

# Notes for REALWARE

by Rudy Rucker

These Notes were begun on December 23, 1996  
The first attempt at writing REALWARE began January 1, 1997.  
REALWARE was set aside for SAUCER WISDOM 2/23/97 – 9/15/97.  
The attempt at writing REALWARE resumed on September 17, 1997.  
Practically everything was eliminated and the **real** writing of REALWARE began about January 1, 1998.

Finished final draft on August 22, 1998, at 101,000 words.

Finished final revisions on November 24, 1998 at 105,351 words.

The last Notes printout was made April 29, 1998

Current Notes word count: 44,906.

Posted November 25, 2005.

Notes are 48,000 Words

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## ***Current Issues***

All taken care of as of November 24, 1998

## ***Final Outline***

### ***Short Outline of REALWARE***

#### **Chapter 1: Phil**

- 1.1) 2/11. Powerball swallows Kurt.
- 1.2) 2/15. Kurt's Funeral, Phil meets Yoke.
- 1.3) 2/20. Yoke and Phil in SF, meet Thutmosis, Kevvie on merge.
- 1.4) 2/21. Phil gets Kurt's ring from the oak tree.

#### **Chapter 2: Yoke**

- 2.1) 2/21. Yoke goes to Tonga with Onar, Shimmer kills Tolou.
- 2.2) 2/21. Yoke dines with King, finds out about aliens, sleeps with Onar.
- 2.3) 2/22. Yoke and Cobb take boat, then dive down six miles.
- 2.4) 2/22. Yoke and Cobb meet Metamartians, powerball swallows a Ptah.

#### **Chapter 3: Phil**

- 3.1) 2/22. Phil leaves Kevvie, talks to Randy Karl Tucker.
- 3.2) 2/23. Phil and Yoke in Tonga. Use the alla. Provoke riot in Neiafu.
- 3.3) 2/24. Phil alone, meets aliens, ends up in the powerball.

3.4) 2/24. Phil in the powerball, meets Kurt and Darla.

#### **Chapter 4: Yoke**

- 4.1) 2/24. Yoke sees Phil leave. On ship with King. Onar killed.
- 4.2) 2/24. Cappy Janes kill fake aliens. Yoke & Cobb back to SF.
- 4.3) 2/25. Yoke finds aliens from bean. Allas for Babs and Randy.
- 4.4) 2/27. Yoke talking to Joke. Randy's realware snail.

#### **Chapter 5: Randy, Phil, Babs, Phil**

- 5.1) 2/27. Randy on bluff. Declares affection for Babs.
- 5.2) 2/24 - 2/26. Phil in the powerball. Kurt really dies.
- 5.3) 2/27. Babs on Anubis.
- 5.4) 2/27. Phil comes back. Proposes to Yoke. Kevvie kills Yoke.

#### **Chapter 6: Yoke, Babs, Randy, Yoke**

- 6.1) 2/27. Yoke back from heaven. They split the allas. Kevvie dies.
- 6.2) 4/1. Babs at Stahn's. Engaged to Randy. Build a redwood.
- 6.3) 5/1. Randy at Babs's. Take Blimp to Oakland. Meets Willy.
- 6.4) 6/1. Double wedding. The aliens leave.

### ***Long Outline of REALWARE***

#### **Chapter 1: Phil**

1.1) REALWARE is set on Earth in February, 2054, about two months after the end of FREEWARE. A mysterious space anomaly swallows Palo Alto high-school math teacher Kurt Gottner in his bedroom. Nothing is left of Kurt but his wedding-ring, which has curiously been tied into a knot. Kurt's son Phil in San Francisco is notified. Phil's notification comes by way of a call on an "uvvy". An uvvy [introduced in FREEWARE] is a now-common brain-interfaced universal communication device made of soft plastic that you can wear on the back of your neck. Phil is clean and sober, has blonde hair, dropped out of college, works as a cook, likes to build toy blimps, lives in a warehouse near the Port of SF.

1.2) Phil attends his father Kurt's funeral. Phil meets Yoke Starr-Mydol, a young woman visiting from the Moon, daughter of Whitey and Darla (of WETWARE and FREEWARE). Yoke is Phil's age, dark-haired, very cute, rebellious. She's interested in algorithms to simulate nature. She wants to go diving. Her mother Darla died recently in a fashion similar to how Phil's father died. Cobb Anderson (of all the \*WAREs) is present at the funeral, he is a man who died years ago, but whose mind was preserved and has been programmed into a soft robot "moldie" body. (The moldies are soft artificial life forms made of "imipolex" plastic with mold and algae.) Cobb obtained his new body on the Moon, and it is he who flew Yoke down to Earth from the Moon. Cobb is planning to take his great-grandson Randy Karl Tucker (of FREEWARE) back to the Moon, but Randy is in no rush to go and Cobb wants to look around Earth a little. Phil buries his father's ashes and the knotted wedding-ring by an oak tree.

1.3) Yoke comes the restaurant in San Francisco where Phil works as a cook. They spend an evening together at a warehouse apartment rented by one of Phil's artistic friends, Babs Mooney (of FREEWARE), daughter of Stahn Mooney (of all the WAREs). Cobb and is also present, as is Onar Anders, Phil's rival for Yoke's affections. Phil takes a walk with Yoke, they talk about their dead parents. Across from Phil's warehouse is a ship that is used as a party headquarters by some degenerate moldies who are into prostitution and drug dealing. The ship is called the Anubis. Phil's girlfriend Kevvie makes a scene by being stoned on the drug merge, and Yoke spends the rest of the evening with Onar. When Phil goes back over to Babs's warehouse to look for Yoke he finds Randy Karl Tucker is there, he's a houseguest of Babs as well.

1.4) Phil gets a call that another space anomaly has knocked down the oak tree in Palo Alto where his father Kurt's ashes and wedding-ring were buried. The ring is now flipped into its mirror-image, which suggests that the anomaly is four-dimensional. When Phil gets back to SF he learns that Yoke has left for the South Pacific islands of Tonga with Onar Anders.

## **Chapter 2: Yoke**

2.1) Yoke and Onar fly to Tonga inside Cobb Anderson, who wraps his moldie body around them. In Tonga it turns out that Onar works for a satellite signal company, his job is to track down satellite bandwidth pirates. Yoke gets a fake ID from Tongan intelligence. Tonga has a satellite named Cappy Jane which has been suffering a lot of piracy. An official named Mr. Olou gets Onar to help him visualize the pirate signal in cyberspace, and something in the signal attacks Mr. Olou and kills him, also stunning Yoke and Onar.

2.2) Onar and Yoke have dinner with the King of Tonga. The King lives with a green moldie "woman" named Vaana. He reveals that there is an alien named Shimmer who is living in a dome six miles below the ocean near Tonga. It is she who has been using the Cappy Jane satellite bandwidth, she is finding signals that encode aliens like herself and decrypting them. She is interested in meeting Yoke (Yoke and Shimmer met in FREEWARE, when Yoke's mother Darla killed all the aliens except Shimmer). Shimmer wants to give Yoke some kind of "femtotechnology." Yoke has a romantic ride back to her hotel with Onar and, on the spur of the moment, goes to bed with Onar. He is a poor lover and she regrets it.

2.3) Cobb has a hangover, he got high on a moldie drug called "betty" with the moldies Tashtego, Daggoo and Vaana. Yoke and Cobb take a boat with Tashtego and Daggoo to a spot near Tonga above the aliens' dome. Yoke dives down the six miles with Cobb wrapped around her like a diving bell.

2.4) There are six aliens in the dome. They call themselves "Metamartians." Their bodies are made of the same imipolex plastic that is used for the flesh of moldies. They travel through space as signals like radio waves, these signals are called "personality waves." Shimmer is able to decrypt the personality waves and install them onto moldie bodies. The most recently arrived alien has a plastic body the size of a beetle, his name is Josef. Josef has an idea for making the aliens' plastic bodies extremely small. The Metamartians are from a part of the cosmos where time is two-dimensional, they find it odd where we live. They are, to a limited extent, able

to see into the future. Their leader is Shimmer. Shimmer gives Yoke a tool called the “alla”. An alla is like a magic wand, it will create whatever you think of, although you need to think of the object very exactly. Your interface to an alla is via your standard uvvy communication device. To begin with, Yoke is using a “wish-book” catalog of pre-stored alla “wish items” that the aliens provide. A space anomaly like the one that swallowed Phil’s father Kurt appears. It is called a “powerball.” A powerball is a kind of spherical object that is like the mouth of a tunnel into the fourth dimension. It is supposed to provide a shortcut back to Metamars, but it isn’t working correctly. In general a powerball appears whenever a new Metamartian is decrypted. This new powerball is a result of Josef having recently been decrypted. Yoke watches as the powerball swallows one of the aliens who is named Ptah, leaving five aliens. And then the aliens collapse the dome, but Yoke and Cobb float up to the surface unharmed.

### **Chapter 3: Phil**

3.1) Phil’s girlfriend Kevvie loses her job because of her drug use and Phil decides to leave her and try and get together with Yoke. He talks to Randy Karl Tucker who is still staying with Babs, and who is helping her with art projects. Phil gives his father’s knotted wedding-ring to a moldie who lives on the Anubis. The ring is hidden inside a toy blimp that Phil made. Phil takes a conventional rocket-plane to Tonga.

3.2) Cobb picks Phil up at the airport in Tonga and flies him to a tiny island where Yoke is located with some bodyguards and the alla. Yoke uses the alla to make breakfast for Phil. One of the Metamartians is with Yoke, this one is in the shape of a beetle, his name is Josef. Josef uses his limited precognition abilities to help Cobb, Phil and Yoke avoid the bodyguards and go to a little town named Neiafu nearby. They find a large magical seeming bean on a vine. The bean has six seeds. Yoke uses the alla to make some things for the natives, a riot starts because people want more and more. The alien Josef flies away. Phil, Cobb, and Yoke go back to the tiny island. Yoke lets Phil play with the alla, he can see the catalog, but he can’t make anything, it is keyed to her. Yoke figures out how to start making her own “realware” objects not in the catalog, objects that she invents. Sculptures. Yoke and Phil kiss, confide, share a room, but don’t have sex.

3.3) Yoke has to go on a Tongan Navy ship and make a lot of gold and imipolex for the King and Onar. Phil takes a walk on a Tongan island alone, he finds the five remaining aliens in a cave at the end of the island. They explain that the powerballs are like hyperspheres in four-dimensional space. Shimmer admits that she got a powerball to swallow Darla on purpose. Shimmer decrypts a 6<sup>th</sup> Metamartian, and its accompanying powerball swallows Phil. Yoke and Cobb come just as he is being swallowed, but its too late.

3.4) Phil is inside the hypersphere of the powerball. The powerball has a built-in alla. By using his uvvy , in that he can wish for things and they appear. But the built-in alla-catalog is an alien catalog, not a human-tailored catalog, it is an alien “wish-book”. It’s hard to find anything he can eat or drink. Phil’s hypersphere bumps into a larger powerball hypersphere and merges with it like two soap bubbles. In there is his father Kurt, also Yoke’s mother Darla who also was swallowed by a



powerball. Kurt and Darla are drunk. Kurt tells Phil there is a hole on one side of the powerball where you can stick your head out into raw four-dimensional space.

#### **Chapter 4: Yoke**

4.1) After seeing Phil get swallowed by the powerball, Yoke wants to leave Tonga, but Cobb flies her back to the Navy ship with the King. Yoke realizes that Cobb has been enslaved by a “leech-DIM” patch [introduced in FREEWARE] that Onar has placed on him. Onar tries to get Cobb to put a thinking-cap on Yoke, it gets him instead. Cobb gives thinking-cap control to Vaana, she kills Onar by having him run towards the King’s bodyguards. Local moldies steal all the imipolex, Cappy Jane splashes into water by the ship, throwing Yoke, Cobb, King and Vaana overboard.

4.2) Yoke gives the Cappy Jane’s a big cube of imipolex, they make 100 copies of themselves. Yoke spills beans about the aliens, the Cappy Janes go to burn the aliens in the cave. Cobb and Yoke send a dummy of themselves off towards the Sun. They sneak back to Babs’s. Yoke has brought Phil’s bean. They tell Babs and Randy everything.

4.3) Yoke wakes up to find the seven aliens have come out of the bean. They were small, now they get big. All but Josef take on a humanoid form. Goddess Shimmer, god Ptah, pig-man Wubwub, devil-girl Peg, snake-woman Siss, bird-head Haresh. Josef becomes a fly. Randy and Cobb come back lifted from a night at the Anubis. Randy tries to fuck Shimmer, passes out. Shimmer makes an alla for Babs and for Randy. Aliens decide to join the Snooks family on the Anubis.

4.4) Yoke is on the uvvy with Joke, telling about what’s happened the last two days. She and Babs made a lot of cool sculpture with the allas, also clothes, furniture, and a car. Randy falls asleep wearing the alla and one of his nightmares becomes real, a giant snail that talks like his mother. It crawls on him, Cobb saves him, drags it outside and burns it. Babs has given up on Randy and started up with Theodore, who works in an art gallery. Joke is urging Yoke to come home.

*[The rest of this “long outline” is speculative, as this was used to send in to get the contract with Avon after writing chaps 1-4]*

#### **Chapter 5: Randy**

5.1) Randy Karl Tucker rides his motorcycle down the coast and decides he wants to have a relationship with Babs. The alla shows him some cartoons and he figures out how to copy the alla. Heads back into town and Babs is leaving with Theodore, he goes aboard the Anubis.

5.2) Randy has sex with Shimmer. He really loves it. But he doesn’t take camote. Kevvie is on the Anubis, she’s a hooker. Randy talks to her a bit, then lo and behold there is Shimmer. Randy is the only one aboard who knows Shimmer is an alien. Randy has sex with Shimmer and discovers something important, an alien alla guide. Finds Phil’s ring in the blimp.

5.3) Kurt teaches Phil how to “see” in the fourth dimension. Phil falls completely out of the powerball, somehow tugged by Randy He drifts around in raw four-dimensional space together. He sees the thing that Cobb calls “the SUN”, it’s pretty much like God. He looks down and see Earth as well.

Cobb snaps back into regular space, but Randy goes to talk to the people stuck in the powerball, appearing there in the form of a 2D cross-section. They were made

so anxious by Cobb and Randy falling out that they somehow closed off the hole. They are trapped in there, they can't get out like Randy and Cobb did. Randy figures out the "plumbing" of the powerball, he figures out how to make it touch ordinary space and let all the people inside it get back to the real world. But they can't just do it anywhere, they are going to have to do it inside the Anubis because Phil left his father's knotted ring there, on account of the associative dream-like logic used by powerballs to locate themselves.

### **Chapter 6: Yoke**

6.1) Cobb and Yoke and Babs figure out how to clone the alla. How to "use the magic wand to wish for a magic wand". They start giving them to their friends, but aren't sure if its going to be a good idea. Cobb starts using the alla to make low cost housing for people, he wants to become the mayor of San Francisco.

6.2) More and more people are using the alla, we look at some of the effects of this. Yoke and Babs get a visit from Randy, who is in the 2D cross-section form. Randy explains his plan for how to help Phil, Kurt and Darla back from the powerball. Meanwhile Cobb figures out a way to make moldies stop stinking.

6.3) Big scene on the Anubis, the powerball comes there and forms a hyperspace "neck" connecting it into our space, and all the people inside tumble back into ordinary reality. Randy still remains stuck sideways in the fourth dimension.

6.4) Yoke and Phil are reunited, but they quarrel. Yoke wants to give the allas to everyone as freeware, but Phil doesn't want her too. Phil is for killing all the aliens, but Yoke still thinks they are good. Phil and Yoke argue and separate.

7.1) **Phil.** He walks around San Francisco with Stahn Mooney, looking at what people are doing with the allas. Looking around he realizes Yoke was right, it's weird but it's good. Allas mean that matter in and of itself is all of equal value. But if you can think of a beautiful form, then you are adding value. Of course once you make one particular realware object, others can use their allas to copy it. They talk to Cobb. They all agree that allas are good. Stahn and Phil also agree that the aliens are good, but Cobb doesn't think so.

