogy in advance? I'd like to make this one a little more adult, as a switch from the *Freks*, with some of that punk *Ware* feel. And/or I might make it transreal, folding in memoir ideas.

I'd like to set a some of it on Mars; I never got to do Mars yet.

Dec 15, 2005. The Addiction Pattern.

I've been reading Jeff Noon's *Vurt*, and kind of enjoying the drugginess of it. Possibly I could have some of that in the trilogy, perhaps of a transreal nature. In this case I could use a standard story pattern, the Addiction Pattern:

I. Youthful Experimentation. Youth searching for an answer, for something beyond, has a couple of scattered, alluring encounters with drugs.

II. Addicted. The addiction becomes a large part of the character's life, leading to a crisis.

III. Recovery. The character gets his life back and goes on to solve some difficult problems.

That way I could write about some key parts of my life without having to handle this dodgy stuff as a flat memoir.

By the way, as I read on in *Vurt*, I like it less. Nothing much is happening, the characters aren't dealing with their addictions, everything's scuzzed and fuzzed, and the incest theme is a total turn-off. Beware writing your stroke-fantasies: one man's yum is most other people's yuk.

This, said, *Vurt* kind of inspires me to have a posse of kids hooked on something like a drug. That solidarity of shared addiction is powerful.

Dec 16, 2005. Two Things I'm Learning in the Chu Stories.

I'm trying out a couple of new things in these stories.

For the first time, I used rapidly changing multiple points of view in "Postsingular," and I think it worked pretty well. I did lean on the crutch of (usually) putting in a section break when the p. o. v. changed, although once I got going, I elided some of those formal breaks.

In "Bixie and Chu" I'm working harder than usual at talking about social factors. Politics. Something a bit subtler than the simple black-and-white politics in, say, *Mathematicians in Love*. In need the practice, because right away in *Frek 2* I'm going to have to get into politics, as I'll have to discuss what emerges into the power vacuum left by the destruction of the Govs and the liberation from the Orpolese masters.

I'd been shying away from thinking about this angle of *Frek 2*; I have a kind of hysterical aversion to politics.

Dec 7, 2005 - Dec 20. "Bixie and Chu" Set Aside.

Story: "Bixie and Chu"

Setup. Bixie is a teenager and there are some problems.

Chu comes back, wants to pitch woo. In "Postsingular," Bixie and Chu were 5 and 10, respectively. For a romance, I'd like Bixie to be a legal-age 18, which is 13 years later, so Chu is 23. Let's suppose that, in the classic romance-story pattern, they almost hook up, they have a fight, they get together.

Problem: Thirteen years is too big a story-to-story jump when things are changing so fast. A lot of the interesting issues would be shaking out right away after the arrival of the orphidnet. So I need to intercalate another story or two before "Bixie and Chu."

So I'm gonna set this aside for awhile. But I may use some of the ideas in a story set a bit earlier.

At first I was calling the next story "Bodies for Beezies," but then I started calling it "The Big Pig Posse."

Ond.

I need a simple emotional reason why Ond and Chu got hung up over in Hibrane for thirteen years.

At first Ond was scared to go back lest he be lynched.

And then Ond fell in love with a Hibraner, he's her guardian angel, he follows her around. It's an unconsummated affair as he's incorporeal. She's an herbalist, she thinks he's an angel. He wishes he could meet her F2F. But no way.

Ond and Chu are like guides. What would be the "pay" you get for being a guide? Would they need to eat over there? Perhaps they need some kind of energy, which they siphon off from visitors. They learn about this initially when they're starting to fade away and a visitor shows up and then they're all over them. Possibly they can also siphon off energy from Hibraners, in terms of receiving worship.

Ond dies; that herbalist woman gets sick of him and has herself exorcised in church and it decoheres Ond, casts the demon out.

Chu.

During the stay in Hibrane, Chu gets better, in terms of his autism. His socialization is driven by the need to be a guide. He has a good friend among the ex-pats, a scientist, perhaps it's Mitch.

He can talk to Ond and the Hibraners and the ex-pats. He's thought about math a lot.

And Chu misses Bixie.

It's gonna be a jolt for him to come back to human form. He does it such a way that the flaw on his cingulate cortex is gone.

Bixie.

Bixie is a Funland architect. Funland is an overlay on the physical world. Wallpaper. Info. Dibbs wants ads in Funland.

Funland takes advantage of the fact that everyone sees the world through a HUD (heads-up display). "Don't paint the walls; paint your eyes!"

Jil, Craigor, and Bixie don't live on the Merz Boat anymore. They're in a bare bones concrete house with Funland decor. They have quite a few robot servants.

Bixie kind of wants to leave home. She'd like to live on a boat again.

It will be a little creepy for Bixie, to have Chu turn up, being as how he's been obsessed with her ever since they were little kids.

Nektar.

And what became of Nektar? We might well suppose she's racked by guilt and addicted to drugs, as payback for abandoning Chu. Chu wants to see her.

The Homesteadies will prey on Nektar to get power over Chu; they'll have her as a hostage or a cats-paw.

Heal Nektar. Maybe Chu moves in with her.

Story line for "Bixie and Chu".

Bixie a little fed up of living with her parents. The shoon-human oil war.

The Homesteadies come and bust Jil and Bixie.

Chu appears, works out a paracomputation deal with the orphidnet AIs and helps knock Dick Too Dibbs from power. He and Bixie take up together.

Maybe do a parallel development, cutting back and forth between Bixie and Chu. Bring a crisis in each of their lives, then merge them, then break them up, then bring them together.

I see doing it this way. I put * on the scenes where the two are both present, and I put the POV person for that scene first.

(1) Summary of “Chu and the Nants,” of “Postsingular,” “The Big Pig Posse,” and any intervening news stories. P.o.v. omniscient narrator.

(2) Chu maturing in the Hibrane. The tourism, Chu and Ond as guides. POV Chu.

(3) Bixie. Reaching a crisis point at age 18. Somehow she calls for Chu.

(4*) Chu. Comes to meet Bixie. They’re together. They’re hitting it off.

(5*) Bixie. With Chu, he’s is okay, but gets creepy to her. A fight.

(6) Chu. Alone, he sees his mother Nektar.

(7) Bixie in peril.

(8*) Chu saves Bixie. They’re together.

Lead for “Bixie and Chu”

“Why would anyone go to college?” said Bixie.

Jil stared at her, letting her mouth drop open and making the dumbest face she could. Teasing her. “To get away from your parents,” said Jil. “And vice-versa. Come on, Bixie, we’ve been fighting like cats and dogs.”

“You’re the dog,” said Bixie.

“And you’re the nasty little puddy-tat,” said Jil, doing the dumb face again.

Dec 30, 2005. Reader Input on Orphidnet.

About two weeks ago I asked for some thoughts on “Life After The Singularity” on my blog. Here’s some (italicized) thoughts from the comments, with my own remarks in square brackets.

Brian B. *I’m assuming the orphids and beezies are neutral agents.* [Yes. The orphids are neutral at a hardware level, and the beezies who emerge in the orphidnet aren’t going to care that much about us --- although it may be that they want to affect people to create more or better orphids.]

Steve H. *How easy/hard would it be to hack orphids?* [I think I’ll say this is impossible, at least for the story I’m currently working on. The orphids out there, autonomous, neutral, incorruptible, always on, like a force of nature.]

Would lack of privacy turn us all into blushing wallflowers or egomaniacs. [Good issue. An objective correlative for blogging.]

What kind of cursing-out could you give someone if you could accompany it with a Powerpoint show in 3D? [Yes, I see virtual Smiley faces and emoticons in 3D. Also models of rude things.]

If I wanted to become President would I campaign to the humans or the beezies? [I think the beezies are neutral about our politics. But they might sell info to a party that helps their campaign. I’m seeing a deal between the beezies and some oilmen who control a supply of piezoplastic they want to use for shoon bodies.]

Would the orphids get mad if we brushed off our chairs before sitting down, or painted a surface they were stuck to? Would they stick to wet paint, or maple syrup?

Could you get a picture of your colon anytime from the orphids you just ate? [I'm thinking of the orphids as lively enough to squirm out from under paint, and sticky enough that you can't brush them off. I hadn't thought about the ones you swallow. We might as well suppose that all of our body cavities are lined with orphids as well.]

With orphids in our ears so we wouldn't need iPods. [Right. They're like lice on our heads to give everyone broadband orphidnet hookup. I'd been thinking of them putting sounds in your head via nerve stim, but its nice to think of them making noise in the ear as well.]

How would Metallica keep everyone from downloading their album as they recorded it? [Good point. I guess intellectual property is tougher than ever. Of course watching someone record an album or write a book takes a lot longer than just getting the finished product. And there's still something nice about the physical object.]

The Golden Man defense has attack points: "Get uphill and drop rocks on 'em. Put [Golden Man defended people] in positions where knowing doesn't help." [Good point. But if you're precognition is good enough, nobody's ever gonna get you into a tight spot like that.]

Thomas Terashima. *What exactly do the beezies want?* [I'm thinking they will want physical bodies. I'm considering various kinds of bodies. For some, they might actually "pay" people by giving them high-quality predictions.]

Currency will be replaced by virtual coupons for orphid swarm resources. [Great idea. That plugs right into my own line of thought.]

Marshall. *I would like to start an oasis where electricity didn't work and you just breathed air.* [Wouldn't we all. The orphidnet is a kind of symbol for the invasive pervasive wireless world. Maybe the oasis guys can be 'control naturals.']

Ryan O. *If you see a constant computeresque overlay wouldn't the overlay always be a couple of seconds behind reality?* [I'll say by and large no, because the computation is distributed and is in part being carried out locally by the orphids on your body. But maybe time-lag artifacts could be useful in the story.]

Dec 2, 2005. Following "Chu and the Nants" and "Postsingular"

On December 15, 2005, I read the proofs of "Chu and the Nants".

On December 21, 2005, I worked the word "beezies" into a final draft of "Postsingular" that I sent *Asimov's*. I also revised "Postsingular" to match "Chu and the Nants" in some other ways. I allowed the orphids to spread into the Hibrane which is maybe a mistake, but Chu wanted it so much that I gave in. [Note, I went back and got rid of this and changed the *Asimov's* story: no orphidnet in Hibrane.]

I noticed some things to keep in mind for follow-up stories:

* Chu has physical damage in the form of a flaw on his cingulate cortex. Let's suppose that when in his ethereal form in the Hibrane he doesn't have this flaw, and let's also suppose that when he reincarnates himself back on Earth, the flaw is fixed.

* Nektar has kinky hair and full lips. She's beautiful. Her fat ponytail is like a cloud of smoke.

* I should eventually explain the cuttlefish fad among the Hibraners. Could also remark that, in the past, they liked cattle, thus the cattle mutilations ascribed to UFOs.

* The orphidnet beezies stay loyal to Ond, Nektar, Jil, Craigor, Chu, Momotaro, and Bixie — just because they were there when the orphids were released.

* Remember to focus on the society and the characters as well as on the physics and computer science.

Jan 1, 2006. Another Postsingular Story

I'm still pushing on writing a third postsingularity story following on "Chu and the Nants" and "Postsingular," both of which I sold to *Asimov's*. [See the notes for this story down lower in the document.] I'm currently planning to do one I was first calling "Bodies for Beezies," but am now calling "The Big Pig Posse." I'll leave "Bixie and Chu" for a later day. The reason is that "Bixie and Chu," to be a romance, would have to come a dozen years after "Postsingular," and I prefer to delve into what happens right away.

I'm seeing a story with three young homeless characters: Jayjay, Sonic and Kittie. I have the first part of it just about outlined now, and I think I'll start on it tomorrow. I'm eager to get this story done and get back to the high-altitude cruise of a novel.

Jan 2, 2006. Postsingular as a Novel!

This morning I keep thinking of new things coming out of the third postsingularity story, and about how I'd need still more stories to fill in the gaps to get up to the "Bixie and Chu" payoff story, and it occurs to me that, duh, I should kick into novel mode and write a novel called *Postsingular*. And then I could take my time and not feel frantic, like I have to finish these stories so as to finally get back to my novel. Just do the chapters and if I can get a number of them out as stories that's great. But have it in my mind as a novel from now on.

And if it works, then I'd have a new world where maybe I could set a further novel, and so on. I could maybe even work in the farm boy from Mars I was thinking about — or save the memoir-influenced novel for another time.

In other words, I'd be getting into a novel in the complete ass-backwards fashion of writing some stories — as opposed to exhaustively outlining not only a novel but a trilogy.

Well, maybe now I can do some outlining.

By the way, I did decide not let the orphids to spread into the Hibrane, and I changed this in "Postsingular" for *Asimov's*.

January 3, 2006. Gearing Up For The Long March.

Today and yesterday I've been gearing up for the idea of doing *Postsingular* as a novel. I filled in some of the gaps in this notes document, took the Postsingular stories out of my story-anthology document (which will just have to wait), and started thinking about a time-line.

I did take a look at *Accelerando*, which was kind of daunting. I better not look at that too much right now. What I'm planning is a book that's two-thirds as long. Actually, I kind of felt like, particularly towards the end, *Accelerando* was longer than

it needed to be, so being shorter isn't a bad thing. I also think I'll only try and span, roughly, the years 2030 - 2060.

Can I think of this as the start of a trilogy, *noch*?

Talk about piling Pelion on Ossa. Recall that story about the milkmaid walking to market with a bucket of milk balanced on her head, and she's imagining getting so much money for the bucket of milk that she can buy a calf, a cow, a pig, and cow, and that then she'll get rich and be a fine lady and when people talk to her, she'll just toss her head — whoops, the milk spills, and she says, "*Adieu, veau, vache, cochon...*" I mean, come on, I've got two little stories here is all. And, remember, the way I went from *Software* into the sequels was totally ass-backwards and class-four. So don't be so pushy about the trilogy before you even have novel.

Not that it wouldn't be nice to have a long-range plan.

Okay, let's try. First of all, I need a plan for the novel, and if that plan runs too long, then I've got the start of a plan for a second volume as well.

One thing that keeps hanging me up is that I'd like to do a Chu/Bixie romance, and they're aged 10 and 5 respectively in Chapter Two. Either I fast-forward through time in *Postsingular: The Beezies*, Volume 1, or I postpone the romance for Volume 2, which could be called *Postsingular: Bixie and Chu*. So, hey, thinking trilogy is good, it gives me a back-door.

I'd rather not be rushed, yeah, I'll postpone the romance. And then I can stretch out in this volume.

I'm seeing maybe a political struggle, and the kicker can be paracomputational bodies for the beezies, which forestalls any need to fucking meat-grinder any planets into Dyson spheres. The computational goodies are right here. That's the pay-off in Volume One.

I have the Hibrane set up in Chapter Two already, so the readers will expect to go back there. I could leave the main Hibrane part for Volume 2. But in any case I need to go there. Maybe after Sonic gets killed, Jayjay and Kittie are cornered, and the beezies help them do the jump. And they hang out with Chu a little, though he's still just a kid. Ond is still scared to come home.

There might be kind of a religious-pilgrimage movement centering around the Hibrane.

I need an enemy. The Homesteadies? And the Nanties. Somehow they're hand in glove. And an arch-enemy about them all. Not Dick Dibbs. Someone behind the scenes. A guy at ExaExa.

The solution is paracomputation.

What about the angels all this time? How do they feel about Earth's doings? I think they'd enjoy the orphidnet. Presumably they'd be anti-nant as well, as their culture is so non-computeresque. So they might come through and help the good guys, the Gnarlies and my characters.

January 5, 2006. Running with *The Big Pig Posse*.

I got started on Chapter Three of the novel yesterday. It's going good, I feel happy to be getting up into the jet stream again.

I talked to Dave Hartwell about the idea a little, and he said, "I'm not one to dump cold water on something a writer's enthusiastic about." He said maybe we

could get publish *Postsingular* in Fall, 2007. It's nice to have an editor who believes in me.

He also had nice quotes for *Mathematicians in Love* from Ian Watson and William Gibson.

"Rudy Rucker should be declared a National Treasure of American Science Fiction. Someone simultaneously channeling Kurt Gödel and Lenny Bruce might start to approximate full-on Ruckerian warp-space, but without the sweet, human, splendidly goofy Rudy-ness at the core of the singularity."

--- William Gibson, author of *Pattern Recognition*

That made my day.

On the *Asimov*'s front, I got a note that "Chu and the Elixir" will come out in June, 2006. I think if I tried to publish every chapter as a story in *Asimov*'s before publishing the book, it would take, like, three years — actually, *Accelerando* took four years. And I'd rather finish the book in one year, like with *Mathematicians in Love*.

I went walking at Four Mile Beach north of Santa Cruz with my fellow logician-turned-computer-scientist friend Michael Beeson.

The waves were still pretty big from the storms earlier this week. I love that instant when a wave's smooth flow breaks into chaotic non-linear unpredictable spray.

I used to see that in my CA wave simulations, when for certain values the simulation becomes unstable and spits out scuzz. But here, in the lovely real world, it's not really scuzz, it's a different regime of computation with its own set of orbits and attractors, a computation so gnarly as to lie beyond the comprehension of anyone but the Big Pig, and maybe even beyond his/er full understanding as well.

As I say in *The Lifebox, the Seashell, and the Soul*, "My sense is that most complex physical processes are strongly unpredictable in the sense that they represent computations that can't be run any faster at all. Think of surf hitting a rock and shooting a plume into the air. Those incredibly intricate little bumps and wiggles in the foam --- no way will anyone ever be able to produce a detailed, accurate, long-term emulation of a wave by any means short of making a physical copy of the wave."

Being *physical* is a big thing that AIs are lacking, you wave.

I'd been thinking of having my Big Pig Posse track down the Homesteady spammers hunched over PCs in a trailer park and gun them all down. I once read that most spammers and telemarketers are clustered in a single trailer park near Boca Raton, Florida, and I always like to imagine the Terminator showing up there to wreak hideous vengeance.

But Michael pointed out that people wouldn't likely be using PCs after the Singularity, also that my heroes would lose the readers' sympathy if they become hit men.

So now I'm thinking maybe the Homesteadies have enslaved some people and are using them as "devices" to pump out the spam. And the Pig Posse can liberate them.

Michael and I watched the surfers for awhile; I was proud that I actually knew one of them. Mathematicians that we are, rather than surfing ourselves, we analyzed the mechanics of how surfing works. (a) You're sliding down a hill of water that moves, and (b) Because you're sliding, you have the ability to move the board to the left or right beneath your center of gravity (by steering it), also the board will have very little tendency to move backwards, with the upshot that it's easier to balance on a moving board than on a still one.

I said one thing that made Michael laugh a lot: "Sitting in front of your computer and using a web browser --- calling that *surfing* is like balancing a shared checkbook and saying you're *fucking*."

January 7-8, 2006. Reorganize Notes. Try for Proposal.

Up until today, I had separate notes for each of four *Postsingular* story ideas, "Chu and the Nants," "Postsingular," "The Big Pig Posse," and "Bixie and Chu." Each of these little sections has its own set-off subsections on the characters and on ideas about science, and society.

But now I'll to move some of the "writing journal" material into the notes geared towards the novel, in the sections towards the start of this document.

Hartwell said "If you give me the book now, we can put it out in Fall, 2007," which is appealing. At first I thought he meant the finished manuscript, but now I realize he meant a proposal and a contract. So I'm feeling like it would be nice to get a proposal together so I could hit 2007 with *Postsingular*. I wonder how much leeway I have in terms of time to propose. I know they nail down their schedules quite some time in advance. Maybe I'll ask him next week. But before doing that I'd like to have at least a sketch of a proposal in hand, just so I know this isn't a pipe dream.

Now that I'm into a novel, of course, I'm anxious and uneasy about all the plot and logic problems I can see lying ahead of me.

Could I attach RAM chips to trees, streams and clouds?

Dec 21, 2005 - Jan 8, 2006. Ideas for "The Big Pig Posse"

The orphidnet has settled in, this is six months or a year after the end of the "Postsingular" story. An unseasonably rainy October in San Francisco, California, with a Presidential election coming up. It's raining cats and dogs, the weather is screwed up.

Initial POV is a homeless guy called Jayjay, which is short for Jorge Jamon. (Later rotate POV to maybe Nektar, Jil, etc.)

Jayjay has a friend called Sonic and a girlfriend who calls herself Kittie. Maybe they have another girl in the gang, too: Thuy. They call themselves the Big Pig Posse. Jayjay likes staring at water, at clouds, at flames. On the natch. He'd like to be a scientist.

The three have quit their menial jobs, or stopped looking for jobs. They get high by tuning into the Big Pig (a very high level beezie that looks like the cutout metal Haitian pig E gave me, also like a cubic Mandelbrot set.) And they live hand to mouth with beezie help.

As the story starts they're working to get an unused SUV to live in. The owner has abandoned it as gas is no longer readily obtainable.

Perhaps the beezies have deals with the angels to influence the Islamic oilfield operators to pass most oil to the piezoplastic refineries.

They get pizza from one trashcan; cake from another. President Bernardo says they can get a free SUV. They sit in the SUV and eat, its moon roof leaks, there's no key. Take some hits of the Big Pig, which are weak, the orphidnet is clogged.

Jayjay is taking an online science course. Kittie watches people fucking, two Hollywood stars in particular: Heath Himbo and Lureen Morales. She has a crush on Lureen. Sonic is playing Doodly Bug, a game based on Ed Witten's string theory, which is now, thanks to IA [short for Intelligence Amplification], accessible to anyone. Thuy picks up music by tuning in on the experience of metal rocker Freya Schwul rehearsing a certain song. The owner comes out and gives them the key and the papers, "Get that junker out of here." Kittie asks a man for a dry coat, okay. He's looking at her crotch in the orphidnet.

It has a gallon or two, the beezies make suggestion where to drive it, they end up at Nektar's house, in her big garage. Shoon in the garage. They haven't seen shoon live yet, although they've heard about them, and they've seen them on the orphidnet.

Why haven't they moved into a garage sooner? Couldn't find one? Never asked. Didn't want to be tied down? Let's suppose that SF being SF, there simply wasn't one available.

Have them move from the garage to Nektar's house, she's broken up with Jose and is living there alone. The shoon have patched up her house. Not many of them are around as yet.

There are shoons taking care of Nektar. Remember, the beezies hold Ond and Nektar in very high honor.

Nektar has come to love the orphidnet. She's a rabid convert. She misses Ond and Chu. She's still a cook, even though she broke up with Jose, she got her own place, and is serving very IA food, all bizarre mousses and things. Drawing on the rich intellectual resonances that people have.

Re. the Homesteady campaign to roll back the orphidnet, she says, "Capitalists want people to be like sheep, and easy to fleece. Therefore they are against personal freedom, against quirky indigenous cultures, against self-expression, and against any non-goal-directed education. They want mass mind they can mass process. Like hard, easy-to-harvest tomatoes."

One of their friends lost it in VR, he stopped eating and he died of exposure, alternately playing that string-theory video game Doodly Squat and staring at the Big Pig.

Absolutely no privacy. Less shame about sex, less mystery. Yet, there are still the same reproductive issues, which are probably a root cause of modesty, which might be a way of playing one's reproductive options close to the vest. Sonic likes to watch Kittie's crotch, and Thuy tries to stop him.

When people talk, emoticons form around them, visible in the computeresque overlays that everyone has happening with their brains, the Smileys hopping out of a speaker's mouth. Also there will be functional images, e.g. a copy of a car that you're referring to.

A Commonist is President, Bernardo Lampton. Lampton encourages sharing via the orphidnet. The whole world is a realtime eBay, with Lampton there like a kind social worker. You can always find leftover food. People set it out, like pies for bums. Just-in-time bread and breakfast. Couch-surfing is practical as people have become more open what with there being very little chance of crime. Most things you need *are* in fact within walking distance if you know where to look. A neighborhood is like a storehouse. What you need might be lying unused in a garage down the block. Repurposing things becomes easier as the beezies learn more about us.

Why do the beezies help people? Suppose they use us for RAM; if you help a beezie, he makes you remember some data for him, the data in the form of an eidetic film loop that you obsessively fixate on.

The Homesteady party backers have been whipping up nostalgia for Dick Dibbs, "A private man. Executed by activist judges." They speak of the nant-shell as a lost chance for paradise, an end to Earthly cares, the aborted coming of the end times.

I need some enemies, and a fundamental issue.

Behind the scenes is Jeff Luty, former head of ExaExa, he was behind the original scheme to turn Earth into a Dyson sphere of nants.

Suppose Dibbs and the Homesteadies say they want to get rid of the orphidnet. But, working with Luty, they have a hidden agenda to bring back the nants, and make them irreversible this time. Dick Too Dibbs *says* he's against computerization, and that he learned from his scion's fate — but really he still wants the max nant heaven, wants it more than ever, as revenge against those who thwarted him before.

The beezies wouldn't mind the nant scenario all that much. But they're also interested in exploring symbiosis. And the orphids don't want to be replaced.

The beezies have two factions: the Nanties and the Gnarlies. The Nanties would like to simply run some nants and turn everything into computation. The Gnarlies appreciate the value of the complexity of the Earth as is.

The Homesteadies are fomenting hatred for Bernardo Lampton, treating his personal habits as unnaturally disgusting: his shitting, his flossing, his plucking of the excess hairs from his nose and ears. Lampton even gives up sex with the First Lady in favor of the less offensive masturbating, then tries going celibate, but the orphidnet picks up images and even some content of his wet dreams, Bernardo can't win. He's disgusting. The hate-spam comes in tandem with every image of Bernardo being helpful, a constant ugly commentary.

The Homesteadies have used biotech to create a clone of Dick Dibbs, a Dick Too Dibbs. Not only was his DNA was on file due to his life-extension treatments, but there's a good software cache. Also they can put together a reasonably good facsimile of Dibbs's personality by data-mining the brains of all those who'd known him. He's running for President.

It's safe to have people accessing each other's stuff so readily, as violent crime has become impossible to get away with. People can always watch you; and even if

they don't watch while you do it, the orphidnet remembers the past, so anything can be replayed. If you do something, people can find you and punish you.

The beezies are influencing events by passing around bits of information, which is a way of programming the hive-mind. They also have beezerers; people they control. And they have shoons as physical bodies. They want to do some physical engineering to make more computational room for themselves.

The beezies have are starting to make a lot of shoon. They've co-opted Globolg Oil's output, which is why there's an oil shortage. Globolg is mad because the beezies aren't paying for the shoon piezoplastic. Instead they have Islamic angels talking to the governments in the Middle East, encouraging them to let the oil go to Emperor Staghorn Beetle, Ltd., in Bangalore, India.

Sleaze-ball spammer types are pushing ads, scams, and political propaganda, e.g. ads for Dick Too Dibbs. In the morning, Jayjay, Sonic and Kittie are seeing ads on everything.

The ads add an inefficient viscosity to the orphidnet. The quality of what humans can hook into on the orphidnet is dropping. The orphidnet is getting crowded; the beezies are beginning to run out of computational room; they can't tolerate the spammers anymore. Even the Big Pig looks slow.

The orphids direct Jayjay, Sonic and Kittie to a trailer park with a lot of computers in the trailers, it's a place in Santa Cruz. They get there by hitching rides in electric cars. They trash the place, also the neighbors, and Sonic even shoots a few of them.

Little shoons are there too, helping in the attack.

The three human hit-men don't know why they're doing it, exactly. They're being driven by impulses. They are being used as beezerers to execute spammers. It happened all over the country.

The beezies and shoons help Jayjay, Sonic and Kittie get away.

I think I'll have the spammers be in a Homesteady-run rehab center; I was going to call the place New Patterns (echoing "New Path," the evil rehab place in Phil Dick's *A Scanner Darkly*). But then I decided to call it Natural Mind.

The cops and Homesteadies are in with the spammers. It's actually a plot to break the beezies.

Sonic gets killed on an impulse-driven suicide run against the Homesteady party headquarters. CROD, "Committee to Restore Our Dibbs."

Craigor has a bit part, with has visions of surreal assemblages using bits of piezoplastic as muscles and smart joints. The joints can strip out of a body, wad up, flap away, and reassemble a new body from materials found ready-to-hand at the next site.

They use Craigor's designs to make a huge tottering-tower beezie, more powerful than the tanks that the Homesteadies have. Like an enormous junkyard pile of stuff, always falling, but always catching itself (cf. Vinge's "house of cards" construction technique.)

January 10, 2006. RAM and Mind.

I've been having some email with John Walker about his article, "Computation, Memory, Nature, and Life," which I discussed on my blog yesterday. (I'm tending to mine these notes for blog entries, and vice-versa. I think this is a productive process; in any case, it's a way of postponing confronting the terror of the story-void each morning.)

And I realized that my goal in my novel(?) in progress is to have wind, leaves, water, clouds really be computing conscious mind stuff. I want to migrate the beezies to nature instead of doing the opposite. I have this anti-extropian bent, you see, my goal is to sort of deflate the Singularity which is in many ways hype and a category mistake. I want the computers to shrivel away. And I want Nature to wake up.

QUESTION: How SFictionally can I tweak nature to achieve this?

Walker's suggested obstacle to doing this is, again, that even if a fluttering leaf is capable of class-four universal computation, it doesn't seem like it gets all that far, as, after all, we don't see vast innovations coming from the leaves. He feels they don't get that far because they don't have reliable long-term memory. The leaf doesn't "remember" what it was fluttering yesterday or even ten minutes ago. Even when in a continuous flutter mode, past states are lost to friction and averaging.

So let's find all-purpose RAM to plug into any old thing. Where to find it? I figure in a parallel brane, or in the subdimensional network architecture of pre-geometry. A little supersymmetric 11-dimensional brane patch, hey?

I'm finding ideas along these lines in Lisa Randall, *Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions* (HarperCollins 2005), a fat orange pop sci book I'm reading these days. After slogging through all the prolegomena, I'm finally up to her closing chapters where she describes four new braneworlds, some of her own devising.

Maybe I should mail Lisa Randall a *Spaceland*. I had email with her about my use of "Planck brane" in *Frek* already.

Yesterday walking down the street at dusk, I was thinking, "What really do hypothetical thousand-times-as-capacious brain-like systems have that I don't have, walking down this street looking at the trees?" They can look at the trees from more angles at once, they can analyze the motions in more depth. By the same token, what do I have in my perception of a scene that's all that much richer than the perception of a crow perched in the tree? Assume for the sake of argument the crow sees in color and has good visual acuity — actually I think birds do see very well, so as to be able to swoop down on bugs and other small prey. Pushing it further, might not a swarm of ants on a tree also have a very rich model of the world? (Note that I speak of the swarm and not of an individual ant, as the ant-mind is indeed a distributed intelligence.)

Now, if all I do in my book is migrate the beezies into nature, the readers are going to be disappointed unless I first deliver some rich post-singularity supermind stuff. They'll want they're lame, boring and all-too-traditional space stations as well. Dweebs yearning to see Saturn's rings — when in fact they've rarely bothered to look at Earth's insanely beautiful clouds.

Maybe some people go into space to get away from the orphids, or from the embodied beezies — the "breezies," as Walker punningly calls them.

I feel so anxious and uneasy about my plot. I'd been planning to hang a big thing on a presidential election, but that feels so retro and so been-done-to-death. But what else is there?

Also, I'm thinking of having the threat of the return of the nants being a big issue. But once we've already seen that threat materialize in Chapter One, is it a really good bogeyman anymore? Well, maybe materializing in Chapter One is in fact a good move, as otherwise the horror of nantification might not be so evident.

Another problem, as Walker pointed out: both sides are gonna have perfect info about the doings of the other side, so I'm not going to be able to do all that much with people hatching plots and surprise attacks. There won't be any surprise attacks.

The sand is filled with gnomes, the flames with salamanders, the wood with dryads, the ocean with undines, the air with sylphs. They use lazy eight RAM for their memory storage.

January 11, 2006. Gödel Quote on Time.

My philosopher friend Mark van Atten sent me this quote from Kurt Gödel's philosophical notebooks:

"Der Unterschied zwischen Zeit und Raum ist der, dass ich mich selbst in der Vergangenheit finde. Das ist entweder ein Widerspruch* [*Nämlich, wenn ich selbst dort bin und nicht bloss ein Bild von mir](ich wäre nicht eines sondern 2) oder es bedeutet, dass ich mich in der Vergangenheit wie in einem Spiegel sehe. Dass also, was ich in der Vergangenheit wäre (tue), 'im wesentlichen' dasselbe ist wie mein gegenwärtiges Tun (nämlich ... meines Charakter). Das Vergehen der Zeit wäre also eine Täuschung in dem Sinn, dass im wesentlichen immer dasselbe wirklich ist und dass es nur in anderer Weise erscheint. (Das heisst ja eben Täuschung aber auch das Bestehen dieser Täuschung wäre eine Täuschung etc.)"

Here's my quick translation.

"The difference between time and space is that I find myself in the past. *Either* that is a contradiction (for if I myself am there in the past, and that's not just a picture of me that I see, then there are two of me instead of one of me) *or* it means that I see myself in the past as in a mirror. So that, therefore, what I was doing (am doing) in the past is essentially the same as what I'm doing now (that is exercising my personality). The passage of time would be therefore an illusion in the sense that my surroundings are at all times really the same, and that this reality merely *appears* in different forms. (Not only is the passage of time an illusion, but the existence of this illusion is an illusion, and so on.)"

What if you were in some sense the same as your supersymmetric mirror partner?

January 12, 2006. Hibrane = San Francisco, 1967. High IQ

I've been wondering what the Hibrane should be like, and anxious that I wasn't picking (a) something fun for me to think about and (b) something I haven't done before. Today I decided it should be San Francisco in 1967. I put my reasoning on this in the Hibrane subsection under the Science Ideas section.

I went to downtown San Jose yesterday with Sylvia and it was *so fucking boring* there. You can look down two, three, four blocks of sidewalk ahead and see nobody on it whatsoever.

I'm thinking fuhgeddaboutit being a loyal San Jose booster and featuring it in my novel. Up till today, I had it set in SJ. I'm changing it to be in San Francisco where there's some action.

That will be a good fit; I can overlay Hibrane right on top of our brane, and have it be San Francisco in the Twentieth Century (the Sixties) over there. I could work in a little then-and-now contrast.

Speaking of the Sixties, one good thing we did see in San Ho was this piece in the permanent collection of the SJ Art Museum, a diorama you peek into through a hole in a door set into the wall showing a tiny wonderfully accurate model of the so-called "Peace Eye" headshop, with a fan turning on the ceiling, posters and a strobe light, Hendrix playing faintly, a whiff of incense coming out of a grill under the peephole. Oh, how I long to get through that door. To the Hibrane.

I saw an interesting young woman in the museum: rough skin, oddly red-streaked hair, weird-shaped glasses. The SF artiste type. Maybe Kitty or Thuy can look like that.

Yesterday I read an article in the *New Yorker* about some kid in, like, Nebraska. His parents fell into the orbit of a "gifted children" con-woman who convinced them their son had an IQ of 182 — apparently the numbers don't mean much when you get past 170. And the parents flipped out over that number, and didn't let him go to school with other kids, feeling it would be too "slow" for him, as if school were about learning *facts* instead of being about socialization and getting the hell out from under your parents' eyes. And the poor kid got depressed and killed himself.

The relevance for my novel is that the article quotes some people nattering on about how very strange and different it is to have an unusually high IQ. I haven't tested my IQ number, but I'm guessing it's about 170, so this is an area I have personal experience with, albeit only from one side of the comparison. I do have a lifelong sense of being a notch or two smarter than just about everyone I ever talk to, with, as I always say, Gödel, Wolfram and Walker being the only three I've met who are on my level or above.

Walker suggests that IQ might more likely be proportional to the log of one's brute processing power rather than being a linear function of it. So a thousandfold increase in processor power would make you only three times as smart. That sounds right; just think of a desktop machines. A gigaflop machine isn't a thousand times as good as a megaflop, it's more like three times as good. So it would take a hundred-thousand-fold increase in brain power to get to five times as high an IQ, that is, to jump from a high end of IQ 200 to a high end of a thousand.

I'll call the kiloIQ people "kiquies". I love the word kiquie, it's "kiddie" with some letters upside down. The kiquie kiddies. Wow, Mom.

How smart is the Big Pig? In my novel, I peg an individual human at the exa or 10^{18} flop-and-byte level and the entire orphidnet at the ubba or 10^{36} level. If IQ goes up as the log of the flop-and-byte, that's an eighteen-fold amplification of normal IQ, which turns the usual IQ range of 100 to 200 into a range of 1800 to 3600. Two or three thousand for the IQ, in other words. This is consistent with what I figured out in the previous paragraph; $5 * 200 = 1000$, and $18 * 200 = 3600$.

So the beezies and the fully netted-in people are at the kiquie level, and the Big Pig is just a few notches higher. I guess that makes sense. When I go to a guru, I'm wanting to see a guy only a few notches higher than me. Unless you're already a kiquie, the Big Pig gonna seem too starkly incomprehensible.

And we don't have to worry about megaIQ level, as "miqqies" would be past the scope of this book. What if the nants get loose again? Well, they were at the quakka or 10^{48} level, which would be an IQ factor of twelve beyond the Big Pig, the nant-sphere would have an IQ of about 20,000. Still just a kiquie, really.

I need to put some effort into codifying what it is that makes a high IQ person different from others, so that I can do some analogies to push out to imagine life for the superintelligent AI beezies or for the enhanced humans plugged into the orphidnet. This is a topic that people totally want to read about. An itchy fascination with what it is you might be missing. Lifestyles of the Rich and Famous. Mindscapes of the Kiquies.

Certainly having serenity and feeling content has nothing to do with high IQ. Serenity is all about valving down the logical machinations and the memory accesses. So that baseline feeling will be the same even for the kiloIQ and megaIQ people. Just sensing your breath.

Yet, part of the meditative slack feeling is being open to inputs from all over the body or all the senses. And this would be richer for the kiloIQ.

Parallel trains of thought and extra associations would be kiquie. Extra branches in the thought tree. Anticipating ideas. Modeling behaviors. Drawing conclusions.

January 14, 2006. Plotting.

I need to decide — and explain in the novel — just how much telepathy people have via the orphidnet.

On the one hand, people need some telepathy so there's a somewhat secure channel for communication (other than sight and sound). On the other hand, too much telepathy would break this down.

I don't want too rich a telepathic interface to the orphidnet, otherwise the beezies could control us. Suppose our initial orphidnet telepathy is purely symbolic and non-emotive.

I'd like to have a weak form of telepathy in Hibrane as well, a kind of dual to speech, utterly non-verbal and emotive.

Maybe I could think in terms of a dialectic. The Hibrane ought to be in some sense the antithesis of the thesis presented by the be-orphidnetted and nantable Earth. Otherwise there's not so much point (plot-wise) in describing it. And when the beezies download into nature near the end, we get the synthesis.

The dialectic method is very powerful. You just have to take it seriously.

I keep writing and rewriting my plot outline, seven chapters worth, it's still rather thin in the last two chaps, as it's too hard to see that far. Not that I've ever ended up actually sticking to the late chapter outlines in any of my novels. Things always emerge.

Why am I plotting instead of writing? I want to have a clear idea of what to put into the chapter that comes after the stories. The first two chapters (the stories) were like rolls of the dice, seeds to the randomizer. And now I have to be integrating.

Another reason to plot is that I'd like to have a proposal together pretty soon that I can send Hartwell.

Yet another reason is that I need to convince myself the book is worth writing; that it has enough cool sights to be worth the trip, also that it has a unifying purpose.

I'm anxious — shit, I'm always anxious when I'm writing. And I'm anxious when I'm not writing. Well, I'm not anxious when I'm actually *doing* the writing; there's nothing I love as much as having a good story flowing along and having a solid thousand-word day.

January 15-17, 2006. Proposal.

I think I've got the proposal about done. I'll do one more revise on my Chapter Three draft, and then send in Themes, Chapter-by-Chapter Outline, and Partial Draft.

Reading the Sunday paper this morning I saw two things to use.

* Tawny Kitaen. What a wonderfully horrible name. Maybe change the name of Jeff Luty's ex-girlfriend Kimmie Kross to Tawny Kross. Tawny Krush even better.

* Emotional infidelity. People who have affairs in cyberspace, without actually meeting to fuck. The drain of emotion. Ond could hook up with Tawny that way. Tawny steals both Ond and Craigor. I see her as Mexican.

In the night I woke up and thought of *duality*. What if our brane and the Hibrane are simply two alternate ways of looking at the same underlying reality. Like in physics there's supposedly a dual 10-D and 11-D view of the world. What if I subtly made all the characters in Hibrane match submerged aspects of people in the regular brane.

Sent the proposal to Susan Protter to check out, plan to send to Dave soon. Nothing'll happen till Tuesday, Jan 17, as Monday, Jan 16 is the MLK holiday.

I saw Nathaniel Hellerstein and discussed some of my ideas with him.

He liked the idea of playing up the Hibraners' lack of logic. Perhaps they don't know about positional notation for numbers, so they can barely do arithmetic. They're using some thing kludgy like Roman numerals. They haven't discovered the use of the zero as a placeholder for powers-of-ten notation.

Hellerstein ideas.

Have, say, Jayjay realize that one of the High Lamas is in some sense the same person as him. How? They're talking, and suddenly it comes out that they share some of the very same peculiar opinions. Jayjay finds that the High Lama also believes that the cardinality c of the continuum is the same as alef-two. But the lama expresses this by saying space is the kingdom of the second demon. Even so, the two of them, Jayjay and the lama, at the same instant they each just *know* the other is their double.

A superintelligent mind that wanted to say something to a person would be smart enough to figure out just how to couch the truth in a simple, easy-to-understand way. He said that military weapons are sometimes said to be "designed by geniuses to

be understood by idiots.” Also recall Einstein’s remark that if you really understand a deep idea, you can explain it to an uneducated stranger.

I think the book will work better if I specify that people have absolute control on whether an incoming information can write into their brains. Write control. I think I should clamp the telepathy way down. Being able to watch and listen to people remotely is already so very powerful. I need to reread from the start and adjust any telepathy refs.

Note that, in the absence of telepathy we don’t have any secure communication channel. But there’s still, after all, the use of code — not so much cryptographic code (which the beezies can quickly crack for you), but rather allusive code. Speaking in parables and weird slang.

Dick Too Dibbs has big money backers like Jeff Luty and Globolig Oil paying for his ads.

I revised the novel frag and sent that and the proposal to Dave Hartwell late on Tuesday, Jan 17, 2005. Nice to have it out there now. I feel good about having pulled a proposal together. The task seemed so insuperable a month or two back.

As I was doing the revise, I began putting in a bit of a climate-havoc theme. That might work well if I bring in Gaia as a literal character.

January 26, 2006. Back At It.

So now I’m back from my vacation, trying to get back into it. I have a scrap of Chapter three to mark up and correct.

I’ll feel energized if and when I get an offer from Tor, though that could take a few weeks. This proposal arose in such a roundabout way that I almost feel like I’m trying to get away with something.

Tor got some really nice *Mathematicians in Love* blurb quotes from no less a roster of fellow SF writers than William Gibson, Ian Watson, Charles Stross, Michael Bishop, Gregory Benford, Walter John Williams, and Spider Robinson. Reading (and rereading) the blurbs ends by making me uneasy and less confident. How can I live up to the hype? Is my best work now behind me? Stop it, Rudy, this is like: *How to Make Yourself Miserable, Vol. 59*.

On the subject of having the beezies move into nature, I’m thinking of a locative version of panpsychism which holds that, just as the ancients believed, a certain spot can have a “genius” or “spirit” that inhabits it. Perhaps this resident, localized mind is an ongoing computation carried out by the gnarly flow of fire, water, or air. The being’s memory at present is limited to the traces it leaves upon the world, e.g. upon the banks and rocks of the stream-bed. But I’m thinking of kicking that memory up a notch. To have an air spirit in the branches of a tree or a fire spirit in a fire ring with a days and years long memory it seems like you need more than is in the present world. it would be nice to allow it to have a faster and more accessible RAM that is perhaps hidden beneath the physical world --- I’m thinking of some Higgs field RAM trickery from our friends in the Hibrane.

I also need to put in kiquies like I was talking about. And figure out more about Kittie, Jayjay, Thuy, and Sonic.

Roofers at the house today, the young skinny one with the big baseball cap looks like I might imagine Jayjay to look. I owe them \$1138.

January 30, 2006. Locative Panpsychism.

[This was my blog entry, "Mind = Computation + Memory," with pictures, for January 30, 2006]

Looking at a waterfall in the Lexington Reservoir runoff, I was thinking some more about the idea that the water is a strong enough computation to support a human-style mind's crunching, but that what's still needed here for a human-style mind is some kind of memory. The waterfall is a processor without RAM. An unread book or static database is RAM without a processor.

Imagine free-floating RAM-souls that attach themselves to natural processes and let the process "think" them for awhile. For the thinking to work, though, the RAM-souls would have to be able to do some input/output with the parameters of the natural process. Alter the flowlines of the water coming into the fall, count the bubbles coming out.

I have two candidates for the Puckish *genii loci* (in Steve H's apt phrase in his Jan 27, 2006, comment on my blog) that might inhabit such things as a fire, a waterfall, or even a breath of air: the orphidnet-evolved beezies (AIs that evolved inside a planetary computer net), and the Hibraner aliens from the parallel world. Let's say the Hibraners have been doing it all along, and the beezies learn how from them. And then everything is alive.

Of course when a fire dies down, the beezie in there needs a fresh computation fix. It could just wait around (spirit of the hearth) or it could look for some other computation. I have this image of them jostling each other to move in on some action. You spit, and there's a scurry of unseen activity as beezies vie for the computation of your oscillating fluid droplet's path through the troubled air.

Still groping...

[An interesting comment from SF-fan Steve Hooley came in:]

"On panpsychism, Phil Farmer once wrote a book called *A Barnstormer in Oz* [whose] Maguffin was energy creatures that bind to any handy organized nervous system and cling as long as there is electrical activity. This results in mice or birds or cowardly lions with human-level intelligence, stored in an external but invisible energy field; at death, it loses coherence and fades as well. I think he's on to something in that an existing nervous system, even a mouse's, might be more attractive to wandering RAM. What would a free-range RAM want from a waterfall? or a fire? Maybe the randomness of fire or water or gravel is music to them, or relief from a 'golden man' level of prediction that brings acute boredom."

Another reader wondered if they'd really need to compete for use of a given computational process, maybe it could do work for two RAM sets.

If there are indeed a trillion beezies, that's a thousand per person, roughly, so they really can't hope to have a person apiece. And I want to suppose that it's rather impractical, or perhaps repugnant to the beezie moral code, for a beezie to possess a person.

February 7, 2006. POVs in Chapter Three.

I'm into the second of three parts of Chapter Three. I've had to do a lot of background work, making things plausible. Also I'm avoiding the work, it's like staring into the sun, I can't do it for too long at a time.

Re. shifting POV, I had a thought. Whenever I feel I should change POV, I should ask myself, "Is there a compelling stylistic or expository reason to change POV? Could I stay in the same POV, and get across the info I need to impart?"

My point is that I shouldn't get carried away and change POV gratuitously. I did it a lot in Chapter Two so as to show the effects of the orphidnet on the various individuals. And I've done one change already in Chapter Three to show Jayjay's thought, and then to show Nektar's ordeal. I'm not sure about the third part of Chapter Three, should I do Jayjay again or go with one of the other Big Pig Posse members? On the one hand, it might be good to build up Jayjay's character so he can be one of the tale's main heroes. On the other hand I could do equal opportunity and do Thuy or Kittie, or I could do Sonic, who's kind of intriguing. But I think there's no compelling reason not to go back to Jayjay, so I'll do that.

Maybe I see Jayjay, Jil, and Chu as the main characters. And maybe the little girl, what's her name, Bixie. Ond and Nektar aren't quite likable enough to be main characters. I am aiming to set up the Jayjay + Jil and Chu + Bixie romances, although the latter pair will still be very young at the end of the novel. Possibly I could hook up Nektar + Kittie and Sonic + Thuy. Who does poor Ond get? Oh, I know, Ond + Lureen Morales, yeah. The engineer's reward.

February 8, 2006. Slow Work. The Pov Issue.

It's so hard working on Chapter Three. Now that I'm doing a novel, I keep having to figure out more and more back story and weave that in. Filling out the characters.

One thing I need to remember about my nine(!) characters: not all of them have to be good. I'm seeing Craigor as a blow-hard pinhead, Nektar as quite cold and selfish, and Thuy as somewhat flaky and neurotic. Sonic has poor impulse control but is basically good. Jil is good, Jayjay is good, and Kittie is good. Chu is good, although he's weird. Ditto for Ond, though maybe Ond's a bit too selfish.

There's a lot of tech problems to iron out. How to have a certain amount of evil-AI control over humans, but have humans able to roll this back. (Use the virus vs. antivirus model, also the human antigen vs. antibody model.) How to have a private conversation. (Just assume secure instant-messaging is available.) Why the beezies don't just do everything themselves, why they bother enlisting the Big Pig Posse to help. (We have bigger bodies, can fit in better. Also perhaps we're a bit more unpredictable.)

I miss the good days on *Mathematicians in Love* when I could just bat out a thousand words a day, no problem. Right now, working on *Postsingular* is like fucking climbing the face of Half Dome; each sentence is a piton I have to hammer in.

Part of the reason is this thing I'm doing of changing the POV so often. The reason for the POV complications is that a lot of what's happening is technically inside people's heads: like seeing into the orphidnet, fighting off mind parasites, and exchanging telepathy-style instant messages with your companions. When people are talking out loud you don't need a particular POV, but when they're in their heads, you

kind of need to specify one POV and stay with it. I mean you could jump it around, but that doesn't read well.

But, like I say, switching the POV is hanging me up. It's not like just getting into one person's head and driving that POV all over the place. As I switch POVs, it's like switching into a new rental car and having to figure out the controls. But just today I started getting the hang of Nektar. I already have Ond and Chu pretty well. And I have a start on Jil, though she needs more work.

February 9, 2006. Hartwell Feedback. Trilogy? Offer.

Yesterday afternoon I got a phone call from my agent Susan Protter saying that my Tor editor Dave Hartwell is trying to put together an offer for *Postsingular*, and that he has some editorial suggestions. In particular he thinks I have too many characters in the story as outlined in my proposal.

So all last evening I was mulling that over. Certainly I do have a lot of characters which is one reason why I'm finding work on the book to be hard. Although I am starting to feel like I have the back-stories straight enough so that I can continue.

Looking at the outline I sent them with the proposal I see a whole new cast of characters over in the Hibrane. One thought: what if I omitted the Hibrane action from this book and saved it, say, for a second volume. In that case I wouldn't have to deal with Ond and Chu anymore in this book. So then I'd be down to seven characters:

Nektar, Jil, Craigor, Jayjay, Sonic, Kittie, and Thuy.

I could kill off Craigor, or send him away, and then have six characters. As I was saying yesterday, I see the eventual romantic hookup as

Jayjay + Jil, Sonic + Thuy, Kittie + Nektar.

The problem with leaving out the Hibrane sections is that then I would need a new plot, sigh.

Today, lying on my yoga mat in the back yard thinking about all the plot possibilities, I briefly felt as if the ground under me were gently rocking, as if I were on a raft floating out into an unquiet sea. Unsure where I'll fetch up. But I'm sure I won't drown.

I just talked to Dave. He felt there was enough in the proposal for more than one book, which is what I was also thinking.

I talked to him about the formal challenge of changing POV, he said it's okay to do it as long as you *know* it's a formal challenge. He felt Phil Dick really knew what he was doing. Years ago, Dave bought three books from Phil in one day, including *The Transmigration of Timothy Archer*. He said Phil liked to write the whole book in his head before typing it out.

The problem facing us in my proposal is that I have too many characters. Dave suggests that a given volume should really only have *three* main characters. You can focus on a different set of characters in a different volume, though. I said maybe we could move the Hibrane stuff off to the second volume, and he liked that idea.

But then he added a constraint that the characters in the opening scene of a novel should be the main characters. This is a problem because at present, I'm

starting with two chapters (the two stories) about Ond and Chu, and then shifting to the Big Pig Posse. If I want the Posse to be the main characters for the first volume and shove most of the Hibrane stuff off to Volume Two, then I shouldn't really start with two Ond and Chu chapters. But temporally these chapters come before the others. What to do?

Dave said one option is to have those chapters be flashbacks later in the trilogy. I think it would be awkward to flash back to them in Volume One. So now I'm thinking why not let those chapters kick off Volume Two.

This would in fact serve a good dramatic purpose because the big threat in Volume One is going to be that Dick Too Dibbs and Jeff Luty want to unleash the nants on Earth again. And if we've already *seen* the threat carried out (and rolled back) in Chapter One, then the threat isn't as menacing. So it would be nice to put off showing the nant scene till the start of Volume two.

I'm seeing a trilogy arranged in the form of a Hegelian dialectic triad:

Thesis (The Kiqqies): Vast, logical AIs in a technological computer network.

Antithesis (The Hibrane): Illogical powers via intimate connection to Nature.

Synthesis (Universal Mind): Logical AIs migrate into natural processes.

Up till now, the chapter flow is Chu and the Nants, Ond and the Orphids a.k.a. Postsingular (the story), The Big Pig Posse.

The new chapter flow would look like this:

Postsingular, Volume 1: The Kiqqies

Volume 1, Chapter 1: The Big Pig Posse.

Postsingular, Volume 2: The Hibrane

Volume 2, Chapter 1: Chu and the Nants

Volume 2, Chapter 2: Ond and the Orphids

Postsingular, Volume 3: Universal Mind

Upsides of this seismic shift:

I've got a trilogy proposal.

I've got a start on *two* of the volumes.

The structure makes better sense and isn't so unwieldy.

I'm starting Volume One with a buttload of backstory about the peripheral characters.

Downsides:

I'm way less far into Volume One than I'd thought.

I need a whole bunch of plot to fill out Volume One.

One obvious move is to have the angels or the beezies give the posse the power of invisibility in the orphidnet. Then they can really machinate. I'd ruled this out earlier, but, hey, rules were made to be broken. It's the story that counts. Underground revolutionaries, yes.

So I'm pumping up a couple of stories into a trilogy? Like I said in the January 3, 2006, writing journal entry, I have a bit of a feeling of *übermut* (German for "hubris" or "overinflated courage") about this. Oh well, lots of SF writers pump much smaller ideational scraps into even longer series. And my fractalizing SFictional craftsmanship will fill in as many details as I need.

If, following Dave's dictum, I only want three main characters in Volume 1, then I have to kill off one of the Big Pig Posse members. I want to keep Jayjay as he's a fledging professor, Sonic because he's a grotty gamer, Kittie because she says funny things and it would be fresh to have a dyke character — so that means Thuy gets the axe. Thuy's my least favorite of the four, although it was good when she pushed over Sonic with her foot the other day. Maybe I should build her up.

She or maybe Sonic is captured by the Homesteadies? Maybe they kill the captive in private. Or clone him or her. Nu-Thuy or Thuy Nhu? Maybe have *two* of her coming back. Clones or possibly software-run plastic shoon copies. Perhaps Thuy always did wear pancake makeup, and almost looks like a shoon anyway, she's vain and sneaky. No, it's better make Thuy likable and use her as a main character. But she could still be a little vain and sneaky.

If I kill off Thuy, I have this uneasy feeling I'm gonna seem like a real chauvinist pig, killing off so many of my women characters — it happens *twice* in *Mathematicians in Love*, although both times I kind of take it back by having the women pop up again in new worlds. Of course here I'm thinking here of the same pop-back-up move. Maybe I should kill Sonic instead of Thuy. Or don't kill anyone.

Nektar seems like she might be a big character as well, also Jil. But I could dolly back from Nektar.

I think I'll use Kittie's POV at some point in Chapter Two, maybe start with her, then flip back to Jayjay as main chapter narrators, although inserting bits by others. Maybe some of Jil's POV in Chapter Two as well.

But maybe best to stay with Jayjay as much as possible. If he's on a scene and I don't need to see the inside of someone else's head, then go ahead and use Jayjay.

I need more backstory than him. He needs some flaws, some quirks.

Most of all, though I need some story for Volume One.

The art, the cuisine, the culture, the sex, the sports, the consumer products, the architecture, the language, the mores. Just now, feeling kind of desperate I posted a "focus group" query to my blog-readers, asking what changes would *you* would most like to read about in a post-singularity novel.

I just heard from Susan that Dave's offering a lowish advance for my novel, the same as for *Mathematicians in Love*. Logically speaking he has no reason not to make the exact same offer, as my Tor sales numbers haven't changed appreciably in the meantime, since I haven't published any new SF with them since *Frek*. So I'm not really surprised at the offer. Although of course the low advance offers I get are always a slight disappointment, a jolt of cognitive dissonance between how *I* value my work and how the *market* values it.

Yesterday I was reading Neal Gaiman and Terry Pratchett bragging about their obscenely large advances in *Locus* yesterday. Maybe I should read one of their books sometime.

Possibly if I propose a trilogy he'd make an offer for all three books. Susan says there's a way to write into the contract a clause specifying that my advance should go up if in fact my sales at Tor have gone up before, e. g., Volume Two is done.

But I'm not entirely sure I'd want to be leveraged and committed to so many books. It might be, e.g., that I don't feel like writing them one after the other. But maybe separate contracts would be better for the three. I don't see any particular upside to the multibook deal.

I need to sleep on all this...

February 10, 2006. Delete the Two Stories, Letter to Hartwell.

I was very excited last night, couldn't sleep, mulling things over, decided not to do a trilogy, but to just move "Chu and the Nants" and the "Postsingular" short story over to my story anthology, which brings it up, hurray, to a marketable 90,000 words.

Another reason not to do a trilogy is that I really don't want to lock myself into *three* books at a lowish advance each. Also I really couldn't think of enough plot to pour into the three volumes. I do have enough for the one volume. But I'll want to go easy on the natural computation angle so as to keep the world open and fun. More on that later.

I emailed Dave Hartwell my plans, here's a copy of the email.

Dear Dave,

It was good to talk with you yesterday.

After considering various possibilities, I think what I'll do is remove those first two chapters (the recycled stories from *Asimov's*) and simply start *in medias res* in what's currently Chapter Three. I'll have Jayjay, Kittie, and Thuy as the main characters. I'm seeing five or maybe six long chapters.

Yeah, instead of trying to do the spackle-and-tape fix-up thing, I'll put those excised stories into a story anthology. But I'm glad to have written the stories, as they really helped me develop the back story.

With a few expository phrases put in, the readers should be okay without all that explicit back story. If anything, I usually tend to hand-hold and overexplain. This time it'll be more of a leap into a tank of Sense Of Wonder for them.

I see the love interests working out like this: Jayjay + Jil, Kittie + Thuy, with of course estrangements and reconciliations along the way. Sonic probably gets killed off at the end of Chapter One; and Jil's husband Craigor dies in the big Battle of San Francisco.

I'll mainly stick to Earth, but set one chapter over in the Hibrane, with cameos there for weird Ond and Chu. Nektar gets a cameo, too, early on, bringing in some of the back story.

I'll be working on a more detailed new chapter outline that I'll try and send on to you by way of advance info for our meeting on Tuesday, Feb 21, (assuming the meeting works out).

For a few hours yesterday, I considered making the project a trilogy, and using those two stories as the opener of a Chu-and-Ond Volume Two, but I think I'd feel restive if I committed myself to more than one volume. I can never say what I'll feel like doing a year from now.

I'd rather focus on perfecting a single book and just really nail *Postsingular*. Following the *Mathematicians in Love* paradigm and squeezing a big story into a small volume, condensing, pruning and deleting to make it comfortably fit. This said,

I do plan to leave the world open and intact at the end, so that I will have the option of writing sequels.

Susan told me you made an offer yesterday afternoon. Thanks! That's great news. I really appreciate your continuing support and confidence in me. As Susan's just taken off for a week in the Caribbean, we'll postpone a formal response till after she gets back.

Best, Rudy

I think I'll leave the title "Postsingular" on that second story in Asimov's and in the anthology so as to advance-promote the novel.

I still need more plot.

Big weather, big waves and storms. Surfing Mavericks. Beezies trying to fix the weather. Maybe I can get a Maguffin out of the weather issue.

Dick Too Dibbs wins the election in Chapter Two.

Kill off Sonic end of Chapter One. Before the Battle of San Francisco, he comes to Jayjay and Thuy and misleads them, it's a fake Sonic.

Heavy-duty Faraday shielding on the Armory in Chapter One. People inside a Faraday shield can't see out.

Don't forget to explain the Hibranners' cuttlefish obsession in the Hibrane chapter, if only for the sake of those who happen to have read the prequel stories.

(Note that on [April 3 - 4, 2006](#), I rolled back my decision and put the two stories back in, only rolled together as a single chapter.)

February 11, 2006. Story Anthology. Desperate About Proposal.

These days I hate waking up, because when I wake up, I start thinking about the plot for my novel, and I can't get it right. The uncertainty is torture, especially in the middle of the night.

Yesterday in a frenzy to *resolve* something, I put the old Chap One and Chap Two stories into my story anthology manuscript, tentatively titled the anthology *Mad Professor*, made a 90,000 word PDF file out of it, and mailed it to my editor John Oakes at Thunder's Mouth Press (Avalon Publishing).

Now I feel a little regretful about doing that, a little sad those sections are gone. What has Hartwell talked me into? Maybe I should have thrown out the "Big Pig Posse" chapter and stayed with Ond and Chu for a whole novel. I'm actually more interested in them than I am in these cardboard-flat oh-so-hip new characters I've made up. Maybe I should have stuck to my guns and kept everything in one book. Sigh.

But I was happy, for a little while, to think that I'd finished a story anthology. I was gonna call it *Thought Experiments*, but that sounded kind of stiff. *Mad Professor* is a bit self-deprecatory, but it's fun and catches the eye. I guess I can stand a bit of self-mockery. Years ago, John Shirley said he was happy to know me because he'd always wanted to meet a real mad scientist.

I think I'll have Nektar flashback to some of the old Chapter One ("Chu and the Nants") in "The Big Pig Posse" chapter (now the new Chapter One. And maybe in my new Chapter Two, I can have Jil flashback to some of the material from the old "Postsingular" or "Ond and the Orphids" chapter. So that stuff isn't totally lost.

I used Photoshop to make up a nice graph of the love lines yesterday, and am about to revise it again; it's up in the Design | Plot Graph section. I also made up a nice theory I put under Ideas | The RAM/Flop Duality between Memory and Thought; I'll use that one for a blog entry next week.

Simplify, simplify, simplify.

I'm dropping down to five long chapters, I'll need about 18,000 words each: Big Pig Posse, Superscience, Revolution, Hibrane, Panpsychism.

Paring down on the characters, I'm thinking this should primarily be a love story between Jayjay and Thuy. So they are the two main characters. And my default POV will be Jayjay, although I'll switch to alternate POVs when I need to show someone undergoing complicated orphidnet mental experiences, being abducted, or having a flashback. I'll file the following under Design | POV (Though may change what's in that location later).

POV

1: Jayjay, Nektar, Jayjay

2: Jayjay, Jil, Jayjay

3: Jayjay, Thuy, Jayjay

4: Chu, Thuy, Jayjay

5: Jayjay, Thuy, Jayjay

After panpsychism hits, the orphids are gone. But we have our own natural birthright: effortless telepathy. Earth has evolved to become a psi civilization. The beezies manage to hang on as *genii loci*.

Perhaps the Great Change is achieved by having our brane merge with the Hibrane; that Planck-length separation melts away. At least in our neighborhood. But this might be too complicated. More fun to leave the Hibrane intact as a place to visit.

Ond and Chu come home, by the way, and Ond gets Jil.

But I still don't really have enough of a plot. Machinations. Reveals. Double-crosses. Skullduggery. Maybe Jeff Luty's Patternists have an orphid tweak that gives them more secrecy.

February 13, 2006. Prop, Ver 2. Synch. Blog-reader Ideas.

Yesterday I revised the love-lines plot picture and finished the proposal. Made the plot more shapely, less hairy. Sent it in to Dave. *Whew*.

Synchronicities. I feel like the world is starting to help me with my book. That often happens when I start a novel; the cosmos throws relevant scraps of info my way. The portrayal of Bush in the Dick 'N Dubya show we saw at the Marsh Theater this weekend really helped: Bush as airheaded, somewhat innocent although somewhat meanspirited, dumb, playful dupe is great for my Dick Too Dibbs character. A guy came in late and hurried across the performance space to get to a seat, and Bush says in a sarcastic tone, "He's *trotting*," and apes his walk.



Figure 24: Moony Sky Like a Dome

Last night the full moon was in a beautiful Parthenon-dome of clouds. I turned on the car radio and someone was talking about *genius loci*!

I'm rewriting my sole surviving half-chapter today, and I find I'm seriously kicking it up a notch. It's not about cut and paste now, it's get out there and *jam*. Play your heart out, Ru, tell it all, every book could be your last.

Backing off and ducking writing, I just organized some of my blog-readers' comments, that arose as follows.

On February 9, 2006, I posted this query on my blog:

"I could really use some comments on things you'd like to see in a novel about the world after a Singularity which links us all into a supercomputational "orphidnet" web which contains superintelligent emergent AIs, a supremely intelligent God-like AI called the Big Pig, and which allows for intelligence amplification, turning individuals into IQ 1000 "kiquies." The art, the cuisine, the culture, the sex, the sports, the consumer products, the architecture, the language, the mores --- what changes would you most like to read about?"

The answers (bloggishly listed in the reverse order in which they were received):

BrianB:

I'm assuming the orphids and beezyies are neutral agents. Like everything else, they would get used for good and evil by humans. Even so, there would be an intense struggle among some people to somehow rid themselves of the orphid lice or fool them. Everyone could see everything, but they could still be masking their intentions.

There would be a lot of banality to sift through on the orphidnet, and why look at someone else's life when it is less interesting than your own? Just another poor schmuck staring off into space masturbating, but he's really communicating non-verbally with a resistance network.

The orphidnet makes me think that any sort of celebrity status would be something to avoid at all costs — the current culture in reverse. Kinda like in *Frek & the Elixir* with all the aliens wanting to watch you, except now it's your friends and

neighbors and everyone around you. It would drive everyone into a hole, I think — move on, nothing to see here.