7.2) **Yoke.** Shimmer is angry about Yoke figuring out how to copy the allas. Kevvie helps Shimmer try to kill Yoke. Darla and Babs Mooney help save Yoke. Darla convinces Yoke realizes that the aliens have to go. Cobb also becomes convinced that that the aliens have to go.

7.3) **Phil.** The Randy cross-section appears and shows Cobb a plan to get rid of the aliens. The aliens are here for good. Phil's father Kurt Gottner really does get killed this time, doing something heroic. Randy Karl Tucker vanishes for good as well; he's transported to Metamars.

7.4) **Yoke.** Phil and Yoke are together at last. Things are calming down. The moldies on Earth don't stink anymore and people are starting to accept them. Cobb is going to be the mayor of San Francisco, a symbol of harmony between humans and moldies. Stahn Mooney is very mellow, retired, calm. Humanity is entering a wonderful new age of floatin' gnarly realware.

## **Word Count**

Date	Word Count	Chapter Starts	Days In	Recent Words/Day	Avg Words/Day	Recent Days To Finish @*#	Avg Days To Finish @*#
Jan 15, 97	647						
Jan 21, 97	2,443						
Dec 11, 97	318	Chap 1	1				
Jan 27, 98	4,700		47				
Feb 7, 98@	7,184		58	225.82	123.86	411.02	749.36
Feb 16, 98	10,192		67	334.22	152.12	268.71	590.38
Feb 24, 98	12,808	Chap 2	75	327	170.77	266.64	510.58
Mar 3, 98	16,197		82	484.14	197.52	173.1	424.28
Mar 12, 98	19,813		91	401.78	217.73	199.58	368.29
April 9, 98	23,504		119	131.82	197.51	580.31	387.3
April 16, 98	27,394	Chap 3	126	555.71	217.41	130.65	333.96
April 30, 98	30,059		140	190.36	214.71	367.41	325.75
May 8, 98	37,597		148	942.25	254.03	66.23	245.65
May 17, 98	40,654		157	339.67	258.94	174.72	229.19
May 22, 98	42,769		162	423	264.01	135.3	216.78
May 27, 98	46,667		167	779.6	279.44	68.41	190.86
June 1, 98*	47,354	Chap 4	172	137.4	275.31	455.94	227.55
July 3, 98	47,740		204	12.06	234.02	5,162.52	266.05
July 10, 98	54,226		211	926.57	257	60.19	217.02
July 17, 98#	64,808	Chap 5	218	1,511.71	297.28	29.89	152.02
July 20, 98	67,805		221	999	306.81	32.23	104.93
July 26, 98	71,942		227	689.5	316.93	40.69	88.53
Aug 1, 98	80,696		233	1,459	346.33	13.23	55.74
Aug 7, 98	89,848	Chap 6	239	1,525.33	375.93	6.66	27.01
Aug 10, 98	93,628		242	1,260	386.89	5.06	16.47
Aug 13, 98	98,479	End	245	1,617	401.96	0.94	3.78
Aug 22, 98	101,093		254	290.44	398	-3.76	-2.75
Nov 17, 98%	102,771		341	19.29	301.38	115.55	7.4
Nov 24, 98	105,351		348	368.57	302.73	-0.95	-1.16

@Until June 1, I assumed I was shooting for 100,000 words.

\*From June 1 to July 17, I assumed I was shooting for 110,000 words because I assumed I was shooting for 7 chapters. The first three were 47,354 words long, so I assumed 15,784 per chapter. This made a total of 110,500 words, which I rounded down to 110,000 as my new target.

#From July 18 on, I went back to planning for 6 chapters for about 100,000 words (just to be a shade longer than FREEWARE). The first four chapters are almost exactly 65,000 words, so that's 16,250 per chapter. 6 times this makes 97,500.

%November 17, after taking 10 weeks off, I decided I need extra stuff for about 105,000 words.

Lengths of my recent novels:

*The Hacker And The Ants* 92,000

*Freeware* 97,000

*Saucer Wisdom* 84,611

**Projected Finish Date.**

Let's call December 11, 1997 the date when I started writing the real *Realware*. Let's say I'm shooting for 100,000 words.

*Estimate as of April 16, 1998.* I just finished Chapter Two and have 17,394 words. At 13,700 average per chapter, I can do 7 chapters and get 96,000, almost long enough. They'll grow a bit anyway. Say it's seven chapters. The chapters are averaging 8 weeks each, so that would be 40 more weeks I'd need for 7 chapters maybe 44 weeks, which is 308 days, or 10 months more, which has me finishing by February 15, 1998. Of course I'm not going to get much written when we're in Europe, though I might write more this summer. So between the end of this August and the middle of next March I'll be done.

Instead of doing this computation over and over, I put some cells into the table above, so it will be automatic in the future. And I'll do it in terms of days and words, not weeks and chapters.

*Current Estimate:* October 1 to January 1.

***Timeline***

[This is an extension of the same Timeline I used in the Freeware Notes.]

1950 Cobb Born, March 22

1971 Cobb and Verena Married

1975 Ilse born

1980 SST paper

1990 The (not-to-be-written) Hardware prequel would start here.

1990 Haf'N'Haf born.

1995 Ralph and 12 others set free in Sea of Tranquillity

1995 Sta-Hi born, Fern Beller born.

2000 Whitey born.

2001 Ralph revolts, Cobb convicted of treason, leaves Verena

2002 Della born

2003 Ilse's Wedding

2004 Willy born. Darla born.

2010 Social Security stops

2020 **Software**

2021 Starshine born, Aarbie born.

2022 Humans win Disky back

2030 **Wetware**

2031 Boppers exterminated. Joke and Yoke born. Spore Day.

Bopper technology replaced with moldies and DIMs.

March 17, Willy meets Stahn, they go off as dolphins.

Willy meets Stahn and Fern, invents the uvvy and moves to the Moon.

2032 Randy Karl Tucker born, August 20. Stahn elected to

U.S. Senate

- 2038 Moldie Citizenship Act passed. Stahn re-elected.  
2039 Joke and Yoke's 8th. Corey making commercial Silly Putters.  
2042 Joke and Yoke's 11th birthday. Darla mad at Corey.  
2043 Terri and Ike get DIMboards.  
2044 Stahn loses election.  
2048 Randy Karl is 16, starts affair with Honey Weaver.  
Dom dies at Thanksgiving, Ike buys Da Kine.  
2049 Ramanujan discovers dream-DIMs. Tre gets job at Apex  
in March, marries Terri in Nov.  
2050 June 20, Honey Weaver breaks off her affair with Randy.  
2050 Dolf Dietz, born Sept 23.  
2051 Randy 19 starts work with Ramanujan in March.  
2052 Willy moves into the Nest, July.  
2052 Wren Dietz born June 26.  
2053 July, Tre invents 4D Perplexing Poultry, the Vib Gyor.  
2053 August, Randy turns 21, moves to Santa Cruz.  
2053 October 30, **Freeware Chapter One** Randy kidnaps Monique.  
2053 November 6, Shimmer is decrypted  
2054 Thursday, February 12, **Realware Chapter One**. Kurt Gottner dies.  
2054 Saturday, Feb 14, Kurt's funeral  
2054 Thursday, Feb 19, Yoke meets Phil at LoLo.  
2054 Friday, Feb 20, Phil goes down to Palo Alto, the oak tree's been  
eaten. Yoke and Onar fly to Tonga. Olou dies. Meet HRH.  
Yoke fucks Onar. Kevvie gets fired.  
2054 Saturday, Feb 21, Yoke dives down to meet Shimmer. Wowo eats  
Ptah. Phil leaves Kevvie, sets off for Tonga.  
2054 Sunday, Feb 22, Phil meets Yoke in Vava'u. They have breakfast,  
swim, go to Neifau and start a riot with the alla. They sleep in  
same room.  
2054 Monday, Feb 23, Yoke goes aboard King's ship, Phil walks to Tolou  
and meets the aliens. Harsh's powerball gets Phil. Onar is killed.  
Yoke and Cobb back to SF. Randy goes to Anubis.  
2054 Tuesday, Feb 24, The aliens hatch out of the bean. Yoke and Babs get  
allas. Aliens go join the Anubis nest. Randy has nightmare.  
2054 Wednesday, Feb 25. Yoke, Babs, Randy play with allas.  
2054 Thursday, Feb 26. Randy goes to bluff, tells Babs he wants to be her  
guy. Phil, Darla, and Tempest come back. Yoke dies, comes back.  
Phil & Yoke and Babs & Randy sleep together. Kevvie dies.  
2054 Wednesday, April 1. Randy and Babs engaged.  
2054 Friday, May 1. Willy to Earth.  
2054 Monday, June 1. Wedding of Phil & Yoke, Randy & Babs.

## *Notes For Chapters*

### *Overall Novelistic Arc*

Have a love story with Phil and Yoke. First they're with the wrong person, and they like each other but alienate each other (or just get physically separated?), but you know they are right for each other, and then finally they get together. Stretch it out for most of the book, so you are rooting for it to work out.

Like in that movie I saw last week, Jerry McGuire. First he's with the wrong girl and the right girl is lonely and then they get together. First Phil is with the wrong girl and Yoke with the wrong guy.

Another issue is Phil coming to terms with his father's death.

### *Early Notes*

#### **Chapter 1: Kurt Gottner's Funeral (Phil p.o.v.)**

Start out with Phil and his girlfriend. Phil is a slacker. He's kind of mechanical, physical. His father Kurt Gottner dies. That's the lead-off, bang. "When Phil Gottner heard that his father had died, he was angry for a long time." Phil a likeable young man finding his way in the world.

Phil lives in San Francisco with a girlfriend he doesn't really like. Her name is Kevvie, she's just like Kevin Lynott, has that bossy deep voice, flat and affectless, with a tone that seemed to say that's-the-way-it-is-and-nothing-more. Kevvie Inch. Very flaky, self-involved. But deeply conventional, believing and saying only received ideas. Self-important. Deeply humorless. She watches other people to know when to laugh. She's into bacteria-style sex. She has a friend who's a sex-worker in North Beach. She herself is kind of a nurse. Cares for old sick people. She's a visiter. Lonely old people dial her up on the Web, she comes and talks to them. Kevvie is strung-out on some drug too, some stupid drug that is prescribed to her, she doesn't even admit it's a drug. It's an esteem enhancer. To prevent some new faddy thing, not depression but maybe anomie. Phil and Kevvie both have strange hair. Iridescent, made from shrimp shells. Phil talked Kevvie into it. Under the glo-job, Kevvie is blonde. She's blue-eyed, triangle-faced. How had Phil ended up with her? Inertia.

Kurt Gottner's funeral. Sister Jane is there.

They have a neighbor Kathy Bunce. She's like Kathy Anderson from Geneseo. "It's the Snooks family again," said Kathy Bunce, referring to the Black freaks who lived downstairs. The lower Haight. Gum dealers. Making synthetic fungus chewing gum. Growing camote. They or some other neighbors are into something really odd. Subcutaneous drug-delivery jewelry.

A girl named Yoke shows up at the funeral. She's a grad student studying something that Kurt Gottner had been into. Had planned to meet him, but he died when she got there. Now she's on her way to go to some South Pacific islands, she's not sure which ones. Phil's very taken with Yoke, but somehow Onar gloms onto her and ends up heading off to Tonga with her. Phil wants to talk with Yoke, but gets side-tracked by Yoke, who's babbling about bacteria-style sex.

*Who Killed Kurt Gottner?* Maybe it's a random N-space being that noticed Kurt. Or maybe someone "hired" or "invoked" it to go after Kurt.

Phil's working at Ultraware doing something nebulous with the Web. He notices Onar's bicycle, then meets Onar. Onar talking about the radio signals from the Tonga Trench. Wants to go there. Phil is sad about his father dying, mentions it, Onar gets all greedy and opportunistic that Phil is the dead Kurt Gottner's son. Onar wants to find a way to capitalize on it. "Would you like to bring your father back to life?" asked Onar. "I dunno," said Phil. "I think maybe it makes more sense to just take what life gives you. I'm not so sure he'd want to come back to life anyway. Dad always spoke of dying as 'getting off the hook.'"

Some kicker at the end, as Onar leaves for Tonga and gets Phil to promise to come on along after he does some stuff about Kurt's funeral or something.

The funeral. Cobb Anderson shows up. Very sincere. Cobb is 100% plastic, pure imipolex, a perfect symbol of a mall-walking senior citizen. A Wal-Mart greeter. A net version, who talks to newbies on line. He loves being plastic. Clean and safe. Phil doesn't trust Cobb. Yoke is there. Phil loves her. But he's distracted by Kevvie babbling about bacteria-style sex, or she doses him and Yoke sees them "doing it" and is completely turned off, "My parents take merge a lot." And then Onar hits on Yoke. Phil wants to kill Onar, but there he is, off and nattering with Yoke. They head out to Tonga.

### **Chapter 2: Yoke In Tonga (Yoke p.o.v.)**

Yoke goes to Tonga. Tonga is still a royal principality, still with its own peculiar laws. Yoke meets Onar there. She gets a little involved with Onar, has him as lover for a little while, but Onar is a bad lover.

Yoke dives the Somosomo straits or the Tonga Trench. She gets in trouble down there and Onar can't help her, but Phil does help her. They have a moment of closeness, but then somehow they're separated again, or some new misunderstanding comes up.

In this chapter I want Yoke and Onar to find the aliens. Shimmer has been drilling holes in the dimensions. Onar gives a lecture about the pawky physicists with their "compactified" 26 dimensions.

I think I don't want a second race of aliens because then there is no way to control them. I don't want too much proliferation. We have the love story. We have the alla. We have the Metamartians and the problem of their wowos. With the wowo we have the issue of higher dimensional existence.

### **Chapter 3: Phil joins Yoke in Tonga (Phil p.o.v.)**

Start back in SF, then quickly Phil goes to Tonga, gets together with Yoke. She's staying at the Paradise Hotel in Vava'u. Now, how are Onar and the King dealing with Yoke's getting the alla? Presumably it only works when she controls it; that's how the Metamartians set it up. Could the King imprison Yoke and make her "spin gold" like a captive princess in a fairy-tale? Maybe she is turning out a fair amount of something the King wants. Probably imipolex. Cobb beefier than before, I suppose.

I think maybe not have Yoke imprisoned, I don't like that. Too hard to keep her, really. She staying because she's interested.

To begin with they are keeping the alla secret from the Tongans. But in this chapter the word of it gets out. That could be a main part of the action.

Also it may be that Yoke and the Metamartians are promising to do more for Onar and the King. Stringing them along. What does the King want, ultimately? He's in love with Vaana, let's suppose. So he wants to make her happy. Wants a really big moldie Nest? Likes the idea of Tonga leap-frogging the rest of the world. Maybe Vaana already has a thinking-cap on him?

What is the action of this chapter. Eventually we need to resolve the powerball problem, but that will come nearer the end of the book, I think. Maybe just intensify it some more in here. Maybe even end with Yoke or Phil ending up in one and who should she meet in there but Randy Karl Tucker. Yoke, let's say.

A lot of the chapter should be about the alla.

Kennit is at the hotel, kind of watching over them. Josef helps Yoke and Phil go off by their own, a matter of when to duck so they don't see you. They walk up to Mt. Talau. They find the lofa bean. They're having fun joking around. They're walking back down and they meet Lata. He asks them in, gives them a soft drink, shows them shells, gives them shells. Phil says "Give him something, Yoke." "Onar said not to." "Do it." They give Lata a stainless steel bicycle. He's happy, they head on downtown, Lata passes them, waving. In town people come up to them, more and more, they make an uvvy, an auto?

Back in the room, they talk about the bean, joking around. Then they get into the issue of the powerball. Phil dreams even more intensely about his father, it hits as soon as he falls asleep.

Yoke can't go out the next day, there's a crowd of people waiting for her outside the hotel. They're not so interested in Phil. He wanders down, passes Adam and Eve, sees the brittle sea stars, the graveyard, comes to the village, the kids poke him.

A black pig came up to him. "Hello." It shows him the node. "Your father really is there." "Cobb should be interested. We decrypted one more and it got Cobb's great great grandson." "How did he end up in there?" segue to Chapter 4.

#### **Chapter 4: Yoke and the Alla (Yoke p.o.v.)**

Working out the reality of the alla. Yoke figures out how to clone it, perhaps. Yoke back in SF or should she be back on the Moon with Randy? Kind of makes sense to have a Moon chapter. But maybe then we get spread too thin. Could leave the Moon sequel for the fifth WARE. Problem is that with each WARE there are more characters to check up on, a branching tree.

Start with Yoke in Tonga. Need closure on her thing with Onar and the King. They do something really outrageous, try and imprison her or something, she escapes. Cobb's role?

When Yoke leaves, she takes the lofa bean with her and the aliens are inside it. They hatch out. Let's suppose that she goes first back to SF and towards the end of the chapter she goes back to the Moon, taking Randy Karl Tucker with her.

Suppose that the hatched-out aliens set up shop at the Anubis. Suppose that the fact that Kurt's ring is there will give old Kurt some leverage on the location from hyperspace.



Would be nice if Randy had sex with Shimmer.

**Chapter 5: Randy And the Realware Snail (Randy p.o.v.)**

Maybe tell this as if Randy is telling it. “How I ended up hyar in this hyperspace bubble and all.”

Stahn, Saint, Yoke, Cobb bring femtotechnology to the Moon. Randy and the realware nightmares. I think the wowo should get Randy and take him off to travels with the aliens. Randy In The Cosmos, Randy Goes To Heaven. The cosmic background radiation is the one mind. God everywhere, ever ready to effloresce. Hyper dimensions.

**Chapter 6: (Alternating Phil and Yoke p.o.v.)**

Phil’s point of view. About how he and his Dad manage to come back to Earth and get rid of the aliens. They send all the aliens off into the powerball and even destabilize it so it goes clear back to Metamars.

But at the last minute, old Kurt really does die, only this time Phil can deal with it better.

Yoke’s point of view. A scene aboard the Anubis. Thutmosis, Ramses and Isis Snooks. They’re like the Little Kidders. Kevvie their captive and a powerball coming in, and Phil has to save her.

**Chapter 7: The Cosmos (Cobb or maybe Everyone’s p.o.v.)**

Randy figures out how to replicate the alla.

Maybe discover that everything on Earth always was an alien anyway. The mystical body of Christ. God in everything.

The allas are everywhere.

Be sure to wrap it all up, at least for now. Maybe leave no loose ends at all, everyone and everything accounted for.

***Outline of Chaps 4-7 I sent Jennifer Hershey on June 1, 1998.***

**Chapter 4: Yoke**

4.1) After seeing Phil get swallowed by the powerball, Yoke wants to leave Tonga, but Cobb flies her back to the Navy ship with the King. Yoke realizes that Cobb has been enslaved by a “leech-DIM” patch [introduced in FREEWARE] that Onar has placed on him. She is captive of Onar and the King. Word about all the imipolex in the boat is getting out, and the local moldies storm the boat. Even the moldies which make up the Cappy Jane satellite come flying down to fight. The King flees, but makes Yoke come with him.

4.2) The King can’t let Yoke have her alla because she could use it to create things to help her escape. Yet he wants her to have the alla so she can make things for him. She is like the goose who lays the golden eggs. Onar suggests that the King place a moldie “thinking cap” brain control [introduced in FREEWARE] upon Yoke. The King’s moldie girlfriend Vaana prepares to do this, aided by the sinister Tashtego and Daggoo.

4.3) Cobb and Yoke escape, thanks to the Metamartian Josef who reappears and helps them with his precognition. The aliens want Yoke and Cobb’s help because the rampaging Cappy Jane moldies are trying to kill the six aliens. Yoke lets

the aliens hide in her special bean that she found with Phil, each alien shrinks to the size of a worm and crawls inside one of the bean's seeds. Yoke, Cobb and the bean fly back to SF. Onar and the King get killed or perhaps taken over by moldies, so that they are no longer a threat.

4.4) Yoke helps the aliens pose as moldies and establish their new headquarters aboard the Anubis. Phil's ex-girlfriend Kevvie has moved aboard the Anubis and is doing some sex work in exchange for drugs. She has it in for Yoke, but she doesn't yet realize that the six new "moldies" are aliens. When Yoke goes to Babs's warehouse, she runs into Babs's father Stahn Mooney [of all the \*WAREs] and Stahn's wife Wendy [of all the \*WAREs]. Randy Karl Tucker is still at Babs's as well. Neither him, Yoke, nor Cobb wants to go to the Moon yet.

### **Chapter 5: Randy**

5.1) Randy Karl Tucker is helping Babs make imipolex art objects. Babs thinks he's kind of cute, but Randy is a cheeseball only interested in sex with moldies. He goes aboard the Anubis and ends up having sex with the alien Shimmer, though Randy doesn't initially know Shimmer is an alien. Then Shimmer gives Randy an alla. This is only the second alla they've given out, they are kind of checking out what people will do with them before they spread them too wide. Randy figures out how to crack the alla-registration code so Babs can use it too.

5.2) Babs and Randy start making a lot of really weird things with the alla. Wavy realware. Stahn Mooney gets involved as well. Randy falls asleep wearing the alla and one of his nightmares becomes real, a giant snail that talks like his mother. He tries unsuccessfully to kill it, it catches him and is about to smother him. At the last minute a powerball swallows him Randy as Shimmer has decrypted a 7<sup>th</sup> Metamartian. Shimmer makes the powerball swallow Randy because he's compromising her security. Cobb tries to save Randy and gets swallowed as well.

5.3) Randy and Cobb are with Phil and the others in the powerball. Kurt and Phil teaches Randy how to "see" in the fourth dimension. Randy and Cobb fall completely out of the powerball. They drifts around in raw four-dimensional space together. Randy sees something that Cobb calls "the SUN", it's pretty much like God. Cobb and Randy also see Metamars, they can see that if the aliens ever get a powerball properly working on Earth, a trillion of them are going to invade. They find a way to look down and see Earth as well.

5.4) Randy and Cobb figure out how to snap back into ordinary space, but Randy doesn't want to yet. There is also an option of remaining "sideways" in the fourth dimension and looking like a 2D cross-section, like a single salami slice of a person and a moldie. Randy chooses to stay like this for now. Cobb snaps back into regular space, but Randy goes to talk to the people stuck in the powerball, appearing there in the form of a 2D cross-section. They were made so anxious by Cobb and Randy falling out that they somehow closed off the hole. They are trapped in there, they can't get out like Randy and Cobb did. Randy figures out the "plumbing" of the powerball, he figures out how to make it touch ordinary space and let all the people inside it get back to the real world. But they can't just do it anywhere, they are going to have to do it inside the Anubis because Phil left his father's knotted ring there, on account of the associative dream-like logic used by powerballs to locate themselves.

## Chapter 6: Yoke

6.1) Yoke and Babs and Stahn and Wendy figure out how to clone the alla. How to “use the magic wand to wish for a magic wand”. They start giving them to their friends, but aren’t sure if its going to be a good idea. Cobb starts using the alla to make low cost housing for people, he wants to become the mayor of San Francisco.

6.2) More and more people are using the alla, we look at some of the effects of this. Yoke and Babs get a visit from Randy, who is in the 2D cross-section form. Randy explains his plan for how to help Phil, Kurt and Darla back from the powerball. Meanwhile Cobb figures out a way to make moldies stop stinking.

6.3) Big scene on the Anubis, the powerball comes there and forms a hyperspace “neck” connecting it into our space, and all the people inside tumble back into ordinary reality. Randy still remains stuck sideways in the fourth dimension.

6.4) Yoke and Phil are reunited, but they quarrel. Yoke wants to give the allas to everyone as freeware, but Phil doesn’t want her too. Phil is for killing all the aliens, but Yoke still thinks they are good. Phil and Yoke argue and separate.

## Chapter 7: Phil/Yoke

7.1) **Phil.** He walks around San Francisco with Stahn Mooney, looking at what people are doing with the allas. Looking around he realizes Yoke was right, it’s weird but it’s good. Allas mean that matter in and of itself is all of equal value. But if you can think of a beautiful form, then you are adding value. Of course once you make one particular realware object, others can use their allas to copy it. They talk to Cobb. They all agree that allas are good. Stahn and Phil also agree that the aliens are good, but Cobb doesn’t think so.

7.2) **Yoke.** Shimmer is angry about Yoke figuring out how to copy the allas. Kevvie helps Shimmer try to kill Yoke. Darla and Babs Mooney help save Yoke. Darla convinces Yoke realizes that the aliens have to go. Cobb also becomes convinced that that the aliens have to go.

7.3) **Phil.** The Randy cross-section appears and shows Cobb a plan to get rid of the aliens. There’s a big final battle, and the aliens are defeated. Phil’s father Kurt Gottner really does get killed this time, doing something heroic. Randy Karl Tucker vanishes for good as well; he’s transported to Metamars.

7.4) **Yoke.** Phil and Yoke are together at last. Things are calming down. The moldies on Earth don’t stink anymore and people are starting to accept them. Cobb is going to be the mayor of San Francisco, a symbol of harmony between humans and moldies. Stahn Mooney is very mellow, retired, calm. Humanity is entering a wonderful new age of floatin’ gnarly realware.

## *Outline of Chapter Six Right Before Writing It*

6.1) **YOKE.** Yoke’s experience of being dead. The hyperspace monsters are the demons of the Death Bardo. How do we get her back? The alla saves her information, and Phil reincorporates her using her alla. It can make the body because she has the full information. Om ferries her back down.

Kevvie dies of a drug O.D. Derek has started using Kevvie’s alla already and she can’t be resurrected.

They talk to Cobb about the SUN. Cobb says, yes, he was a butterfly too, “You get closer and closer through level after transfinite level, never quite all the way there.”

The trick for copying an *allas*. Om tells Phil how to “split” them like vortex tubes.

#### 6.2) BABS.

Have this be a month later. Things are getting fucked up.

Do some stuff with Stahn and Cobb in here as well. Cobb running for Mayor.

Handing the *allas* out to people, driving around town.

The bad use of *allas*.

Babs and Randy have a falling out.

6.3) RANDY. Sees the aliens like Grays in a Saucer. They give him some advice. They should mention they are flames. Probably he gets abducted into the saucer for awhile. He loves it. He fucks Shimmer. But then he realizes he has to get back to Babs.

Maybe Randy gets in on fixing the *allas*, as a plumber. Goes into hyperspace? Has a bright idea for making them safer. *Allas* getting better.

6.4) YOKE. Further into the future, let’s say in June. Double wedding. Willy there with Randy, Stahn with Babs, Darla and Whitey with Yoke, Eve and Willow there with Phil.

### ***Discarded Chapter Ideas***

#### **Cobb In A Limpware Body**

[I think don't do this chapter, skip and get right to Randy.]

Cobb on the new Moon. He wakes up first inside Chunky, and then he gets a limpware body of his own. Jenny gives him a tour of the Nest. Lots of resin is arriving and the *imipolex* factory is going full blast making new moldies. He goes to the pinktanks and asks if they can grow him a meat body, well they can, in fact maybe they already have one, maybe he could do like Wendy. No, he likes being plastic.

Question, is it hard to carry a Happy Cloak around? We need a hook for something to come later, we should put in a hook to the aliens.

There is some problem with Cobb’s new body.

He gets involved in a quest to get himself a *meat* body? He looks around the nest for the forgotten wetware technology. At Willy’s urging, maybe he finds out something relating to the Stairway To Heaven as well. And then the moldies get mad and throw him out of the Nest. No I don’t think I want this thread.

He goes to live with Randy and Willy. Cobb suggests the psychoanalysis of Randy using the *uvvy* dream recorder.

He could just got the pinktanks and get a Cobb body to run it like Wendy does. They probably have come Cobb DNA. And he could shrink down to a scarf.

Run this chapter as a long timeline, start out the wake-up before Shimmer comes to the moon and do the spread of femtotechnology in this chapter, wind it up with RKT trying to make realware.

## A Chapter Seven

Tell it from Cobb's point of view, as it makes sense to end the series with him.

7.1) Cobb *does* become the mayor of SF.

7.2) The shitstorm comes down. Lots of airing out, and then the nukes.

7.3) They get rid of the allas, with people hoarding shit like you wouldn't believe. The Last Day. The whole planet going nuts with last minute wishes. Like the corner of the Sandpile Simulation I just saw in Santa Fe.

7.4) Cobb goes off with the aliens. Om teaches Cobb how to chirp and he leaves like the aliens did. Maybe the aliens stick around and Cobb leaves with them, maybe they don't leave after the wedding?

## Sketches From Life

### Wired Party, January 1998

Cal's story about a guy who took a cattle-prod to punk concerts, hid it under his coat, would use it to stun guys whose looks he didn't like. The victim's wouldn't notice it, he'd just come up near them and give them a taste and they'd fall down. Which kind of guy to cattle-prod, I wonder? I'd pick the dancers who whirl around and slam into people. Or the stoner dancers who dance like obnoxious newts, feet and arms rising and falling in that newt-like cross-gait, the way the arm and leg meet near the waist on one side, then on the other side, the body bending back and forth to make the two sides successively pinch their gelid limbs together. Yes, let's do Phil's friend dropping the newt dancer. "Christ, I hate hippies." *Crush* the newt.

### Tamagotchi

A woman brings her kid and there is a *mewing* sound, it's the kids Tamagotchi, his electronic pet, and everyone thinks it's natural, the kid takes the electronic pet out to calm it down, and here we are in SF reality not even being surprised.

### Haight

A black-man with a pickup truck full of auto parts, all copies of the same part, like a truck of turnips, the parts a little different from each other, but basically all the same. Me and Rudy Jr. and Rafael looking at it, us a trio, I thought of old hipster, young punker, and Indian/Hispanic dude, looking like major dealers right, and the black guy murmurs to us, "What's up?"

A record store in a bowling alley. Amoeba or Ameba records.

On the bus a girl with lots of red wool in her hair. A woman in red velvet Xmas clothes, she has a big pot-belly, it feels homey like a small town to see her.

The clerk in the hair salon has the ultimate colored hair, it's pale purple and short with two little spiky tufts red, like volcanoes on a planet, and on the back of his head are S-curve doodles like the holes in violins.

Coffee shop. An Asian girl reading a big fat Manga Japanese comic, thick as a phone book, arcane symbols in the comic system, reading the thing backwards, natch, and at the start of each page her eyes are so interested and mild the way they fasten on the new top corner of the new page.

### **Food Court below Nordstrom's On Market St.**

Legs on an escalator, girl in a polka dot skirt, short and scalloped. She's flat-nosed and big-lipped, an Asian/Hispanic face, Filipino? Frizzed hair.

Retarded Chinese woman throws a paper cup in the trash, then looks in after, twice. Walks side to side rocking.

Kid with a parka like the Michelin man. Fu Manchu mustache, little Chinese-style skull-cap. Trousers so long as to be crushed like accordion, like dryer hose, like curtains on a rod. Tiny rat-tail. Big soft black high-top tennis shoes with no laces. Trucking gait, feet placed flat.

The way people's legs bend and beat. Like flagellae.

### **Bill Gates speaking at SJSU Event Center**

Bill on a stage in blue button-down oxford cloth shirt and khakis. Second richest man on the world. Sitting in a chair getting interviewed by a young guy in a suit, the young guy with a kind of eager prehensile air and a big Adam's apple. The images of them are on huge state of the art projection screens, one on either side of the stage.

Bill Gates. Gulping, gulping. Swallowing. High cracking voice. Warbling voice like a cartoon bird who tries to steal the children's waffles in a TV commercial on Saturday morning TV. "Waffle waffle. Waffle waffle." A gobbling sound like a turkey.

He talks about what great partners Intel and Microsoft are. "Andy [Grove] and I."

### **The Los Gatos Christmas Parade**

I always remember this, from a couple of years ago.

The Los Gatos Christmas parade is tailing out. A few more marching bands. The sky low and gray, chilly breeze. I have a sudden vision as if I'm in a wide-angle lens maybe a hundred feet in the air. How big the sky is, how small a part of the world our street is. Us like protozoa, beating our twin flagellae, our legs. The emptiness, the arbitrariness of it. Everything so radically contingent, so artificial, so unnecessary. *La Nausée*.