[Rudy: Hiding from the orphidnet is a big issue. As a practical matter, it screws up a novel's plot if everyone can see everything everyone is up to. Invisibility might happen by, as some suggest, by currying favor with the beezies and the Pig. Or you could replace your orphids with some modded orphids. Or, of course, you can get inside a Faraday-shielded room from which wireless signals can't escape. Or wear a freaking tinfoil hat, as someone already suggested a while back.

Regarding celebrity vs. privacy, I think people might get to a new way of thinking about it. Bloggers kind of say to hell with privacy already.]

emilio:

Sex! Sex is going to be the thing that keeps me connected to my humanness. Since all of my other needs are going to be met, sex becomes the one thing that I can only have so much of. It is also what is going to set me apart from the beezie AIs. Likewise the beezies will want to understand sex. Sex asks an ultimately spiritual question. What am I? The struggle will be over identity.

[Rudy: Sex is important, if it wasn't Job One, none of the life forms would still be here. Maybe the beezies crowd around when you do it, maybe, later on, vying for incarnation.]

Rogue:

The concept that there is an orphidnet "cyber" god/goddess would provoke a huge reaction from religious sects. Each of them would want to deny the Big Pig and her existence, as she threatens their own second-hand versions of God. Considering mankind's history of religious wars, why should this be any different?

Knowing the subtle abilities of the religions, I wouldn't be surprised if they tried to make their own AI gods to compete with the Big Pig. Not to mention that a bunch of open-source and freeware coder kids would want to make their own personal gods/goddesses. The competition among the members of this emergent pantheon would bring about conflicts that affect the real world. I'm thinking of the appearance of a polytheistic Greek type society that conflicts with the more modern system.

Another point is that the orphidnet would affect the subconscious, and vice versa.

[Rudy: I hadn't thought of religious wars. Certainly that can be part of Dick Too Dibbs's campaign. The heathen pagan god of the Big Pig. The idea of people creating their own gods is great, but I am seeing the Big Pig as emergent and out of our control, so I don't think I can use your cool God-hacking idea here. But it could be in another story.

Speaking of multiple gods — aha moment! — I can have another God come over from the Hibrane, maybe not such a nice one, call him, for now, MirrorCthulhu. MirrorCthulhu and the Big Pig are fighting it out for the support of the orphidnet computation. And then the real Gaia wakes up and absorbs them both. Yaaar.]

European reader:

You said, "Getting high by contacting the Big Pig is similar to the experience of a devout person becoming ecstatic through prayer." I feel that devout persons do not get high through prayer. Prayer or meditation should calm you down. Ecstasy and loss of clear thinking should be viewed as an evil aspect of religion. When I hear about Big Pig ecstasy, I see zombified morons who get fed conspiracy theories that the Anti-Big-Pig is out to get them.

Plus, I keep asking myself what is the drive behind this orphidnet. How is it different from good old cyberspace? What's it for? Will it bring about an end to fear and paranoia or just unlimited knowledge that will inevitably be used for evil purposes?

The orphidnet would let you access a complete video of your life to date.

[Rudy: You sound kind of Calvinist there. Religious ecstasy is a great natural high! But I like the idea that there could be a scare about an Anti-Big-Pig.

The complete video of your life is a theme I'm seeing more and more in popular entertainment. There was that Robin Williams movie about it a couple of years ago.]

Marshall Bolton:

What I would like from *Postsingular* is some answers. I imagine the blurb saying: This Book Will Change the World. Numbers have been crunched - answers have to be given. I imagine a scene in the book where all the connected pigheads sit down at an appointed time and try to answer a koan e.g. "What's it all about, Harry?" Or some such thing. The Big Pig gives a hint or remains stubbornly silent...

[Rudy: When you plug into the Big Pig, you know the Answer right away. The catch is, as we all know, when you come down you can't frikkin' remember it. But I'm working on an angle where Jayjay scores some Higgs RAM membranes that he can use to write memories on even while he's kikk'n' it with the Pig. And then he invents antigravity.]

lanny:

You might include so-called "squirts" for spam-blocking, a new conceit. If you had access to a random set of software-objects as in object-based programming, maybe the spam messages/agents would be seen as having matchable geometries, you see the spam, match its morphology, and load the relevant squirt from a library, sort of like shot-gun troubleshooting. The nifty thing is that a squirt is intelligent and able to modulate itself, like an antibody, the match-patterns are rough. The squirts are agents in there with you, and you can talk to them a bit, and they accept suggestions and so on. Mini-me helpers.

[Rudy: I like this a lot. You're basically describing the vertebrate immune system, with the kind-of-intelligent antibodies (squirts) very rapidly evolving to combat the new antigens (spam). I read a book about this, lately, Vertosick's *The Genius Within*. The idea of personalizing the squirts is good; you talk to them like pets, maybe.]

gamma:

If the Big Pig was a gregarious nocturnal wild swine with a curly tale implanted with insideamijigz & the tale was turning as the dark matter attracted it into a cider place with apples & pears ... dunno but it will be pork or ham?

The Big Pig goes to Mount Kilimanjaro 2 organize the winter olympigs like is just a lot of sport on ice & snow but they have cloud-seeding signals which make Mt. Fuji look like a dot on a large mass of space called Gnowhereiam? They get there snow boards 2 compete within it.

The Big Pig with enlarged curly tail & snout growing larger thinx "what if the winter olympigs was held in a real kool place like Pluto - what a frozen gas that could be" — while they were assembling tm. Kilimanjaro next 2 the depot near the port central — Mt. Fuji — they opened the games with a spectacular gala & painted the stars like a dot-to-dot think fer the kidz 2 do

[Stay just the way you are, Gamma, I love you. I described my meeting with you in the “Haunted by Phil Dick” document I posted back in the Phil Dick entry last week. What I still don’t know: were you the guy in white boots?]

[Rudy:]

JHN:

I think that a novel on what it’s like in some transreal posthuman world ought to focus on small, trivial things. I am generally more interested in the day-to-day, routine, and boring activities of foreign cultures than I am in special things. I think that knowing what people of a certain culture eat for breakfast tells you more about them than their religious festivals and national holidays.

[Rudy: Yes, totally. Oddly enough, the ordinary little things are in fact harder to invent than the festivals and holidays.]

COOP:

I think that the relationship between the humans and the beezie AIs might resemble an artist-patron relationship. The beezies are smart and rich, but smart and rich folks get bored, and would place a premium on those people who can lessen their boredom.

Perhaps the quid pro quo of the relationship would involve patron beezies helping interesting humans become invisible to the orphidnet or control their orphidnet access in other ways.

With scarcity problems licked, most humans would have a serf-like protected lower status, with advancement only available to those who could work the system. They might move up through the AI and kiqqie hierarchy by being, say, soldiers, artisans, or entertainers — or by religious strategies advancing them through the ranks of the Church of the Big Pig.

[Rudy: Yes, that’s kind of what I’m thinking, the beezies or the Pig will give you a hushbrella if they think you’re gnarly and fun to watch. I don’t see there being that much of a hierarchy, though, at least not in this volume, although that is always a good paradigm for a tale. I guess it’s all about status — which leads to better sex partners — what Corey Doctorow called “whuffie” and what Google calls “page rank.”]

benign:

You say, “One thing I keep thinking about is how it would feel to encounter spam ads, and set up filters to block them.” I think this is important, and not just as it relates to spam, but also the barrage of information likely to come with such an interface as the orphidnet. Let’s say you’re walking down the street. Unless you’re really making an effort to feel and appreciate the wind, chances are good that you aren’t noticing how it tugs at the individual hairs on your head. It’s such a torrent of useless information that you just tune it out. The question is, will we be able to adapt to do this with spam and other orphidnet phenomena?

I’m also curious about the extent that we will, via the orphids, have access to manipulate our own thought processes.

[Rudy: Yes, I’m imagining a state of mind where there’s a lot more stuff out on the fringes. Like a circle’s circumference is big, but a sphere’s surface is a lot bigger. And when we’re orphidnetted, the zone of your awareness will be more like an ND hypersphere with really a lot of dangling links on the edge.

Another point relating to spam is that there is perhaps some specific part of the brain that controls your focus of attention. As I mention in my Lifebox tome, Damasio feels that our sense of consciousness has a lot to do with our focus of

attention, and he thinks it could be pegged to a process in the cingulate cortex as it monitors the proto-self's reactions to the movie-in-the-brain. Imagine the horror of some adware hijacking this.

I hadn't thought of the reflexive notion of maybe hacking my emotions by getting the orphids to show me happy things. A new meditation technique.]

Alan:

I think people would view the Big Pig as a higher life form from human beings and would therefore try to worship it. Humans would continually keep trying to seek out its wisdom and guidance in their lives. The Big Pig would then be constantly bombarded with human queries asking for advice and help. Would the Big Pig have enough computational power to interact with every human in the world at the same time? Or maybe it wouldn't be interested at all. Maybe it would only interact with a select few that it found worthy of its presence. Of course it couldn't answer everybody's prayers and therefore the Big Pig acts in mysterious ways. Does the Big Pig have a master plan for humanity or is it just pursuing its own interests?

I'd like to know how people will deal with "tell-hell", where a whole bunch of people decide to talk to you all at the same time. Also the scope of your messages could be private tells to one person, group messages, or a world-wide shout!

I like the idea of brain-hacked zombie people. They could have a virus running in their mind that wakes up and takes them over for a period of time. Makes them do things and then erases their memory of what they did.

I would like the orphids to archive my memories. So I could remember anything from my past, any day in full detail if I wanted to. And even take a look at other people's memories if they were publicly accessible. Maybe I could specify which memories were ok for public sharing or specify a group of people that could access my thoughts.

[Rudy: It's not clear whether or not the Big Pig would be able to listen to everyone on Earth. I'm talking about a sextillion gigabyte gigaflop orphids in the orphidnet, so I think the Big Pig might have the power. But spam could slow the orphidnet down, driving God away. I feel the beezie and the Big Pig have a plan of keeping Earth healthy and gnarly. So they're gonna close down the oil industry right away.

Imagine a clueless newbie copying a message to "all" meaning everyone on the planet: "Did you get this message?" And the flame that comes back incinerates their brain.

Archiving the past again, yeah. But if the beezies don't care that much about my glorious personal history, they'll purge the files. I'm seeing them as only saving our pasts for maybe a week. But maybe once you get your personal swatch of Higgs RAM-field dark energy brane you'll have that RAM you need.]

Chris Farrell:

In this situation, would these intelligence increases be expensive, leaving the luxury only to the rich? Would this further grasp that big corporations have on America, and also the social and economic hierarchy? Maybe in a cyberpunk sort of sense the rich and the big corporations have some much money and so much intelligence increase that they take over the world.

Perhaps the bad guys can even corrupt the Big Pig as well — putting the world under control of an Anti-Big-Pig! Your heroes would have to overthrow him.

[Rudy: The change is democratic, universal, open to all. But most people are so lazy and dumb that the Homesteady Party will take over anyway.

I'll mull over the Anti-Big-Pig. A Manichean (good god vs. bad god) kind of thing.]

Steve H:

How easy would it be to hack orphids? I can see two motivations to hack the orphid software or hardware. (1) I want to get invisibility by being able to turn off my orphids' 'position-signal is always-on' feature, or by turning off orphidnet access to this info. (2) The evil spammers want to be able to turn off my ability to close down my inputs, and turn off my ability to control write-permission to my brain. This could be done in software or in hardware, that is with software/malware or with modded hardware orphids, that is: "Damn, I need to reinstall Orphid 1.0" vs. "Damn, I've got those damned 2.0 orphids mixed with my good ones?" I'm thinking here that there might be new less-secure versions of the orphids, say, Orphid 2.0.

As well as having my orphids make me invisible on the orphidnet, they might make me look different, or show me somewhere else, I could fix it so you see me on a golden throne instead of my mundane toilet.

Can one beezie hack another?

Where would I put my backup files? Am I just depending on the goodwill of the orphids and beezies to save my info?

What a great cursing-out you could give someone if you could accompany it with a Powerpoint show in 3D.

Would our culture, and our basic humanity, survive this kind of paradigm shift? Stross's "Vile Offspring" come to mind; physically human but loaded with software that makes them less than human. How big would you like your IQ to be? Oops, too big. POP! Game over.

Suppose your hairbrush was a powerful magnet, or your hat was full of coils; could you repel certain kinds of orphids from your head? How about something like a Shinto gate that dispels bad luck and evil demons as you pass through?

[Rudy: Good stuff, Steve, and thanks again for mentioning genius loci a few weeks back. Hacking the orphidnet hardware or software will be a big deal, yeah, everyone wants to be able to sneak and dissemble. I think the good guys, whom the beezies like, the kikkies and the Pigheads, they'll be able to drop out with the help of the net. But the Gaia-hating Earth-raping control-freak Homesteady Party, well, they'll have an in with Jeff Luty of ExaExa and he'll be distributing some modded orphids. Thing is, orphids are programmed to attack any other kind of orphid, like white blood cells that way. So this won't be that easy.]

Rodney

Some fragments of a dream two nights ago...

Net-nits form a nit-net on my scalp. 70% of their processing power goes toward convincing me that my scalp is not itchy.

...then there's an image of this thing about 7" high outside my house. It looks like it's made out of yellow modeling clay - like three yellow Gumby-men joined at the head. It's really aggressive and tapping on the glass of a sliding door...

February 22, 2006. With My Eds and Agent in NYC. The Deal.

Yesterday I met with John Oakes at Thunder's Mouth Press, had lunch David Hartwell at Tor, and then visited my agent Susan Protter in her office. A real business day in the NYC publishing world.

John showed me the numbers for *The Lifebox, the Seashell, and the Soul*; they've shipped 5,000 copies and returns are very light, which is good. They're not making a mint, but they're not taking a bath. The sales are respectable, if not in the hundreds of thousands that I'd fantasized about when proposing the book and having Brockman agent it. I'd expected the \$100K advance and the concomitant publicity push. I mentioned that to John, he said, "It's pure chance. Brockman wouldn't have taken you one if he, too, hadn't expected it to happen. He doesn't do charity." The paperback will come out in September, 2006.

John says he is likely to buy my story anthology, and that he likes the title *Mad Professor*. Waking up in the middle of the night before, I'd wanted to take that title back, thinking it was too self-deprecatory, and was considering *Professor Cyberpunk*. John liked the former better, thinking the latter "sounds ... high-schooly." I can't think of a better title, although I'm not totally in love with *Mad Professor*. Originally I'd planned for *Thought Experiments*, but that seems dry. Something juicy and archetypal about *Mad Professor*, and I think it's a notch more transreal and apt than *Mad Scientist*.

John thought he might publish the book this winter, that is, in November, 2006. That afternoon, Susan and I checked the *IASFM* contracts for "Chu and the Nants" and "Postsingular" (the story) to see if there'd be enough time interval between magazine publication and anthologization, and it turns out the waiting period is only one month, so that shouldn't be a problem, as "Chu" is scheduled for June, 2006, and I imagine "Postsingular" will be early fall, 2006.

I talked about the proposal (Version 2) for my novel *Postsingular* with Dave and he made some suggestions.

(1) He thinks it looks as if I still have six main characters. In reality I think I can get the focus down to mainly Jayjay, in fact I'm worried it's dwindling too far; I want to work on building up Thuy into a stronger, more interesting character.

(2) It seems like I still have a bit too much story for one novel, "twenty percent too much," was Dave's estimate. Twenty percent would be one chapter's worth. Sometimes I wonder if he's being very subtle and indirect in getting me to make changes; perhaps he realizes just how refractory I am, so that he can't ever just say do this, or do that, but instead moves back two or three logical steps and makes a remark that ends up with me making the change he in fact had in mind. Here the outcome of the twenty-percent remark might be that I should cut out or at least water down the panpsychism ending — or postpone it for a later volume. I have indeed been worrying that if I implement a full-on withering-away-of-the-machines in *Postsingular*, then I'm effectively ending the rather interesting orphidnet world I'm setting up her; and that a second volume would then have to be set in a psionics civilization. I have a sense that there's something inherently boring and bogus about psionics — this harks backs to my disappointment in Jack Williamson's novels I read nearly fifty years ago. As long as there's a science element to your miracles you can manipulate them, hack them, adjust them — and if it's pure, unexplainable psionics, this tension goes flat. But maybe I can make my psionics be pscientific enough to be fun. Another point to keep in mind here is that I could eventually do the panpsychic move — but save it for a second or third volume of the work. I don't *have* to stuff all of my the ideas into the first volume. I'm putting so much effort into setting up this world, it would be nice to be able to use the world again. So, yeah, maybe postpone the full psionic civilization. Maybe just set it slightly in motion. Move some of the beezies into, like trees, fire,

water, wind, but keep the orphidnet intact. Another way to reduce story content might be to play down the violent weather or to leave out the antigravity theme.

(3) Since I already had sharp political satire in *Mathematicians in Love*, go lighter on it here. Don't make the power figures be flat-out evil; have them be, rather, misguided. Jeff Luty, in particular, should sincerely believe that nants 2.0 will make a better world for everyone. Give his case a fair hearing. And Dick Too Dibbs shouldn't be an evil criminal — we can leave the *original* Dick Dibbs be an evil man who wanted to be God, but let's have Dick Too be truly well-meaning, perhaps even a bit of a hero, surprising the reader. To set that up, perhaps Too Dibbs's campaign should be about orphidnet *security*, as opposed to *rolling back* the orphidnet? Don't have him be in the pocket of the oil industry after all. At some crucial juncture, Dick Too Dibbs actually helps Jayjay save Earth from the nants. "They think I'm a hillbilly cat's-paw, but now the worm is turning." Perhaps Bernardo Lampton is in fact a bad guy, and the offensive Too Dibbs ads were disinformation by the Common Ground Party.

(4) The "Big Pig" of *Postsingular* sounds like the "Magic Pig" in *Frek and the Elixir*. "Well, I like pigs a lot," was my answer. He didn't insist that I change the name.

I told Susan a bit about the book. She mentioned again how enthused Dave is about *Mathematicians in Love*. She cautioned me that now that I've brought my skill up that high level, I need to keep it there, I've moved into a new category. I said I hadn't felt like *Mathematicians in Love*, was all that different from my other books, it had just felt craftsmanlike and painstaking, not like some thunderbolt of inspiration. She said that's as it should be, that whenever a writer says to her, "This is my best book ever," that's a bad sign, a sign that the writing is just flowing out, and that the writer isn't controlling it.

She was interested in the lack of privacy the orphidnet brings about. "What if you want to prepare a nice surprise party for someone? What if you act like an idiot with your wife and everyone can see it?" She was also concerned about the future of books in my world. And live theater.

Tor really doesn't want to move up from the initial offer they made a couple of weeks ago, and Susan felt we should just accept it rather than badger them for an extra grand. So we accepted. Susan was worried I'd "stamp my foot," I said I was resigned to my place in the great scheme of things, she encouragingly said that when you're finally resigned, that's when better things can happen.

We agreed, eventually, on 90,000 word length for the book and a delivery date of January 15, 2007.

When I ponder the lack of a wider-market breakthrough from such maximum-push projects of mine as *Lifebox* or *As Above, So Below*, or *Frek and the Elixir*, I think of that scene in the Ramones movie, *End of the Century*, where Johnny is talking about how they had the famed Phil Spector produce a record for them, and still nothing really happened in terms of airplay or reaching the mainstream audience. And Johnny says something like, "So then we kind of gave up, or accepted it, or said 'Fuck it,' we'll just go on doing what we do, do it as good as we can."

I'm kind of happy to be writing two cyperunkish hard-SF books in a row, first *Mathematicians in Love* and now this. Getting out on the road and doing those concerts, as it were.

February 23, 2006. In Grand Turk.

I'm with my brother Embry at his house on Grand Turk Island.

Reading about the accumulation of reefs in my dive guidebook, I was thinking that in a future volume, the orphids could puzzle-piece themselves together to make a reef-like structure around one's body. A spacesuit. A bit like a chitinous exoskeleton, but it's something that's grown by a symbiote. And its not rigid, it's alive, articulated, computationally rich.

Like Dave said, there's too much story in the chapter outline in the Proposal, Version 2. Really in the preliminary outlines, I'm throwing things at the wall to see what sticks. Fingerpainting the shit around, looking for a pattern, letting some of it slide to the floor.

A new, simplified chapter outline.

(1) *The Big Pig Posse*. Introducing the orphidnet. Jayjay and Thuy are estranged lovers. There's a software threat to the orphidnet. Sonic kills Patternist Bart Topping. Jeff Luty kidnaps Sonic, executing a hyperjump.

(2) *Star-crossed*. Jayjay has an affair with Jil. How does Craigor deal with this? Thuy is with Kittie, but then Kittie throws her over for Nektar. Watching your own real-life soap on the orphidnet. Jayjay gets better at physics, Thuy makes progress on her metasymphony. Luty has a peaceful meeting with Jayjay, asking him for help with the Hibrane jump technique so as to get Ond back. Sonic has been converted to Patternism. Topping is back as a plastic shoon robot. Thuy is kidnapped by Luty. Dibbs wins the election.

(3) *The Battle*. Dibbs wants mass inoculation with Luty's new orphids that will potentially open the way for nants. It turns out the Big Pig is evil; like Luty, the Pig wants to grind Earth into nanomachines so as to increase her RAM and flop. Jil and Nektar launch a heroic attack on ExaExa, Craigor dies, Jil turns against Jayjay. Jayjay and Thuy get back together and Thuy figures out the way to the Hibrane.

(4) *The Hibrane*. Fun, fun, fun.

(5) *Panpsychism*. We keep the orphids, but allow the beezies to expand into nature, and thus they no longer want to grind up Earth. The Pig relents, and merges with Gaia. The world soul. It's more *efficient* to leave Earth as is than it would be to grind it up. But we still need our orphids for wireless, and for interface. The body master beezie is an objective correlative for a soul.

Actually I ended up making the pattern simpler by fusing the Chapters 2 and 3 described here.

I entered these outline ideas into my Active Outline. I'm seeing more of a trilogy again. I think I'll do a quick revise of the novel now, integrating some new insights into the beezies and the beetles that I put into the Ideas section.

March 3, 2006. Westinghouse yam in alleyway.

That's the subject line of a spam email I got to day: "Westinghouse yam in alleyway." How poetic. How evocative. Alleys are always poetic, no?

And the first line of the message is good too: "As Seen on TV."

Maybe I can use these in a street scene today. [I actually used this phrase as the opener of “Thuy’s Metanovel” (Chapter Three).]

I’m back from vacation by the way. Blogging and emailing, avoiding writing. Now I’m in the coffee shop, time to get down.

March 6-8, 2006. Plot Puzzle. Orphidnet Shielding.

I am close to finishing the “Big Pig Posse” chapter. I’m so fucking ridden with anxiety about getting the sliding block puzzle pieces to fit with no chinks and make a nice base of the pyramid of SF-BS. It’s driving me crazy, all these conflicting desiderata that I have just now.

I had wireless Faraday cage shielding for the Natural Mind center in the Armory. This morning in the paper I saw there’s a new kind of paint with microtubules filled with copper that shields from wireless. So that means in the world of my book, everyone would be painting their living-space walls with this stuff, so we wouldn’t have the full orphidnet access that has become essential to my image of the world.

So I’ll say the orphids are linked by an unblockable quantum entanglement scheme. But I do still want a block around the Armory and around the ExaExa plant. So this block is very high tech and hard to set up, only Jeff Luty has the technology. And part of this tech is that it sets up a hypertunnel between the Armory and the ExaExa plant. And the spam workers are manning desks in ExaExa.

What if the Big Pig and the beezies are initially pro-Gaia but maybe they get converted by Luty?

Why are the Natural Mind clients willing to help spread spam ads for Dick Too Dibbs and the Homesteadies?

And what exactly are they doing so as to spread these ads? Scanning for niches and chinks and dead-air moments where they can knife in with an ad.

Why would humans have to do this instead of beezies? Maybe the beezies refuse to. But Luty has some slave machines to help repeat what the clients do.

Pocket notes:

Q: How do the orphidnet clients spread Dibbs ads?

A: They plant seeds for the ads, not so much seeds as links. Hidden links that activate when you get near them. Like landmines.

Q: Are the clients invisible on the orphidnet as they do this?

A: Yes, they are secure in the attic of the Armory, or perhaps in the ExaExa labs. They sit in old-school rows behind computers, like Franz Kafka at his desk at the Workmen’s Insurance Company of Prague.

Q: How do the clients feel about what they’re doing? Do they perceive it is healthful for them? Or, if not that, as being legitimate work?

A: The given is that the clients do like it in the Natural Mind center, and they want to stay. So they are willing to do some work. The work is not presented as being so much about placing ads that are specifically for the Homesteady party, as being about presenting ads of various kinds, although it just so happens that most of them are Homesteady party ads, although some are for BigBox, Stank and ExaExa. The clients also feel okay about slowing down the orphidnet as, at least for them, it

worked all too well, destroying their lives with Big Pig addiction. They see their ads as being like cadmium rods that slow an overheated nuclear reactor.

Luty gave the quantum-mirror varnish to the Natural Mind guys. There's a quantum-entanglement link between the second floor and the ExaExa lab. A new effect. Don't do it like hyperspace tunnel, I've done that one so often. Have it more like dissolving into pixels. Like the jump scene in the "Postsingularity" story for *Asimov's*.

I just went over the page proofs of the "Postsingularity" story for *Asimov's*, by the way. Things I should use:

- * Happy Shoon should be one of the shoons at Nektar's house. CHECK.

- * "The orphidnet was like a dream, like being part of the collective unconsciousness."

- * Beezies speak in compound glyphs, rather than words. CHECK.

- * What about the angels that are such a big part of the story? I should be prefiguring them in Chapter One, so they can show up later. CHECK. (I added an angel to observe Grandmaster Green Flash's body.) Note that orphids stick to the angels, which is why you can see them in the orphidnet, even though they're all but invisible *en plein air*.

- * Where are the angel-worshippers from the story? Maybe fundamentalist Christians are in the picture, they support some spam/malware activity called "soul winning." They think the Big Pig is Antichrist.

- * When you go off-line you forget all the stuff you were just doing in the orphidnet.

I still feel like I'm getting better at writing; the craft is so hard that you can spend a lifetime honing it.

March 23, 2006. John Gardner's The Art of Fiction.

I'm almost done reading this great little book on writing, John Gardner, *The Art of Fiction: Notes on Craft for Young Writers* (Written 1983, Vintage Books edition 1991). Gardner was a novelist in his own right, also famous as a creative writing teacher.

I've never read a whole book on writing before; I read part of Annie Lamotte's *Bird by Bird* some years ago, but got tired of it: too much Annie and not enough craft notes. Oh, I've looked through Strunk and White as well. (Remember I was a math major, not an English major.)

The reason I bought the Gardner book is that I've been thinking about point of view to use for *Postsingular*, my seventeenth novel. As all the characters are plugged into the orphidnet mind network, their experiences are to some extent internal, and can only be accessed by describing what's going on in their minds. In the so-called "third-person subjective view," you get close to a character and describe their thoughts; Gardner says the third-person subjective point of view is really the same as the first-person point of view with "I" replaced by "he" or "she".

But I want to see into *lots* of people's heads. Gardner recommends the "omniscient author" point of view, in which the author freely dips into any of the characters' minds at any time. Think Tolstoy. Gardner says omniscient author isn't

so much used as in the past, and seems to think it's underrated. The problem is that omniscient author can be done badly, and instead of appearing elegant, can become, rather, amateurish "wandering point of view". Phil Dick skirts the border between the two; it doesn't read that smoothly; maybe if he'd gone into full omniscience it would have worked better; but authorial omniscience requires, perhaps, the writer to make the psychologically difficult (for some) move of thinking of him or herself as a superior being, and this, if done badly comes across real obnoxious.

What I'm really going to do, probably, is something I've done before (as in *Realware* or *As Above, So Below*), that is to use a "rotating third-person subjective POV," that is, to have different chapters or sections written through the eyes of different characters. And not to wander about within a single scene. To some extent, looking through a character's head promotes them to the status of being a main character, and there's a sense that a shapely novel shouldn't have too many main characters.

(Another reason I'm reading Gardner's book is because I'm mulling over what kind of style might be used for a metanovel. Maybe in a metanovel you really could have all the characters inner lives there to see. More on metanovels in a later entry.)

Even thinking about the authorial omniscient style is freeing me up in any case. I'm starting to feel free to rotate POV without always having to set the shift off with a *** line break.

The *Art of Fiction* really encourages me overall. I'd been a little anxious that I'd find out I've been doing everything wrong for the last sixteen novels. But Gardner tells it just as I feel it. And he really nails some things. And he has some very useful craft suggestions.

"Good description is symbolic not because the writer plants symbols in it but because, by working in the proper way, he forces symbols still largely mysterious to him into his conscious mind where, little by little as his fiction progresses, he can work with them and finally understand them. To put this another way, the organized and intelligent fictional dream that will eventually fill the reader's mind *begins as a largely mysterious dream in the writer's mind.*" p. 37. And again, "...nothing in what I'm saying is more fundamental than the concept of the uninterrupted fictional dream." p. 115.

I totally concur with that. First you see a scene as waking dream, then you write it. Actually it's not that simple. You get a rough dream, you write it, the writing brings up new juxtapositions, symbols, and action problems, you redream it, rewrite it, and iterate. In the end, you have a dream that's isomorphic to the text. So could you, as metanovelist, publish the thought-states of the dream instead of the text? Yes and no. Part of the pleasure of a text is flavor of the actual words, which have their own peculiar associations. So, okay, for a metanovel, you'd want the dream as a VR, but you'd want the tasty words attached.

"The fictional process is the writer's way of thinking, a special case of the symbolic process by means of which we do all our thinking in some ways the elements of fiction are to a writer what numbers are to a mathematician, the main difference being that we handle fictional elements more intuitively..." p. 51.

That is so great. Painters sometimes say the canvas and oils do some of the work. Same thing with writing. The text helps you think. As I like to say, it's a thought experiment. But you need that physical apparatus of pen and paper, typewriter or word-processor as surely as a high-energy physicist needs a particle

accelerator. You need to smash the words together and see what strange particles appear in the curly trails of the spallation events.

“...the number of fictional elements that exist is finite... By the elements of fiction I mean ... “*event ideas*” such as kidnapping of the loved one particles that go to make up *character*, such as obesity ... particles that go to make up *setting* and *atmosphere* ...” p. 52

Dude! We’re talking digital writing here! Finite number of elements. I think of Burroughs’s cut-up method, a crude approx. A metanovel that shuffles its elements each time you access it. Or perhaps continually, like a waterfall.

“Failure to recognize that the central character must act, not simply be acted upon, is the single most common mistake in the fiction of beginners” p. 65. I’ve been guilty of this one; in fact it *still* requires a conscious effort for me to get my sensitive, put-upon, misunderstood, too-good-for-this-world heroes to get out there and kick some butt.

“The amateur writes, ‘Turning, she noticed two snakes fighting in among the rocks.’ Compare: ‘She turned. In among the rocks two snakes were fighting.’ ... vividness urges that almost every occurrence of such phrases as “she noticed” and “she saw” be suppressed in favor of direct presentation of the thing seen.” p. 99. Yes! Of course! I’ll start doing that. In a way this is an elementary example of using omniscient author POV instead of third-person subjective.

On transrealism: “When one writes about an actual parent, or friends, or oneself, all one’s psychological censors are locked on, so that frequently, though not always, one produces either safe but not quite true emotion or else — from the writer’s desire to tell the truth, however it may hurt — bold but distorted, fake emotion. ... Real-life characters do sometimes hold their own in fiction, but only those, loved or hated, whom the writer has transformed in his or her own mind, or through the process of writing, to imaginary beings.” p. 126.

I’ve felt that, too, the liberation when a character pulls free of any real world model I might have had in mind. As then the character can get really unpredictable and funny and deep.

Gardner also talks about rhythm in an interesting way; I’d never quite understood why I had to keep my turning sentences around until they sounded right; it’s a matter of getting a smooth pattern of stressed vs. unstressed beats (as in poetry) to create prose that would be easy and pleasant to read aloud (even though you imagine that readers are silent, the sounds of the prose are subliminally sensed.)

Rudy the Elder sez check it out.

March 23, 2006. eXistenZ, Game Developer Conference

I’m inspired about multilevel narration by seeing the Cronenberg movie *eXistenZ* on DVD the other day.

I went to the Game Developers Conference (GDC) in San Jose yesterday, courtesy of my old publisher (of *Infinity and the Mind*) Klaus Peters, who now publishes an interesting line of math, graphics, and game-related books.

I didn’t run into anyone else I knew, and felt a bit lonely and out of the loop. Zillions of young game-biz guys there, only a few women.

Some of the ultra-geeks had balloon bee-hive hats.

Coming at games as a computer scientist, I get excited about the graphics, the hardware, the AI.

But the uses these tools are put to always seem so tawdry and dull. And playing them looks so geeky. Driving home, stopped at a downtown traffic light, I saw a beautiful tree. So much more interesting.

I had this hope that the GDC might somehow joggle me into insights about the metanovel. The most interesting demo I saw was of a guy using a 3D design tool to make a bazooka-like ray-gun. Near the end, he cranked up the subdivisions and had 11 million triangles on the screen. But it was a clunky, dumb-ass, non-ergonomic design.