### **Warehouse Circus**

Izzy talking about the guy a few warehouse-sections over who likes to put on a circus. He and some friends are puppeteers, they have a bunch of bones hooked together, the Bone People, they dangle them and make them fight. There were two girls with balls of fire on long chains, so four balls of fire in all, they swung them really close to each other. There's Elastic Girl, she bends herself. Another girl plays circus music that she wrote, she plays a synthesizer. Afterwards there was a jug band, these funny sounding old things that weren't even instruments. There was a girl who talked, a ringmaster. And the organizer has a cabinet with all these things in jars. A Siamese carrot, it's a carrot that forked in two.

### **The Marx Brothers in *Love Happy***

Oddness of someone smiling into a camera. To interact with a machine. The dancer woman with the generic Mitzi Gaynor face shoving her puss up into the lens.

"Scram!"

What's in Harpo's pockets, a perfect *Mad* magazine Will Elder list. Dog, sled, big cube of ice, rural mailbox, horse-collar, mannequin legs, Welcome mat. Each really iconic.

### **In New York City, 2/13/98**

In the Adult Video Center. Walls covered with plastic dicks. In the back a dark arcade of booths. The faint sound of tiny music from the booths.

Dumbness of 20s advertising. If it says "Music" then it has a picture of notes, with the wavy note bars. Maybe uvvies do something like this. What if the uvvy carries ads. The old 50s ad-nightmare future.

A window of hats. Felt bowlers, every cover of the rainbow.

Painted ad on a building "Emil Talamini Realty." Talamini is a great name. There was a Talamini in Embry's high-school class. They called him "Talo." He lisped.

The New York Public Library, NYPL, you enter into a marble hall, 100 ft high. With a gentle barrel vault. With columns all around the room. Walking down a side hall, it's just like a video game hall, so repetitive, the great marble blocks of the wall, the periodically spaced lamps, great hanging wrought iron spheres.

A store that sells lace. Wholesale only. All the different patterns. Easy to imagine them woven by vants. Would be nice to have some stuff about clothes in Realware. Maybe Babs is a fashion designer?

### **NYC Museums, 2/14/98**

Egyptian rooms at the Met. The round cartouche in the middle of the spreading wings. Naked woman in the midst of the spreading wings. Such a Heavy Metal icon. Sculpture of a crocodile. Dynasties 26-29, 664-80 BC. Skinny-headed dog, three Mayan gods, naked women, hippopotamus-headed gods.

A big black stone sarcophagus, somewhat squat, like a booth. Teleportation booth. Very wide, like a super-big fridge. Band of hieroglyphs: Owl, door, box/saw/line, quartet/moon, owl, feather, owl, furnace. On the front of the casket a huge peaceful moon face with fancy curved eyes. Under the face a kneeling woman holding out immense wings. Get in that black stone box and it can transport you anyplace in the cosmos anywhere anywhen any dimension.

Video art at the Whitney. The only good pieces were the ones that weren't just little movies you could equally well have seen on tape; the ones that were projected on something weird, like on a huge rotating mirror, or the ones that involved some live aspect like the real-time video of the water drop. Uvvy art, moldie art, what would it be like? Certainly I could use the great live scarves of images from SAUCER WISDOM. Just mine that "nonfiction" book shamelessly.

A wonderful Noguchi sculpture, the perfect image of an alien, a stone donut, angled up on two "legs" on one side, with bumps sticking out all over it, knobs and protrusions, the Ambassador. A U-shaped bump like cow horns, a flattened toadstool bump. Like the knobby donut has a name for each of its bumps, they find each other handsome or not, the bumps have special functions.

In the evening we have dinner with Eddie and Hana. Hana tells me she's been taking "shamanic journeys." This means that she and a group of about 30 get together for a workshop led by a shaman. "Today we went to Sirius." At first I

thought she meant Syria, but she meant the dog-star Sirius. The shaman had a mental trick for getting there, you imagine yourself getting real small, and then you grow back at Sirius. The insects there are so big that one of their legs is like the trunk of a redwood tree. She's telling me this at dinner, this girlish fifty-year-old woman.

### **Dream Images**

Little baby hands touch touch touching my face. Riding a car, too high up.

### **In Search Of The Giant Squid, Feb 98**

National Geographic special. The cuttlefish, a fellow cephalopod, the ultimate SF monster, holds its bunch of tentacles tight together like a cone, then darts and grabs something to eat, like a crab. They are wonderfully fast at changing their color, totally, from brown to yellow to black, with wonderful beautiful spots on them.

Squid in a mating frenzy. The males grab the females like hands grabbing hot-dogs. Pushing each other aside, snatching the females from each other.

A hooked squid is being hauled up and another squid comes and gloms onto it, all eight tentacles and two arms holding tight so as to push its beak against its victim, munge munge munge, when it is shaken free it's eaten a big pizza-sized chunk outta one of the hooked squid's lovely rear fins, wobbly stingray kind of fins.

The squid is a.k.a. the sea arrow. It has a jet by its tentacles to swim backwards.

The whales sleep vertically, head down, like a bunch of bananas. Marvelous sight, a bunch of them sleeping together, they stick together a lot. In the show they attach a camera to the back of a whale in the hopes they'll see it catching a giant squid. It swims deeper and deeper, tight against the other whales of its pod. Actually touching each other. And all the while they are clicking, they call each whale's distinctive click pattern its *coda*. Sometimes the sound goes into a buzz, a creak, a crack. The numbers at the bottom of the whale-cam screen show the depth, quickly up to 1200 feet! The whales dive waaay the hell down to grab BIG SQUID that hang down there. One sperm whale's stomach contained 18,000 squid beaks! Whenever a whale dives, it's a safe assumption that it's catching (or tryna catch) a squid. The sperm whale's skin bears circular abrasions from the suckers of the struggling squid.

### **Waiting on the Phone**

Different clerks keep answering. Like their worker threads being spawned off by the phone-answering process. Virtual particles around a heavy nucleus.

### **In Hollywood with Rudy Jr., March 25, 1997**

Touring the Wild Wild West sets on the Sony lot. A 3-story brothel being built out of wood inside an enormous thick-walled building that is a sound (proofed) stage. The guy giving us the tour says, "We wish they'd stock it and leave it."

We see the set of a TV sitcom pilot being filmed. Two women with perms and ballpoint pens and clipboards sit on high stools to one side. They are the script supervisor and the continuity supervisor. Script supervisor records any change between the script and what people do or say. The continuity supervisor watches exactly where people put things down, like coffee cups or sweaters, so that the continuity can be picked up again later. They struck me as really deeply symbolic, like the Parcae [fates].



Speaking of a video game, assistant producer Stuart Volkow mentions “twitch factor”.

My director Scott Billups talked about heli-skiing. He showed us a video of Van Halen with an effect he called “point in time”. He shoots a fleeting event (a water balloon bursting, in this case) from every angle at once with a battery of still cameras, then somehow sews the images together to give an effect of a camera panning all around this event in frozen time. So cool.

Rudy and I saw an art show at LACMA of a woman called Yayoi Kusama. Tens of thousands of stuffed polka dot cloth penises.

Phoenix pictures, we meet the studio head Mike Medavoy and the president Artie. Artie very Jewish and wise, the wisdom of the desert.

In the street after dinner with producer Jeff Most and Chris Hanley, my agent Steve Freedman is standing there in his shirtsleeves, his arms up high to the heavens. “It’s happening, Rudy! Enjoy!”

### **At the Catalyst in Santa Cruz**

I went to a rockabilly and punk concert at the Catalyst nightclub, alone, in Santa Cruz on Tuesday night, April 21, 1998. The first act was Big Sandy and the Fly Right Boys. They played good. The musicians looked like radio ham operators instead of like grungers. Very eager and kind of geeky. Big Sandy was a very olive skinned fella, nice voice, fairly large man, not tall. There was a \*ugh\* S.C. newt dancer woman alone on the dance floor, then two cute, plain, flat women in polka dot dresses doing classic swing moves. During the next act, Big Sandy and the polka dot women were at the soda fountain out in the Catalyst lobby. I was checking them out. Big Sandy had his hair bulging up in a pompadour, but with no break in it, continuous like a Dairy-Freeze. And close above him was a strange stained glass lamp, a very psychedelic lamp that had no doubt been eyeballed by many upon many S.C. trippers, this lamp was not a smooth dome or cone, it had bulging wavy outlines like a cartoon toadstool or like, most of all, Big Sandy’s bulging hair, Sandy and the light next to each other, me staring goggle-eyed.

### **At Los Gatos Coffee Roasting**

Sitting there today, I notice a woman who looks like a model, or like the Olivia Newton-John of Grease. I’d seen her there before, alone, and she’d looked so cold and aloof. Frozen porcelain. “Don’t anyone dare talk to me.” And today she was with a woman friend, they’d been shopping, and she was talking and smiling and making faces. It was so odd to see her in animation. Like seeing a picture talk, or a chair. What would such a creature say?

### **July 22, 1998, Around Izzy’s Warehouse**

A sweet potato in a jar of water for sprouting, jasmine vines in another.

Huge mirror ball dangling from a high beam. Izzy wants to put in a hanging garden on a pallet on a pulley.

Cal’s hot-dog grill, a saw-horse with gas jets and jaws that bite.

The Potrero Hill neighborhood on 18<sup>th</sup> Street.

The “Emperor” a man who lives in a school bus with various fences around it, and a sign on the bus to recycle your urine by drinking it.

A big white ship in by the wharves with two huge round white polyhedral domes on it.

Enormous dry docks where a ship can be craned out of the water, or maybe the water drained from around it.

Izzy with beautiful reddish hair, a wonderful green squid on her wall.

### **August 1, 1998. Santa Clara County Fair**

I figured out a lot more of the ending of REALWARE this morning. Went to the County Fair with Sylvia as well as Brian Petersen, his wife and two kids 4 and 8. It was savagely hot, wandering around on the asphalt, looking for patches of shade. Saw a rooster with his high arched tail. Some beautiful goats: rams and does. Rode on the Ferris Wheel with Bryan's 8 yr old daughter Elizabeth. Were in car #1 of 16 cars, and sometimes the car in front of us was #16, and sometimes it was #2, depending if we were going up or going down. This was confusing for us, more so for Elizabeth. She thought we must #17. We were the only ones on the Wheel, it was so hot. I had my picture taken by S. with a person dressed as the fair mascot, a chicken in nerd glasses and carrying a foam rubber laptop. I could relate the chicken, being a Kentuckian CS teacher. I had one of those moments of wonder at the realness of ordinary life, sitting on a bench waiting for the others, all the physical objects within my view, the low yellow Western hills over on the east side of San Jose, right across the city, which is very finite and graspable as a patch in this level valley, a very strange midway ride with cars moving along the circumference of a large cartouche-shaped rotor, the dairy barns, the dog show arena where Elvis records played, the Sheep and Swine barn, the stock-car racetrack with stadium seats, the blue sky, dusty green trees, asphalt, patches of shade, the breeze, and me in the center there like a mirror ball reflecting it all, *this is all there is*. They had a "digital art" show at the fair as well as the usual things, and in there were about ten pieces, the *Relevator* series, by a man named Guy Marsden. What he'd done was to find old kinds of electronic numeric display devices and had polished them up and assembled them in compact form very beautifully. His favorite were the "Nixie" neon display tubes from the 70s, in these each number has a wire in its shape, they're like stacked up one in front of the other, and the current number to display gets lit up by a halo of pale orange glowing neon.

## ***Characters***

### ***Ages in 2054***

Cobb Anderson	104
Berdoo(*)	60
Tre Dietz	27
Dolf Dietz	4
Kurt Gottner(*)	54
Willow Chen Gottner	44
Phil Gottner	24
Jane Gottner	22

Kevvie Inch	28
Aarbie Kidd	33
Stahn Mooney	59
Wendy Mooney	48
Saint Mooney	23
Babs Mooney	21
Whitey Mydol	54
Terri Percesepe	28
Ike Percesepe	26
Rainbow Plenty(*)	55
Tempest Plenty	60
Corey Rhizome	50
Darla Starr	50
Yoke & Joke Starr-Mydol	23
Randy Karl Tucker	22
Starshine Tapin	33
Duck Tapin	38
Willy Taze	50
Della Taze	52

(\*) Permanently Deceased

### ***Phil Gottner***

Note that when I write from Phil's p.o.v. there are more sentence fragments than usual. This is his thought style. [Phil Dick used lots of sentence fragments.]

Phil's personality plusses and minuses. Plus: Kind, nurturing. Minus: Indecisive, unambitious.

Everything about him is negative. He doesn't drink or take drugs. He has no academic ambition and is not overly intelligent. He's kind of a drag. I have to give him some positive energy. Maybe he should be more militant about his lacks at least. Like actively against anyone who achieves something in the normal way. I don't really like Phil, I think he's a loser. I need to find a way to like him better. He has guts, maybe. That could be an issue in the powerball.

Phil feels flat, go through and give him more attitude, make him less soft and more prickly. He's been scared to go for it, scared to try because he might fail. Self-protectively sarcastic like Britt. Set him up for a conversion moment inside the powerball when he grows up and decides to really do life.

### ***Onar Anders***

#### **From An Abandoned Tonga Story Based On Eric Gullichsen**

Saint Mooney first became aware of Onar Anders through Onar's strange, hand-made bicycle. It was a long, low device with two chains and three sets of gear-wheels. The frame was scarred with unpolished welds. The alarming seat arrangement seemed designed to lay you out flat on your back, with pedaling feet forward. There were no handle-bars; you steered with your feet. There was a little swinging bracket mount for a knapsack over the spot where the rider's waist would be. The rigid hand grips were down below the seat, right near the ground.

A mere three feet high, the strange bicycle had a visibility flag on a high whippy stalk of carbon fiber. The flag was a pennant with a picture of planet Earth, a nearly all-water view which showed the Pacific Ocean. Just to make the vehicle all the more utterly outrageous, the flag-stalk was hooked up to a tiny little supplemental drive of exquisitely retro gears and wires that would set the stalk into a tightly chaotic triple-pendulum motion whenever the wheels began to roll, as Saint ascertained by riding the thing up and down the hall a few times. It was tough to get the bike started without falling over.

Two or three times a month, Saint would see this Boschian bicycle leaning against a wall in the otherwise very bland corridor of Meta West Link, the telecommunication company where he was working as maintenance manager. Neither Saint's schedule nor the bicycle owner's was at all predictable; everyone but the bosses and secretaries telecommuted most of the time.

After asking about the bicycle and being told it was Onar Anders's, it was a week or two before Saint realized that Onar Anders was the ratty-looking skinny guy with long blonde hair whom he sometimes saw upstairs in the antenna lab, fiddling with the gnarly, ever-changing new transmission hardware and limpware devices which were sent to Meta West for evaluation. Onar was such a shabby spaced-out-looking individual that Saint had kind of assumed that he was just a Meta West hanger-on, and not a real employee, but no, Onar was an important guy, the key hacker in charge of tweaking the Meta West Earth-to-Moon transmission link to optimality.

\*\*\*

Onar Anders was trying to set up a business using supercompression techniques to provide international uvvy hookup for Tonga at rates radically below those charged by the current dinosaur technology, which was based on a bunch of outmoded ISDN equipment purchased from Meta West Link. Onar's scheme was to compress Tonga's entire communication channel into the bandwidth of a single voice telephone call. To help his cause, Onar had befriended the king of Tonga.

\*\*\*

Onar's hallucinations. "Once driving to Mexico, I saw a hilltop crucifix turn into a UFO and stop time and make it run backwards." "Another time I tripped I was staying at the Chelsea Hotel in New York City. I was there to be on a panel about cyberspace. And going down the stairs took forever. The stairwell was mirror-reversing from a left-handed to a right-handed helix, and the reversals were being reflected down into my DNA. I've never really been the same since that trip."

\*\*\*

Overheard conversation in the Vava'u Bounty Bar between an Australian electronics man and a New Zealand sheep-farmer about Onar Anders: "Typical American, a loudmouth, always bragging. A real name-dropper, mentioned H.R.H. But he actually gets things done."

\*\*\*

Onar mused over the great parallel computation inherent in a coral reef: Would it be best modeled as a cellular automaton or as a particle system? He relished the computer-scientist fun of studying the shapes of nature --- a tree, a leaf's waving, a chunk of coral, an insect pupa --- and wondering *how to compute it*.

\*\*\*

Onar on the porch at the Beach House in Tongatapu. Sitting calmly in a rocking chair next to his bed by a window. A guesthouse, an older building with a wide porch. They had bedbugs. Onar had a special bike he'd made for Tonga, assembled all out of stainless steel parts.

### ***Funny Names***

#### **Wrestrum**

A name for a bad guy, from Ralph Ellison, *The Invisible Man*. So many negative associations in this word. Wrest, wrestle, restroom, rostrum, rectum. Dirk Wrestrum.

#### **Shook**

I love names that are English words. Ronnie Shook. (This idea was in January, 97, before I went ahead and use Shook for a whole book. The "Frank" first name, by the way, came from Greg Gibson, who was referring to himself as "Frank" as short for "Frankenstein's Monster" when I told him he should come to the HardWired meeting and impersonate my alien-contactee friend.)

#### **Kathy Bunce**

Saw this name in a pamphlet for something. What a sexy all-American name. I think of her as like Kathy Anderson in Geneseo. She can be Saint Mooney's girlfriend.

#### **Neon Roflox, Jr.**

One of Sylvia's students, a Filipino guy.

#### **Web**

What a name for a moron business man. A duck's foot, for crying out loud. "Hi, I'm Web." Like that Web Hubbell guy, f.o.b.

#### **Ptah**

The name of an Egyptian god. I'm using it for one of Shimmer's Metamartian friends, the first one she decrypted. Logically, maybe I should use the name "Ptah" on the Anubis, as that is an Egyptian-theme scene. But I want to use it for the Metamartian. When he introduces himself it's like he's spitting. "Ptah."

#### **Youpi**

A dog pet character from "Les Vacances De Caroline," this very groovy kids' book we had. Youpi's a good name for something I kill almost right away. Such a groovy name it hurts like a spot on my gum. Youpi! I think it's French for "Yippie!"

### ***Randy***

2054, Randy settles in on Moon with Willy, living initially at the Einstein-Luna Hotel. Corey and Willy and Randy and Joke go out and look at the isopod. It's really trashed. Randy doesn't want to live out there, Corey would rather get his own place with Joke, who also doesn't want to live out there. Willy says, all right let's just stay in Einstein, let's just rent a floor of the hotel. Or let's buy the Temple of Ra.

Randy wants a moldie girlfriend, but there is no casual human/moldie fraternization in Einstein. He does find some cheeseballs, though. The hangout had

been at the spaceport but this is now trashed. Randy gets a job there rebuilding the spaceport. Makes friends with the moldie hookers. But no moldie will love him.

Let's suppose that before Shimmer goes down to Earth, she gets involved with Randy. Maybe she has an affair with him! Yes, of course, who else by Randy Karl would fuck an alien moldie. And though Shimmer has a moldie body, she doesn't have the loonie moldie hatred of humans. So they have an affair, yes. And Shimmer gives Randy an alla. So he has one before Yoke gets one. And Ptah gets involved and then Shimmer and Ptah leave, Shimmer would rather fuck Ptah than Randy. And somehow it's Randy's fault that the Ptah powerball kills Darla. And it's Randy who makes up the stupid name N-by-N in analogy to 4-by-4.

Randy's mother dies and he freaks out. One night he falls asleep holding the alla, and that's how he ends up getting pinned by the giant snail. And after that the powerball gets him. Maybe Randy ends up in the oubliette with Yoke and Darla. Maybe it's Darla's doing that the powerball gets Randy and Yoke both, she's mad at Randy and wants Yoke to help her.

"Try this nifty mother-daughter combination," said Randy, eyeing Yoke and Darla. Hovering over his head was a visible thought-balloon of an ancient R. Crumb drawing of a yoke back-boning a woman on all fours, the yokel's face between the cheeks of the woman's daughter, on all fours on her broad back. "Too bad you girls ain't made o' plastic."

What is Randy's function in this book, really? He doesn't invent much of anything. Well, I guess he's just back because I like him. And to get married off to Babs. But it would be good if there something he could contribute. Maybe something to the alla protocols.

### ***Yoke***

"Yoke walked slowly down the beach, slender and graceful as a swaying plant. Her jaw line was strikingly angled, her eyes were clear and true, and she had a high, perfectly rounded butt. Her one non-idealized feature was her nose, which was a bit larger than normal, though it sat quite harmoniously in the calm oval of her face."

Yoke in Freeware. "light olive skin, big bright eyes, and short full-lipped mouth." thick dark natural hair in a bob. dark ribbed-wool dress with low silver boots modern moonmaid-style. Calls Whitey Pop. "sistah" "bitchin'" "'Sup, Ma?"

Yoke's personality plusses and minuses. Plus: creative, gentle. Minus: impatient, bossy.

What is Yoke's problem, that is, what issue does she need to resolve for a happy ending to the book? I think she should need true love? Or to find herself as an artist/scientist. She becomes the master of the alla. Maybe her problem is that she is a little too snippy, a little too much of a bitch.

### ***Cobb***

#### **Cobb background**

In SOFTWARE, he's first in a body that blows up to kill Stahn's father, then he's in a body driving Mr. Frostee. He feels like he didn't really lose consciousness

(Chapter 16). This second body changes into Mel Nast and blows up trying to kill Stahn. Mr. Frostee dies.

In WETWARE he wakes up in the Nest with Berenice and Loki (Chapter 6). He is stored in an S-cube and, anent the SOFTWARE bodies, “the experiences Cobb had in those bodies were beamed up to the Moon and added to the memory store of his master S-cube as they occurred.” He gets a humanoid bopper body. He goes to Earth, helps out Manchile, Willy drives him and Cisco to Churchill Downs after Manchile is assassinated, and Willy gets arrested. Cobb raises Bubba in Churchill Downs. Cobb is killed Feb 8, 2031, by state police along with Cisco (Chapter 11).

In FREEWARE we find that the Heritagists own the Cobb S-cube and have brought it to Salt Lake City. Jenny runs it to tell Randy he’s doing fine. Randy talks to it, end of August, 2053 (Chapter 4). Cobb complains about being on an asimov machine. At the end of FREEWARE, Willy says, “When Jenny was still working with me [up until November 6, 2053], her simmie crypped us a copy of the original Cobb Anderson S-cube, and I archived it nice and safe with ISDN... Corey and I are going to design a humanoid imipolex body for the Cobbware to live on.”

*First*, he’d had a full human life (1950 - 2020), which ended when the boppers on the Moon extracted his software to make him immortal.

*Second*, in 2020, the boppers had set him to running inside a huge supercooled computer that rode around in an ice-cream truck on Earth, controlling the actions of a remote-controlled robot. Eventually the truck had crashed and the computer had melted.

*Third*, in 2030, the improved petaflop boppers had given him a self-contained body. He’d flown it to Earth to help pave the way for the bopper intended wetware invasion. They’d found a way to genetically engineer humans to carry robot personalities. This life had ended with some Kentucky state police shooting him.

### **New Cobb**

“Whenever he was running, which wasn’t all the time, Cobb would uvvy his son Willy and his grandson randy to ask when his new imipolex body would be ready. Cobb would have preferred a true meat wetware body --- and he knew where to find his DNA code if anyone had been interested --- but for now imipolex would have to do. Most of the secrets of wetware engineering had been lost on Spore Day, back in 2030.”

“Cobb was feeling itchy, so he went out crawling on the Web.”

This could be a simple (is it too creaky?) device for catching up on everything, to get a Cobb’s eye view of all sorts of scenes. He can look in on (a) Willy, (b) Randy, (c) Jenny in Salt Lake City with the Cobb running down there, (d) the Nest, (e) Stahn Mooney...

Sitting with Sylvia in the Boulangerie drinking tea, thinking of Cobb moving around on the Net, looking through all these remote eyes, being computed in parallel, I look up at her and say, “*Pop’s a computer virus!*” Funny how large the old duffer looms forever in my mind. I guess I’ll loom that way to our kids, well I hope so, one wants to loom somewhere.

Actually I don’t think Cobb will want a meat body after all. He’s a geezer, they like plastic Wal-Mart shit, he loves his new imipolex body.

Do a double reversal with Cobb. At first he seems plastic and bland, then it begins to seem that his motives are evil and sinister, and then it turns out that in fact they were good motives. Something about the housing project. The Embry C. Rucker Shelter, as it were.

## *Jenny*

### **Jenny Background**

Jenny has a remote slave simmie of herself that lives in the Heritagist asimov machine. The Heritagists think it works for them, and use it to investigate “sexual shenanigans”. There’s also a clone of herself in the Nest, together they are Jenny-1 and Jenny-2. She jets back to the Nest after they slaughter the aliens in Willy’s dome and the dome explodes, her and Frangipane and Ormolu.

Jenny is a golden carrot with a fringe of little green tentacles.

## *Stahn*

### **Stahn Background**

#### **New Stahn**

Have Stahn be in recovery, like in NA. He secretaries a meeting. There can be a good character in the group, or several of them. Stahn dies early in the book, give him an interesting death. Maybe it’s Randy Karl Tucker’s fault. Or Cobb Anderson’s. Or the realware. And later Stahn can still be alive in some form or another. Maybe he gets a limpware body just like Cobb. Would be fun, the two of them being moldies together. They’ve come a long way since SOFTWARE. Like indestructible cartoon characters.

## *Gaston*

### **Golem Chef Conundrum**

Frank and the aliens skip late into the 21<sup>st</sup> Century, beyond the era of sluggies and radiotelepathy. Frank scans the radiotelepathic UV channels and finds references for a product called a *golem*. He and the aliens find a golem at work as a cook in a big house in Los Altos Hills.

The golem is in the big house’s kitchen, standing by a sink, holding up a carrot and staring at it in a slanting beam of evening sun. The golem is man-shaped lump of piezoplastic, perhaps five feet tall. “His” name is Gaston. His skin is pale yellow and he has a nappy ruff on its head which resembles black hair. The mistress of the house, a fox-faced woman named Geena, is sitting at a counter with her soft-featured husband Tod, watching the golem at work. Apparently it is a new acquisition.

The golem continues to stand by the sink, turning the carrot this way and that, examining the play of sunlight on the orange root’s surface.

“What’s he doing?” asks Geena. “Hasn’t he ever seen a carrot before?”

“I don’t think so,” says Tod. “The salesman said he’d be a little slow at first. You did ask for cream of carrot soup.”

The aliens tap into the golem’s head and let Frank see what’s going on. The golem has photomapped the carrot surface to create a 3D wireframe model, and is



simulating a peeling strategy, scraping along the virtual carrot with an imaginary knife --- pretty much the same as a person would do, albeit automatically and unconsciously. At first this seems weird to Frank, but then he realizes it's the same thing that he himself would do, albeit automatically: look at the carrot, form a mental model of it, and imagine the best way to scrape it.

"Hurry up, Gaston," says Geena sharply.

Gaston the golem picks up a knife ... and peels the carrot. Then picks up another carrot, looks it over, peels it, then does another and another and another, doing each one twice as fast as the one before. The glinting of the sunlight on the rapidly moving knife makes visual trails that are jittery looping curves. Tod grows uneasy and interrupts.

"Could you fix me a fresh lemonade, Gaston?"

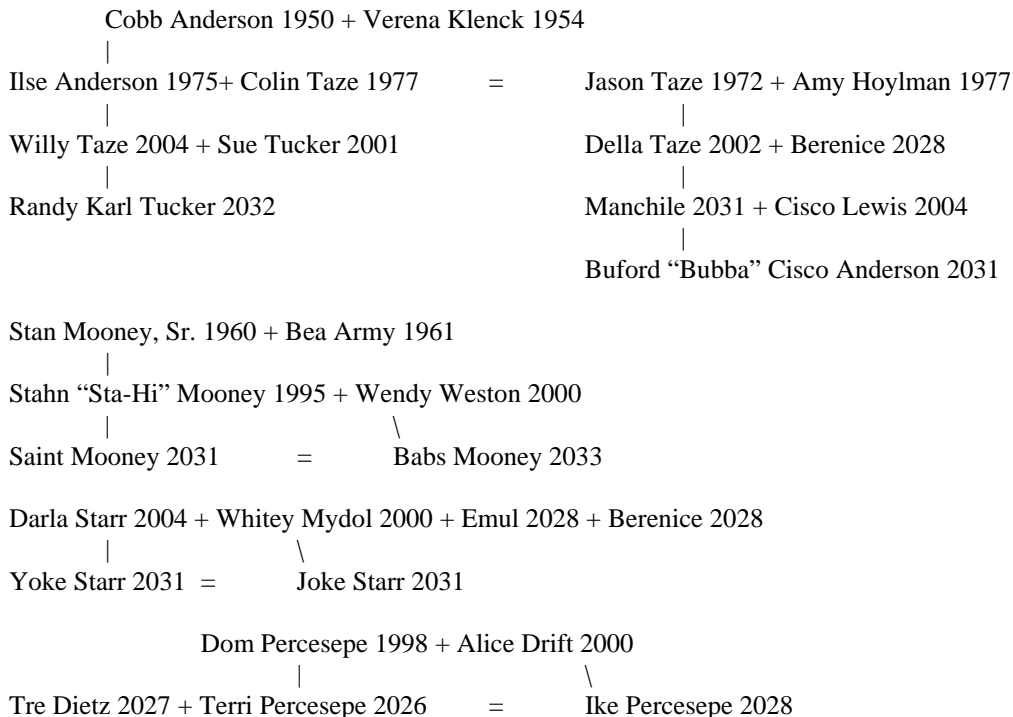
Gaston sets the knife down next to the pile of peeled carrots, rinses off his hands, dries them, pads across the kitchen, opens the fridge, takes out three lemons, carries them over to the sink, and holds one of the lemons up to the light, staring at it like he's never seen a lemon before.

"Here we go again," says Geena. "Did you have to distract him, Tod? Gaston! Finish the carrot soup before you make the lemonade. The guests will be here soon."

"No," says Tod stubbornly. "Gaston. Make my lemonade before you finish the soup."

Gaston turns and looks at the couple. The lower part of his face vibrates to produce speech. "I'm going to randomize," He gives them the finger, leaves the room, walks out of the house.

## *Genealogy*



Dolf Dietz 2050 = Wren Dietz 2052

Berdoo Scragg 1994 + Rainbow Plenty 1999 = Tempest Plenty 1994

Starshine Plenty 2021 + Duck Tapin 2016

Everooze 2042 + Andrea 2043  
Ouish 2050 + Xanana 2049 = Monique 2952 + Xlotl 2052

## ***Technology***

### ***Alla***

The alla. Anyone can buy a pen, but you need an artist to draw a picture. Anyone can get a word processor but you need a writer to type out a novel. Anyone can buy food staples, but you need a cook to make a good meal. The word-processor/novel analogy is exactly my present situation.

In each case of using the alla, the problem is how to choke infinite possibilities down to one single reality. Note that this is exactly analogous to God thinning out 2D time down to 1D. Maybe this is exactly why the aliens want to give us the allas, to watch what we do with them. They really don't care very much at all if our world gets trashed.

With the alla there is no longer any intrinsic value for any kind of matter. The value is only in form. Of course some forms also can be pre-stored. Realware. But the new forms, that's what's in demand.

The aliens are releasing one alla in Tonga to test out its effect with Yoke. Randy gets one next.

What difference WOULD it make if I could have anything I wanted. I'd get a new car and a bigger house. So would everyone else. The highways would be too crowded. Someone would wish for bigger highways. Everything would get paved. People would start using helicopters. Or flying with moldies.

How shall we duplicate the allas? It should be something cute and simple. I keep thinking of a mirror, but isn't there something better? Maybe grow the alla control cube so it includes the alla? Or maybe you wish for a 3oxer first and then 3ox the alla, no that's too hard, it should be something anyone can easily do. No, probably it's just that one of the Metamartians will spill how to do it. No, let Om the powerball tell.

The alla is, let us suppose, a rolled-over tube made of space. The view probably should appear strange when you look through it. How would the alla work? Perhaps its best to stay with quark-flipping. Just that we use a higher-dimensional field to flip the quarks. Suppose also that each alla has a tendril connecting it to the aliens' hypersphere. At some point they could tug the strings and all the allas would go away.