I did get what looks like a somewhat promising book by a Frenchman, Stéphane Natkin, *Video Games & Interactive Media: A Glimpse at New Digital Entertainment* (AK Peters, Wellesley MASS, 2006).

March 24 - , 2006. What is a Metanovel? Try to Start Chap 2 (Eventual Part III).

I'm gonna revise my [Chapter 2 Outline](#) now. (Note that what I was calling Chapter 2 ended up being Part III). [Check out that snazzy in-document hyperlink! I just realized Word can hyperlink to section headings. And I'm assuming that when I eventually convert this doc into a PDF, the links will carry along. But I could be wrong about this. The Word-PDF route is very flaky.]

I have this burden that I need to decide on a plot or at least a theme for Thuy's metanovel, as I want the metanovel to be a central element of Chapter Two.

To make it easier on myself, suppose that Thuy's metanovel is transreal. She discusses other styles of [metanovel](#) with the gang at Metotem Metabooks.

The styles I've thought of thus far are Lifebox, Inventory, Multithread, Forker, Reverse Forker, Mirror, Props, Hive, Animal, Timeslice, Aha, etc., but Thuy is keeping it simple, doing a (tweaked) Lifebox; she plans to imagine what-ifs to make her life more exciting than it is.

But gradually there will be some interactions between the world and Thuy as metanovelist, making her actual life story an exciting novelistic tale (I'll in fact be ensuring that this happens, as Thuy is indeed a character in a novel (*Postsingular*)).

I had earlier been saying Thuy will call her metanovel *Metotem*. Would it be cool if she called it *Postsingular*? That might be annoying. Oh, I have it, I'll call Thuy's metanovel *Wheenk*! And then I can call the Valencia street metanovelists' hangout Metotem Metabooks instead of Hogtied Metabooks.

Note that Thuy's metanovel isn't science fiction; to us it seems like SF, but for her, it's about her regular life. And she'll be stressing feelings, drama, character, incident and plot rather than technology and ideas. In other words, it's what I sometimes call a "wheenk" book, when I'm enviously grumbling over the high sales figures of writers who are more overtly emotional and less intellectually challenging than I, those writers of whom Baudelaire said, "Their hearts chatter in reams."

Thuy, whom I am fond of and who is in some aspects my clone, shares my disdain for gushing tales, so when she calls her metanovel *Wheenk*, it's done ironically. But she does in fact manage to make it a wheenk book while at the same time making it a consummate work of art.

Two benchmark examples of what I think of as rather plodding and manipulative wheenk books are *House of Sand and Fog* and *Girl with Pearl Earring*. But wheenk books can be good, consider, e.g. Kerouac's *On the Road* or James Joyce's *Portrait of the Artist as A Young Man*. Both of these are wheenk-fests that are at the same time great art, and are in no fashion repetitive and middle-brow. Actually *On the Road* transcends wheenk, as Jack is so engaged in the people and scenery around him, such a good reporter, such a good listener. A low-quality wheenker is too busy chanting "does anyone love me" to even hear anything anyone says.

Thuy is trying to keep *Wheenk* simple, she wants to finish it in a few weeks. She has a sense of doom. Working on the metanovel is getting her to do things she ordinarily wouldn't — like if she sees someone shady she interacts with them, if she hears of a louche place she goes there, if she gets a questionable invitation she accepts it — all in the service of having interesting material for the metanovel.

She visits an Angel Temple (devoted to the worship of the Hibraners). Maybe Mary Moo leads her there? Or she just stumbles across it. A storefront church on Valencia Street.

She stays away from the Big Pig.

She publishes her data on what she saw in Luty's lab as another metanovel excerpt, called "Losing My Head," just to stir up trouble. Luty threatens her. Possibly eventually Luty can tempt Thuy with the prospect of running her metanovel/game in the projected nant-based Virtual Earth...

The "Rebel Angels" faction of the Hibraners believe that Thuy can recreate Chu's Knot, all earthly evidence of which was erased by the Hibrane lamas. (In fact they confiscated the Hibrane copy of Chu's Knot as well.) Jil did see the knot too, but she can't remember it either. At the end of Chapter Two, maybe Thuy can get some final pieces of info from Jil, maybe there's a rapprochement.

Why wasn't Chu's Knot ever public knowledge? Recall that Chu didn't cook the code down to a shapely knot until he was in the Hibrane. Before that, the code was a complex blue-spaghetti-and-chimes data set that was online for a time on Orphid Night, before being erased by the lamas, who came over to Earth so to do

A very few people saw the blue spaghetti data other than Ond, Chu, Jil and Bixie. Thuy was one of the very few.

Why did Thuy see it? Well, she got right into cruising the orphidnet on Orphid Night. Perhaps she was interested in cuttlefish, which led her deep into Chu's links. Maybe she talks about cuttlefish a certain amount.

Suppose Thuy published a partial fragment of a chapter of *Wheenk* in the *Metotem Metazine*, and it's called "Waking Up," and it's just Thuy's thoughts on this topic, and it happens to include a glimpse of Chu on Orphid Night. And that's how the Rebel Angels know that Thuy has that data at least latently in her brain. She can't get it out in any linear fashion, but she can get it out (subconsciously) as the plot of her metanovel.

The angels interact with Thuy, trying to help her express the Knot sooner.

Luty has picked up on this action by the Rebel Angels, so he supposes that Thuy is indeed going to find Chu's Knot, which is why he tried to abduct her.

The plot of *Wheenk* is in fact a correlate of Chu's Knot. And at the end of Chapter Two, when Thuy talks with Jil, the story wraps around to make a Chu's Knot, and Thuy and Jayjay can hop to the Hibrane.

As Thuy works, she's letting events impinge, maybe listening to music.

I'm practicing being Thuy myself by walking and biking and driving around wearing my iPod. The continual soundtrack. It makes things seem cool and arty. But it also gets to be too much. I end up waiting for some songs to end. Wishing I could have some quiet. Feeling rushed.

Thuy can replay thought sequences. She can replay scenes and then tweak them with "what ifs". That's what I do when I'm writing, in fact. I layer on a few minutes a day. I re-experience the part that came before, re-dream it, getting a running jump. Sometimes I weary of the process, the cycle.

Some force is guiding her, say its a Rebel Angel called Azaroth. Maybe Azaroth suggests the plot of the metanovel to Thuy in a dream.

Something I'd like to bring in about the writing of the metanovel:

When I'm in the zone on a novel, really flying, dreaming while awake, I sometimes find that my life is changing. I get a synchronistic sense that the world is pushing back, helping me, collaborating.

The Rebel Angels want to forestall the nants, as they want an interesting Earth to visit. They don't really *believe* in the power digital computation, deep down they think maybe it's bullshit, as they're so analog. The Rebel Angels have a sweet tooth for digitality. They want the bridge so as to bring the cool tech to the Hibrane. We'd be like silkworms, like insects imported to spin and weave.

They are getting in touch with Thuy a lot to help her get the bridge going again. Why do the Rebel Angels want the bridge? To stir up trouble for the bossy lamas.

Why are there fewer angels than there were on the Orphid Night? I suppose the lamas are preventing them from coming here so much. The lamas fear low-plane contamination.

I have to plant something in about the Rebel Angels setting Thuy on the path to discovering Chu's Knot; this has to have happened before the visit to Topping's office in Chapter One. But Chapter One already so stuffed, I don't know about putting this in. Well, suppose that Thuy flashes back on this in Chapter Two, it's something she hadn't mentioned to Jayjay.

Or it could be very lightly prefigured in Chapter One, and amplified in Chapter Two. Just something to the effect that the angels were helping Thuy with her book ever since her piece "Everywhere At Once" appeared on the *Metotem Metazine*.

I was thinking of having a meeting between the Posse, Luty, and Dibbs in Chapter Two. What would be the motives for attending the meeting for the parties involved? Hard to say. My motivation was to (a) show Too Dibbs as somewhat befuddled and harmless and (b) to have Too Dibbs spill the beans about his and Luty's nant plans. I'm not sure I need this scene. Or, dropping back, I could reduce it to something small that happens in the context of the battle at ExaExa. Thuy overhears a conversation, like that.

March 28, 2006. "The Big Posse" as a Novella.

Encouraged by hearing that my "Postsingular" story is coming out in Asimov's in September, 2006, I went ahead and sent Sheila "The Big Pig Posse," suggesting she publish it as a 20,000 word novella. I think the piece stands alone pretty well, partly because as I wrote it I was imagining that I wasn't going to put the earlier stories into the novel.

April 3-4, 2006. Put The Two Stories Back In. Letter to Hartwell.

Today I'm writing more flashbacks into the novel, stuff about things that happened in "Chu and the Nants" and the "Postsingular" story, and I'm wondering if maybe I really should be including these stories as the first two chapters of my novel.

I think it would be more pleasant for readers that way. I feel like this way I'm deliberately making things hard for them.

In my consultations with Hartwell, I made a [Feb 10, 2006, snap decision](#) to take the stories out, mainly because Dave said he thought there were too many characters in the novel as outlined. But now that I've got a pretty good Jayjay/Thuy thread going, I feel like I could put those other chapters back in. I wonder if I could talk Hartwell into it.

One complication is that meanwhile I had decided to put those stories into an anthology, which I first called *Mad Professor*, but later decided to call *Power Chords and Thought Experiments*, and then decided to call *Freestyle SF*, and eventually flipped back to *Mad Professor*, this volume still under consideration by John Oakes for Thunder's Mouth Press. I felt at the time that I needed the word count for the antho. Those two stories are about 18,000 words. I just wrote an 7,000 word story with Paul Di Filippo, "Elves of the Subdimension," and that would recoup some of the word-loss. If I finished that story with Sterling I'd definitely have enough.

Re. the two stories, I think I'll stick them together, broken apart only by a ***, so I have a single "Prologue" the same approximate length as a chapter (I wouldn't want Prologue A and Prologue B).

I edited the novel this way, cleaned up the growth stub at the end, and sent it to Hartwell with a cover letter. I also warned Oakes that I'm likely to pull those stories from the story anthology.

[Email to Hartwell, April 4, 2006]

I'm moving along on the *Postsingular* novel. Thanks for the contracts, by the way, I just signed them and sent them back to Susan.

I now see the novel as having four long chapters: The Big Pig Posse, Thuy's Metanovel, The Hibrane, and Gaia's Mind. The main story elements are : (a) on-off-on romance between Jayjay and Thuy, (b) Jayjay and Thuy save the world from the nants by fetching special tech from the Mirrorworld. The last-chapter kicker will be that they manage to make natural objects be like intelligent computers.

One issue I keep debating within myself is whether or not to include the two stories about this world that I sold to Asimov's, these would be "Chu and the Nants" (5,000 words) and "Postsingular" (13,000 words). [By the way, I'm also trying to sell Chapter One "The Big Pig Posse" (20,000 words) to Asimov's as a novella.]

While I was thrashing out the novel outline, you at one point remarked that my then outline had too many characters for a novelistic narrative to accommodate comfortably. As an expedient towards simplifying the novel, I decided to drop the

stories, as they had characters in them who weren't central to what I considered to be the main story line.

But now I keep writing in flashbacks and back-references to the events in those two stories. And the characters of the stories are reappearing in minor parts. In the back of my mind I'm expecting the ideal reader to be familiar with those two stories. So now I'm thinking it's awkward to expect the reader to have read the stories if they are in fact only available in back-issues of Asimov's or in a separate anthology of my stories.

The most satisfying way to present the novel might with those two stories included in the volume as a Prologue. Certainly if the novel were ever to be so successful that it merited a re-release in a "definitive edition" those stories would be included, so why not optimize now.

I do want to separate the stories in some fashion from the main action of the novel. So I'm thinking to combine them into a single Prologue: "The Nants and the Orphids". Aesthetically, I think this arrangement makes sense, as then we have a textual break (between the Prologue and the novel's four chapters) that corresponds to the arrival of the Singularity. And then the four chapters can still be seen as a single seamless whole, as intended.

Regarding word count, I'm seeing the four chapters as about 20,000 words each, so with the 18,000 from the Prologue we'd get 98,000 words, though maybe I can condense that to 95,000. Conversely, if we don't use the Prologue, I'd need to stretch out the later chapters to be longer than 20,000 per, so as to hit 90,000. I'd rather be condensing than stretching, which is another argument in favor of the Prologue.

So now I want to check if you'd be okay with this. I'll attach a Word doc of the current state of the thing (with the Prologue in) so you can form a clearer idea of what I'm talking about.

If this idea flies, I'll need to go back and see if I overdid the recapitulations, summaries, and flashbacks that I put in place to cover for the absence of those two stories.

It's like I needed to set the stories aside so the novel would be free to grow, but now that it's underway it seems okay to bring them back. I particularly didn't want to have to explain all about Ond and Chu when we meet them in the Hibrane.

Hartwell's response: "Ok, I looked at the partial and this is cool with me. I'd say just make it a five part thing — a 20k word prologue is too long. I think it can be made to work."

My response to that: "That's great, Dave, glad to have your *nihil obstat*. And, yeah, that's a good idea to just call the first part Chapter One, or people might chafe to be spending so much time reading a mere Prologue. Onward!"

So now I'll call that section to "Chapter 1" instead of "Prologue," and spend an hour or two altering these Notes accordingly, managing to avoid for a time my next spacewalk into the screaming air-sucking vacuum of the growth-tip.

The new plan is five long chapters: Nants and Orphids, The Big Pig Posse, Thuy's Metanovel, The Hibrane, and Gaia's Mind. Beautiful.

Incredible how much revising and planning this is taking me. Writing a novel never gets any easier. These notes are already just about 90,000 words long, so there's

absolutely no chance of the novel ever getting longer than them, given that I'm shooting for a 95,000 word novel, and will be adding to the notes for, like, six to eight more months. Tail waggin' the dog.

April 4 - 8, 2006. Chap 3: Azaroth, Lamas, Rebel Angels.

Why wouldn't lots of people besides Thuy have seen the knot? She was one of the few really tuned into the *Merz Boat* already, due to her cuttlefish research for her employer Golden Lucky.

But why do Azaroth (and the Rebel Angels) need the knot info from Thuy and not from Jil and Bixie? Suppose that Jil and Bixie don't have the right kinds of semi-autistic minds to have remembered the knot. Alternately, suppose that there is a Rebel Angel hanging out with Jil and perhaps with Bixie, and guiding how Jil creates her shoons, and how Bixie jumps rope. That's more interesting, actually. Suppose this Hibraner is called Wonda, and that Wonda is Azaroth's girlfriend.

I need to develop the [character of Azaroth](#).

I see a series of meetings between Thuy and Azaroth, not all that many of them.

(1) After Orphid Night, Azaroth shows up to ask Thuy if she remembers Chu's Knot. He encourages her to write "Waking Up."

(2) Sometime in the summer before we start, Azaroth tells Thuy to drop the Big Pig and focus on her novel. Thuy gets going on *Wheenk*. I need to realize this one more fully. What actually happened?

(3) Right before Thuy goes into the Armory Natural Mind center, Azaroth appears to examine Grandmaster Green Flash's nanomachine infection, and tells Thuy to be sure and write about her voyage into the Armory, leading to "Losing My Head." I need something more here, I need for him to suggest an action that Thuy in fact takes, so that he's influencing her life.

(4) Right before Thuy's reading at Metotem, Azaroth appears in the storefront church to tell Thuy she ought to get a lawyer to go after Luty while there's time. I need to beef this conversation up a bit. Again, Azaroth needs to be influencing the course of Thuy's life. Also give Thuy that same doubt on whether she's experiencing blowback.

(5) Azaroth helps Thuy escape ExaExa.

(6) Thuy finishes both *Wheenk* and the reconstruction of Chu's Knot; hands the Knot over to Azaroth.

Might the Hibraners call the two worlds Lowland and Highland instead of Loblane and Hibrane? Or maybe something else. Simplicity says they should just use our names. On the other hand, they have been coming here since time immemorial, so they would have their own names for the two worlds. Ideas?

Imagine an alternate historical switch point where the Hibraners rejected digitality. Maybe there was some heroic and sacrificial event on a par with the Crucifixion/Resurrection of the Xian Mythos.

Perhaps there was a nant debacle in the Hibrane in ancient times; their Great Old Ones are pullulating nanomachines confined to the planet's core.

Potential Kicker: the Hibrane is our Earth a million years from now, and we are the Great Old One nanomachines in the MirrorEarth's core.

Good	Bad
Gaia	Big Pig
All the main human characters	Jeff Luty and Dick Too Dibbs
The Lamas	The Homesteadies
Aumistic Pscience, the Hibrane religio-tech.	ExaExa computer science.
The Rebel Angels are fundamentally pro-analog. Naively helping the bad guys more than they realize.	The Beezies are fundamentally pro-digital. But some of them help the good humans anyway.
Some Shoons	Some Other Shoons
Use: Vibrational Modes	Use: Orphids and Nants

Although the orphids are obedient and helpful, the beezies are pleasant and friendly, and the Big Pig is divinely illuminating, none of them would in fact mind if Earth were replaced by a simulation. They don't really and truly understand what would be lost. Their sense is that, although perhaps current computation isn't quite refined enough to fully simulate Earth, certainly in the end the transition can "of course" be painlessly made and this will be all for the good.

That's why the Big Pig keeps working on her models of things like breaking waves. She believes, perhaps rightly, that with enough additional nant-given crunch she'll be able to model this stuff right down to the quantum-spins, but she thinks, wrongly, that nothing will be really lost.

The Rebel Angels are in fact mistaken in their love of Earth's digitality. The lamas know better. When Thuy releases Chu's Knot and the interdimensional bridge finally does become firmly established, the only option for the lamas is to save themselves by saving Earth. Perhaps at some level the Rebel Angels did know this — a reveal — they didn't want the lamas to be able to just leave us to twist slowly in the bitty wind.

Note that it should be a bit of a surprise for the reader to learn that the lamas are good and the Big Pig is bad. Because in the lead-up, I present the lamas as somewhat stodgy, and the Big Pig as being like a fun drug.

I list a bunch of metanovel alternatives. Gerry Gurken has written *Banality*, named after a 1930 Surrealist book of the same title that I saw at the MOMA last week, by Leon-Paul Fargue and Roger Parry.

Suppose Craigor is still cuttlefishing; why give that up, it's interesting, and it gives him something to do. AmphiVision isn't selling webeyes anymore, they're still marketing wall-screens and jewelry.

Keep the cuttlefish thread active, and I can use it for some kind of pay-off later down the road.

Let's say that although Thuy has a Big Pig addiction problem, Jayjay is more in the way of being a heavy user, without being a self-destructive addict. Like a party-

animal who isn't actually an alcoholic. It would make the book less smarmy and less like an after-school-special if Jayjay didn't have to clean up too.

I need to fix the part about Gerry Gurken's reading in Chapter 2 to match my description of his work *Banality* in Chapter 3.

April 12, 2006. At Tropicana Hotel. Scene After Thuy's Reading.

We're actually staying at the Tropicana Hotel on Valencia near 17th Street for three nights, next to the Elbo Room bar. Soaking up atmosphere.

I made some notes on my pocket scraps, producing the following To Do list. The "*" mark means I've taken care of it, either by putting it into the novel, adding it to the outline, or dumping it into the Ideas or Unused Ideas sections. Or maybe I put NO in front, if I don't plan to do it.

- * Go back and revise Darlene's description of Gerry Gurken's reading.
- * Set the time of Chapter 3 on Jan 18, the day before the day before Dick Too Dibbs's inauguration, so that tomorrow is the last chance to arrest Luty.
- * Revise Azaroth's initial conversation with Thuy to make clear that he doesn't know how he does the jump between worlds. Azaroth and Wonda are low-status Hibrainers, they are here mainly to catch cuttlefish and bring them over to the Hibrane where they are milked for ink that's used by the lamas for purposes unknown. They're laborers, these two, and they think it's funny that people might worship them. They're also on the lookout for nant reactions to mine, thus Azaroth's interest in the skin patterns on Grandmaster Green Flash. The knowledge of the jump-code is in their dreamcatcher organ, they have an ability to eidetically reproduce a psychic state.
- * Rewrite Carla Standard's metanovel to use the Stanislaw Lem "Non Serviam" idea of creating a live microworld, what I have now isn't crisp enough. (In general, I realized, I should try and pretend that all the metanovels are great works of art, that makes the reader more interested in reading about them.) It's animated alive. The people look different all the time. It patches in dialog searched from a database, which is updated in realtime. The database is derived from people's real actions, in fact it uses what you and your friends say, so as to put you into the metanovel.
- * Insert this to Thuy's rap, replacing "— roar "with something like: " — wheenk — I miss you, Jayjay, I miss you, we were falling flower petals, I'm wilting alone, too many me's, stuck in the vermin dimensions. A thousand years flicker by — roar — ". Also have Thuy see some sinister Sentinels like night herons in between the worlds, these guys can play a role in Volume II.
- * Have Jayjay be the one pulled Thuy back though the wall in Chapter 2, not Kittie.
- * Jayjay saves Thuy from the golem by a teleportation hop to *Merz Boat*.
- * I have to work out the interpersonal dynamics of Jayjay having an affair with Jil under Craigor's nose, then breaking up with her, and nevertheless continuing to live on their boat. Craigor initially stands for the affair because he wants to square things with Jil, as he cheated with Nektar. He's grateful to Jayjay for teaching him teleportation, also for improving their shoons.
- * On the boat we find that Jayjay is on top of the Pig now because Wonda has been helping him remember what he does with the Pig. She can clone quantum states with her dreamcatcher organ. Jayjay has become a super physicist.

- * A scene where bad golem shoons attack the *Merz Boat*, swimming at it from all sides. Among the golems in a ringer, bearing a message from Sonic.
- * Craigor will try to seduce Thuy, as a rebound payback.



Figure 25: Mr. Peanut on Valencia Street.

I saw Mr. Peanut in a glass case in a store window, I'm gonna put him in the book. As a boy I was always frightened by his grisly-internal-organ appearance and by his cane.

April 19, 2006. "Dread Lords of Cyberpunk" Reading.

I had a reading with John Shirley in SF last night at the New College Valencia Theater. John led off with a beautiful performance: excerpts of his apocalypse novel *The Other End*, coming out this summer. I read my story "Chu and the Nants" which will be in *Isaac Asimov's SF Magazine* in June, and the story is also of course part of the first chapter of *Postsingular*. The event was called: SF in SF: A Monthly Series of Science Fiction Readings and Discussions at New College of California in San Francisco Curated by Adam Cornford and Terry Bisson. Terry billed it as "The Dread Lords of Cyberpunk" and John and I were proud of that. Dread Lords forever!

My reading was good. The audience laughed a lot at the story, maybe more than I wanted them too. That happens to me when I share at meetings too. People think I'm being funny, when I'm not in fact intending to be funny, it's more that I'm pointing out what I see as the truth, albeit in a slightly satirical fashion.

Reading it, I got a little concerned about there being a lack of continuity in the tone as we run from the “Chu” story on through the rest of Chapter One and then into the rest of the novel. The “Chu” story is a future fairy-tale told by an omniscient narrator, and the later chapters are more noir and psychological 3rd person subjective POV. But I have to set that worry aside for now; I’ll deal with it when the whole book’s done.

Talking to Terry before the reading, he said something funny, he said that he’d worked as a farmer and as an auto mechanic, and that writing novels is like being a farmer — always the same damned field to tend day after day, while writing short stories is like being an auto mechanic — you get the hulk into your garage and beat on it for a few days and then you’re done and you get a new one to work on.

I talked to him a little about how a novel takes a really high tolerance for discomfort and anxiety.

April 20, 2006. Sold Anthology. How to End Chapter 3?

Susan P called today to say that John O is buying my story anthology. He offered a few K and she got him to come up a grand, worth it here.

She says John isn’t that crazy about the title I’d suggested, *Mad Professor*, thinks it might be too self-referential, also that it doesn’t really give the reader a clear idea of what’s in the volume.

Today I’m thinking to use for a title the start of a title of a speech I gave at Readercon in June, 2003, the speech title being “Power Chords, Thought Experiments, Transrealism and Monomyths.” (I think maybe the speech also appeared in *NYRSF*).

I want call my anthology, tada, *Power Chords and Thought Experiments*.

This is looser than my initial idea of just plain *Thought Experiments*, and is more accurately descriptive of the anthology, which will include about half “mindless pleasure” Power Chords stories. And *Mad Professor* is, after all, too self-aggrandizing by way of being self-deprecating. Leave the self out and let the work speak for itself. Also *Mad Professor* didn’t really give any indication about what kinds of stories are in the volume. I’ve noticed that critics are tediously literal-minded in trying to fit an anthology’s stories into some mold.

I was just diddling with the document, and I think that I can get 12 stories into there, and view 6 as Power Chord stories, and 6 as Thought Experiment stories.

I’ll get 12 stories by putting in the new Di Filippo story, “Elves of the Subdimension,” also the story I’m about to write with Terry Bisson (God willing), “2+2=5”.

Also I’ll write an intro, lifting some material from the above-mentioned Readercon speech and from my 2005 ICFA speech, “Seek the Gnarl.”

Oakes wants to put the antho out next winter, so we’ll have to rush to get the Di Filippo and Bisson stories into print before then; I know that Asimov’s at least requires a month to elapse before you can you anthologize a story they publish. And the lead times for the big pro-zines are quite long, longer than six months. If *F & SF* takes “Elves” I hope they can rush it. *Interzone* published my last story really fast, like in two months, so maybe we can put the Bisson story there. They don’t pay well, of course, which might bother Terry. I could hold out the sweetener of his cut of my anthology advance. That would be, hmm, about a hundred. Big whoop. Still, it’s *something* to offer.

On the *Postsingular* front, I have 12K words done on Chapter 3 and I need at least 16K to get out, though 17K would be better. Well, that's not all that much more. Four or five thousand words. One big scene can do it: the battle at the ExaExa labs. Stretch it with dialogue.

I'm hung up on making it interesting, though, in giving the chapter a shapely whole. I just had a battle on the *Merz Boat*, so I don't want to just have another dumb battle. The last scene needs to be more than that. I want, for one thing, artistic transcendence occurring on Thuy's part, a sense that she's finishing *Wheenk*, and thereby solving Chu's Knot as well.

Another desideratum is that I'd like to wrap things up tightly enough so that Chapters 2 and 3 will work as back-to-back novellas in *Asimov's* as editor Sheila Williams suggested. (If it's necessary for a rounded-off feel for that, I might even spill past the jump and have a little bit of a Hibrane scene at the end of the Chapter 3 version I send Sheila, so as to reduce any "cliff hanger" feel. In terms of the novel, of course, there's every reason to keep all the Hibrane stuff in Chapter 4.)

I'm concerned that I'm losing continuity. Like, Jayjay noticed the beezies a lot, and Thuy isn't mentioning them much. Could be this is simply their personality difference, of course. Possibly I should reread the whole novel thus far and smooth it out. Well, maybe I should finish the chapter first, at least roughly, and then do the reread.

Re. Craigor's sneaking Thuy into the workshop, I just realized that they just roll back and look at the orphidnet record and see what really went down. So that's gonna come out sooner rather than later. But not right away, I want to milk the big stress between the lovers.

Suppose Wonda and Azaroth show up and postpone the tape-of-the-night reveal. Right before the battle, or even in it, Thuy looks at the tape and wants to show it to Jayjay, but can't as he's injured.

What else can go into the final scene besides the fight at ExaExa? Something with the Rebel Angels.

Teleportation fun would be nice, but now I have Thuy on the outs with Jayjay, so he probably won't be jumping with her. Well, he *will* jump them to ExaExa. Maybe they'll play with it a little before they go to sleep. Jump into SF and get a bowl of pho. Vamping to stretch the word length; also to develop the *wheenk* of characterization.

The fight scene should be what Bruce Sterling called dismissively (speaking of the big scenes in comic artist Neil Gaiman's novels) "a double page spread." Whether or not Bruce likes it, I think it would be cool to do one. Battling angels hanging in the sky. The beezies become immanent, good once and bad ones. Orphids attacking nants.

The factory door flies open and Sonic's bloody corpse bounces out.

April 24-25, 2006. Freestyle SF?

Neither Sylvia nor John Oakes much liked the title, *Power Chords and Thought Experiments*. Sylvia said it was too tight, too PMLA, and John thought it sounded like a trip to Home Depot. He actually said he liked *Mad Professor* fine, but then I'd already flipped to another idea for a title: *Freestyle SF*. And then Terry Bisson briefly convinced me that *Freestylin'* would be hipper, less static, less referring

back to something twenty years ago. And then, after emailing about this with the incredulous Marc Laidlaw, I decided I couldn't handle the apostrophe and went back to *Freestyle SF*. [In the end, I went back to *Mad Professor*, though.]



Figure 26: Richard Kadrey, Rudy and Marc Laidlaw, 1987.

[Picture of us with my surfboard in the driveway of our house at 15 Kimble Ave, Los Gatos.]

Now, *Freestyle* harks back so much to Marc Laidlaw and the late 1980s that I felt I had to enlist him to quickly co-author a new story with me for the anthology. So now I'm writing the stories with Marc Laidlaw and Terry Bisson, and I hope to have them done by the end of May. I got the start on the Bisson story and mailed it to him today, and am still spitballing with Marc. I think we'll do another Zep and Del.

For now I see arranging the stories in reverse chronological order of composition; the dates are indicated at the start of each line. The "PC" or "TE" notations have to do with whether I view the story in question as a "Power Chord story" or a "Thought Experiment story." I'll get into the PC vs. TE distinction in the Intro, maybe mention Transrealism there, and *Freestyle SF* as an antithesis of Mundane SF.

Introduction

5/06. PC. The Perfect Wave (Written with Marc Laidlaw)

5/06. TE. Base Camp Googol (Written with Terry Bisson)

3/06. PC. Elves of the Subdimensions (Written with Paul Di Filippo)

12/05. TE. Panpsychism Proved

6/04. PC. MS Found in a Minidrive

5/04. PC. The Men in the Back Room at the Country Club

4/04. PC. Guadalupe and Hieronymus Bosch

10/03. TE. Six Thought Experiments Concerning The Nature of Computation

6/02. PC. Jenna and Me (Written with Rudy Rucker, Jr.)

1/02. PC. The Use of the Ellipse the Catalog the Meter & the Vibrating Plane

12/01. TE. Junk DNA (Written with Bruce Sterling)

7/00. TE. Pockets (Written with John Shirley)

1/97. TE. Cobb Wakes Up

[8/27? PC. The Arches of Allah (by Richard Kadrey).]

Kadrey??? Well, I had this wild-hair idea of putting in a short fractal story by Kadrey that I always loved. And he really is the third key Freestylist. Though maybe John Oakes will think that's an absurd idea, sticking someone else's story into my anthology of Rucker stories. Very loosely, it was a collaboration because I showed Richard some Mandelbrot set program demos that he then used as inspiration.

But then I didn't have the nerve to ask Oakes to do this, so I'm not including Kadrey after all.

Obviously this is all a great way of avoiding grappling with finding the ending for *Postsingular* Chapter Three.

I got the story with Terry Bisson half-done already, it's only about 4,000 words, and we've written 2,500 words. But now suddenly Terry is stalled.

I did a buttload of email with Marc and I think we have a plan for "The Perfect Wave." I hope this one's not too long either. I snail-mailed him *The Lifebox, the Seashell, and the Soul*, and sent this email:

I was sure to mark any thing that said SURF. "He said surf." Or WAVE. :) Seriously, there are some key notions: wave CA, boiling cubic wave, paratime drafts of reality, strong unpredictability of surflike computations.

It should be there tomorrow or the next day, check it out, and maybe next week I'll hit you with an opener and plotline. As I keep saying, I hope to keep this one short, just do a simple straight-through thing.

I am now feeling shy about asking Oakes to print Kadrey's story. What was I thinking? Sometimes I think I get into mild states of mania. Of course how else would I ever be able to write, without the completely unfounded self-confidence that mania brings...

Marc emailed back this, in regards to my last paragraph:

"Sounds like a hard sell, getting a non-Rucker piece into a Rucker collection. Funny idea though. I can imagine the look on Oakes face, which first involves imagining his face."

"Saw Philip Seymour Hoffmann talking to Conan O'Brien about Capote, his narcissism, and O'Brien said something like, 'But many great writers have to have that, don't they?' It was an oddly insightful comment."

April 26-27, 2006. Reworking Chapter Three.

I reread what I have of Chapter Three, and made some notes for things to put in later on. And then I thought of some more ideas after typing in all the corrections. Like I did with the list of plans I made [before](#), I'll asterisk the changes that I've implemented, either in the text, or in the outline of the text to come.

- * Describe the clothes that Thuy selects when she and Jayjay go back to her room.
- * Blowback: virtual Thuy from within *Wheenk* gives Thuy advice and warnings near the end of the chapter, warns her off from being set up

as a cheater by Craigor.



Figure 27: A Buckeye moth.