How would you duplicate an alla? Like duplicating a vortex tube. Think of the alla as a vortex thread that “lies down” in our space to look like a tube. Split the tube, maybe just by saying, “Split.” Or you can say like “Split seven.”

Why would anyone not give the allas away? You have no more need of money. But sex and power, yes. “You have to blow me everyday and I’ll give you anything you want with my alla.”

If everyone did split, you can get to 16 billion with 34 splits.

And everyone in the world has one, but then the aliens twitch their tendrils and they all go away. Maybe even all the changes get undone. Compare to how nice it would be to twitch away guns, or alcohol, or drugs.

Imagine two people fighting, turning a hillside repeatedly back and forth into house/nature/house/nature. Would be good. But as the book’s written at this point (July 25, 1998), an alla can’t make life. So maybe the hillside goes back to just nice rock? Or maybe Om allows an exception that the alla can make trees?

The alla is a vortex tube that dips down into our space and lies along it for a bit. The ends connect to Om. The Metamartians each have an alla within their flesh.

The alla *can* make plants. I want to be able to reforest hillsides. Maybe it just can’t make fungus, that would block the moldies. Or meat, to block people. Fungus the third kingdom, the *Dritte Reich*.

Problems with the alla. It makes “perfect crime” murder possible. “You aren’t ready for this. An alla can turn anything into anything. What if instead of turning things into other things it was making new things out of nothing. Then you couldn’t use it to remove things, you would only be adding things. But then we have the problem of out of control clutter, like the motorcycle in the ocean.

When you register to an alla, it stores an eidetic copy of you. You become immortal. This is final, purest form of the WARE notion that the individual is information. The alla can recreate you out of pure info, body and mind. And your soul comes back.

Relative to humans, the alla is “Thirty-First Century technology”.

“And, hell, once the alla limpware technology gets better, I bet we could figure out how to make life. Just ‘cause we three cain’t do it don’t mean a real wetware engineer can’t hack it.”

I’m going to assume an alla’s maximum size for its control mesh is a cube four pi meters on a side, which is 12.567 meters, which is 41.222 feet. Three allas can make 123.66 feet. Four allas can make 164.88 feet, or 164’ 10 1/2” and five can make 206.11 feet or 206 feet and one and a third inches.

Fairly many people are going to kill other people by turning them into air. Walker calls this “to air [someone] out”. (Note that after an airing out, you have to get rid of the victim’s alla then, which is hard since everyone has one so you can’t reregister it, and the allas are indestructible. Like people often find an alla and recreate the murder victim, like they did with Yoke, and then the victim airs out the murderer and it goes on and on.)

Some people are bound to misuse the alla very seriously. Both by killing each other by “airing out”, but also by creating a big sphere of plutonium which blows up as an A-bomb. Someone might do this not deliberately, but in a dream, a la Randy Karl Tucker. A “really bad dream”.

For the Metamartians, disasters due to the misuse of the allas don't matter very much — because they live in a vast number of parallel times. Even if your city gets N-blasted in a third of the timelines, it's not that big a deal. They *really* don't care about death, which is a hard thing for people to wrap their minds around. But for us single-thread-time people, it's way too high a price to pay. Om and the Metamartians hadn't quite realized this, or didn't care that much. So we're going to need to get rid of the allas, we're not ready for them, it's not working out.

### ***Nanotechnology***

What about nanotech. Growing polymers might work very well.  
Nanites like in MST3K.

### ***What Is Realware?***

Realware is the solution to the moldies' chief problem: they presently need petroleum from Earth for imipolex. We need instant imipolex for them. I'm inclined to use femtotechnology as the solution.

But first, would a nanotechnology solution be possible? Maybe. Presumably imipolex is a hydrocarbon with some doping by metals of the ytterbium series. Nanomachines could make these hydrocarbons if they had carbon. Is there much carbon on the moon? No, but there is a lot in the asteroid belt.

### ***God's Mind***

The cosmic background radiation is the One Mind. Radio, TV, aliens, God are always present if only you can receive the information. The info is not impatient to be received, it's just ever ready to effloresce.

Maybe Shimmer agrees with Cobb's view of heaven. I could wrap up the book with Cobb going back into the One Mind.

### ***Thought To Reality***

With the uvvy you can think about something and have it become a computer object. In fact, new development, if you wear an uvvy while you're asleep it could record your dreams. A kind of psychotherapy or dream analysis.

The idea is that you write a program or create a computer model, push the Instantiate button and there's your target object, directly matter manipulated (using femtotechnology) out of whatever mass (or for that matter spacetime) is handy. Randy Karl Tucker falls asleep wearing an uvvy hooked to an Instantiator and his dreams come too true...

### ***The Metamartians and Two-Dimensional Time***

The aliens don't understand chaos and contingency. They always see all the realities, the bland binary fan, and not the snaky single path picked out in it. Maybe this is something they are interested in learning about from us. Seeing the handiwork of God in our time. The master Sculptor. That's what interests them about our world. But it's tedious for them and they don't plan to stay forever. It's more like a tourist Mecca.

For an alien to leave it essentially has to die? Or maybe it can use its powerball to go back home. Each alien comes with his or her hyperspace transmission booth, yes.

The Metamartians get really turned off to Earth after a few of them *die*.

There are three problems about the aliens being on Earth: the presence of the superhuman aliens themselves, the presence of the allas they give us, and the destructive powerball from their decryptations.

Can we hope that the aliens will all go away for good? No, that didn't work in FREEWARE. But let's suppose that they would in fact not want to move here en masse. Or suppose at least that they will accommodate with us.

What is to be the eventual fate of the aliens? I think let them blend in. Or they realize they've always been here? Or maybe the allas are really the aliens? Or maybe we really have 2D time?

Grays in a Saucer. "Kevvie said that was our REAL appearance," said Haresh. But how did the aliens live in plain plastic? They have some Ylem as well, that is their essence, a glow, like in *The Secret Of Life*, they are flame people. If they ever said they looked like people, as I believe Shimmer did in *Freeware*, then they should now say they were lying. (I can't find the place where Shimmer says that, maybe she didn't say it. But just to be safe I'll put the disclaimer in.) Aliens decide to be UFOs. Josef gets to be the flying saucer. Glowing lights, plasmas, saucers. Then all's right with the world. The aliens are in the sky where they belong. Kevvie talked Haresh into this, she believes in flying saucers.

The aliens know all along that everyone's going to get an alla.

The aliens are doing a scavenger hunt kind of thing. They're a bit like anthropologists, helping Om.

Maybe they need to find out this direction by listening to the dreams of lots of people, kind of like building up a magnetic compass reading from a whole lot of iron ore. That's why they're hanging around so long. That's what they are doing in that saucer when they are gone for awhile near the end?

There should be an explanation of why the aliens like to hook up on new worlds and travel together. The number is needed in order to sniff out the right direction to go in next. Seven is a certain shape of attractor in the psionic overfield of Metamartionic Omerian symmetries. Could try and find a reason why the aliens need a group of seven. The symmetry of it.

It's dramatic to have them appear at the wedding, but why would they want to take one of the wedding party, haven't they seen a zillion farmers to kidnap? Maybe Phil's dreams are particularly helpful, his "mountains" point towards the right direction. It would be great to come back and pick this up.

### ***Bubbles***

I found a series of "VTV bubbles" while diving, opalescent pearly membranes, like little pearl-skinned balloons, wedged in the reefs. If you pop them -- as my guide Tashtego did --- they seem empty. Pearly sacs. Leathery, iridescent.

The pearly bladders are cavity resonators. Eschering a 3D room into a little space. "O God, I could be bounded in a nutshell and count myself a king of infinite

space, were it not that I have bad dreams.” [Hamlet, Act II, scene ii, I got this reference from Sheckley when I visited him in like 1981 in NYC and he was about to buy “The Last Einstein-Rosen Bridge.”]

### ***Viral Personality Encryption***

“Pop’s a virus.” What if you became a *wetware* virus? A disease that people could catch? In FREEWARE, the alien chirps could infect and take over a moldie. What if a virus could turn you into someone else? What would it be like, to be that one person living in many bodies?

### ***Getting Rid of the Moldie Smell***

I could replace the existing chipmold with a “meatmold”. But then they’d need new bodies to deodorize. Change the meatmold thing to an intron or a prion that lives on top of the mold and changes its odor. That way a moldie doesn’t need a new body, s/he just needs an inoculation. It’s like a piggyback enhancement. Goldmold. Metamold. Sporewrap. *Stinkeater*. Make it a bacteria.

### ***Moldie Raw Materials***

How many moldies live in the Nest?

Say 20,000. They weigh 50 kg each, so that’s a biomass of  $10^6$  kg, or a thousand metric tons. In terms of volume, if we assume 1 kg = 1 liter, as with water, then  $10^6$  kg =  $10^6$  liter ~ 250,000 gallons ~ 6,000 barrels. This is not so much. The US produces ~10 million barrels a day and consumes ~20 million barrels a day! A large tanker holds ~1 million barrels.

Of course you don’t make imipolex out of crude oil. Instead you’d use resins of the precursor substances. But probably you’d cook that down on Earth, and would just send the resins to the Moon.

### ***Bacteria-style Sex***

This is an expression from Lynn Margulis and Doreen Sagan MICROCOSMOS. In bacteria, sex and reproduction are not linked. They have sex by just swapping some DNA with some other germ. This is more like what moldies would actually do. I made kind of a mistake in assuming they’d be doing the 2-parent thing. Well, it made them easier to relate to, but it’s not at all necessary. Computers right now have bacteria-style sex all the time. Getting programs from each other. Is exactly what it is. So, sure moldies would do that.

One reason humans don’t have conjugation is that we are multicellular. We have about a trillion cells. And I think it matters that all the cells have the same DNA. So if you wanted to do conjugation, it would be more complicated, you’d somehow have to swap in the new DNA for all trillion of the cells. For a bacteria it’s simple, though, because there’s just one cell.

The phrase looks like “cafeteria-style”. “How was your dinner with the duchess?” “Underwhelming. We had bacteria-style sex.”

### ***Rayon and the DIM-spider***

The dictionary says rayon is a “synthetic textile fiber produced by forcing a cellulose solution through fine *spinnerets* and solidifying the resulting filaments.”

Perfect. Because before I looked this up, I wrote about a DIM-spider spinning big cocoon spheres out of rayon. A *spinneret* is exactly what a spider has. The DIM-spider would carry a pouch of mashed-up paper and wood and weeds and grass to get the cellulose.

### ***The N-torus***

I've been thinking about the thing where in modern physics they've adopted the Kaluza-Klein idea that there are more spatial dimensions (some say 10, some say 26) and that the extra dimensions are all compactified, i.e. curled around into tiny circles. It kind of pisses me off to have those dimensions curled up. Like in "Wag the Dog," why are they so *shifty*, so *stand-offish*. Those pawky, stingy uptight physicists, wasting all those good extra dimensions.

Thinking about it some more, I realized I can start with 0, a point, and could say, oh the point has an extra dimension which is compactified, so the point is a circle, and then it has a compactified 2nd dimension so it is a torus, and then so on to N-torus. Note that an N-torus can only exist in N+1 dimensional space. This seems perhaps to set into play an off-center tumbling dynamic where we have to go out to infinite dimensional Hilbert space.

Like so that A Squares guts don't fall out, he should be curved around in the 3rd dimension. His top should touch his bottom. This like a point should curve around into a circle. But it doesn't stop there. If I give the point a 1D extent and then curve that extent into a circle, the object is a 2D circle. But the line of the circle can't "really" be 1D in a 2D space, it must have a breadth, and I can curve the breadth around onto itself in 3D to make a torus.

If I start with a line instead of a point, if give the line a 2D thickness and curve that thickness into a circle, the object is a 3D tube. But then since it is in 3D, the innards of the tube will fall out, unless I curve the inside and outside of the tube together in the 4th dimension. And then I need to curve it in the 5th, etc.

It's a very interesting new solution to the question of whether A Square has "height", and if so why he doesn't fall out. But it's a dialectic solution that leads to infinite dimensional space. "The fools and running dogs of contemporary physics have little or no inkling of this profound insight," said Onar Anders.

### ***How Thick Is Flatland?***

It would be nice to write an essay, "How Thick Is Flatland?" Some options:

(1a) 0 thickness. Square is 2D patterns in this, "ink". You lift Square out you make a hole in the plane. Or you lift him by doubling the plane at that spot. But he is inherently 2D, it almost makes no sense to ask what holds him in on ana/kata.

(1b) 0 thickness and the matter of Flatland is bumps in this thickness.

(2a) small thickness of Flatland, square inside this thickness. Again you make a hole in Flatland to lift him out, even more so. Here there's more of a question about what holds the stuff in on the ana/kata sides.

(2b) square is thick, but rests on a separate Flatland of indeterminate thickness. Coin on a tabletop analogy. Hinton's "Episode of Flatland" and his aether thorns. Easy to lift him up. Certainly he has ana/kata membranes.

(3) Thick flatland, square embedded, but ana/kata is compactified, Square's ana side touches his kata side. Seems impossible to lift him out as the ana/kata has no room. We wouldn't even be able to see it, light from Flatland would circle the ana/kata and not come out to us. See comments in the N-Torus, above.

### ***The Powerball***

What *are* those wowo things that ate Kurt, Darla and Ptah? Let's have them be a side-effect of the decryption of a Metamartian. Each decryption of a Metamartian also produces a thing like a signaling beacon. One of these is bundled with each Metamartian personality wave. When you decrypt a Metamartian, one of these things appears and it attempts to call Metamars, using a subether Hilbert Space transmission technique. It's used as a metabeacon. Although the first few times it appears it comes through a wowo, that's not what it *is*, the wowo was just a handy thing which attracted it.

What to call it? Initially I used the name "N-by-N" for these things because the name made me laugh, sort of, being a generalization of the dumb-ass locution "4-by-4" for a high-hat redneck truck or inflated yuppie sports utility vehicle with 4-wheel drive and 4 — what? Gears? And don't they know that 4-by-4 means 16 of something? Fucking morons. So out of some perverse desire to torture myself I thought to call the aliens thing an N-by-N. So, instead of a 4x4 "four by four" drive, I had an NxN "N by N" drive. (Side riff: think of a wo<sup>N</sup>, a wowowowowowowowo...) Or n-by-n. Or enbyn. Or enbynner, for N-by-N-er. Or eNbyN.

But, hey, "N-by-N" is too confusing, and why annoy myself, and when you see it on the page, you're confused every time you see it. I really just need it to be 5-D, something that operates above the Metamartians 3 space + 2 time signature or our 4 space + 1 time signature. ["Signature" is the word used by cosmologists for precisely this distinction. In reality, our spacetime is considered to have a signature of 3+1.] So now I need to do a search and replace putting ??? in place of N-by-N everywhere.

What to call the thing, really? Tunnel, wormhole, chronosynclastic infundibulum, funnel, nexus, portal, door, magic door, porthole, hyperjump, hyperlink, Kaluza-Klein anomaly. Funny how many words already exist for this concept. It's clearly very dear to us, it has a big objective correlative meaning of, I would guess, both "travel" and "memory association". I could use one of the existing words or I could make a word up. Gaahr. Twinker. Winky. Winkle. "A Wrinkle In Time." Hyperlink is very topical. But doesn't capture the notion of the entity as a thing in and of itself. I like door, except the thing is more like a sphere. A ball. Bounceball. bounceball. powerball. There's a popular lottery called Powerball, I was reading in the paper this week about some gigundo pay-off they got, so that word would resonate. Let's S&R that and see how it looks.

Unfortunately, the Metamartians designed the powerball's dialer to function in 2D time (i.e. in 3+2 spacetime, unlike our 4+1 spacetime). They didn't really think it through, they assumed time would be 2D wherever a powerball popped up. That spacetime would have the same signature. Now when it tries to work from a 1D time



environment the extra time dimensions of the thing get reified as higher space dimensions.

Now in Metamars, the folks live in a stack of parallel times. So there doesn't really have to be one particular singled-out time like in our world. All the choices exist. If I think of a Lineland, a 1D space, I visualize Lineland's spacetime as a sheet, and a Metamars kind of Lineland as a fat book of sheets, the sheets actually melted together. When you go from 2D time zone to a 1D time zone the fat stack of extra times gets squeeze down to the one sheet. And *something*, call it the Mind of God, has to pick out a *good* sheet to use. Think of it as lumpy, as a really nice lamina that gets sanded out of a fat block of possibility wood, like a turned and sanded burl bowl. The God Mind lives in those extra dimensions in place of there being all the parallel times that Metamartians inhabit with their multiple parallel lives. Instead of 2D time we have a 4D God.