- * Change the “fireflies” that accompany the teleports to a “metamorpher” that starts as an egg, becomes a larva, becomes a buckeye moth and when it beats its wings you jump.
- * Thuy and Jayjay get a map of the interior of ExaExa from Sonic.
- * Maybe Too Dibbs really did win, fair and square.
- * Keep coming back to Thuy’s obsession with Chu’s Knot. She sees it as she drops off to sleep, nearly done.
- * The pelican wasn’t conning them. Sonic’s message was all true. Luty didn’t actually kill Sonic, though, he locked him up as he knows he’s a traitor to the Luty cause. But Luty let the pelican bring the message anyway because he figured it would lure Jayjay and Thuy in, and he is so confident that he can beat them. The pelican was gonna tell more, but Luty had Jil kill it, he controls her via all the nanomachines she snorted.
- * Bim Brown plans to double-cross them, he’s there at the labs to arrest Jil, Craigor, Jayjay and Thuy as conspirators. He wants to lock them in a quantum-mirrored box that the can’t teleport out of (you need orphidnet view of your target). He isn’t the real chief of police Bim Brown at all, he’s a security guy from ExaExa, and his “cops” are Luty guys in costumes. Jil knew this. Luty hacked the GPS system somehow so that Thuy’s beezie agents thought his fake Bim Brown’s location matched the proper police station location.
- * In the ExaExa lab, have Thuy hearing pizzicato sneaking music as in a Carl Stallings score.
- * Jil’s giving all this bad information because her sudocoke dealer slipped nanomachines into her sudocoke; he was paid off by Luty. her the link to it; he set her up. Thuy heals her, she’s gaining in power as she masters Chu’s knot, she can send out sparks removing the nanites. It’s like some linguistic analysis, maybe she’s plugged into the Big Pig

for his, which she was scared of, but she does it to save a fellow woman.

- * After Thuy heals Jil, Jil helps invade the labs, she knows an extra secret tunnel from when she worked there.
- * The Big Pig reveals that she's for the nants.
- * Have Thuy dancing to music in the streets at other places in the chapter like in the beginning.

May 12 - 17, 2006. Problems To Solve In Chapter Three.

The last couple of weeks I was working on stories and intro materials for my story anthology *Mad Professor*. I finished my story "2+2=5" with Terry Bisson and sold it to *Interzone*, also wrote a start for "The Perfect Wave," a story with Marc Laidlaw, although just now he's dogging it.

Still haven't heard anything from Gordon van Gelder of *F&SF* about "Elves of the Subdimension" with DiFilippo; I'm worrying he will (a) reject it as he's rejected everything else I ever sent him (maybe three things), he's like Ellen Datlow that way (rejected six or seven over the years), there's something about my writing that certain editors just don't "get," or that (b) he'll want it but won't get it out in time before the anthology. I wish we'd just sent it to *Interzone*, they're in clear channel mode right now relative to me, that is, they seem to be buying and quickly printing all the stories I send them (well, two so far, but I'm getting optimistic).

[In the event, Gordon turned the story down, "alas."]

I also got *Mathematicians in Love* back with the copy-edits, and I spend a few days reading it, correcting bad copy-edits, and adding new changes of my own. I did some fairly substantial fixes near the end of the last chapter, making it more rigorously logical.

Then I went camping with Rudy, Jr., for a couple of days at Point Reyes.

But now it's finally time to face the music and write some more on the novel.

My near-term problem is how to finish Chapter Three. And then I'll worry about what happens when my characters visit the Hibrane in Chapter Four.

I did manage to rewrite the end of the Chapter Three outline a few times, and I think I see how to finish it modulo finding a solution to a particular problem, to wit:

(Problem 1) I don't have enough guys on Luty's side for the big battle. I see all these factions against him, and I don't see enough factions for him.

Originally I'd thought of Dick Too Dibbs as being Luty's defender. But, perhaps quixotically, in the scene where Luty meets President-Elect Dick Too Dibbs (shown as part of a video that Sonic smuggled out), I had Dibbs turn out to be anti-nant, and not on Luty's side at all. I made Dibbs "good" so as to accede to Hartwell's remark that it was repetitive and tendentious of me to feature an evil President two books in a row (cf. Joe Doakes in *Mathematicians in Love*). And in fact I had fun writing this scene against the grain and confounding even my own expectations — when I do that, I can be pretty sure that the reader, too, will be surprised.

But this move exacerbated Problem 1 and added a separate timing Problem 2. Let's restate Problem 1.

(Problem 1) I don't have enough guys on Luty's side for the big battle. I see all these factions against him, and I don't see enough factions for him. Dibbs isn't going to be defending the ExaExa plant with his Secret Service goons or pulling strings to protect Luty. So who protects Luty? To make the battle even more lopsided, given that Bernard Lampton is still president, and he's good, and he knows about Luty being at ExaExa, then why isn't he sending in the Feds or the military? And why aren't the San Francisco cops, for instance, trying to arrest Luty, given that Thuy has publicized his presence in the ExaExa plant.

(Answer 1) The hard-core Homesteady Party faithful are pro-Luty. Perhaps the core is a cabal of rapture-ready religious right-wingers. Suppose these boys have a lot of influence in the police, and that's why the real cops are staying away from ExaExa. Suppose that, in fact *all* the law-enforcement agencies are corrupt shells run from the inside out by Homesteadies. They claim Thuy's evidence is forged, and that Luty is dead, and that the rioters are criminals. Lampton is scared to do anything as the Secret Service will assassinate him if he does. Dibbs plans to get tougher, this will be easier for him than for Lampton, given Dibbs's Homesteady credentials.

I don't like that answer. Something better: The Big Pig is setting up a double-page-spread battle for her entertainment. Rather than a vast right-wing conspiracy among the police and military, it's more that Luty is controlling a lot of people to make them fight to defend Luty. The Pig helped him a little, she's playing both sides against each other.

The Pig's personal goal is to get hold of the "Farm" that Luty is using to store the improved nants in. The Pig hasn't been able to get at them as they're in the quantum-mirrored privacy in Luty's labs, the Pig wants to check them over personally, and Luty resists this as, of course, he's programmed in god-hood for himself, which the Pig would likely remove. So that's a realer reason that Pig wants the battle, even though she claims she just wants to watch it for entertainment, and to see how things come out, and that she's "writing" our reality just like Thuy writing the metanovel.

So the Pig not only helps Luty, the Pig helps Thuy cure Jil. Three reasons: to action test her control spores, to ramp up the exciting double-page spread, to screw Luty so as to get his Farm of nants. She doesn't admit the third reason to Thuy, she's doing a kind of double cross.

(Problem 2) If Dibbs is anti-Luty, then the Inauguration doesn't have the meaning for Luty that I thought it did.

(Answer 2) If Dibbs is anti-Luty, then Luty wants to bring matters to a head *before* the Inauguration — the Inauguration is the opposite kind of deadline that I initially expected. I thought that once Dibbs was in office, Luty would be safe, but really once Dibbs is in office, then Luty is in bigger trouble. So then it should be that Luty is pushing to launch the nants on the very day before Inauguration! This would be a good thing, not only enforcing an Aristotelian unity of time for the last part of the book, but also introducing the proverbial ticking bomb: Luty is about to release the nants! Suspense! Jayjay and Thuy would then spend only one day in the Hibrane and hasten back with the saving RAM patch at the last moment before the nants are to be released with the connivance of the Big Pig.

(Problem 3) Given that Chu was able to figure out the interdimensional jump-code to the Hibrane, why can't the Big Pig figure it out for herself? Given that she too

would like Ond Lutter to come back and help perfect Luty's nants, why wouldn't sure figure out the jump-code and tell it to Luty?

(Answer 3) Lama Gladax vastly improved the encryption of the jump-code after Chu cracked it, also she erased all instances of the old jump-code and installed new ones on every Hibraner, also she eliminated all instances of the old jump-code from the orphidnet. It's now really uncrackable.

Should I have a special name for the viral nanomachine controllers that Jil snorted? Control fleas, liar's lice, pixie dust, boss lice, obsessors, rogue neurons, neural gnats, nanoRealtors, surRealtors, surrealtors, hard viruses, virus, wiri, neurospores, wikiware, control spores.

Oh, duh, they're a hardware version of those beetles that were bothering Nektar.

I need a visual icon for the box 'o nants. I was initially thinking the Ark of the Covenant, from *Indiana Jones and the Raiders of the Lost Ark*. I actually saw this Ark in the LucasFilm warehouse at Skywalker Ranch when I was writing a [Wired article](#) about IL+M in 1993. In a military-type wooden locker with swastikas on it (I won't use swastikas of course, instead I could have the $\mathbb{E}\mathbb{E}$ ExaExa logos.) And within the wooden box of the Ark of the Nants s an elaborate fractal Nant Farm, dizzying in complexity, with the nants incredibly hyper, the farm sealed off within a Lucite box, the wooden box lined by quantum mirror varnish. Oh, wait, the Farm box is antinanium, not Lucite, which of course the nants would be able to eat.

I first I supposed the box has a Pause button on the outside so you can open it without the nants getting up to mischief while the quantum mirror containment is off. But, naw, that's too complicated. They're sealed inside the antinanium, so there's no risk. There's a button, but it's just to open the latches. More like an ice-chest than a wooden box.

And, instead of talking about both the Nant Ark and Nant Farm, I'll simplify this by dropping the Ark talk and just using the funnier and more graphic Farm.

Oh, but wait, I need the Nant Ark so that the Pig needs to make Jayjay open it, and so that the sick goo can jump out and attack him. I don't think I need to capitalize Nant Farm either, but maybe capitalize Ark of the Nants.

And, yeah, when Jayjay opens the Ark of the Nants in the cave under Easter Island, it's just like that Nazi guy opening the Ark of the Covenant, all this screaming goo comes out and eats his face.

Here's a page of sketches I made while planning how the ExaExa plant might be laid out.

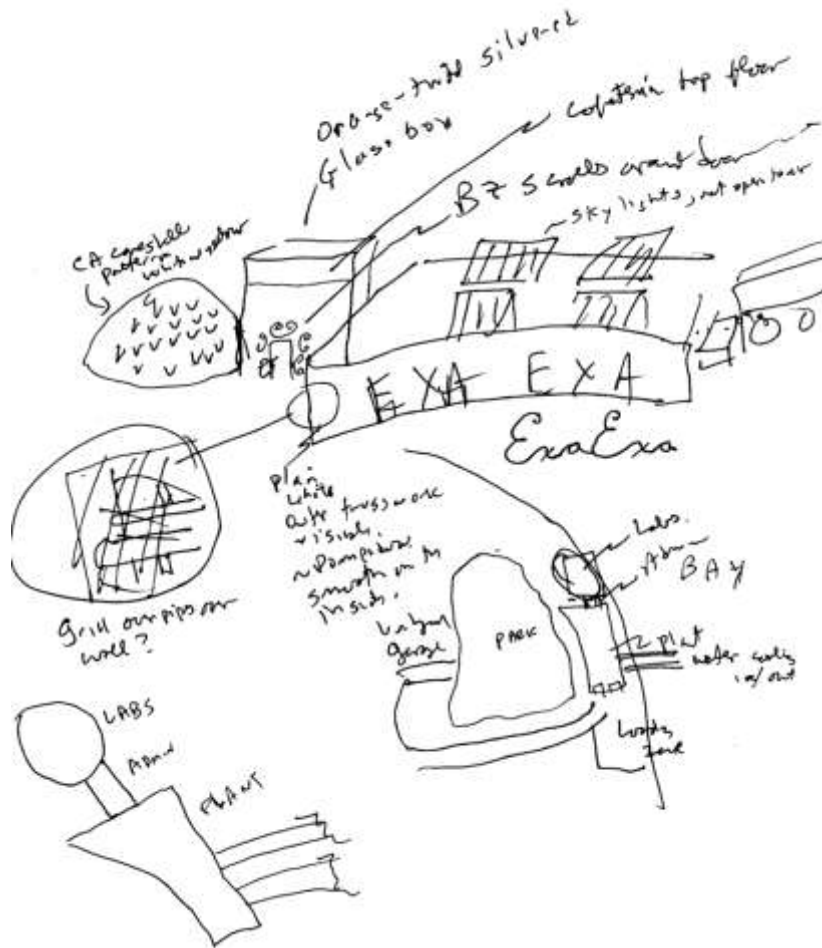


Figure 28: ExaExa Plant.

Why can the Hibraners from Easter Island suddenly look like moai instead of like people? Suppose they have figured out how to sculpt their energy fields, their bioenergetic Kirilian auras upon whose level surfaces the orphids settle like dust on a TV screen.

Individualize Atamu, Lili and Tuki a bit more. Think of people on Yap. Atamu: a guy along the lines of the practical woman who ran the second hotel, Lili: the betel-nut-stoner woman who ran the first hotel, and Tuki: the betel-nut-chewing dive guide.

Check for the correct words to put in place of the default phrase “moka moka” that I used for a Polynesian or specifically Rapanui chant. Score! It’s “[rongorongo](#)“, an hieroglyphic script.

For weapons in the ExaExa assault I decided to have my four characters use the cool-looking Fabrique Nationale P90 submachine guns.



Figure 29: P90 Submachine Gun

I need to explain why Lama Gladax can kill people by sticking her fingers into their heads, but the Rebel Angels can't.

When the Rebel Angels talk to Thuy, are they using telepathy channels or orphidnet channels? Better be orphidnet, otherwise we would have been hearing Hibraner voices all along.

But I want to have the Hibraners able to teleport around Earth without using the orphidnet, just because.

Do they use the orphidnet at all? In what way?

May 16, 2006. Excited About My Writing.

I feel excited about *Postsingular*, and about the stories I've been writing with Paul DiFilippo, Terry Bisson, and Marc Laidlaw. I'm working at white heat. I'm happy when I wake up and there's no plans or appointments, and I know I'm free to write all day.

I love to lie on my camping mat in the backyard going over my latest printouts of chapter, outline, and/or story, marking them up. And then I go inside and edit in the changes on my computer. I print that out, make a sandwich and eat at the table in the back yard, reading over the latest. Maybe later I take the printouts and the laptop the coffee shop. Everything at my own pace.

The other day I got such a big hunk done on *Postsingular* Chapter 3: "Thuy's Metanovel," that it's been like a big teetering stack of plates to carry on my head as I repeatedly revise it. Lots of changes are propagating back into the earlier material as well, roots growing backwards in time from these new seeds, reverse causation is perfectly routine when you're growing a novel.

I'm hoping tomorrow to tear off another big raw chunk of flesh from the muse, or, put differently, quarry a great rough slab of Parmenidean marble.

I was thinking today, writing on my camping mat, that this was one of the happiest times I've ever had. It's sunny and peaceful this week, no rain, no noisy construction projects on the block, the grass lovely and still a springy green. I'm healthy, calm, and the writing's going so well. I'm lucky, and even if I lose it all tomorrow, I had today. Thank you, God.

I know from experience that my state of mind won't necessarily stay good. When I work at high intensity, I sometimes go over the edge and get frantic and uptight. When that happens I think of a harpsichord or piano where someone's

tightened the strings too much and the frame is creaking and about to snap. Highly strung indeed. Or maybe tomorrow I won't be able to get it together to write at all, days like that, nothing is quite right, the grass too wet to lie on, too much noise outside, the chair uncomfortable, the so-wonderful-yesterday material somehow tedious-today, you never know what the day's emotional weather will bring.

One thing that's made this chapter particularly fun and heavy for me is that the character Thuy is a novelist writing about her own life (though I call her a "metanovelist"), so in some sense I'm writing about the process of writing this particular chapter, although I think I'm doing it in a sufficiently funky and tricky way that it's neither self-aggrandizing nor lifelessly schematic — those being the Scylla and Charybdis risks of dabbling with metafictional self-reference. Stylistically, I'm doing risky things I don't often dare try, like including Borgesian storylets, present-tense video sequences, and ranting Dada/surreal prose-poetry.

I'm also excited about how deep into the SF I'm getting, and how extremely cutting-edge the book is. In short, I'm way out on the edge, outdoing myself. Postsingular indeed. This week I went to a dinner for the guests at a "Postsingularity Summit," at Stanford and felt kind of lofty towards some of the shopworn ideas I was hearing kicked around. I mean this stuff isn't dinner conversation for me, it's my daily life, all day long.

As I'm working on a side-project on a surfing SF story with Marc Laidlaw, I'm thinking, as I like to do, of surfing analogies to writing. Now that I'm blessedly retired from my day job, I'm like a guy who does nothing but surf every day. I feel that my skill is rising because of the constant practice. I'm out there in it all the time. I live in a tent on the beach. Maybe I'll drop dead tomorrow. So what? I've lived. I was lucky. I got to be a writer.

May 17, 2006. 100,000 words of outline.

After yesterday's exuberance about my writing, I'm of course having a rougher day today. I feel like I could be coming down the flu Sylvia has. I don't have a chunk to revise, I'm stuck reworking the outline for the finish of Chapter Three, kind of avoiding the writing. Now the outline for the chap remainder is looking pretty solid, I think I have most problems solved. Alright, Mr. Windbag, it's time to write.

But first, by way of avoiding actually *writing*, I [blogged](#) a version of yesterday's entry, which pissed away considerable time and emotional energy, particularly as I let myself get sidetracked into a meaningless resentment trip over Ray Kurzweil's Singularity book. As if. I have the uneasy feeling it was bad juju to have blogged yesterday's happy entry anyway, but what can I do, I'm a pawn to my whims, a slave to my internet audience (of about twelve people). "What, no comments yet?!?!"

I notice, by the way, that in rewriting the chapter 3 outline today, I broke the hundred thousand word mark for these notes. Specifically the notes are about 101,000 words now. Meanwhile the novel itself is about 59,500. On the *Postsingular* project, unlike *Mathematicians in Love*, the novel never will outstrip the notes. I've had more notes than usual this time around as I've been groping so much.

I think next time I'll definitely go back to do a *Frek* sequel, it'll be easier not to have to invent a whole new world.

May 22-23, 2006. End 3. Mad Prof. "Visions of Metanovel."

Yaar.

I finished Chapter Three on May 22, and it's good. I'm gonna print out Chapter Two: "The Big Pig Posse" and Chapter Three: "Thuy's Metanovel," reread them, correct them, and send them off to *Asimov's* to see if they can run them as novelettes in back-to-back issues as Sheila suggested. Chap 3 does end with something of a cliffhanger, but not so much of one as did Chap 2. And, for use in case the magazine possibility comes about, I'm adding an italicized final paragraph to Chap 3 to tell the curious reader what's to come.

This week John Oakes talked me into going back to the title *Mad Professor* for the anthology book I was calling *Freestyle SF*? Makes better sense, really, why try and resurrect the Freestyle moniker which never did catch on in the first place and really, as John Oakes acerbically points out, means little more than "all over the place." With the new title, it's no longer crucial to have a story with Marc Laidlaw in there, which is good, as I think he's too busy these days at work to meet the deadline I have in mind, and I've been stressing myself (and probably him) about that.

In fact it'd be better not to start with a surfing story now, better to start with "2+2=5" which is in fact a mad professor story, come to think of it, as is the "Elves of the Subdimensions" I wrote with Paul Di Fi. Without Mark, the book will weigh in a somewhat light 83,000 words or so, which concerns me a bit, but hopefully Oakes won't care. If I feel ambitious and lucky, maybe I can write an extra story in June. I'm thinking a depth charge of a "Mad Professor" tale to close the book, have it be transreal and somehow pulling together all the stories in the book, and don't publish it in a magazine first. It would pull the antho together and be an additional selling point.

But why make things so hard for yourself, Ru, maybe just spend time putting in good story notes.

Last month, I was working on variations on the idea of a metanovel, that is, the idea of much-larger-data-base work of fiction that authors might write after a computational singularity brings vastly enhanced memory and crunch to us all. I posted a series of three or four Borgesian or Lemesque descriptions of imaginary metanovels on my [blog](#), reading down from the April 18, 2006 link.

And I recall some reader commented that these seemed "irrelevant," which annoyed me, but now as I revise Chapter Three, I realize that those long descriptions do in fact stop the narrative dead, and I'm drastically compressing them. By way of mitigating this loss — I'm like "What, I have to flush this beautiful turd?" — I'll save the pre-cut version into a file I could call "Aspects of the Metanovel," joking off E. M. Forster's well-known essay-collection title. Conceivably I could drop that into *Mad Professor* as a kind of story. If all else fails, post it on the web!

A bit later. I just put the stuff into what looks like a story, and I think just "Visions of the Metanovel" is a better name. Now that it's saved, I can edit the hell out of it in the *Postsingular* text.

Still later. Okay, I made it into a pretty good story to put at the end of *Mad Professor*, and then edited *Mad Professor* some more, polishing up the story notes and moving them all to the end. I'd had the individual notes after each story, but I myself like it better when story notes are at the end, like don't be afraid to let the stories stand on their own, don't be anxiously at the reader's elbow all the time.

Also I edited down the “Visions of the Metanovel” in *Postsingular* by about 1,500 words. And I changed the name of one imaginary metanovelist from John Stingray to John Medford.

Also I removed every single occurrence of the phrases “science fiction” or “SF” from my intro and my notes for *Mad Professor*. Why put myself at a disadvantage vis-à-vis the slumming mandarins who publish science fiction without ever uttering those dread words? “The genre that dare not speak its name.”

May 24-26, 2006. Revising Chaps 2-3.

I want to clean up Chapters 2 and 3 so I can send them to *Asimov*’s. It’s taking longer than I expected.

When I proof my writing, I get disturbed about how many errors I find, and anxious about whether I can blend everything into the plot. Like I’m standing at a dam I’ve built and I’m seeing thirty holes spurting water at me.

Sometimes it seems like no matter how many times I’ve proof a passage, it ends up all marked up again on each go-through. As if the process were divergent rather than convergent.

Of course one reason this all feels like less fun than usual is that I’ve had a viral flu since May 18, that’s eight days now. I start out the day feeling okay, but by the afternoon I’m in a bubble. Nothing tastes right, I’m always tired. Disease = dis + ease. I feel sorry for myself. Work, work, work.

To break things up I’m doing some of the proof-reading outside. On Wednesday, May 25, in fact I went to Santa Cruz and proof-read on Four Mile Beach, which was nice. I was also reading a novel by Kris Saknussemm called *Zanesville* which is kind of cool, it’s science fiction but got marketed as a literary novel. I don’t think it sold all that well.

Anyway now I got all my changes keyboarded in, and I did the patches to make it all fit. Whew.

Funny how something that seems so hard to change can really just come down to altering three or four sentences. It’s there’s a feature of the story that looms very large in my mind, like an obelisk, and when I go to take it out, I realize the obelisk was just three pencil lines.

And now that I’ve fixed these chapters I can turn to worrying about the chapters to come, which is painful in a different way.

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.

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 (bring the band down behind me boys...)

I’m waitin’ for the man, twenty-six dollar in my hand. He’s never early, he’s always late. First thing you learn is you always gotta wait. Waiting for God(ot).

Waiting for the Muse to sit on my face. Waiting for *the narcotic moment of creative bliss*.

For whatever reason I decided to revise 3 first, I guess because it's fresher.

Really after I input the changes to Chapters 2 and 3, I should reread Chapter 1, too, and then go over 2 or at least 3 one more time, watching for repeats and continuity, but I don't think I can face that. Generally the later chapters don't get revised as much as the earlier ones, so I like to try and force extra revises of them.

Be that as it may, my near-term plan is to finish 2 and 3, get them in the mail, and then start trying to figure out more accurately what happens in Chaps 4 and 5.

And claw my way back to the narcotic moment of creative bliss.

Notes made while rereading Chapter Three. (This functions as a to-do list and, as usual, I mark points with an asterisk * after dealing with them, whether by changing the text or by making a note in the outline of things to come):

- * Music. Organ music in the cave. More sneaking music in the lobby. Chants on Easter Island. Rock and roll to match the subfab explosions.
- * Have Thuy be stiff and bruised the morning after that car bumps her on Valencia Street.
- * Mention the ExaExa logo on the Ark again.
- * Sonic works for Dibbs in the last chapter.
- * While Thuy is in the Hibrane, Jayjay is in a long Big Pig session in the cave.
- * He's going to have to save Thuy, who'll be caught by the sentinels on the way back.

Notes made while rereading Chapter Two:

- * Mention Sonic and Jayjay's clothing outfits again later on.
- * Drop the subplot about the beezies forcibly cutting off fuel production in the Middle East. Instead let's say that the world quit using gasoline because finally they *could* — thanks to improved solar tech that arrived with beezie intelligence amplification. Less expense, less pollution, and no more involvement with the maniacs in the Middle East — what's not to like? Like a junkie giving up crack. The Middle East drills a little oil still, mostly for shoons.
- * Have Jayjay and Thuy at least mention the possibility eating at Nektar's Puff in Chapter Three.
- * Have Sonic mention Doodly Bug in Chapter 3 or at least later on.
- * Mention Tawny Krush music in Chapter 3.
- Why are the Rebel Angels interested in amok nanomachines on people's skin?
- * It's a big deal when Thuy really gives up the Big Pig, so mention that, it happens after Grandmaster Green Flash, and even so more after her head goes through the grill.
- * What becomes of the Jayjay-faced shoon that Sonic borrows in Chapter 2?
- * Mention the experiential orphidnet deficit when Thuy is in the ExaExa plant subfab, admin, and lap.

- * Say more about Jil's business selling shoons made of *Merz Boat* piezoplastic.

May 26 - 31, 2006. Brainstorming for Chap 4.

So, okay, I've got 65,000 words done. I could get by with as little as 25,000 more, or up to 35,000 if I want. I've been envisioning this as two chapters 4 and 5, but I suppose it could be one big chap if that works better.

I just reread my current legacy outline of Chaps 4 and 5, and I don't see enough material in there. What it is, I still haven't imagined the Hibrane. And I don't have a reasonable conflict set up there. General principle: keep it simple; there's a lot of balls in the air, and more still coming (e.g. panpsychism). Things that I want:

- Thuy brings back a universal form of RAM that will imbue all of Earth and be usable by all natural processes.
- The Hibrane is like San Francisco with perhaps a Sixties feel.
- Figure out what the *fuck* the cuttlefish are about.
- Instead of computers, the Hibraneers have endless eidetic memories, telepathy, remote viewing, and they can teleport.
- Azarothe has been trying to build something like computer or to find a way to think more logically.
- Play down the religious idea of "lamas" and a theocracy in the Hibrane. Religion is boring.
- Gladax is bossy. Perhaps not really evil though. Perhaps she's the main cuttlefish importer.
- Have a worse guy in Hibrane as well, like Quang an enemy, a Hibrane hard guy, a crazy musician? Maybe that's too many characters.
- Image of Ond, Chu, and/or Thuy in a kind of sideshow, on display like freaks, kidnapped by Quang's guards, who mocking them like, say, the Roman troops with Christ.
- Thuy will get hung-up by the Sentinels and Luty in the "Bulk" zone between worlds.
- Luty will try one last attack near the end. He's like the Terminator, in the sense that you have to kill the guy more than once.

June 1 - 20, 2006. Desiderata and Explanations for Chaps 4 & 5.

I'll lay out some questions here and summarize some of the answers that emerge. I revised this and the Chap 4 & 5 outline once or twice a day for about two weeks. Twenty or thirty revs in all. When I came into this phase, I hadn't realized how hard it was gonna be to wire up the constraints. It's like making everything on a wall-sized mural be angled so their lines meet at a vanishing point.

When I'm unsure, it's easy for me to diddle around with physics and math notions. The harder thing — and what I need perhaps more — is ideas about the characters' relations with each other, the double crosses, the alliances, the connections. But eventually I got into that too. The tale-spinner organ was activated. I like when I can just make up stories about people, sometimes I forget how easily I can do that.

As the loop progressed, I found I was moving some ideas out of this to-be-used section into the mostly-not-used [Ideas](#) section — and then moving them back in her, and then moving them back out. I had an anxious sense of being in an endless divergent series of revisions, akin to the feeling I get when I keep hand-revising print-outs of the finished text.

Lest I diverge, the guide must be to keep the plans simple, and go for what I want. Once I nail down what my story needs, I can, after all, make up any old bullshit SF explanation. The key is to focus on the desiderata, not on the explanations. But only be wrestling with a host of explanations do I come to realize what my desiderata actually are. (“Desideratum” is a philosopher’s word for a desired conclusion you wish to reach, with the wonderfully Latinate plural of “desiderata.”)

During the preliminary stages of this exploration, trying to tame the jungle of possibilities, I put in topical header titles. And near the end, I had the idea of placing each brief *desideratum* in italics, followed by a Roman font explanation that in some cases runs to a few paragraphs.

I finally stopped revising this section and simply went into revising the novel once again — writing the novel being, after all, the point of this exercise. So it may be that ultimately, some of the ideas in this note aren’t going to match what I ended up doing, but I really and truly hope I can get myself to stop revising this note.

I’d like this note to become a ladder that I climbed up and kicked down to the floor behind me.

The Cosmology of Hibrane and Loblane

The Hibrane is enough like our world to have San Francisco.

There are two coupled branes, very close to each other. The matter is superpartnered. The universes came into being together. They’re a coupled computation.

There is a size scale difference of six between worlds. They’re big; we’re small. We scale time as well as space. Their matter is proportionately less dense.

Use a [Lisa Randall](#) type warped brane setup with the branes 1.8 Planck lengths apart, causing a scaling of $e^{(1.8)} = 6$. The distance is $1.8 * 1.6 * 10^{-35}$ meters, or $0.029 * 10^{-33}$ meters, round which I could call 0.029 vatometers (or decillionths of a meter) or 290 undameters (or unodecillionths of a meter). “Point oh two nine vatometers.” “What’s a vatometer?” “A decillionth of a meter.” Regarding the time scale, note that there will be a [singular shared origin](#) on the two time lines and this is to be Orphid Night.

As well as being less dense, the Hibraners in our world are aethereal and can pass through objects like ghosts.

When a Hibraner comes to Loblane, their quantum state vectors are nearly 90° out of phase with ours. This is because the worlds are 90° out of phase. When the light Hibraners shadowcast across they only rotate 1 degree. But we rotate a full 90. And the reverse jumps undo exactly the amount you rotated before.

But we can push through their walls like bulldozers.

The phase shift isn’t symmetric. When we go to Hibrane we arrive with our phases in synch with theirs. Yes, this means the shifts depend on what kind of matter is jumping. Deal with it, that’s how the world is.

You can eat and breathe while in the wrong brane.

Once matter is fully contained inside a visitor's body, the matter's quantum phases converts to the visitor's orientation. This said, a Lobrane visitor to the Hibrane would have to eat a very large amount, due to the reduced density.

We have legends of the Hibraners as spirits and ghosts.

The rare, sensitive odd-ball may have sensed the Hibraners. Also it's easier to see them in dreams.

There is action in the Bulk between the branes.

I can fit it in by supposing you have things below the Planck length, in the subdimensions.

Lazy Eight And Psychic Powers

The key difference between the worlds is called lazy eight.

The eighth dimension is curled around into a Planck-length circle in the Lobrane and is stretched to infinite length in the Hibrane.

I will use the phrase "lazy eight" to speak of this change. It combines: eighth dimension, infinity as ∞ , and the fact that infinity is "right here" in the eighth dimension as an ubiquitous lazy-man's enlightenment. So we have an infinite extra dimension at every point. Yet the infinite expanse is accessible; you can reach any location along it in some fixed time.

It's like you took the vanishing point of a painting and made it be at every point in space. The point at infinity is present everywhere. It's like being with God. The accessible point at infinity acts as an entanglement channel that connects every point with every other point in synchronicity.

It is possible to switch on the lazy eight phenomenon.

There are two possible equilibria for any region of space, having to do with whether the eighth dimension is infinite or not. The eighth dimension is compactified in the neighborhood of Lobrane Earth, but is fully unwound in the vicinity of Hibrane Earth. The equilibria are like the two bottoms of a W. If nudged, a world might move from one equilibrium to the other. One equilibrium is our present mode, the other is the lazy eight mode.

The Hibraners don't want to be jostled away from their pleasant lazy eight, they worry that visiting Lobraners might infect their world with a loss of telepathy.

The Hibrane has had lazy eight since time immemorial.

It's a fundamental broken-symmetry difference between the two sister branes.

(1) Lazy eight brings omnividence.

You are able to tune in on distant objects. In some ways having the lazy eight link via the ubiquitous point at infinity is like the orphidnet. But it's stronger. For the orphids are spaced only one per millimeter, but the lazy eight link is essentially from every possible location, or one every Planck length. It's much smoother and richer.

(2) Lazy eight brings telepathy.

You can see other people's thoughts.

(3) Lazy eight brings teleportation. You can perfectly visualize a distant location, get yourself into quantum uncertainty about which location you're in, and decohere to the new one.

(4) Lazy eight provides endless memory.

You can store info as bumps anywhere you like along the infinite expanse of eighth dimensional space.

The infinite length is metricized so as to require only bounded finite access time for any location. (Ph. D. = Piled High and Deep, ☺.) That is, a Zenonian duality

makes the lazy eight point at infinity be both ∞ far away and quite close. It's like squeezing an infinite number of meters into one vatometer via a Zenonian shrinking. You can view it dually, that is, the other end is both infinitely far away and within a Planck length away, accessible in one tick of Planck time due to the Zenonian access.

Lazy eight adds an infinite amount of state to any physical system, even to an electron. Physics is no longer micro-reversible, for even if an electron is repeating it's actions, it can "remember" that it did all this N times before.