Whenever a powerball tries to snag onto our spacetime, things go wrong because it is trying to open up a signature 3+2 object in a signature 4+1 spacetime. It makes a weakly coupled hypersphere.

When someone falls into it, they should diminish as if getting farther away. First their insides go, so it looks like they're hollow for a second.

The powerballs participate in some way in the dream level. They move about via the racial memory, the social archetype, the shared dream, what does Jung call it? The collective unconscious. Dreaming is a type of 2D time.

How does the powerball that accompanies any given Metamartian's personality wave pick *where* to spang into human spacetime? Perhaps it uses an associative process. Perhaps it has access to the info of the powerballs who've already opened or tried to open near the site. Or, which would make more sense, it uses information from the new Metamartian. Maybe it can hang fire and not pop out until the Metamartian's been alive for some short period of time, but this shouldn't be more than a few hours.

The arrival of a powerball comes across as somewhat disastrous for most of the target sites. But maybe it's not as disastrous as people think, maybe it's only a tunnel to a hyperspace holding tank.

Can tweak the appearance of the wowo as it eats Ptah. Maybe it has a red surface that *looks* like meat being ground up. But maybe really Ptah is just getting *smaller*, like he is moving kata or ana.

Suppose that all the things taken by a powerball end up in the same place, in some higher dimensional oubliette. And Phil keeps dreaming of this "room". Perhaps the people in there move in higher dimensions, and as you watch them there will be gaps in their bodies, like if the elbow jigs up ana a bit, you just see the hand and then the upper arm with seemingly a space in between.

The very first powerball, Shimmer's, had no association other than Shimmer's experience. Shimmer met Darla early in Shimmer's existence, so the Shimmer wowo could have homed in on her for that reason. But I want Shimmer to be completely blameless in this.

### **May 23, 1998, Getting Swallowed by a Powerball**

I worked out a concrete image of how the powerball swallows you. Think of Flatland. First of all A Square is looking at a picket fence. In between him and the fence a powerball appears (an upward bump in the plane that is a round berm capped by a column capped by a sphere). The light bulges around the bump to avoid it, this has the effect of pushing out the pickets to the left and the right, leaving a big hole where he sees the powerball. The powerball moves towards A Square and at some critical moment his skin moves up the berm, up the column, over the sphere, back down the column, down the berm, and the powerball is inside him. His innards are stretched and this tension is going to pull his square skin up along the column like a lipstick ring on a blow-jobbed dick. There is energy inside the powerball so there will be light glowing out of A Square. If he were to twist while the bulge is inside him he could tear. When the skin finishes sliding up, he will be a pattern on the top of the sphere at the top of the powerball column. Then the column can pinch off and he is on a sphere outside of space.

In order to do knot and flip the ring, Kurt would have needed to be able to go up into true 4D, not just be glued to the hyper surface of a hypersphere. Kurt finds the flaw right away. Kurt can jump off the surface and drift back.

Maybe Ptah liked getting taken? Why were the aliens scared of the powerball? Why did they think it might take several of them?

The very worst thing you can do when the powerball is swallowing you is to *twist*.

### **July 23, 1998, Powerballs As Part of the Aliens**

What if we say the aliens are higher dimensional and that each alien is actually *connected* to its powerball. I have an image of a ball floating over Flatland and dangling down a tentacle that either rests on Flatland making a 2D patch like a nose pressed against a windowpane, or which extends through Flatland and makes a 2D cross-section.

In the same way the aliens are hyperspheres that dangle something down into our space. First the dangler appears, decrypted from a personality wave. And then the ball attached to the dangler swings through our space, picking up something interesting on its surface on the pass-through. It has to swing through so as, um, to “knot” the dangler into the space? an even higher space we might think of all the 4D powerballs as parts of a 5D powerball. Maybe this is why they fuse? No, too complicated.

Better to have the separate 4D alien spheres fusing. And then you have a single big sphere dangling seven tentacles or jellyfish arms down into our space. Jellyfish — their streamers are called “oral arms” and the beasts eat whatever sticks to these oral arms. The seven Metamartians as oral arms of a four-dimensional jellyfish.

Suppose that the powerball is an integral part of the alien, kind of like an anchor or tail. Start with the powerball kata and the alien bulging out into our space. The powerball swings through our space and goes to the kata side. As it swings through, it captures whatever object is on some disk. It rises up ana. The cross-section of the tail is a solid-seeming sphere that darts over and collides with the

original alien, pinching a bit of our space into a clamped grip. I drew a picture of this, maybe it's too complicated.

### **Powerball As God.**

A simpler idea. Suppose that the powerballs are a completely different race, that the aliens are symbiotic with them, maybe kind of scared of them. They like to take people and examine them. Not clear if there is one or many powerballs.

Here's an even better idea. There is only one being behind the powerballs, they are like fingers of a hand. All are one. The being is Om, a she-God, the God of the Metamartians. Wherever they go, Om follows. Om also provides the femtotechnology of the alla. The Metamartians pray to her.

Have Om's powerballs be her finger tips. Really they should be tips of rounded off hypercylinders, rather than spheres so that they can connect to each other. Have the flaw be a fingernail. But its easier to leave them as hyperspheres. In this case, Babs really has to be five-dimensional so that the separate hyperspheres of Phil's and Kurt's powerballs are connected, but I don't think I'll mention this. I will stress that Om is huge, she should be really big to have room to remember everyone on Earth who gets an alla — which will be everyone.

### ***The Metamartian Powerball Snatches***

#### **Original**

1<sup>st</sup> (Shimmer the woman) This first powerball takes a Silly Putter from Corey's isopod. Humpty Dumpty.

2<sup>nd</sup> (Ptah the man) gets Darla. Darla has a *wowo* near her, so the powerball gets fixated on wowos.

3<sup>rd</sup> (Peg the unicorn) got Tempest Plenty and Planet in Santa Cruz through Starshine's lawn-ornament *wowo*.

4<sup>th</sup> (Wubwub the pig) killed Friedl and Kurt Gottner through a *wowo* and Tre turned all the wowos off.

5<sup>th</sup> (Siss the snake) got the oak tree where Kurt's *ring* was buried.

6<sup>th</sup> (Josef the beetle) got Ptah near Yoke.

7<sup>th</sup> (Haresh the bird) Got Phil near the aliens.

#### **Revised**

1<sup>st</sup> (Shimmer the woman) This first powerball takes a Silly Putter from Corey's isopod. Humpty Dumpty. First living thing Shimmer sees.

2<sup>nd</sup> (Ptah the man) Shimmer directs Ptah to have it get Darla for revenge, or because Darla is so interesting. Om notices Darla's *wowo*.

3<sup>rd</sup> (Peg the unicorn) Om wants a good *wowo*, Peg finds the biggest one in Rainbow's lawn. Om scoops so heartily she gets Tempest Plenty and dog Planet along with Rainbow's lawn *wowo*.

4<sup>th</sup> (Wubwub the pig) Now Om is even more interested in the *wowo*, so Wubwub helps her find Kurt Gottner, kill Friedl by accident.

5<sup>th</sup> (Siss the snake) Om wants to go back and flip the ring again, Siss suggests he take part of the oak tree to have a plant.

6<sup>th</sup> (Josef the beetle) Om wants a Metamartian, and Josef tells him to take Ptah. Ptah copies himself at the last minute.

7<sup>th</sup> (Haresh the bird) Om want Phil to help Kurt.

***The Measurements of Moldies, Cappy Jane, and Precious Cubes***

**July 11, 1998, Rudy Asks Walker about Valuable Elements**

Hi John,

I have SF engineering questions for you again. As you recall, in SAUCER WISDOM, I introduced the alla, which transforms matter. Now I am using the "science" from this "non-fiction" book in my new science fiction novel REALWARE. (I get a lot of personal amusement from the fact that I am so far into Munchausen territory that even my "scientific sources" are now tall tales I made up.)

I have a young woman named Yoke who has been staying in Tonga, where the King arranged that some aliens give her an alla. In return he wants enough of some precious substance that he can ship to Fiji and sell to pay off the national debt. I would prefer that the substance be a simple element. Originally I'd hoped to get by with a perfect one-meter cube of gold, but this doesn't seem valuable enough. And a perfect ten-meter cube of gold is too heavy, for an additional constraint is that the object should be placed upon a smallish Tongan Navy ship. It will be created by transmuting air, which introduced some other issues. What's your thoughts on the most \$ for least mass substance?

Here's my computations thus far.

When Yoke leaves Tonga she makes one last valuable cube of metal that is supposed to pretty much pay off the Tongan national debt, which I imagine to be in the billions. The cube is to be placed on a not-so-big Tongan Navy ship.

Initially I planned for a perfect one meter cube of gold. Now gold has a specific gravity of 19.32, that is, it weights about 20 times as much as water. So a one meter cube of gold, which would weigh one ton if it were water, will weigh 20 tons if it is gold.

It's value? 1 000 kilos is 2 000 pounds is 32 000 ounces, and if we say gold's \$100 an ounce (though it might well be less rare and less needed in 2050), this makes \$3 200 000 per ton, about \$3M per ton. So 20 tons would be worth \$60M, which is not enough to make a difference in a national debt. I think we would need at least \$3 billion, so 1000 tons. Since the one meter cube is 20 tons, you need the cube root of 50 times as big on each edge. What if we just went to a cube four meters on each edge. That would weigh  $20 * 64 = 1280$  tons and be worth \$3.6 billion, meaningful.

Given that a kilogram of air takes up about a cubic meter, the air for a thousand tons is a million cubic meters, which is like all the air in a football-sized cube building, like the size of the Moffat blimp hanger. That much air rushing in would really make an unpleasant and dangerous wind storm. It would sink the ship.

Another issue is that a big container ship carries 10 000 tons, so 1000 tons is just barely feasible for the small Tongan Navy ship. I could maybe do this, it's kind of nice vision.

But what if I used platinum instead? A 2 meter cube of platinum would be 170 tons. Maybe platinum is worth 5 times as much as gold, or \$500 an ounce. So a ton would be worth \$15M, and 170 tons would be \$2.55 billion, which is maybe enough.

Best,

R.

**July 11, 1998, Walker on Valuable Elements**

>> When Yoke leaves Tonga she makes one last valuable cube of metal that is supposed to pretty much pay off the Tongan national debt, which I imagine to be in the billions.

According to the CIA World Factbook:

<http://www.odci.gov/cia/publications/factbook/country-frame.html>

Tonga's external debt as of FY 93/94 (the most recent data available as of the publication of the 1997 edition of the Factbook) was US\$48.8 million.

But of course, since this is 2050, by then perhaps Gullichsen will have taught them not only the intricacies of Internet connectivity, but also the merits of deficit spending.

>> But what if I used platinum instead? A 2 meter cube of platinum would be 170 tons. Maybe platinum is worth 5 times as much as gold, or \$500 an ounce. So a ton would be worth \$15M, and 170 tons would be \$2.55 billion, which is maybe enough.

Gem quality diamonds. It's all one element, the simplest crystal structure you can imagine, low Z and hence lightweight, and price is exponential with mass. You wouldn't want to make a cube, as that would reveal you had an artificial source, which would cause the market to crater. Just a suitcase full of cut gems from 20-200 carats will do. Finally, there's a global market in diamonds so they'd be easy to unload. (Actually you would want to hit the fat middle of the market rather than the exotic high end, where the key players know most of the merchandise and where it was last seen. A number of ultra-large, previously unknown stones would also raise suspicion of synthesis. But of course you could hint of a "secret, deep-sea source somewhere in the Pacific", which has the additional merit of being true.) Finally, in Saucer Wisdom you've already established that an alla can make diamond at least good enough to be used as windows, which is already very close to gem quality.

Very large rubies and emeralds are more valuable than diamonds of comparable size, but they're a lot harder to make, being a compound with uniformly distributed impurities. Also, the market is smaller and less liquid.

**July 11, 1998, Rudy Insists on Gold**

>Tonga's external debt as of FY 93/94 (the most recent data available as of the publication of the 1997 edition of the Factbook) was US\$48.8 million.

Great news! Thanks God the Kings are so frugal.

For this trifling some of money, I think I will go with the gold. I might use diamonds later on in the book. But I have a feeling that by 2053, synthesizing big diamonds is going to be a fairly standard and mundane kind of thing. Diamonds are nanotech, really, not femtotech, and you know how I feel about nanotech. Actually, duh, Yoke could be making dollar bills. Though that would be counterfeit, wouldn't it, and just microtech.

Of course the most valuable substance of all is going to be imipolex (for making more moldies). What a disaster it would be to alla up a big cube of plutonium. (I recall from THE SEX SPHERE making an A-bomb out of two six KG hemispheres of plutonium that a tripped-out woman slams together like cymbals to set off the explosion.)

\* What IS the most valuable non radioactive element, viewed as bulk commodity?

\* Do you think the description below sounds reasonable, or do you think the effects of the vacuum pop would be more drastic?

\*\*\*\*\*

"Consider this entire interlude expunged from the historical record," said the King. "It's best this way for all of us. I wouldn't want the Fijians to know I'm selling fairy gold."

So Cobb and Yoke buzzed the Navy ship, and when Captain Pulu waved a go-ahead, they landed long enough for Yoke to outdo herself by making a perfect one-meter gold cube, weighing in at just under twenty tons. The cube was quite the elegant objet d'art.

But, in the event, making so massive an object out of thin air wasn't a good idea. As Yoke later calculated, if one kilogram of air takes up a cubic meter, twenty tons of air takes up a cube some twenty-seven meters on a side. A volume the size of a ten-story office building.

The whirlwind of so much air being sucked into the alla-cube made a thunderclap that knocked Cobb and Yoke off their feet. The ocean surged up to fill the sudden vacuum, tossing the ship high high into the air. But nobody was hurt, and for a wonder the ship didn't sink, and the Captain didn't shoot at them, and Yoke and Cobb flew on up into the sky, leaving the Tongans with nearly one hundred million dollars worth of gold.

### **July 11, 1998, Walker on Alla-Caused Implosion**

>> \* What IS the most valuable non radioactive element, viewed as bulk commodity?

I think it's carbon, in the form of a huge (say, the size of your fist) diamond. Other elements are far more rare (or difficult to separate, as is the case for most of the rare earths), but in most cases there isn't an application for them and, consequently, a market. Of all the elements traded on public commodity exchanges (in bulk, non-crystalline form), platinum usually leads the pack, though it has fallen below gold when rumors of platinum-free catalytic converters hit the market. Palladium led the pack during the cold fusion frenzy, but has fallen into third place. Rhodium is more pricey than any of these, but has few industrial applications so the market is thin and illiquid, and is not publicly traded.

>> The whirlwind of so much air being sucked into the alla-cube made a thunderclap that knocked Cobb and Yoke off their feet. The ocean surged up to fill the sudden vacuum, tossing the ship high high into the air. But nobody was hurt, and for a wonder the ship didn't sink, and the Captain didn't shoot at them, and Yoke and

Cobb flew on up into the sky, leaving the Tongans with nearly one hundred million dollars worth of gold.

I'm not sure from the context where the alla-cube was with respect to Cobb, Yoke, and the ship. As a rough engineering approximation, it's probably OK to assume the close-in effects from an implosion of  $(27 \text{ m})^3$  of air are equal to that of an explosion generating a one atmosphere overpressure on a sphere with the cube root of that volume (neglecting effects near the center of the implosion, which would not affect observers removed from it).

Anyway, a 1 atmosphere overpressure at a distance of 27 meters is a big chunk of C4, but something one can easily survive as long as there's no flying debris and you cover your ears and open your mouth when it goes off.

I'm not sure an implosion of that magnitude would have an obviously visible effect on the ocean below. If it were undersea, absolutely, but the difference in Reynolds number between air and water means the coupling will be very weak for an air burst, so the effect on the ocean may be nothing more than a shallow ripple.

(One can calculate this--I'm just guessing it might not make an obvious waterspout.)