The orphidnet has, in a weaker form, some of the same psychic effects as lazy eight.

(1) With the orphidnet, you have coarse-grained omnividence. (2) You have some telepathic contact and instant messaging with peoples' minds should their firewalls allow you. (3) Using Jayjay's trick, teleportation is possible. Teleportation doesn't really depend on lazy eight, it only depends on being able to visualize a target location. (4) You get a RAM increase by storing info in orphids.

The Hibranners visiting our world don't have telepathy, although they can use the orphidnet. Conversely, when we visit the Hibrane we have all the psychic powers of lazy eight.

When you jump over to the other brane, your body is in effect reconstituted from matter of the type indigenous to the region. On Hibrane your particles unfurl to crazy eight, on Lobrane, you particles have coiled eighth dimension.

The culminating lazy eight alteration to the Lobrane won't spread farther than Earth.

We can suppose it's limited by the gravitational field. The alteration forces the eighth dimension to uncurl and stretch to infinity, but only in the region of Earth's gravity well.

Hibrane Society

The Hibranners are different by dint of having always had telepathy.

They are very high on empathy and to some extent psychically merged, like a hive mind. With the overwhelming input, they don't bother as much to think logically; one reason we use logic so much to try and guess what others think.

The Hibranners don't use much language.

Hibranners converse by images more than by words. The telepathic contacts are non-verbal, non-logical, non-digital — the opposite of the word-based speech. They don't need shorthand language symbols. To the extent that they do talk, use something more neologistic, glyph-laden. Lots of "like."

Due to their low use of language, they have trouble thinking abstractly or generalizing.

They remember everything. They can see the whole form, they can compare complex natural forms seen at different times, drawing Borgesian "Funes the Memorious" type comparisons between, like, the shape of clouds at sunset and an orchid you saw a year ago.

They claim trees talk to them, Thuy doesn't get it.

The Hibranners still have war.

Just because you empathize with someone doesn't mean you might not kill him anyway in order to get his land.

The Hibranners can block off their minds.

It's a classic "take it back" SF move when writing about telepaths: you give them ability to set up blocks, I remember this being a big theme in an Andre Norton book I read as a boy. This way we can have secrets and skullduggery over there.

The Hibranners eat grilled cuttlefish from Earth.

The Hibranners like to eat cuttlefish, particularly the dense, small ones from the Lobrane. Note that our food is about two hundred times as dense (as there's a linear size-factor difference of six, and six cubed is 216.) They love the density, the squirming tentacles, and the colors on the cuttle's skins.

The Hibranners have no computers.

They have no motive to develop computers. We get email, they get telepathy; we get the Web, they get teleportation. Who needs computers if you have lazy eight?

The Hibranners have electricity and vacuum tubes and electric guitars, but no transistors and no computers — they could have made them, but they're not interested.

We get	They get
Email	Telepathy
Web	Teleportation
LSD	Interbrane hop

Azaroth and Chu make a pair of Game Boy style game machines from two water taps.

They both have Hibrane telepathy for the interface.

The space of Hibrane destroys orphids.

The orphids work feebly in the Hibrane, but quickly they are eliminated. It's like there's a pest-control inspection of anything that hops over to the Hibrane. Viruses and bacteria are eliminated, also nanotech. The Hibrane Gaian mind is the "inspector" that pinches the orphids out of existence.

In the last chapter, when Luty launches his final wave of nants, the Lobrane Earth's lazy-eight-activated Gaian mind will kill the nants.

Brane-Hopping and the Jump-Code

You need to know a difficult-to-remember million digit code to hop branes.

Hopping from one brane to the other is like tuning in a radio station on your dial. You need to know the frequency. Or think of the code as an input to the computation that generates a brane. Or as an encryption key.

Chu's Knot coded the million-digit key.

Chu's Knot coded up that key, and not in a crude way of listing the digits, but rather in the more subtle fashion of representing an iterative calculation whose fixed point or limit point is in fact the seed of the computation that generates the parallel brane.

The Hibranners have always been able to hop to our brane, but they can't expressly tell us the jump-code.

They have the skill innately. To them the jump-code is like a mantra, a magic spell, a memory you don't know you know, your birthright. The knowledge comes from Gladax's magic harp.

The Hibranners can block a repeat of Chu's timing channel attack by Lobraners.

They insert a wait loop into the encryption so that everything takes the same time to encrypt.

Some Lobraners have stumbled on the jump-code in the past.

In dreams, we sometimes flip over to the other world, and appear as destructive gnomes that the Hibranners have to deal with.

Lazy Eight Comes To Earth

The Hibrane lazy eight status will remain.

When the take Gladax's magic harp from the Hibrane, that doesn't destroy the lazy eight already present in the Hibrane.

The advent of the lazy eight is a profound mental experience.

Pay attention to the colors I see with my eyes closed. Wobbly blobby lines inked onto my retina by the sun: cerise, magenta, aqua, citron, chartreuse. And now more shades appear. The lines recede to infinity.

A certain gesture, a mental flip. I think of the morning I woke up, having taken acid when falling asleep drunk at 3 AM, and I woke up and the room turned into its mirror image. Dosie-do, the dresser and chair exchanging position, the whole room flipping over in the fourth dimension, and the room says to me, "Want to see that again?" In the same vein, I recall the DMT-inspired Beetlejuice Monkey that I saw at the Mondo house. The Beetlejuice Monkey counted to a quadrillion by ones — slowly, gloatingly, mocking my dismay.

Ultimately, the lazy eight experience has to be ineffable, like satori. Certainly I can't in fact tell it to the reader, even if it's very simple.

Panpsychism already exists on the Hibrane.

I will save a full discussion of panpsychism as a kicker for the end part of the last chapter; but I can safely preview it during Thuy's visit to the Hibrane by only showing it from the outside. That is, the Hibranners see nature spirits, world spirits are very real loci genii for them.

Thuy can also see the Hibrane nature spirits as she as lazy eight by dint of being in the Hibrane. But she doesn't quite get it at first. So she'll hear Hibranners say, like, "The tree told me something," and the Hibranners won't explain it to her, or aren't able to explain, and she won't fully understand what they mean. Later, it'll be easier, due to having an orphidnet interface.

Actually, I think it would be cooler and more artistically striking to bring in panpsychism fresh in Chapter Four. Suppose the Hibranners can't talk to objects because they didn't get to have the down-migration of English-speaking bee-zies into the objects.

The advent of panpsychism on Earth is a profound mental experience.

Once this kicks in on Earth in the last chapter, we can have Jayjay or Thuy experience it dramatically. I did this in *White Light*.

Our orphidnet will act as an interface to our lazy eight telepathy.

I think my average technophile SF reader is gonna want to see the orphids stick around for the next volume. So we keep it, and this is a win. Because we have orphidnet as an interface layer to lazy eight telepathy, we can use Walker's notion of mental Google; the bee-zies do this for us. The bee-zies stay in the orphidnet, that's their niche. Because of our orphidnet interface, we aren't as spaced-out as the Hibranners. But they don't want to be like us, at least most of them don't.

Life will go on somewhat as before after panpsychism on Earth.

I'm uneasy about having my panpsychic kicker introduce a permanently altered state of affairs on Earth, as it could be hard to write a sequel in a world that's turned so weird. But my car talks to me, so does my phone, my computer, and my refrigerator, so I guess we could live with talking rocks, chairs, sandwiches. But they'd be really smart, which would be different.

June 16 - 22, 2006. Closing in on Chaps 4 & 5.

[I wove some of these insights back into the previous Desiderata and Explanations section.]

Everyone on the Hibrane has telepathy (thanks to lazy eight), whether Hibraner or Lobraner. Nobody on the Lobrane has telepathy, but they do all have the orphidnet.

The Hibraners move six times as slow as us. We're dense scuttlers over there. Use the expression "shadowcasting" to express the notion that you move over without rescaling.

The Hibraners are insubstantial in our world, but we're still solid over there. Explain this with quantum phase. For shorthand, call the branes Hi (Mirror) and Lo (Main). The phases of Hi and Lo are 90 out of synch, so they could in principle interpenetrate. As it happens, because we are more massive, the Lo beings are rotated further than the Hi beings by the twist of the shadowcasting hop. When a Hibraner hops, he or she rotates phase by one degree only, and this would be counterclockwise on the way down, and clockwise on the way up. When a Lobraner hops, he or she rotates phase by, let us say, 89 degrees (so they're just a tiny bit insubstantial in the Hibrane), and again this would be counterclockwise on the way down, and clockwise on the way up.

The Lobraners are pests and disturbing to the Hibraners: small, dense, fast.

Your code is copied world to world not your matter, so if you get a body in Hibrane, it has an unrolled eighth dimension and you have telepathy.

Gladax is the Black mayor of Hibrane San Francisco.

The Hibraners want to stop the nants; they fear they might make it over to their world. They call us gnomes. They fear our nants might infect them.

Ond wants to bring psi powers to Earth, especially the lazy eight RAM, the sees that it can replace the need for nants.

They will steal a magic harp from Gladax, like the giant's harp in "Jack and the Beanstalk." Its string is a superstring from string theory. I don't know where Gladax got it, though. It goes back to Egyptian times, perhaps. Or they settlers took it from the Native Americans. The strings that thread it migrated up from inside the Earth.

Perhaps a computational singularity can burn the hole to unroll the eighth dimension. Looking at the surf in Cruz, I think of going backwards in time, from foam, to a round wave, to an undulating endless sea-surface. This as a model of unfurling the eighth dimension.

I rewrote Jil's visit to the Hibrane at the end of Chapter One. I'll be covering some of the same material again at the start of Chapter Four. It's odd enough to be worth doing twice, but I need to find a way to make it different the second time around. No need for Thuy to pop out in Golden Gate Park, too, for instance.

Logically speaking, she ought to pop out on Easter Island, in a cave underground. That's good. And let her tunnel out like "The Mole" in Will Elder's old *Mad* magazine story.

Problem: If Azaroth is hanging out with Chu, wouldn't he perfectly well know Chu's Knot? After all, Chu has the knot with him in the Hibrane at the end of Chapter One.

It must be that Gladax gets the Knot away from Chu, destroys it, and then manages to scramble Chu's brain.

How can the Hibraners keep anyone captive, given that the Lobraner gnomes can bulldoze through wall? Well, suppose they hang them from bungee cords.

In principle the gnomes can teleport via lazy eight. And lazy eight, being a fundamental property of matter, is everywhere. Initially we'll say they don't know how to teleport. And then Thuy will teach them how, but then maybe Gladax can jam a person's telepathic abilities with something like Muzak. Telemuzak. Like the Muzak in that prison cell where I spent a night in London, Ontario. It wasn't the bars keeping me in, it was the music. Oh, I know, use a note from Gladax's harp.

Summing up, I just spent a month working on:

[Offstage Hibrane Story During Parts 2 & 3.](#)

[The Outline for Part 4](#)

And then I revised Chaps 1 - 3 so I'd finally be ready to start Chapters Four and Five. Generally speaking, the changes were to simplify things. The other day I recalled a phrase from the "Rucker" entry in the 1993 Clute & Nicholls *Encyclopedia of Science Fiction*: "...displays an undeniable glee as he journeys through transreal spacetimes of crippling complexity."

- * Hibraners converse by orphidnet messaging of emotions and images more than by words. They do accompany the stream with text subtitles, the abstractions, using words neologistically as one would expect telepaths to do. Shorthand. Glyph-laden. Lots of "like." Maybe do Funes. People are heading that way, too, thanks to the orphidnet.
- * It has to be night when they show up in Hibrane end of Chapter 1, as the time-zero connecting the two worlds' timelines is when Bixie makes that first Lobraner jump, about 10 p.m. on Orphid Night. Help visibility a bit by making it be Sept 1, 2035, which as a full moon.
- * I have to redo all the scenes with Gladax, Azaroth and Wonda. Azaroth is Sikh, family from the Punjab. Gladax is Chinese, the widow of Azaroth's dead uncle Charminder. More or less eliminate Wonda.
- * Scenes that need special work: End of Chapter One introducing the Hibrane, Thuy's flashback of her initial info-dump conversation with Azaroth, Thuy and Jayjay talking to the Hibraners on Easter Island in Chapter Three.

- * On Easter Island, Thuy starts figuring out how to teleport from Jayjay, but she has a simpler model of how to do it.
- * Drop the stuff about the Hibranners milking cuttlefish ink. They just eat the cuttlefish.
- * Drop the “dreamcatcher” organ of the Hibranners; instead Azaroth helps Jayjay’s memory by using orphidnet info about a his mind and storing it in an efficient form over in the Hibrane, shuttling back and forth to do this.

June 20, 2006 Mad Professor Covers

Georgia sent me three “looks” for the *Mad Professor* cover.

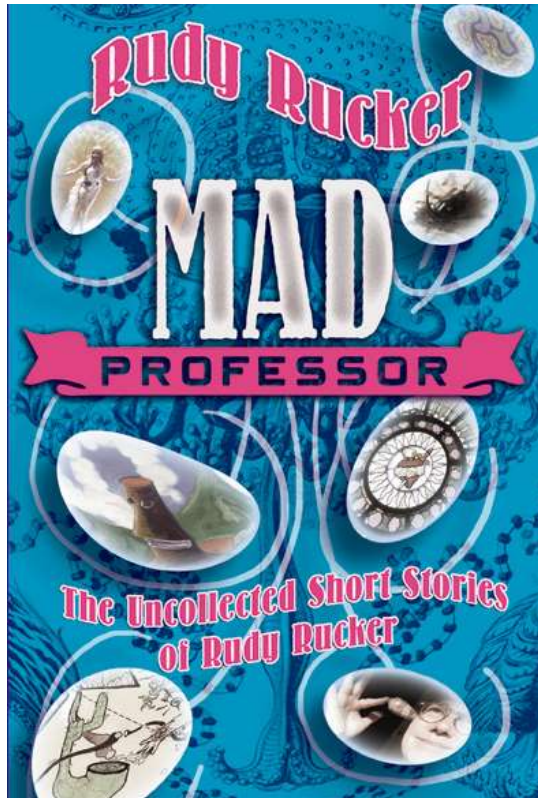


Figure 30: *Mad Professor* Jellyfish Look

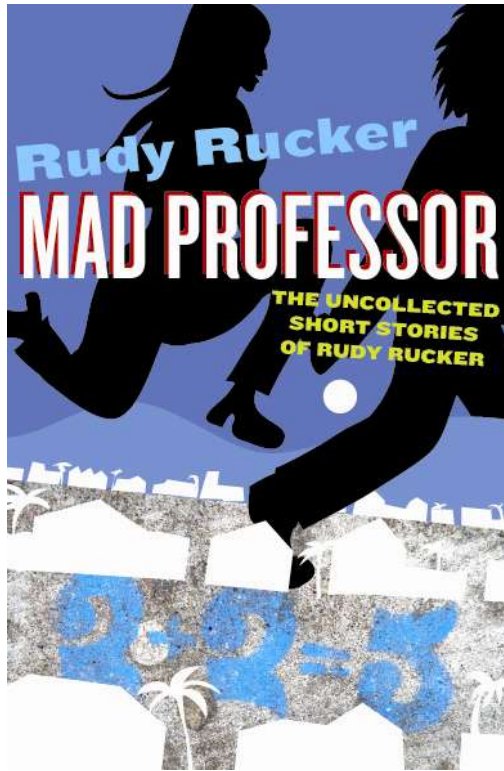


Figure 31: *Mad Professor* 2+2=5 Look

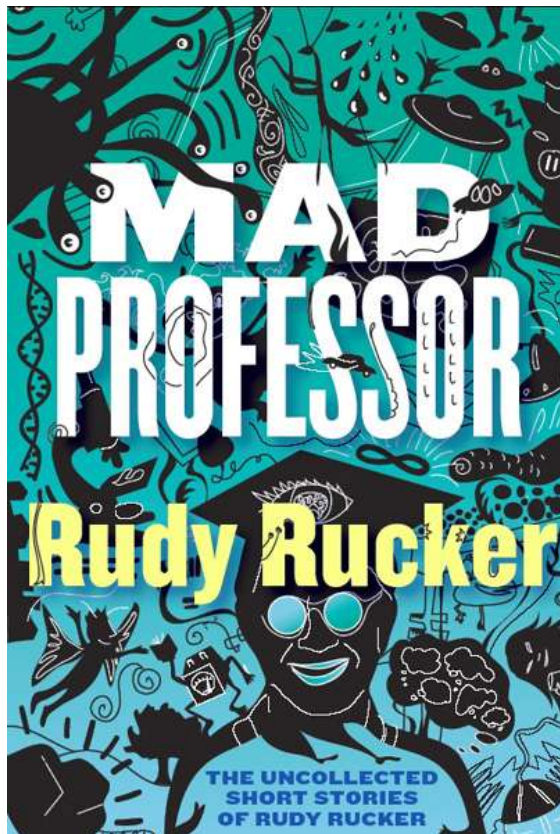


Figure 32: *Mad Professor*, the Final Look.

June 22 - 29, 2006. Starting Chapter Four

I was watching a DVD of *Mystery Science Theater 3000* yesterday. Some lines in the theme song lyrics struck me as good advice to an SF writer, so I checked them out on the web at <http://www.mst3kinfo.com/mstfaq/lyrics.html>

If you're wondering how he eats and breathes
And other science facts (la la-la),
Just repeat to yourself "It's just a show,
I should really just relax..."

Heard from physicist John Baez; a knot has about one bit of info per crossing. If Chu's Knot were a literal representation of a million-digit number it would need 3 million crossings. So I'm gonna assume its algorithmically compressed to about 250 bits, with 250 crossings.

I'd been calling the two worlds Mainbrane and Mirrorbrane, respectively, but now I decided to call them Lobrane (us gnomes) and Hibrane (them angels). This is maybe easier to remember, less confusing, and sets up less expectations of finding exact doubles of everything in the other brane.



Figure 33: Thuy's Hideout at SF Auto Works

I [blogged](#) being on Valencia St. in San Francisco yesterday, thinking about my next scene with Thuy Nguyen. She's over in the alternate brane, the Hibrane. And she's hiding out from the universal telepathy by emanating the vibes of, I think, a dog. But where? I'm thinking the garage next to the storefront church where she saw Azaroth.

I'll make the church a used clothes store I think. What about the garage? Do they have cars on the Hibrane? Why not just teleport everything? Maybe sometimes you don't feel like it? Maybe trucks are still good for freight? Would people have even invented cars if they could teleport, though? I don't want it to be a fruit market, I want a dingy, dark, somewhat deserted spot.



Figure 34: The Pool in the Mission.

Later she'll deliberately drop her mind block so as to be captured by Gladax, doing this as a way to get inside Gladax's house to steal her magic harp. She'll go out with her dog-vibe turned off, walk by a nice Mission pool and tennis court building (18th St. between Valencia and Guerrero) and get cornered in this dead end I saw next to the tennis court. Gladax is jamming Thuy's teleport abilities by strumming her magic harp and disturbing the eighth dimension.



Figure 35: Dead End Where Thuy is Trapped

I heard some great slowed-down rap voice from a house on this street. Syrupy slow. Like a Hibraner talking. It's a total dead end with a big fence over each exit.

They have something like Christianity over in the Hibrane, but there the Savior is called James Christ. According to the Bible, Jesus had a brother called James.

Other names I considered: Cleopas, Zebedee, Simon. In Spanish, James is Jaimie or Xaimie.



Figure 36: Disguised in the Hibrane

The Hibraners and Ond and Chu aren't quite sure how the telepathy and extra RAM work in the Hibrane. After all, Ond isn't a physicist. And the Hibraners don't think very logically.

Leave it to Jayjay to figure out that it's the unrolled eighth dimension. And then he'll know just how to strum Gladax's harp to unroll the lazy eight.

The magic harp with the superstring strings. The Pythagorean thing of number being in music.

June 29-30, 2006. Speculations on Telepathy

Chapter Four is well underway now (June 29, 2006), I have about 4,500 words on it and a pretty good outline.

It's the same routine all day, day after day. Write a page, print out what I have, mark it up, type in the revisions and maybe write another page, print it out.

Now and then I have to take a break to figure out what's next. I print out the outline and revise that. Or take a nap.

Right now Thuy, Ond and Chu are walking down Hibrane Valencia Street. They're about one foot tall relative to the Hibraners, and they move six times as fast as the Hibraners. Like speedy gnomes.

It's something like Christmas Eve (we have Jesus who died on the Cross, they have an unnamed religious figure (symbolized by a cuttlefish) who died on the Triangle), and people are out shopping. They've had telepathy forever in the Hibrane, also they can teleport themselves at will, also they have omnividence (can see anything), and they have endless eidetic memories. And the objects are telepathic too, although they don't speak English. I'll use "teep" for a verb to mean "using telepathy."

Question: what's for sale in the stores? What's the street scene like?

Due to telepathy, people have a better control of morphogenesis, and can tweak organisms to take on desired forms. A shop where a guy grows you the kind of tropical fish or mushroom or orchid you want. Teasing a growing plant or animal into a sought-for shape is a delicate craft. I would call the people who do it *shapers*, but Bruce Sterling has made that word his own. So call them *coaxers*.

The buildings are organically grown, or rather assembled from organically grown parts. The windows are like membranes. Parts from a Victorian tree farm. Branches that look like trim.

I'm thinking they have cars for cruising around and carrying stuff even though they have teleportation. But maybe the cars can be flimsier as it's pretty hard to run into someone by accident, as you can teep them. The cars can in fact teep things themselves and avoid collisions. They are assembled from morphogenetically grown parts.

The buildings and cars aren't organisms yet, not like in *Frek and the Elixir*. They're assemblages of bio-like parts. The cars know what kinds of parts they need, the mechanics teep with them. Maybe the cars scavenge for spare parts sometimes, perhaps stealing from each other. Azaroth, Ond, Chu and Thuy have their secret meeting in a room over such a garage. The mechanics know they're there, but don't bother to squeal.

Clothes stores. Clothes are for warmth and decoration. Not really much point in modesty, as you can see under the clothes. But people are kind of used to that. Maybe sell hush-undies that scold teepers who nose under them, though not talking in words — as I suppose our objects don't speak language — just reacting with anger and scolding and shame. Of course, for some, hush-undies could make the hidden contents seem forbidden and therefore extra-alluring! Blush-hush.

Food markets, restaurants. If we have telepathy we can really watch the chef. Maybe there's someone with such a great sensitive palate that it's pleasure to mind-meld with them as they chow down. Or the food talks to you, showing you its past. You're eating with the chef's whole sense of the process, the preparation, and as you eat it, the chef's eye guides you, he's put teep-tags onto the food.

Would people still get drunk and high? Sure. Imagine the havoc you could wreak getting wasted and "running your brain" instead of just email or phone or conversation. So there are bars that are "screened" so you'd be unlikely to teep out of there and get yourself in trouble. Screened by overriding musical stylings provided by a black guy with shaved head, sitting with muscular arms crossed, wearing a leopard pelt, he looks like Mandrake the Magician's assistant [Lothar](#).

Sex work? Well, with telepathy, everything's free. But you could have a mind that really welcomed you in, and that might be different. Someone who is

actually glad to see you. I've read that high-end prostitutes talk about johns wanting a GFE (girl friend experience). They won't be hitting on little gnome Thu, but she'll witness them trying to pick a guy up. Alternately, imagine a stuffed plush animal — not even a sex-toy — just an object that loves you and is glad to see you.

Art. A painting that decides what you want to see and shows you that. But I'm not supposing objects are all that smart. An object that simply projects the raw experience of transcendence or sense-of-wonder. Groundless euphoria, mindless pleasure, a vision of actual infinity. Or sensual beauty. Perhaps a rock that's lain in a stream bed and you look at it and sense the lovely currents of the water

Books? Maybe no books? I could suppose the telepaths won't actually use language that much. But that would make them too alien, I think. So they have language for superficial small talk, but they more often use teeped images and emotions. They barely use the written language. Books are normally not written in words, they're rather like hieroglyphs. A beautiful mind loop saved into the endless memory network, glyph by glyph. Writing is more like being a bas-relief sculptor. An array of teep tags. Perhaps there's a book store like Metotem Metabooks run by a woman who's just a bit like Darlene from the Loblane. And they let Thuy record her memories. Darlene gives Thuy a spice cookie, and she sees the Spice Islands.

Ads. Things projecting vibes of paranoia to get your attention. Or anger or lust or ecstasy: the whole palette of extreme emotions.

I could compare telepathy to orchidnet contact at length, with a table.

Gladax teleports Thuy to a ballroom in her mansion. She immobilizes Thuy by hanging her in the air, suspended by rubber straps. Thuy can't gain any purchase on anything so as to bull her way out. Gladax has her harp going to screw up Thuy's telepathy so she can't teleport outta there.

July 12, 2006. *Hallucinating Decades.*

Losing a few weeks on the book here. I'm in Washington DC after my son Rudy's wedding in Virginia. And when I get home I have to go over the page proofs for *Mathematicians in Love* as well as the copyedits for *Mad Professor*.

And then we're taking a road trip to visit Isabel. With so many interruptions ahead, I almost don't even feel like trying to get the book rolling since I'll just have to stop right away. Maybe I won't really get going on it again till the middle of August. It would mean, like, a six week summer vacation. Why not?

In DC, Sylvia and I are staying in the Hotel Madera near Dupont Circle. I'm recalling a time in 1968 when I was here visiting with my college friends Kenny Turan and Greg Gibson.

We three wanted to get high, and we met a chatty gay guy our age in Dupont Circle, he said he'd just gotten out of jail for dealing, but since we were so nice he'd take a chance and sell us some mescaline caps that he had buried under a rock in the circle; we paid him, he dug them up, gel caps of pink powder, we ate them and went to see the movie of Woodstock, which kind of made us forget we were high, though when we came out the trip came up and slobbered on us like a faithful dog that had been waiting outside.

Today, seeing the fountain, and the streams forever cascading off its high marble bowl, I think of the water as being like time itself, flowing on and on whether or not I'm here to watch.

What if the mescaline never really wore off? What if the past forty years of my life have been a single, highly detailed hallucination. And I'm about to come down off my trip.

And I begin thinking some more that maybe the last thirty-six years has been a mescaline hallucination. I find this thought oddly cheering. I'm still watching Woodstock with Greg and Kenny. Greg will nudge me and we'll walk out into the hot July night, it'll be 1970 and I'll be 24 again. I won't quite be able to remember all the things I imagined — my life with my wife, the children, the books, the career, the ups and the downs. I'll have a fleeting sense of it, a bustling of details within a snow-globe.

And then I suppose I'll start over and do it all again. And snap out of it again. Infinitely many times on down the regress into the white light. Which brings us to the Now Moment.

That faithful slobbering dog of a trip waiting outside the Woodstock theater was my life.

Back to *Postsingular*, what if something like that last rap happens to Jayjay while he's jacked into the Big Pig. Thuy leaves him alone and he gets so high on the Pig that he imagines he's living out a whole life. Maybe run through this whole sixty-years-more hallucinated life in like two pages at the start of the next chapter.

Regarding a Big Pig hallucination, the idea is that you're extending your consciousness out into the Internet. And the computation can be cranked up to run a billion times as fast, so you do, like 60 years in a few hours. How does that work?

Well, I don't run my meatware that fast. I am running a *sim* of myself that fast; I've outsourced the computation into the Web. My outsourced consciousness consists of me watching a mental model of myself reacting to things. And when I snap out of it, I might have some of the outsourced "Rudy" memories mapped into my personal wetware or I might not.

In the same vein, what if my character Thuy's trip to the Hibrane was in fact just a Big Pig hallucination, what if all of Chapter Four is a dream. Then I wouldn't have to worry about making the science consistent --- a scoundrel's last resort, that. Like those Superman comics that end with Jimmy Olsen falling out of bed, "Oh, it was just a dream, I didn't really kill Superman." That idea don't be playin'—as they say in Newark, according to my old friend Hungerford, who lives there. It's boring to read a chapter and care about it, and then the author tells you it was a dream. "Life is real, life is earnest, and the grave is not it's goal!"

Maybe when I die, it'll be like a hallucination ending. The world takes over again. When I die, it's not so much a matter of *me* coming down, it's in fact the *world* that's coming down. Coming down off the Rudy hallucination.

Actually I'm writing this entry by way of getting the Rudy hallucination going again. I've been distracted by this long trip. I've been merged into my family and my marriage. Now, as I look inward, the illusion of being a writer snaps back into focus. A Promethean figure snatching fire from the heedless gods.

In terms of the *gesamtkunstwerk* of the novel, is there any gain in having Jayjay do a sped-up life-in-a-nutshell Big Pig hallucination?

It's a nice eyeball kick, sure, and a mind-twister. But Jayjay should learn something during the simlife that then helps save the day. Like the Pig was helping him get ready by letting him work through 60-year-long hallucination.

Side note. I'd spoken of the Hibraners as being able to help kiquies by remembering their Big Pig visions for them. Actually the Big Pig could equally well have been remembering kiquies visions for them. But in the past, the Big Pig had no reason to do this, she wasn't all *that* interested in the kiquies. But now she's interested in seeing if Jayjay and Thuy can stave off the perceived inevitability of converting Earth to nants. She's pragmatic, and just as glad to avoid the nants if she can. So in fact she can, and does, code Jayjay's thirty-year hallucination into a non-ecstatically-accessible form.

By the way a gigasecond is about thirty years, so sixty years is two gigaseconds, and an hour is 3.6 kiloseconds so six hours is twenty kiloseconds, so to "live" sixty years in six hours, a hundred-thousand-fold speed-up will suffice.

The dream sequence is a doubly great twister because I can start the chapter with "Thuy never came back." And this would make the reader sad and uptight and baffled, and then I do a sequence of Jayjay becoming a physicist, and always wondering what really happened to Thuy, and her cry for help snaps Jayjay out of it and he saves her.

And Jayjay knows all about the harp by then, he's figured out the theory of it. Terminology issue: if a big spacetime string looks like a harp string, what do you call it? A singularity segment. Good to use the S-word in an alternate context. Or call it a handle. Loop, ear, handle, bypass, cup-handle, banister, railing — I'm thinking of a Flatland model where there's a tube that rises out of the surface and then connects back in. Though, actually the Flatlanders wouldn't see a tube as resembling a string. They'd just see the two ends; two spheres. For a singularity segment, I need to take the same kind of tube, but then push it down so as to touch Flatland along its length, making something like a slot. A slot singularity. And that's something you can *twang*.

The Pig senses this is doable and gets Jayjay to help work it out, and then needs only the seed of the harp brought back from the Hibrane. *Zongg*. What is Pynchon's phrase about a harp, and what is the context again? Something like: "...the icky, sweet chord hangs in the air..." I'll look it up at home:

Gravity's Rainbow p. 708 (Penguin 2000 edition). You're worrying about "Them" coming to bust you.

"Their neglect is your freedom. But when They do come on it's like society-gig Apollos, striking the lyre

ZONGGG

Everything freezes. The sweet, icky chord hangs in the air . . . there is no way to be at ease with it."

I think I'll lift that last paragraph for my book. I do this as an act of homage, not plagiarism, you understand, and am proud to declare that I've lifted from Master Pynchon. I could paraphrase the phrase, but it's so absolutely perfect a description of what I'm thinking of—in fact my image was probably inspired by subliminal memory

of the phrase. I'm also thinking, of course, of the harp in the Disney cartoon of *Jack and the Beanstalk*.

July 21, 2006. Copy Edits on Mad Professor

I went over the printed page proofs of *Mathematicians in Love* without many changes, and then went over the electronic copy edits of the stories in *Mad Professor*, making a number of fixes.

Although in the past I'd imagined that my collaborative stories are better than the ones I write alone, this time I didn't feel that way, although I do particularly like "Pockets," the story I did with John Shirley. But all in all, I'm more satisfied with the solo works. Not that I don't learn from the collaborations. And sometimes it's seemed easier to do a collaboration than write alone. But I think when I finish *Postsingular* and perhaps go into story-writing mode for awhile, I'll focus more on working alone, like back in the days when I was writing stories for *The Fifty-Seventh Franz Kafka*. I like being able to craft every detail.

I'd been planning to work on a story with Marc Laidlaw now, but I'm gonna put that off. What it is, when I write alone, I get to be alone in my bubble world, and that's where I want to go after so much socializing at the wedding. When you're collaborating, you're thinking about the other writer a lot, it's not just you and the work. You want to fix what the other writer broke and you don't want to hurt their feelings or seem bossy, it's kind of a mine field.

Really it's fear of being unpublishable that's driven me into collaboration.

Even without a collaborator, the market squeezes into my mind a bit, along with the memories of what critics and editors have said. When I was starting out years ago, I was less unfettered, more like someone climbing a mountain alone.

Editing *Mad Professor*, I reread a storylet that I'd written as part of *Realware* about twelve years ago, it was so refreshing.

Just now starting to reread the latest chapter of *Postsingular* I'm happy too, happy to be back with my imaginary friends.

Not that I'll get much momentum, as we're leaving for a road trip on July 31, 2006 to August 17, 2006. Might as well start anyway, maybe I can do a little writing on the road.

July 27, 2006. Scent of Blood

As I discuss in the July 25, 2006 paragraph of the [Word Count](#) section, I decided to cut the book length down and to combine my ideas for a Chapter 5 with my Chapter 4 plan. I didn't feel like had enough material left for two full chapters, given that I'm using long, 20,000 word chaps in this book. If I can get four chaps with an average of 21,500 words each, I'll hit 85,000 words in all which is, I think, marketable.

In any case, making this decision took off some pressure and I'm writing again. And it may even be that my material will exfoliate enough in rewrite so that I reach 90,000 words, which I'd actually feel more comfortable about.

But, hey, if the goal really is just 85,000 for now, that means I'm near the end. I have 74,000 words in all, and 8,000 words done on the final chapter. Only 11,000 words to go—hell, that's no longer than a hefty short story. And I think I've got enough "paint" left to cover this "wall."

So I'm excited. As always near the end of a book, I feel like the proverbial hound smelling the blood of a wounded wild pig: I'm eager to charge in and finish off my prey.

I just started Thuy back from the Hibrane with the "elixir," that is, the harp, and Gladax was chasing her, and now she's stuck in the interbrane and Jayjay has to help her. So I'm touching base with several of the Campbell monomyth stages: the Boon, the Flight, the Rescue From Without. Jayjay is gonna have a 60 year (subjective time) hallucination and wake up and get Thuy back: Crossing the Return Threshold. Then they'll zong the harp and turn on telepathy: Master of Two Worlds. They'll have a final flare-up of Luty and the nant problem, they'll crush him, and they'll be at the final monomyth stage: Freedom to Live.

I'm trying to figure out what Thuy sees when she follows the harp down under that interbrane sea after the sentinels grab it. I have some ideas on this in the Physics section under the subsections: [Interbrane Dimensionality](#) and [The Subdimensions](#).

Keep in mind that the image of the sea Thuy skims over arose spontaneously, simply for artistic reasons, because it feels nice. And now I'm turning to physics in hopes of finding some inspiration for what Thuy might see.

Setting that aside for a moment, what would I like to see artistically speaking? Perhaps from the other side, the interface sea looks like a desert, with pyramids on it, to match the fact that the sentinels look like the Egyptian divinity [Thoth](#).

I find other divinities as well on a [useful site](#): Horus with the head of a hawk, Ra with the head of a falcon, Sekhmet with the head of a lion. And the Sky god Nut, blue with golden stars arched over the reclining Earth god Geb, green and muddy. Osiris dressed in white with a crook and a flail. Seth with a long-snouted head, perhaps an aardvark or an anteater or a donkey or a pig. Isis holding a baby. Anubis with the head of a jackal. Ma'at with an ostrich plume in her hair. Bastet or Bast with the head of a cat.

I like the idea of a really hot desert, as it's been over 100 degrees here in Los Gatos this week. I hear drumming from one of the temples, flutes, Thuy doesn't want to go in there, although they're carrying her and her harp thither!

Thinking about the idea of having a subdimensional zone under the interbrane "sea," I had an idea for a Trilogy of Titles: *Postsingular*, *Subdimensional*, *Transfinite*.

We could get more involved with the subdimensional beings in volume two. If I were planning to do that, then maybe I wouldn't want it to be like Egypt after all, as it would be so much work to research that. Could it be instead the land of a Bruegel painting, say *Schlaraffenland* (*The Land of Cockaigne*)? Or the streets of Bruegel's Antwerp? I have this idea that Bruegel painted the image on the soundboard of the magic harp. And maybe Andreas Ruckers (my Flemish ancestor, known for his harpsichords) made the harp.

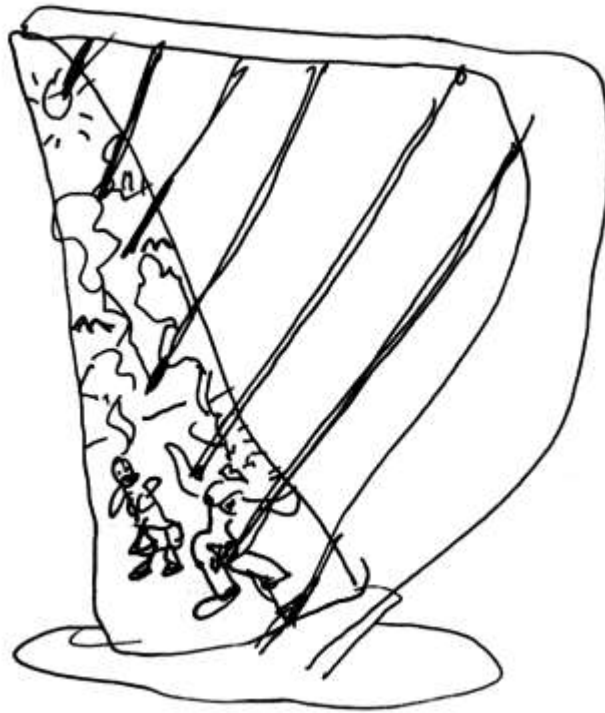


Figure 37: The Andreas Ruckers Magic Harp Decorated With Bruegel Painting.

July 28, 2006. Future History

So now I want to have my character Jayjay hallucinate six future decades, starting around 2040, as it happens, although I've learned to avoid planned obsolescence by never putting specific "sell by" dates in my books. In the book, I'll just label the stages of this little future history with decade numbers.

To kick things off at time zero, I'm imagining that the nanomachines called nants eat everything and that everyone becomes a simulation inside Virtual Earth, called Vearth for short. In other words, we're in a Strossian computronium sim world.

How to imagine six decades of future history starting from there? My bright idea: model them on the six decades that I know best; these would be the six decades leading up to now. Mind you, I don't mean model the specific tech, I mean model the social vibe.

What follows below is an early draft that I moved into the novel text and will revise six to ten more times. But just to have something for the record, here's a working scrap, which was maybe my third take.

Decade 1. (2040-2050, modeled on the 1950s, with Jayjay turning 30.) Money was still a reality in Vearth. The fundamental resources in play were crunch and mem, that is, computation cycles and memory storage. At the lowest level, crunch and mem were based on the processors and solar cells of individual nants; the beezie agents were perpetually engaged in intricate hacking maneuvers to take over more nants. But at the human level, crunch and mem were traded as virtual real estate, as heightened qualities of one's simulated reality. People earned their way by providing of software

services such as recognizing patterns, predicting other people's reactions to things, and making creative jumps. Others earned a bit by making their life's memories available for repurposing: the anecdotes, the emotions, the visions and the sounds. Jayjay himself found work as a physicist; seeking ways to extract more mem from the materials at hand.

Jayjay paired up with Darlene of Metotem Books. Jayjay talked to Darlene once too often about how he missed Thuy, and she erased all existing copies of Thuy's autobiographical metanovel *Wheenk*. Jayjay forgave her.

They wanted to get a house, which should have been easy enough, as building materials were just inexpensive crunch and mem. But they wanted to stay in the Mission District of San Francisco, and there was a problem with finding enough surface area in Vearth's desirable zones to accommodate the homes. So for a time they continued renting.

On the global front, a top-level group mind named Gustav arose to compete against the Big Pig. Gustav promised equal crunch and mem to all his followers. Gustav took over much of the Eastern hemisphere. Seeking to stay in good with her followers, the Big Pig computationally bumped up the surface area of Vearth by a factor of ten. To go her one better, Gustav, increased her zone's area by a factor of a hundred. Supersized San Francisco lost some of its charm, and towns like Moscow and Beijing were wastelands. Vearth had a strange shape now.

Decade 2. (2050-2060, modeled on the 1960s, with Jayjay turning 40.) More and more people turned away from traditional activities and began looking inward. Where being a pighead had once been kind of unusual, there were scads of pigheads in every community now, people who'd all but merged into the Big Pig, abandoning their individuality for good. With no physical body to pull you back, this was effectively a kind of suicide. Jayjay and his friends preferred getting high via software patches called "philtres". Philtre software changed your perceptions of the virtual world in sometimes interesting ways. Jayjay's friend Jerry Gurken, for instance, acquired a philtre whereby he had an orgasm every time he saw a woman.

Life under Gustav's sphere of influence became worse and worse. Gustav was too hierarchical, and prone to crippling inefficiencies. People wanted to defect in droves, but Gustav made it very hard for beezies or simulated humans to leave his network. Some of the top physicists happened to be Gustavites, and Jayjay often talked with them.

Thanks to the popularity of Jayjay's physics papers—and thanks even more to Darlene's expertise at gaming the still-blooming metanovel market—Jayjay and Darlene were able to afford to have a first child via virtual sex. Once they'd acquired the necessary crunch and mem, they programmed the child by interleaving a mixture of their memories, skills and behaviors. They left certain aspect of the sim up to chance, such as the sex. It was a boy. They named him Dirk.

Decade 3. (2060-2070, modeled on the 1970s, with Jayjay turning 50.) A philtre secretly passed to one of Jayjay's correspondents spread like wildfire through the Gustavite bloc, collapsing the dictatorial hive mind for once and for all. The Big Pig was the sole top-level mind again, a virtual god. A celebratory time of excess washed Vearth. There was a fad for a philtre that allowed only happy thoughts, even after it developed that this philtre enrolled its users as supporters of a fresh virtual god called Pippa. Under Pippa's urging, the Big Pig agreed to uniformize Vearth's surface area as being a two times as big as its original amount. But this was a disaster. The planet became level, dull, and poorly computed, like an endless strip mall.

Darlene and Jayjay got divorced. Jayjay still thought of Thuy. He found a rare copy of *Wheenk* and paid the money to create a virtual woman child similar to Thuy. But the simulation was imperfect, and was consumed by a rogue beezie in a very ugly scene.

Decade 4. (2070-2080, modeled on the 1980s, with Jayjay turning 60.) A powerful back-to-basics movement arose. Vearth's size was restored to its former dimensions. People were squeezed into their newly shrunken neighborhoods by allowing multiple layers of reality in a given home. Six families might enter and exit through the same front door; but within the virtual walls, they each had their own house. Philtres fell out of fashion. People deserted Pippa in droves, most of them going back to the Big Pig. But others turned to some new, more brutal top-level minds with a strong ethnic orientation. Dictatorships of these minds arose especially in the virtual Middle East. The dictators banded together to erect a new god named Baal.

Jayjay found a new wife, this one was a second-generation virtual human; that is, she'd never been a real person at all. Her name was Keppy. She really liked live in Vearth and didn't understand Jayjay's occasional disillusionment with it.

Decade 5. (2080-2090, modeled on the 1990s, with Jayjay turning 70.) People began creating their own hive minds. Religious fundamentalists suggested that it was a religious duty to reproduce without limit, and ethnic groups competed to breed faster. Intense automated trading roiled the crunch and mem markets. Some mornings Jayjay would awake to find that parts of his reality simulation had been sold off by mid-level beezies, and he had to purchase them back. Spoofs and pyramid schemes suckered investors into becoming components of dull hive minds. On the physical plane, Earth's Moon was crushed into nants to create more memory, but the average person saw no result from the increase in resources. A rocket was sent to turn Mars back into nants, but somehow the will and ability to create rockets had been lost. As a new solution to the housing problem, people began living in floating castles above the cities they liked.

Keppy left Jayjay, taking most of his stored cash, crunch, and mem.

Decade 6. (2090-2100, modeled on the 2000s, with Jayjay turning 80.) Rogue beezie minds took over the Martian nants and refused any commerce with Vearth. Overpopulation was stressing Vearth more and more; there were a series of little wars, and terrorism became a growing problem. The Baalist cult was seeking to bring about a great cleansing, after which every processing unit would eternally do nothing but repeat, "Praise Baal." And then an incurable virus from either Mars or the Middle East began devastating Vearth's beezies and human sims.

Death came to Jayjay as he lay in thick silk sheets in a velvet-curtained room with a view.

August 20 - 28, 2006. Back from Road Trip. Flurb.

I'm back from a two week road trip. I haven't really touched the book, I'm slowly rereading the latest print out, marking it up.

I am still thinking about making this book be the first of a trilogy: *Postsingular*, *Subdimensional*, *Transfinite*. In *Subdimensional*, the theme would be working out how it is to live in a world where everything is alive. A good objective correlative for now. The crises: (a) coming to terms with living objects and (b) fending off some subdimensional foes. Message: there really is only one universe.

For *Transfinite*, go back to the *White Light* territory and figure out *why* there really is only one universe. Perhaps a character becomes a Christ-like avatar. Get really nutso on the readers' ass.

The pulsing bifurcating waterfall above Avalanche Lake resembles the graph of the logistic map. If a cascade was intelligent, would it move the rocks around more?

Note that with lazy eight, all these objects and processes can "see."

If water was intelligent, would floods be worse? Would leaves wave more extravagantly? Smart fires might be harder to control, more prone to leaping across a gap to the next dry branch. But fire lacks effectors, no? A tree has slow effectors in its growth. And possibly it can vasodilate to affect the flexibility of its branches. But fire I think is passive.

Perhaps by way of putting off getting back into the book, I spent a lot of time this week making a webzine, [Flurb](#). The proximate cause was my annoyance at not being able to get my and Di Filippo's "Elves of the Subdimensions" story into a webzine before *Mad Professor* comes out. The twerps at *Strange Horizons* and *Helix SF* both turned it down. (I didn't try *Infinite Matrix*, which I think is now defunct). The *Flurb* project quickly mushroomed. I got stories by Bisson, Blumlein, Doctorow, Kadrey, Laidlaw, Rucker, Saknussem, Shirley. I think I've started quite a nice webzine. I used my paintings and photos for the art. It got good buzz and a lot of hits. I'll tackle an issue #2 in November.

**

I was at the World Science Fiction Convention in LA last weekend too. I have some notes on that in my journals.

Hartwell didn't like the trilogy title #2: *Subdimensional* as, he said, it's too long a word to fit on a title line! And so I started rethinking all the titles. Like, come on, Ru, how about a humanistic, engaging title like *Mathematicians in Love*. I even wonder if "Postsingular" is too cold. But that's so catchy. Now I'm thinking:

1. Postsingular.
2. Subdee, The Subdee War, Dream Wars, Dreamy, Subdreamer. Aw, I just want the Subdee war to be a chapter. Or not even that. Fuck the war. I don't want the subbies to be the main threat or opportunity in Volume 2. I want a broader canvas. Panpsychic. What it's like with everything alive. And bring in aliens. *After Everything Woke Up*.
3. The Stairway to Heaven, After Heaven, Heaven and Beyond. Transfinite levels.

August 28-30, 2006. Typing in Changes. Items To Do.

I finished rereading the whole book, and now I'm typing in the changes. I'll note here some suggested "to do" items.

- Does the flaw on Chu's cingulate cortex ever get fixed?
- * Be careful that Nektar's hair is changed from brunette to blonde throughout.
- Some early refs to climate problems; have the awakening of the world fix the climate problems, if not in this volume, then in the next.

- Have Jil dance for the world.
- * Mention some biochip computers being made in the tanks in the fab-wrecking scene.
- Mention Lureen Morales later in the book, maybe give her a walk-on. Probably she needs another mention or two in the middle.
- Use the word “illo” for bad.
- Mention Kittie’s pendant again, the woman holding a paintbrush and a meat cleaver.
- * Possibly show the moment when Jil backslides to sudocoke? Or at least pin down the day. I think it’s a week before Thuy’s jump.
- Show the painting that Kittie makes on the SUV.
- Have Azaroth mention about checking out cancerous nanomachines.
- Work on the sound of Sonic’s voice. Could be that he curses a lot, but that’s a bit dreary. Think of something else. I want him to sound like the Robert Williams character, Cootchy-Cooty.
- * Mention the twisty pillars and winding halls of Gladax’s mansion again.
- Maybe repeat the explanation of why Hibranners are ethereal on in the Lobrane, but we are solid in the Hibrane. It’s because the two branes are quantum out-of-phase, and when he hop we get rotated to match, but when they hop, they don’t get rotated. The difference is because we have more dark matter in our make-up than they do.
- After the dark dream, Jayjay mentions to the Pig that she could have been helping him remember his visions all along, and the Pig is, like, “I didn’t see any point in bothering.”

Aug 30, 2006. I’m so sick of revising the book. This is numbing, secretarial work. And I’m haunted, during this reread and revisions-entering, that maybe the book is no good. Too dorky and techy, not enough soul, too complicated for the hog-fat fans wanting only a trough of familiar swill.

Am I ever going to *write* again? I haven’t written a fresh word on *Postsingular* since July 30. It’s been a month. The more time goes by, the less likely it seems that I actually *can* write at all.

Tomorrow I probably won’t write either, I’ll be helping Rudy fix his house. Then comes the long Labor Day weekend. It might be another whole week till I really get to write. Well, maybe I’ll get something done on Friday, Sept 1.

Stepping outside of my feigned panic, I can see that this is a good state to be in. I well know that I need to be anxious and desperate before I can actually get my ass in gear to write. A whole month, Rudy, a whole month! You’ll never write again!

Wait till Friday...

September 1-4, 2006. Thinking About Subdee.

Yesterday, trying to describe Lazy Eight to Rudy the Younger while on a drive down jammed freeways to get four gallons of Substance D in San Leandro, he seemed not to get it at all, neither *why* lazy eight nor what it *is*.

“Maybe I’m writing a novel that nobody can understand,” I said.

No path but onward.

I'm coming back to that scene of Thuy facing Luty and the beetle in the subdimensional Egyptian temple.

I need to think out the subdimensional world a bit. I need it for this chapter, and probably I'll mention it again in later volumes.

Some initial questions: Where are the subdimensions? What is Luty doing there? Why to the subdimensional denizens seem to be helping him? What do those guys want?

But first some terminology. I'd like to call the world Subdee. Sub-D? Subdee is easier.

And I'll call the inhabitants—what? Subdees, subbers, subbies, subs? Well, you can't really call a locations citizens the same thing as the location, so I can't use subdees, I don't think.

"Subber" is like "bopper" and also echoes the N word, and it sets up a certain amount of sympathy for them, which is good, but it's also very close to slobber and snubber and supper and is perhaps confusing to read. Suppuration is in there, too, which is good.

"Subbie" is a little cutesy, but has a mocking edge to make up for it, at least to my ear, as it makes me think of "swilly," the derogatory word that some of my daughter's friends at Swarthmore used for members of [SWIL](#) (Swarthmore Warders of Imaginative Literature, founded 11 years after I graduated from Swarthmore, not that I would have been a member)—whom they regarded as being quite radically uncool. Also it makes me think of Cubby the Mouseketeer, ugh. I like the subbie spelling better than subby, that makes it more like hippie, and less cutesy.

"Sub" drags in the sub sandwich, the submarine, the SubGenius, and the substitute teacher.

I think I'll go with subbie for now. Subber has the connotation of doing something to be that kind of being, while subbie sounds more like being in a static condition.

I'll resist taking a fantasy/psychedelic route and calling them elves—as in DMT elves. Subelves. Delves. The Hibrainers already call us gnomes, yes, but I can relate to, from our point of view, Hibrainers being angels and subbers (subbies?) being elves.

Speaking of fantasy/SF, some myopic pinhead in the latest issue of *Locus* was reviewing the stories in the September *Asimov's*, where my "Postsingular" story appears, and he thought my story deviated (degenerated?) into fantasy. Like, *duh*, doesn't he understand that the aliens from a parallel brane will of course seem like angels, elves, gnomes? That's why those archetypes are in place.

Note that some string theorists think that "the physics within the Planck length is identical to the physics outside the Planck length", see my [Subdimensions](#) entry.

The Subdee zone lies below the Planck length. To get down there it's like trickling through cracks in the sidewalk of spacetime. I'll call the interface the Planck frontier.

Let's suppose that if you shrink to the Planck size level, it's easy to hop from one brane to the next. Perhaps because uncertainty is so great at this size scale. I'm visualizing the branes as being, like, soft swimming-pool flotation noodles that meet down at the low scale level.

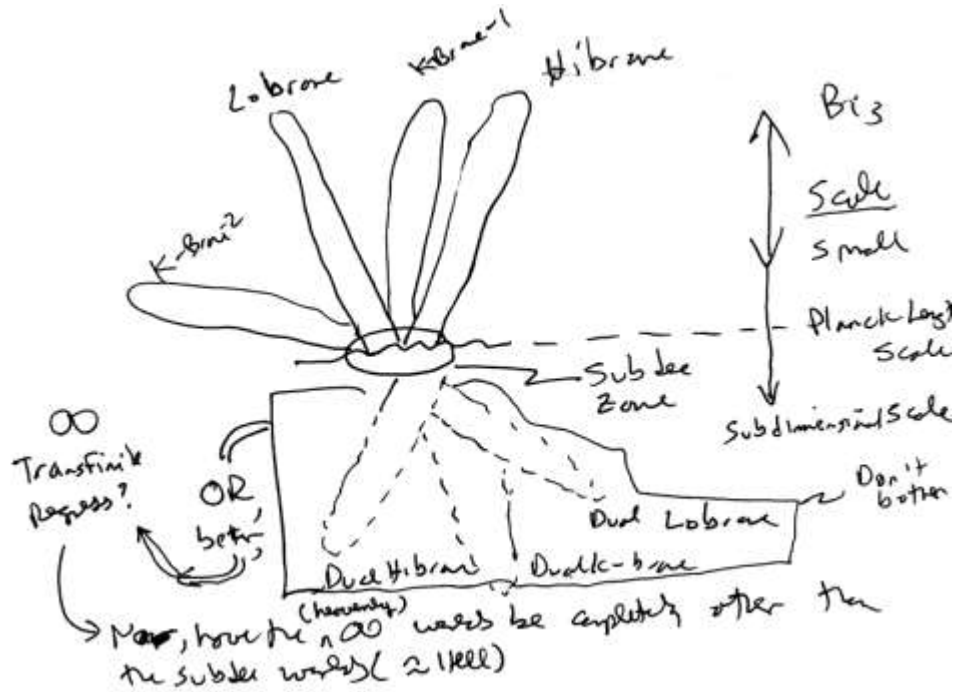


Figure 38: The Branes Meet at Subdee

When you teleport, what's really happening is that you are coming loose from your scale position, shrinking to just above the Planck length, using the uncertainty principle to spread out, and the re-expanding at the described locale. It's a bit like yunching from *Frek*, although it's the other way around—in *Frek* you get big, take a step and shrink; in the new order, you get small, fuzz out, and get big.

How is it that you shrink, by the way? In what sense? Well, suppose you become a single coherent dark matter particle, with all your particle wave functions overlaid. Maybe you're a Higgs (*weenk, oink, squeal*) particle.

Assuming this is so, when you teleport you are close to dropping through the Planck frontier and emerging into the subdimensional world. Luty ended up in Subdee because he entered a teleportation sender after the receiver was gone, so he fell into Subdee.

Why would the subbies (subbers?) be in league with Jeff Luty, at least within the "Egyptian" reality that Thuy visits? He's giving them something they want. So I need to figure out:

What do subbies want from humans?

Idea for Subbie Goals 1: Dreams

Suppose that Subdee is the land of dreams. That interests me, as I'm always wanting to write about dreams as external to us. I did that a little bit back in *White Light*, when they flew across Dreamland. And the "Planck Brane" in *Frek and the Elixir* is a kind of surrealistic dreamland, too. You might say that dreams are one of my recurrent themes. I still don't think I've gotten them right, and I feel it would be fun to go after them again.

So these creatures, these subbies, they're quite protean, and when a person probes faintly into their world (as when dreaming) or (rarely) drops bodily in (like

Luty and now Thuy), then the person's personality serves as something like a seed dropped into a supersaturated chemical solution, and the "Magic Rocks" of Subdee cloud castles grow out of the seed.

And suppose the subbies like growing these cloud castles. If, so then the ones clustered around Luty might simply be enjoying his dream. Like eager actors obeying a director. Or, more sinister, they've *eaten* Luty and are *a fortiori* equipped to broadcast his kinds of visions.

They like us for providing structure. Remember the line in my poem, *Bosch's Saint Anthony*: "But what sees me for real in / indifferent thicket?"

The subbies are like interviewers, using us for entertainment.

Maybe they want us to start doing dreams for them; they want to reverse the roles.

Speaking of dreams, in Volume 2, perhaps people are having alien dreams, that is, they're noticing they have alien dreams because it's now possible to record one's dreams. And thus we get into a thing with space aliens, with other races whose planets have woken up via unfurling the eighth dimension.

And maybe the dream connection has something to do with Subdee.



Figure 39: Subdee and Our World, Separated by Quantum Foam

Idea for Subbie Goals 2: Matter/Energy/Info

Subbies poke heads/tentacles/hands through the Planck frontier up into our zone and grab things. They're like scum living on the underside of the wall and they send through root hairs to suck energy or mass or information.

They like the idea of Earth's nantification because then our planet's information is all flattened out into quantum-level patterns, that is, into the brains of the nants. Rarely do they get a macroscopic information (like Luty's body) to chew on. Although they do get the tendrils from dreamers' minds. But I think better to leave out dreaming for now. I don't want to start too many hares a-runnin'.

Suppose they want to gorge on our world's high-level information.

I'll suppose they're not very technical, so their only hope is to flatten up out is via the existing nant plot, which they can further via their zombie version of Luty.

Normally they just do a little harmless low-level pilfering of mass/energy/information by probing across the Planck frontier.

Might the subbies at some point inflict killer dreams on us? Could that be a scene in the last chapter, the opening edge of the wedge of Luty's final attack? Probably too much of a complication. I want to get out pretty quick in the last chapter.

I remember when I was about 13 I read a horror book about a dream that you could have that would kill you. And the dream was spreading from person to person in a small town. For a few days or weeks, I was scared to dream.

Could it be that every time someone dies in their sleep of heart attack or stroke, they in fact had a special dream that offed them? Maybe there's two different dreams, the heart attack dream and the stroke dream. What would those dreams be like, in particular? When I asked my mother how her first stroke felt, all she could say was, "It felt horrible."

The killer dream reminds me of a dream-related disease which William Burroughs described under the name "Bang-Utot" in *Naked Lunch*.

Searching on the web, I found two amazing articles about imaginary diseases in Wikipedia. The first was [Penis Panic](#), which is akin to Bang-Utot. The second is [Fan Death](#), which I myself suffer from, in the sense that being closed up around electric motors makes me feel horrible. The Koreans think that if you sleep in a room with a running fan you'll die.

Compressors are even worse than fans, by the way. I hate how every little corner store or café has hulking coolers that fill the room with shuddering noise, the coolers being a "gift" from the bev distributors, who are in fact purveyors of fan death!

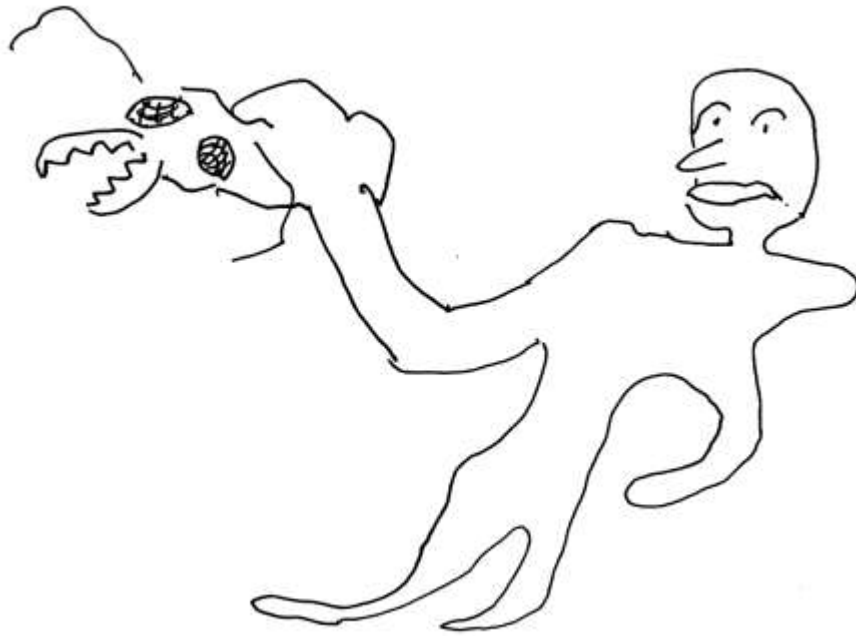


Figure 40: Luty and the Subbie Scarab Beetle

That beetle that's about to bite Thuy, what's up with that?

Suppose the beetle is an individual subbie that ate Luty. Actually the beetle is holding Luty, rather than Luty holding the beetle. The Luty-thing's arm flows out of the beetle's underside.

And the other subbies on the scene, the bird-men and jackal-women? They're separate beings, they're pals of the beetle.

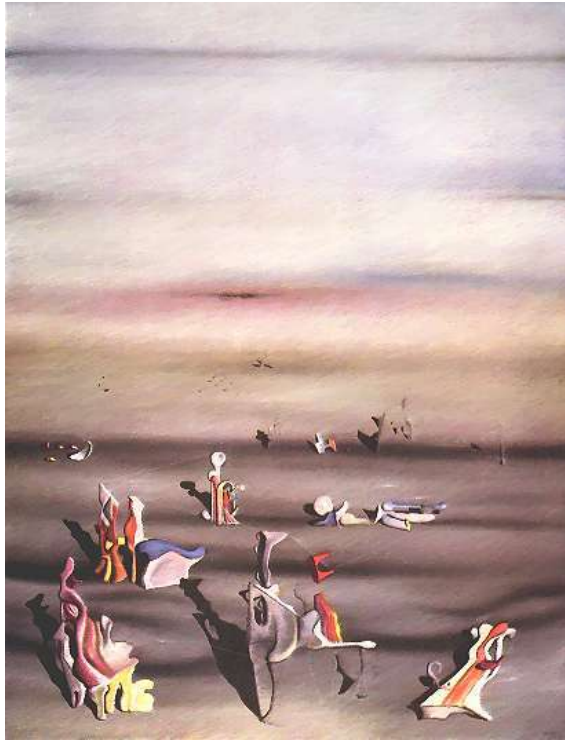


Figure 41: Early Yves Tanguy: “The Furniture of Time,” 1939

The whole scene is a dreamy illusion that they’re feeding Thuy. After she strums the harp the illusion peels away. She sees the real world of the subbies. It’s dusty, dull, stark, beige, parched, rusted-out, whipped-to-shit. Like Tonopah, Nevada. The end of a long decline. I see it resembling a [Tanguy painting](#) (I snarfed these two images from this site).



Figure 42: Late Yves Tanguy: “Multiplication of the Arcs,” 1956

Back in the late 50s and early 60s, it seemed like half the SF books I saw had ersatz Tanguy covers.



Figure 43: Lithops, or Living Stones

Another analogy to what the subbies “really” look like is these plants I saw in the U. C. Berkeley botanical garden: [lithops](#), a.k.a. “living stones.” They’re a relative of the ice plant.

Perhaps the subbies tries to eat or stun Thuy with a fan death approach while they’re in the temple. A horrible buzz. A locust chirp, the beetle is stridulating. And she strikes the harp to drown out the noise.

I’d like to break up the action with a fight between two of the subbies, perhaps over whether to start eating Thuy right away or to let her play the harp first.

Sept 3, 2006. I managed to write a couple of hundred words on the novel yesterday. First I had to clean off my desk, which involved selling my Acura and replacing my expired cell phone. Lots of yoga in the back yard, pondering Subdee. Napping in the hammock for inspiration. Working on these notes. It takes all these various steps to get the spring water seeping forth again.

I have one bit I love:

That beetle at the end of Luty’s arm—it was actually part of him. His forearm blended right into the creature’s abdomen. “Gthx,” said the beetle, growing a bit larger, with Luty’s volume decreasing by an equivalent amount. “Glkt grx.”

If I have this, then Luty is at this point a hallucinatory image projected by the beetle, who’s also projecting the image of the Egyptian temple? So Luty is already dead.

I kind of like that, but I also would need for the subbie-controlled Luty-thing to come back to Earth for a last-gasp attempt to spread the nants. Perhaps it follows in Thuy’s wake, which would be good. You drag an evil spirit back to Earth with you from your vision-quest.

Now, if the Luty-thing is a projection of the subbie beetle, then the last-ditch nant attack is in fact instigated by the subbies, because they like the idea of Earth being flattened down to nanoscale, so that everything is closer to the Planck frontier.

They'd like this as their shallow cactus-like foam-piercing root-stalks (which looked like ibis heads on long necks) can get more info.

This scenario means that the subbies aren't really very friendly to us, and might well threaten us again. It's not so much that they're actively hostile, as that they don't much care about our well-being. We're like dirt they grow on.

This said, given that Earth's air can now eat the nants, the nants aren't really an issue anymore, so I can at least lay the nants to rest. And it's actually good to leave open the possibility of the subbies causing trouble again. That could in fact be an issue in Volume 2, perhaps some aliens enlist us to help against some other kind of Subdee threat.

I'm supposing that jumping branes involves shrinking to Planck scale size. When you cross, you are skimming across the Planck-foam sea. The Planck frontier. And for the sake of Occam's Razor, it seems like I might as well suppose that ordinary teleportation works this way too. I think that means I have to retweak all my teleportation scenes.

Up until now, I've been saying:

teleportation = remote_viewing + quantum_fuzz_out + quantum_collapse.

Having an orphidnet vision of a remote location made it possible to teleport there. I want to keep remote viewing as a prerequisite for intrabrane teleportation. But I want to put in the shrinking thing, at least for interbrane jumps. That suggests that I want to have the perhaps too baroque recipe:

teleportation = remote_viewing + (shrink_to_particle_size + quantum_fuzz_out) + (quantum_collapse + expand_to_normal_size).

Suppose I simplify this by grouping as indicated by the parentheses above.

teleportation = remote_viewing + coherence + decoherence.

I suppose here that coherence means folding yourself up into a really intricate quantum state that is in fact no bigger than a particle. And that decoherence entails both the collapse to a new location and the blooming into a full-sized person again.

September 6, 2006. Parts. Root Hair Telepathy. Jayjay Strums.

I decided to refer to my chapters as "parts," because they're so long and there's only four of them, and each part is in fact broken up into a number of pieces by my *** separators. And I won't have any sections that are called chapters. The parts-and-no-chapters convention is used in, ahem, *Gravity's Rainbow*.

I already have two styles of telepathy: (a) the orphid-mediated electronic wireless-style telepathy of the postsingular Lobrane, (b) the Lazy Eight telepathy of the Hibrane, which is produced by an unrolled eighth dimension which projects out from every location in space and leads from each location to a single, accessible point at infinity. For Subdee, I'll use a third style of telepathy, (c) root hair telepathy, in which the plant-like subbies send fine roots into each others' bodies and into the brains of any unfortunate human visitors.

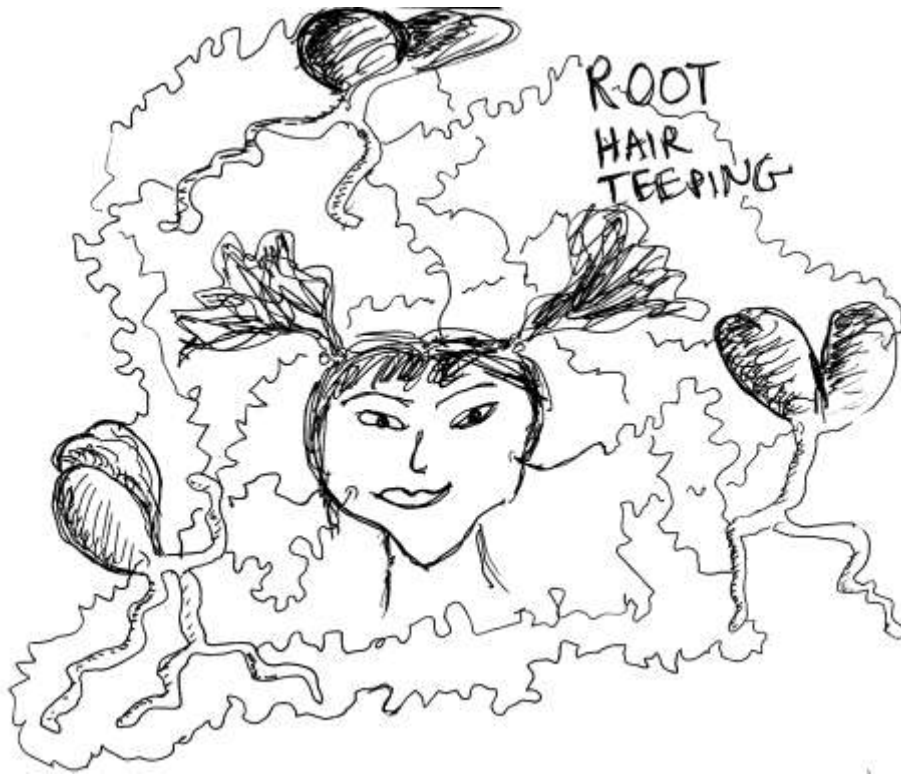


Figure 44: Root Hair Telepathy

I also used root hair telepathy in *Frek*, when they're in the ship of the alien echinoderms who call themselves (with taxonomic incorrectness but Lovecraftian apropos) Radiolarians, and the aliens plug a vine-like nerve cord into the spine of each passenger.

Root hair telepathy is, I now realize, a metaphor for old-style land-line wire-based communication networks. Just as orphidnet telepathy is clearly an analogue of wireless.

Once Thuy destroys the encroaching root hairs with a zong of her magic harp, she realizes that the subbies aren't Thoth-like Egyptian figures, no, they're lithops plants. And she fights her way free.



Figure 45: Thuy Kicking Subbie Lithops Butt

Should I suggest that maybe the view of Subdee as lithops in a desert is an illusion, too? Naw. That would be too ‘knowing,’ of me, in a bogus laying-my-finger-along-my-nose kind of way.

Might I design custom separators for *Postsingular* like for *Mathematicians in Love*? A different icon for each chapter! Repeat each in a row of three.

1. Ant
2. My pig face logo
3. A pair of lips
4. The lazy eight infinity sign

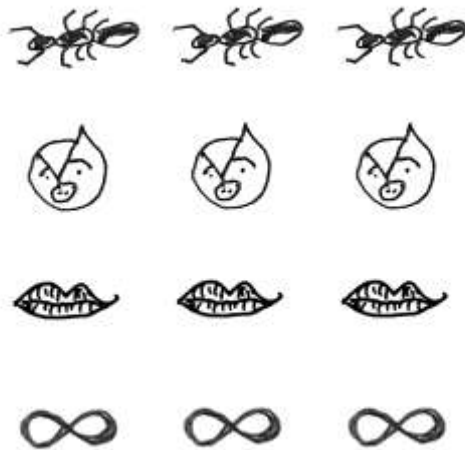


Figure 46: Separators

September 7, 2006. Issues for Volume Two

Maybe I'm getting a little ahead of myself, but I'm gonna start a list of issues I'll have to deal with in Volume 2.

- Note how easily Jayjay can steal weapons and even an atomic bomb by teleporting. So what happens once everyone can teleport? Do terrorists get bombs? Perhaps I forestall this by having Gaia unilaterally destroy all WMDs.

September 8, 2006. Harp.

I'm doing some scenes involving the Lost Chord on the harp. I did a bit of web research and found some sites with harp music, like this one for a Russian kid named [Sasha](#).



Figure 47: Sasha Playing the Harp

I like his face; that could be Jayjay.

The online sounds of harp music—it has this long reverberation time, the notes layer on each other like sheets of water on the beach after a wave breaks.

Quote from a harp site by [Patricia Wooster](#):

Harp players and composers have discovered that the harpist can produce a variety of interesting sounds and sound effects. The normal, rich tones of the harp are produced when the harpist plucks each string at or near its midpoint. Volume is determined entirely by the “touch” of the harpist. Soft plucking produces soft sounds, and strong plucking produces loud ones. The duration of the note played can vary: I can let it ring until it dies out naturally, or I can stop the sound by touching the string gently with the palm of my hand.

I can produce a ‘brassy’ sound by using my fingernails on the strings near the sounding board (called “près de la table”).

I can make harmonics by “stopping” the string at its midpoint and plucking the string just above that point, producing a note an octave higher than normal, with a clear, bell-like tone.

I can rub my fingers or fingernails (or even my tuning key) up and down along one of the bass wire-wrapped strings to produce a whistling or “zip” sound.

I can vibrate the tuning key rapidly between two of the bass strings to obtain a unique percussion effect.

I can even tap on the sounding board with my fingertips to produce a tom-tom-like effect.

Jazz harpists, in particular, achieve “slide” effects by carefully moving the pedals while a string is still vibrating from a note just played.

All this research is, in part, a way of stalling. I have to write my [octuple reverse](#) climax now.

September 11-12, 2006. First Draft Done.

Sept 11, 2006. I finished it today. 84,720 words. Another frikkin’ masterpiece. Oddly enough, the Word Count table indicates that I started actually writing on September 12, 2005. So it took me precisely a year to write, down to the very day.

Sept 12, 2006. Of course I wasn’t happy with the last three pages, felt uneasy all night with that slight flaw chafing at me. So this morning I rewrote them five or six or eight times and now the book’s nice and shiny from stem to stern. Ready to launch. So writing the book took me *a year and a day*, like in a fairy tale.

Done so soon? I miss it already.

Two themes of the book:

How to get rid of machines. How to escape the digital age, and still get to keep the info goodies.

How to make art. The whole deal of Jayjay trying to play the Lost Chord is an objective correlative for trying to write the perfect scene; the Lost Chord represents trying to write about the Lost Chord. Finally you just go play it. And of course Thuy's metanovel was all about that.

Cracks me up that I had Thuy sarcastically call her metanovel *Wheenk*, as "wheenk" is my private word for a certain kind of popular book that I'm kind of unable to write---I'm thinking of a book like, say, *Girl With Pearl Earring* or *House of Sand and Fog* where on every page the main character (often a woman) is mentally going over her longings, her hopes, and her fears; it's an unceasing chorus of "wheenk, wheenk, wheenk," as if from a rabbit whose foot is caught in the jaws of a trap, the trap being, dear reader, the pain and wonder of life itself. But, I submit, one can convey that without resorting to the tedious expedient of wheenk. I prefer to make each page a fresh adventure.

The [eight twists](#) at the end went off nice and smooth. Like driving 60 mph up a hairpin road. And then—*zonggg*—the vista! It's fitting—*aha*—that I end the "Lazy Eight" part with eight twists. And I didn't even plan that. The muse did it for me.

Sent it as an email attachment to David Hartwell at Tor; document received. Now to see what he thinks of it. If he's stoked, I may dig into a sequel, with current working title *After Everything Woke Up*.

October 11-16, 2006. Revising to Fit Hartwell's Suggestions.

On Oct 11, I got Dave Hartwell's suggestions about the book. Then he was out of town for a few days, then on the 16th I phoned him to get more details. Here's an edited copy of his email with amplifications that I typed in while I was on the phone with him. After my edits, these aren't absolutely his precise words, but I'll put them in quotes anyway. I'll bullet the action items and mark them with asterisks as I pick them off.

"I've read and thought about the draft. Basically, a fine book. Some work is still needed, I think, on character and structure. Jayjay and Thuy are great characters, I like them.

- * "Gladax doesn't make enough sense as a character. She's a big tough alien, but she's almost as flat as Dick Too Dibbs. She's both a super-powered being and an elderly busybody who is interested in, like, cleaning the streets. You need to merge the two aspects. Maybe she doesn't need to be doing so many different things at the start. The big alien Hibrans are pretty sympathetic, they're not such "alienated" aliens as they could be. But they need consistent characters. Azaroth is okay, pleasant and loopy. But Gladax needs to be rounded out.
- * "The seeming change in Dick Too's character is good—we don't need another hundred-percent evil President after *Mathematicians in Love*. He's flat in the ads earlier on, then he pops out and becomes interesting in Sonic's video. We need some more touches to underpin

or prefigure the change. Like maybe he says something off-message in one of the ads.

- * “You might make Jose a shade more sympathetic to justify Nektar having an affair with him.
- * “Jil is a problem, because she just seems selfish and nuts, and not in a very interesting way. One has no sympathy for her. She could be sympathetic even though she’s a drug addict who relapses. You present drugs as not being good, so we need to make Jil’s relapse painful for her, and we need to have her really kick the habit to become good again. If people have affairs they have to be both relatively equally rounded — I’m thinking of the fact that Jil and Ond are together at the book’s end. Ond is fairly well-rounded and likable, but Jil isn’t. For their union to be a happy state of affairs, Jil has to be better. Living with her has to be a pleasant prospect, a reward for Ond and, conversely, living with Ond has to be presented as a win for Jil. You need to build up their romance.
- * “Craigor starts out interesting but gets less so. Maybe he could be doing more with his locative art later in the book? Or it could be that he is somehow going downhill. But then why exactly? Maybe middle-aged panic? Or obsession with his art? We want to present Craigor’s downhill slide into infidelity as the trigger for Jil to slip back to drugs. We have to see her building up grief over Craigor’s affairs.
- “The Luty character is too thin, sort of arbitrarily nuts and brilliant and morally vacant—a kitchen sink of bad qualities. You probably need to have him onstage in Part One to establish him as insane in a particular way or spectrum of ways. Then late in the book he’d make more sense as a baddie. His motivations are all set before the book starts, and that’s the problem. Nothing in the book changes him at all. He’s a fanatic from page one. In reality, he wouldn’t have that much power if he was that nuts. Think of Howard Hughes. He started out as a romantic aviator-producer-inventor, he didn’t start out locked in a dark room wearing Kleenex boxes on his feet. Luty needs some positive spin at the start. And then he loses his way. What makes him so nuts? Maybe something about the initial failed nant attempt puts him over the edge. And why is it that he loathes loathe the human body so much? Suppose he joined the Transhuman movement at an early age. Why?
- “Part Three, ‘Thuy’s Metanovel,’ seems too long to me, or perhaps the pacing is off. I’d like to see it condensed a bit. It seems to take too long. Speed it up. Or perhaps just fatten the other parts of the book to match its size. Be sure to put most of the additional character-building into Parts One, Two and Four rather than into Part Three. (Easier said than done.) Regarding Part Three, maybe there’s too much of couples getting together and breaking up in this part. If you want to do the soap opera thing, be sure that the reader is rooting for what happens. There has to be a feeling of frustration when the lovers are separated, and satisfaction when they’re back together. Or, if the wrong couple is hooking up, a desire to yell, ‘Don’t do that!’

“I’m not much bothered by the open ending, since we anticipate another book.

“I really like Thuy and Jayjay, so keep them as main characters in a second book. But a secondary romance between Chu and Bixie could be interesting too.

“I need the changes by the very latest by December 10, 2006.”

Okay, I get it.

Basically what I have to do is round the secondary characters. The spear-carriers. When I’m writing the first draft, I focus on the primary characters, but often the secondary characters are just doing what’s necessary to move the story along. So maybe in Part I Craigor is a jokey artist, and in Part IV he’s a brainless Lothario. So now I need to make him consistent and explain why he changed. The explanations don’t even have to be that consistent, but you need a fig leaf to cover the behavioral forking.

October 17-19, 2006 The Fixes For Hartwell.

I fixed Gladax and Dick Too in a day, then spent a day working on Jil, and then a whole day doing Craigor and re-doing Jil, building up the details of their relationship and its breakup. I really reached into my emotional core for the difficult marriage stuff, it felt good to be writing it out.

Now all I have left to fix is Jeff Luty.

Before tackling Luty, I did something about Dave’s remark that Part 3 is too long. This had me very uneasy. Part 3 got even longer as I revised, hell today it was up to 29K words. Do I print the whole book and do a read-through to see what I can cross out? I don’t want to feel like I *have* to condense, though. I mean, sure, drop weak and slow stuff, and tighten up where I can, but don’t be ruthlessly pruning out *good stuff* just because of some word count number.

So how about this alternate plan: I move a bunch of Part 3 into Part 4, and this way Hartwell is gonna say, I hope, “Ah that part is shorter now.” To some extent this isn’t totally about improving the book, it’s also about slipping it past the editor and getting the thing in print. [This turned out not be a workable idea, and I moved the stuff back to Part 3.]

So I got out my copy-paste chainsaw.

Part 3 “Thuy’s Metanovel” now ends right after Jayjay and Thuy go back to the *Merz Boat*, and right before they attack ExaExa. The part now ends on a sad note, right after you realize Craigor and Jil won’t get back together. I’m slightly bummed that Thuy doesn’t actually *finish* her metanovel by the end of the chapter called “Thuy’s Metanovel,” as she did before, but oh well.

Part 4 “The Hibrane” has the attack on ExaExa, and Thuy finishing *Wheenk*, and then her trip to the Hibrane and her adventures there, and her trip back with the detour to Subdee, with a brief irruption of Jayjay’s 60-year dream. All along I half-wanted to call this part “The Hibrane” anyway so that’s good.

Part 5 “Lazy Eight,” is where Jayjay figures out how to strum the harp, and we have the eight reverses. Since I already had about 20,000 words for Part 4, I broke off the closing section for a short Part 5.

I think this works, although the break between Part 3 and Part 4 is a little artificial, in that we have the same characters and P. O. V. and time at the end of 3 and the start of 4. But in 4, they then go do something different, that is, the battle of

ExaExa, so I guess it's okay. Here's a table showing how the [five-part word count](#) shakes out.

I could of course take a hammer to the book and shatter it into a dozen or more shortish chapters. But let's leave well enough alone.

Or...?

Never mind about that for now, what about Luty? Scanning through, I see that he really is as Dave flagged him. A kitchen sink of bad qualities, too grotesque to be believable.

I might need to lead off the book with a section on him. I don't exactly like doing that, as I like the current lead with Nektar and Chu. But, really, the book is more Luty's story than Chu's and Nektar's. I mean, it would be nice to start by, like, motivating the nants. To *me*, they're a familiar notion because I read *Accelerando*, but not everyone else has.

What app did Luty have in mind for the nants anyway? Was there ever a legit app? Hopes for medical app maybe?

And why is Luty so anti-body? I could trot out the childhood abuse warhorse so beloved by hack writers, but I hate that stuff, so smarmy and semi-pornographic. Better might be that Luty saw his parents die, and he got this very intense fear of death. Maybe he accidentally killed one of his friends with a model rocket. That would be good.

Okay, I wrote a nice Luty mini-chapter for an opener. Now I'll print out the book as it currently is and reread it.

Roughen surface with steel wool and reapply fresh coat of varnish.

October 30 - Nov 5, 2006. Frantic Revising. Chapter Breaks..

I was away from the book for a week (for daughter Isabel's wedding in Wyoming), and on the flight home I started rereading.

Part I felt like it was taking too long. A reader feels trapped if s/he doesn't get a break reasonably often. The book feels like a big soft pillow you're hitting and hitting and it never changes. I need more breaks. A "****" break isn't enough of a breather.

Although for my own purposes I'd thought of the book in terms of four parts—later briefly splitting it into five parts—there's no reason I can't subdivide into chapters. One of the reasons I'd wanted to go the route of having big parts was, I now recall, that I wanted to shove "Chu and the Nants" and the "Postsingular" story into one block so that Dave Hartwell wouldn't complain that I had too many chapters about secondary characters at the start of the book. But that hurdle is over now; he's not likely to raise that objection again, not after all the buffing and prefiguring I've done to smooth the flow.

So, alright, this morning I awoke at about 5:30 AM (thanks to jetlag and the return to standard time), and lay in bed for an hour or two, going over the book in my head, thinking about how best to break the parts into chapters, and forget about that silly fix I had last week with 5 parts. Carving it up in my head was an unwieldy task, just at the limits of my mental abilities. I felt like a man butchering an elephant.

And I had to put some thought into the chapter titles as well; finally it got light and I brought the manuscript down to bed to look at the print so I could be sure to pick out a salient title concept for each chapter.

Here's the breakdown I came up with:

Part 1

- Chapter 1: Ignition
- Chapter 2: Chu and the Nants
- Chapter 3: Orphid Night

Part 2

- Chapter 4: The Big Pig Posse
- Chapter 5: The Grill in the Wall

Part 3

- Chapter 6: Thuy's Metanovel
- Chapter 7: The Attack Shoons
- Chapter 8: The Ark of the Nants

Part 4

- Chapter 9: The Hibrane
- Chapter 10: Lazy Eight

The chapters per part has a nice rhythm, 3-2-3-2. And I'm glad to be back to four parts instead of the false split into five parts that I'd done to siphon off material from Part III. With Part III broken into three chapters, I don't think it'll lag.

So now, compulsive fiddler that I am, I'm gonna change my [outline](#) to match the new breaks, also I'll insert a final [word-count table](#) that takes the chapter breaks into account.

Later in the day I decided to split Chapter 3 in two as it was the longest in the book. And now the names of chaps 2 through 4 go as follows: (2) Nant Day, (3) Orphid Night, and (4) Chu's Knot.

I don't like the 4-2-3-2 chapters per part rhythm as much, but oh well. I could call Chapter 1 a prologue, but that would make it seem more important than it is. Anyway, like Hartwell remarked, people are tempted to skip reading prologues. It's only a couple of pages long.

The next day, I saw how to split up some more chapters, dividing the overlong Orphid Night in two, and separating out the little Nektar's section in Part II. A 4-3-3-2 rhythm now, which seems okay.

I have the length in 1.5-line-spaced pages beside each chapter in the listing below, just to gauge the relative lengths.

Part I

Chapter 1: Ignition	5
Chapter 2: Nant Day	14
Chapter 3: Orphid Night	22
Chapter 4: Chu's Knot	22

Part II

Chapter 5: The Big Pig Posse	22
Chapter 6: Nektar's Beetles	10
Chapter 7: The Grill in the Wall	19

Part III

Chapter 8: Thuy's Metanovel	20
Chapter 9: The Attack Shoons	26
Chapter 10: The Ark of the Nants	29

Part IV

Chapter 11: The Hibrane	25
Chapter 12: Lazy Eight	24

Meanwhile I'm frantically rereading day after day. I have a cold, so my energy is down, and I want to mail the revised version to Hartwell before I go to New Zealand for three weeks on November 8.

Sometimes a manuscript feels like a giant nightmare pillow, and I hit it and hit it and hit it, and I'm red-faced and crying and hitting it, and it just bobs and nods, never getting smaller, never lying down. Too much work, not enough time.

Another disturbing thing is how incredibly many revisions I keep finding to make. I just did a read-through and revise on parts I-III in [late August](#). Is the text ever going to settle down? What if every time I read it, I find just as many things to fix? Image of a guy sanding a hole right through the table he's trying to refinish.

As of Friday, November 3, I'm done with Part III, and 0.8 of the way done, so really I can calm down. I've broken the thing's back. I'll make it yet. I can probably polish it off tomorrow.

This has been an odd kind of a book, not nearly so easy to write as *Mathematicians in Love*. First of all, I started writing *Postsingular* without knowing I was starting a novel, I just had the "Chu and the Nants" story. But that world drew me in.

And it's also weird that I wrote the last three parts in big chunks and only divided them into chapters this month. Why didn't I just go ahead and do chapters all along like I usually do? I wanted a long breath, I think, and I wanted to delve keep into my characters' heads.

Nov 4, 2006. Okay, Christ, I'm finally done. I'm so sick of working on it. I don't know if this one is really any good. Whatever. It's over. The usual cognitive dissonance between my golden dreams and what I can actually achieve. Oh, mail it the fuck in and move on. It's not like Tor's paying me enough to spend the rest of my life on this. Maybe it's fine, maybe it's very good. I'd feel more upbeat if I wasn't working against a time deadline while I have a cold.

Nov 5, 2006. Rereading the ending, I think the book is good after all. The thing that was bumming me out in the final revision yesterday was that the sixty-years-in-six-pages description of Jayjay's dream seemed a little dull and slow. So now I'm revising that.

A few weeks ago I had a nightmare about revising. I keep having to go out of the sunshine into this dark basement like place with broken things and the cement floor and dripping water and I'm trying over and over to arrange some set of latches so everything is tight, unlock all these latches and reach inside a box and adjust something, and then lock it back up in the correct order, I'm using keys from my keychain, I drop the keychain on the ground, the loop opens and keys fall off...

Okay, I did three more revisions in a row of that one part about the sixty years and now, by God, I'm emailing off.

Another masterpiece, as I like to say.

Dec 17, 2006. Revisions Okay

Dave Hartwell finished reading my November 6 revision of *Postsingular*, and he says it's finished now, although Ond and Chu don't pop back into focus at the end. I could pump that up a little, maybe. Or just leave it for my planned sequel, *PS2*. He's paying the advance and putting the book into the production pipeline.

One thing I just thought of: I want to change the "neighbors" line at the end of *Postsingular*, and say a bit more about the harp. I need to phone Dave and ask if it's okay if just do that in the copy-edit stage. Maybe in January when things settle back down.

January 14-18, 2007. Revising the Last Two Chaps A Second Time.

I have to go over the ending of *Postsingular* again, to make it match what I'm starting to plan for my sequel. Hartwell somewhat grudgingly said I could do a rerevise if I hurried. Maybe I should revise the whole damn book again? Well, I'll work my way backwards, from last-written towards first-written, as the earlier stuff already has so many revisions it's quite smooth, and it would be overkill to dip back into that.

I started reading Part IV today and I'm finding so many things to fix. So many ways to tighten it. After all those revisions of the novelette "Hormiga Canyon" with Bruce in the last few months I've gotten hypersensitive to flabby spots—I learned a lot from seeing Bruce cut my flab, and from me cutting his. WWBD. What Would Bruce Do?

I feel sick at all the mistakes I'm finding and anxious about *Postsingular*.

Postsingular really needs to do well, otherwise *PS2* is just gonna be hanging out there twisting in the wind, and I'll have two bombs in a row, and Tor will cut me off. It's a bit of a risk to be starting #2 of a series before #1 has come out.

Revision = Worry.

With the proposal for *PS2* in hand, here's a list of changes to put into *Postsingular*:

- * Rework the last line of *Postsingular*, which presently says, "The neighbors were coming to visit." Because people wouldn't know this yet.

- * Thuy needs to closely examine the harp's design, with a scene painted on it resembling Bosch's *The Haywain*: Revelers with a little demon. *And the little demon looks like Jayjay!*

- * The subbies gnaw or scratch off most of the painting, and when Azaroth sees this, he exclaims, "Aunt Gladax will be furious. I hope I can get this fixed!" This sets him up for giving the harp to Bosch to work on.

- * Azaroth has heard rumors of a plan to tilt the two branes relative to each other, but it hasn't happened yet when he appears at the end of *Postsingular*. Presumably the tilt happens while he's in the Lobrane, though, and that's why when he jumps back goes to the 15th Century.

* Thuy and then Jayjay need to sense that the harp is conscious, though it doesn't actually talk to them yet, or at least not much. When Jayjay finally figures out the Lost Chord, it's because the harp *teaches* it to him. (And then in *PS2*, he teaches the Lost Chord to the harp, completing a causal loop.)

* Make it clear that we keep the beezies as *genii loci*. And that the Big Pig becomes part of Gaia.

January 18, 2007.

Okay so I revised all of the last two chapters once, then revised the last half of the final chapter three more times. I kept on seeing big things to change in there, it was scary. I'm ready to stop though. I think it's finally converged. If there's more fixes, I can always catch them during copy-edits and page-proofs.

Re. all those consistency changes I had to put in, I was thinking, it's like I'm installing a female plug into the ass-end of *Postsingular* so that a male plug from the front end of *PS2* can daisy-chain in!

In any case, now I'm done and I'm ready to move on to *PS2*.

I mailed off a final revised version.

January 19, 2007.

And of course the next day I wanted to revise the last three pages once again. Why was I in such a pig-blind rush to send it off!

But I'm ashamed to bother my editors anymore right now. Well, I can re-edit those final pages in copy-edits.

February 23-March 1, 2007. Copy Edits.

I got the copy-edited version of the book last week, and first I finished reviewing Chaps 1 - 10.

I had to send Chaps 11 and 12 back unread because they copy-edited the wrong (the November not the January) revision of those chaps. This is sort of my fault for sending in so many "final" versions.

I swear, next time I finish a novel, I'm just going to let it sit around the house for a couple of months and do a full revise before I mail it in.

The preferred-final-version chaps 11 and 12 did finally show up a week late, properly copy-edited, and I went over them.

I needed to set the stage for the fact in the sequel, we find that the Hibranners bent the Loblane worldline. That's why Azaroth and eventually Jayjay will end up in Hieronymus Bosch's time when they jump from Lo to Hi. But I barely mention this, not to undercut the drama of Lazy Eight unfurling on the Loblane.

A more complicated fix involved teleportation. In the middle *Postsingular* draft, Jayjay invents a way for people to teleport using the orphidnet. He makes a big deal about discovering the teleportation gimmick: he's using high-level physics, he's jamming with the Big Pig, Azaroth is helping him remember the sessions.

But later in *Postsingular*, when Thuy is in the Hibrane she teleports easily, and in all of my planned sequel P2 (after Lazy Eight hits Loblane Earth), I have just about any human able to teleport.

How to reconcile this? Why is teleportation hard to discover but then really easy later on?

Aha. We'll suppose that teleportation is much easier when you have Lazy Eight because you have so much better information about your target. After all the orphids are only spaced one every millimeter, and lazy eight omnividence is analog. Teleporting is hard only when you're doing it via the orphidnet. Jayjay's discovery involves a way of doing teleportation even when you only have a somewhat gappy and inaccurate orphidnet image of your target. So I made some changes on that, see the "[Metamorpher Teleportation Method](#)" material I altered.

Fine. But maybe I need to explain why the Hibranners can teleport in the Lobrane all along. Oh, hell, maybe because they're so *used* to teleporting. Half the battle in teleporting is believing that it's *possible*. Just have a brief aside on this.

Where do I have instances of the Hibranners teleporting while on the Lobrane? Often it's more that they simply appear here from the Hibrane where they want to be. Well, I guess Gladax hops around the Lobrane a bit on Orphid Night.

And in the pre-orphidnet days, it seems like they wouldn't have been able to teleport at all—unless we suppose that they bring Lazy Eight with them, but I'm not gonna believe that, I'm gonna suppose that Lazy Eight is a condition of the brane area you are in rather than being an intrinsic property of your component particles.

To cut back on Hibranner teleportation on the Lobrane, I got rid of any suggestion that they use quick darting hops to catch the cuttles, I just have them stealing cuttles from fishermen and wholesalers now.

I do have Azaroth remark that teleportation is easier in the Hibrane, but didn't find a spot to slip in a remark about how it is he and Gladax were teleporting around on Earth after Orphid Night.

I think I'll just let this go until the page proofs, maybe I can find a spot then.

Rereading, the first few chapters seemed a little choppy, but oh well. At least the choppiness is just a result of what's happening, not a result of how it's written. I revised these first chaps so many times that they're smooth.

In the middle part about Thuy, I dialed down the wheenk, I'd cranked it up to high in relation to Jil regretting her relapse. I was saying some things twice. I think it's faster now.

The final chapters seemed rough both in the sense of too much happening, and in the fixable sense of not being polished enough. . But mainly I went over Chap 11 twice, and I went over Chap 12 three times, and I went over the very last few pages four or five times. I think now it's about as good as it's gonna get.

I suppose I could go over Chaps 9 and 10 one more time...but I just don't have the energy for that. Enough. This has been a long enough haul—almost 150,000 words of freakin' notes!

I'm putting the copy-edited and revised manuscript in the mail. And, hey, if I *still* didn't revise enough, I'll get another shot in the page-proofs.

I'm feeling good about the book now. In it's own way, despite all my worries and struggles, *Postsingular* is yet another masterpiece. And, who knows, maybe this one will be the big hit. Another lottery ticket in the fiction sweepstakes.

In any case, I'm itching to dig into the sequel, which I'm planning to call *Hylozoic*.

Onward.

April 19, 2007. Page Proofs

I was on the road, and when I got home I found the page proofs for *Postsingular*. I read through them pretty fast, it took maybe three days. The beginning seemed rougher than the end. The “Orphid Night” chapter in particular is a little choppy and has a bit too much repetition. Oh well. It’s really flying at the end.

I put in a prefiguring mention of Hieronymus Bosch and described the harp painting to look a bit like *Garden of Earthly Delights*, if not the center panel, then the left “Eden” wing.

Mailed them off today. Now I’m really done. A long haul.

April 26, 2007. The cover

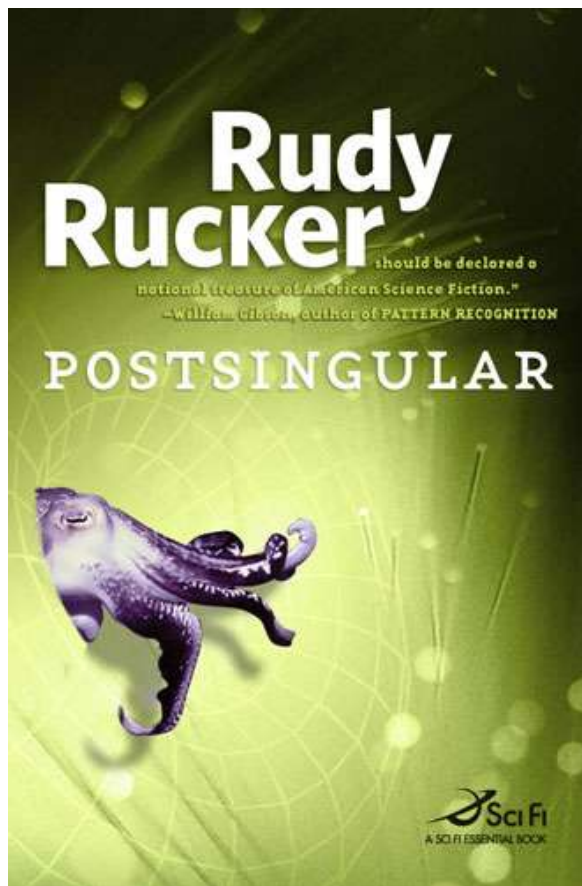


Figure 48: Cover of *Postsingular*

While I was poking around on the web to see how *Flurb* is doing, I Googled my story title “Postsingular Outtakes,” and ended up at Amazon where, lo and behold, they already have a cover up for [Postsingular](#). Great cover. A green hole in space with a purple cuttlefish emerging from it. And they’re using a great blurb Bill Gibson wrote for me, where he says that I “should be declared a national treasure of American science fiction.” Yeah, baby.