#### **More measurements. Kiloton bomb.**

The biggest alla thing you can make is  $4 \times \text{PI}$  cubed meters, which is 1984.4 cubic meters, call it 2000 cubic meters. A cubic meter of water is a ton. So an alla can make a two kiloton bomb.

### ***Can Cappy Jane Fly Down Fast?***

**Email question to Walker:** >> Another question. What do you think of a big grex moldie geostationary satellite flying the 20,000 miles down to Earth's surface in 20 minutes?

#### **Walker's answer:**

Doable, though expensive in energy. When you're coming back from the Moon, it takes two or three hours to fall from geosync to re-entry, and you're actually travelling rather slowly when you pass GEO--you pick up most of the final speed near the Earth. Rough numbers are 8000 MPH passing GEO and 25000 MPH at entry interface (400,000 feet).

So, to get down in 20 minutes, you need first to entirely kill your orbital velocity (which takes as much energy as it took to get you there), then give yourself an inward kick sufficient to speed up the initial part of the fall so you don't spend too long getting to the steep part of the gravity well. This means you'll re-enter hotter than Apollo, but that's not a big problem--the Apollo heat shield was just an ablative polymer, and was sufficiently over-designed that based on experience it would have been adequate for a re-entry at 36,000 MPH.

But since you've established in Freeware that a grex has an energy source sufficient to fly Earth to Moon single-stage (something no chemical propellant can possibly do--you could just barely get to the Moon, maybe, but braking your velocity to land puts it way over the edge), I'd guess (without pulling "Fundamentals of Astrodynamics" and spending an hour or so working it out) that getting down from GEO in 20 minutes requires less delta-V than the Moon trip. The big advantage

Earth-bound is that you don't need brakes--you just dump the energy in the atmosphere. If the Earth were airless, you'd have to double the delta-V, which would send the initial mass ratio into cloud cuckoo land.

### ***Walker's Final Draft Comments, November 11, 1998***

These are quotes from a long email from Walker after he read the version I sent in to Avon.

#### **Moon to Satellite to Earth**

[Here Walker is talking about how loonies use Cappy Jane to talk to Earth.]

Actually, except for rare occultations when everything lines up just right, satellites in geostationary orbit ("geosynchronous" only implies the satellite has an orbital period of 24 hours--to appear stationary in the sky it must, in addition, orbit in the Earth's equatorial plane and have an eccentricity of zero) are almost always visible from the near side of the Moon, regardless of where the Moon happens to be in the sky as seen from Earth. Unlike most moons in the solar system, our Moon does *\*not\** orbit in the equatorial plane of its primary. Instead, the Moon's orbit lies almost exactly in the ecliptic plane in which the Earth orbits the Sun. Since the Earth's equator is inclined 23.5 degrees with respect to the ecliptic, this makes geostationary orbit appear as an ellipse whose major axis is about 20% of the Earth-Moon distance, so except when alignment is such that a satellite appears at a node behind the Earth, all satellites in geostationary orbit will appear offset from the Earth. Since geostationary orbit is only 10% of the way to the Moon, there isn't even a substantial transmission power or light-lag disadvantage in using a satellite on the far side of the Earth. The cheapest solution would probably be to beam from the Moon to any satellite which had the ultimate destination on Earth in view--that way you could send the message in only two hops. The Earth/GEO/Moon distance scale is shown in an image: <http://www.fourmilab.ch/earthview/figures/toscale.gif> which I produced for my "Inconstant Moon" page: [http://www.fourmilab.ch/earthview/moon\\_ap\\_per.html](http://www.fourmilab.ch/earthview/moon_ap_per.html) It does not, however, show the inclination of GEO with respect to the Moon's orbital plane.

#### **Six Miles Of Water**

[Walker objects to my original plan to have Cobb let the ocean fall on him after the aliens took the bubble away.]

In several other places we've learned that moldies can be destroyed by fire. When the sea water rushes in, the air that was inside the dome will be adiabatically compressed, rising to a temperature far higher than any flame. Cobb, and Yoke inside, will flash into ashes (probably dissociated and ionized) well before the water reaches them.

[I protest. "FUCK! Look, wouldn't the bubble maybe just lift up off the bottom away from them before it got squashed and hot? Either I have to ignore this or rewrite this scene a lot, and I love the image of six miles of water coming down on them..." Walker answers.]

I don't think so, because the water's going to be pressing on the bubble on all sides while the sea floor remains pretty unyielding. Actually, if the bubble disappears



entirely (floor as well as roof), the sea bottom will probably erupt like a mud volcano due to pressure from the surrounding seafloor.

You do mention that that the Metamartians were "standing by the dome's pure diamond wall, looking back toward Cobb and Yoke, waiting". If, after sealing up with Yoke inside, Cobb joins them at the wall, when the dome disappears, the water will surround him before the extreme compression and heating of the air inside occurs. Substantial optical energy will propagate through the water, but Cobb can reflect that by turning his skin white or silver. Water strongly absorbs infrared and X-rays (in case there's any sonoluminescence-style plasma action in the final stages of collapse). Cobb'll need some thrust to punch through the advancing water wall (which will be about as hard as a steel plate), but if he can put a man on the Moon...

Something like,

"And then the dome disappeared, and rock hard abyssal ocean water rushed past Cobb and Yoke, crushing the air within the dome into incandescent white light, illuminating for an instant, like the first flashbulb since creation, the bizarre creatures inhabiting the benthic plain."

### **How Allas Might Work**

Josef explains to Yoke that the alla works by "quark flipping" and that any required energy flows into the alla from Om. "Quark flipping", and Josef's description "Quark-flipping is like jujitsu. As if to look at something and then to look at it in a different way" implies to me that the alla is able to flip isospin--that is, change protons into neutrons and vice versa. Now while that provides some latitude for transmutation, especially for heavy elements and allowing for subsequent further changes due to alpha or beta/inverse beta decay, it doesn't help you at all when you want to turn, say, air into gold, because then you have to somehow overcome the nuclear coulomb force and make the light nuclei stick together, which gets very difficult once you're trying to make nuclei heavier than iron.

But, hey, we know already that the alla is a higher-dimensional device--there's that weird swirling of space when you look through one, and later on we learn that it is a segment of a closed hypercylindrical vortex loop connected to Om which intersects our space. So perhaps its apparent magic is just the fourth dimension playing its usual tricks on us. Okay, let's assume there is a fourth (and possibly fifth, etc.) dimension in which things which are far apart in XYZ are much closer together--nothing exotic there--that's just the Kaluza-Klein theory that Witten and the stringy dudes keep talking about--rolled up extra dimensions. And suppose that the coulomb force does not propagate into the extra dimensions (if it did, after all, it wouldn't be inverse square, would it?). So, suppose you want to make an atom of gold, *there*. Well, just push an atom of nitrogen to the right place (through the higher dimension so intervening matter isn't a problem), then grab other nucleons from other atoms in the air and gently push them into the original nitrogen nucleus until you have the desired number of protons and neutrons. What makes fusion so hellishly difficult is that in order to get over the coulomb barrier you have to accelerate the projectile to a moderately high energy (tens of KeV for hydrogen fusion), so when one connects, you end up with a fast-moving fusion product that doesn't stay in one place as you'd like. But by transporting them through the fourth dimension in which the coulomb

force does not propagate, the alla is able to gently drop them into the interior of the nucleus, which adjusts to minimize its energy.

This, of course, violates conservation of energy, but there's a fix for that as well. Every time Om fuses light nuclei, Om absorbs the released binding energy through the vortex tube. Whenever Om adds nucleons to an iron or heavier nucleus, the needed energy is piped down the vortex tube. On balance, over zillions of alla users on multitudes of planets in parallel universes filling two dimensional time, it all balances out--Om is more of an energy bank than a source of free energy. Even on the Earth alone, in equilibrium, about as much air will be turned into stuff as stuff is changed back into air.

In "The Fabric of Reality", David Deutsch works out how, with a multiple worlds / parallel universe viewpoint, time travel is consistent with conservation of energy if you require only that energy be conserved *across all universes*. Om would, in this view, simply be shuffling energy back and forth to keep everybody happy.

### **Alla Disasters**

(1) Om may be good, but seems to be neutral when it comes to actualizing the selection of any alla user. Randy's experience with the giant snail shows there's no Asimov-robot-law-like safety lockout on what the alla will do, as does Kevvie's temporary murder of Yoke (had anybody who didn't already have an alla grabbed Yoke's instead of Phil, she'd have been a goner, as Kevvie's subsequent demise confirmed). Further we know that Om is not entirely benign--consider the physical pain suffered by powerball abductees and the emotional suffering of those left behind.

Now here's the problem: Randy's sporehead dreams veer off into giant snails with his mother's face. What's the probability, on any given night, that some lifter in a city of a million will doze off, uvvy-attached, and dream of, say, a monumental statue of Peter Tosh made of plutonium? Oops. Well, if the probability is one in a billion, then every three years a city blows up.

(2) Anybody with an alla can split it into more, and there's no mention of a limit on how many. Suppose somebody goofs and thinks "ten trillion" instead of "ten"? Now the entire biosphere is filled with allas. It only has to happen once for global "Game Over".

(3) As Kevvie demonstrated, turning your victim into air is an highly effective means of murder. If done in the absence of witnesses, there's no physical evidence of any kind: "The alla: every crime a perfect crime!". Street slang for this is to "air out" somebody, for example, "Nobody's seen Rudy since the Halloween party. Word on the web is that Frank Shook aired him out over a dispute about that book he wrote." If a person's uvvy keeps an indelible record of everything you alla-make and -unmake, then the gimmie has something to go on.

### **Possible "Big Ideas" Behind the Book's Events**

I shared your editor's reaction that there was some "Big Idea" about to be revealed in the course of the characters' adventures, but arriving at the end, it never seemed to appear. The alla *is* a Big Idea but, as the editor noted, there's relatively little exploration of its consequences on humanity (which I suspect would be far more chaotic, if not catastrophic, than anything in the book--I mention a few possible downsides in my comments above, but many more are possible).

The following are unrelated (though perhaps in some cases compatible) "Big Ideas" which I thought might be coming as I read the book. Some of these address the motives of the Metamartians and Om.

(1) FINAL EXAM: When Om, who can see all timelines, observes the emergence of a species whose actions are damaging in too many of them, She arranges that they receive allas before they develop interstellar or interdimensional travel. If the species is unworthy, it will destroy itself or turn into navel-contemplating lotus eaters. Only species able to transcend material constraints are allowed to spread from their material home.

(2) EATER OF SOULS: By giving every human an alla, Om obtains a complete mind and body dump of every human and moldie (except those, the Amish for example, who would refuse allas out of their own beliefs) sufficient to re-instantiate them, and dynamically updated. Perhaps:

(2a) Om is the ultimate voyeur, and gets off on vicariously living the lives of billions of additional beings.

(2b) Om is a soul farmer, granted Her powers by the SUN in return for collecting souls by means of allas and delivering them to the SUN.

Perhaps the SUN is entirely benign and wishes to be One with all sentient beings, with Om's soul harvesting by allas the means to this end. Or perhaps in some fashion, it feeds on souls, in competition with the demons who devour them on their journey into the White Light.

(2c) The alla is a sinister plot to control/destroy humanity. Om knows that once a society has had the alla for a generation or more, even if it survives the transition beyond material- constrained existence, it can be instantly reduced to hunter/gatherer existence if the allas suddenly stop working. This allows all-seeing Om to pull the plug if things get out of hand, or maybe it is the Metamartians who are evil tricksters and are lying / deliberately plotting to destroy humanity with allas that stop working some time after they leave.

### **Will There Be Another WARE?**

Much of the book struck me as the kind of "happy ending send-off" to the \*ware characters that Robert Heinlein did for his characters of three decades in "The Number of the Beast". But then a little voice keeps whispering, "That crafty Rucker may be pulling a big trick on us all" (as Heinlein, in fact did, when he went on to write several more novels involving characters from "Number" which occur in a different timeline).

So maybe the reason there's so little discussion of the consequences of the alla on humanity and moldity and humoldie society and culture is that "Realware" ends during the Alla Summer of Love (when even the Haight is reborn in brilliant, dynamic colors), and everybody is as bright and optimistic as in the Fall of 1967 or after the collapse of the Soviet Union. Before long, the shit train starts to really pick up speed, and the next book will be, seen principally through the eyes of Yoke, Phil, Randy, and Babs, how society and those in are transformed in a world in which ideas- intellectual property--dare I say "knowware"--are the only property that matters. (I recall you saying that you hated the title [verbal] "noware"--this isn't an attempt to

irritate--damned if I don't think you \*may\* be thinking in this direction, if not that title!)

## *Society*

### *Jobs*

Have someone be a genetic counselor. Counseling people on what to do about the things they discover about their genes.

## *Good Words and Phrases To Use*

**Cruster.** The word “crusty” is used a lot by kids these days. Georgia’s always talking about “crusty old punks.” Hence “cruster,” for a crusty old person.

**Ingredientes.** Appetizers in Buenos Aires.

**Euhemerize.** “To explain or interpret euhemeristically.” Euhemerism. “A theory attributing the origin of the gods to the deification of historical heroes, after Euhemerus, 4th C BC Greek philosopher.” I’m going to like euhemerize you, dude.

**Luego.** Spanish for “later.” Use for goodbye. Like “ciao”.

**Mung-Heidi.** Made up word for somebody like Kevvie. Loonie slang. “She was a real mung-Heidi.” [I used bloblolly instead.]

**dialled.** Heard it on the radio about a hip person. “He’s really dialled.”

**cricket.** Word for a reefer. “Smoke a couple of crickets.”

**The Shasta ground sloth and the imperial mammoth.** Saw these in the La Brea tar pits museum with Rudy. I’d like for Emperor Staghorn Beetle Limited to have spawned off a subsidiary called Imperial Mammoth A.G.

**spun.** Wasted, loaded, drunk, stoned. Heard a guy use this. “My boss was sayin’ to me, ‘Why you always come into work all spun?’”

**jonesin’.** wanting something, hungry for. “I’m jonesin’ for a hamburger.”

**gayrod.** A dumb gay person. Related to **nimrod**, which means belligerent jerk.

**chula.** A Hispanic woman.

**bones.** In computer graphics, a “bone” is a set of vertices grouped together so that they move as a rigid body; doing this speeds the computation. Related expression talks about making an Internet computer game achieve **fast-twitch performance**.

**frikkin’.** In the great, great movie Austin Powers, the Dr. Evil character says this a lot instead of fuckin’. Izzy uses it. “Throw me a frikken’ bone, people,” says Dr. Evil. He has a great monologue about his childhood, speaking of his father, he says, “He used to accuse chestnuts of being lazy.”

**top drawer.** Stiff upper lip Britishism.

**We stink to think!** Moldie slogan.

### **Box of Pain**

**Quasar Density Per Cubic Gigaparsec** Actual caption of an axis on a graph in the June, 1998, *Scientific American*. “It’s not all that common,” said Josef. “Perhaps only one or two per cubic gigaparsec.”

**“I have a lot of apathy for what I’ve heard everyone say tonight.”** A stoned guy who meant “empathy” or “sympathy”, he was just out of it.

## ***Discarded Phrases***

### **A lifeless view of heaven**

Gross materialism is wrong, and there always *were* some phantasmagoric scraps of memory from the void downtime of no hardware. When Cobb was turned off, totally dead, he still *did* exist, but in some attenuated unconscious fashion that could only be experienced as a memory and never as a current event. In that other state --- to make himself feel more optimistic Cobb thought of it as *heaven* --- there lived all the dead souls of all the patterns that had ever lived or ever would live, as static and interpenetrating as a philosopher’s virtual museum of all the Greek sculptures simultaneously latent in an uncarved block of marble.

But the stuff in which the software souls lived wasn’t marble, no it was more like energy, but not energy either, something brighter than that. Lacking any real name for it, Cobb always called it SUN, fully capitalized to distinguish it from a mere fusion-fire gas orb. Cobb knew from personal experience that heaven is the pure unmodified existence of SUN, and that all the lives of all spacetime are crystallized inside it.

“And it sucks,” was the fifth thing Cobb always thought. “Heaven is clean and boring. I want to be filthy and alive.”

### **A many body question**

“If we had human bodies we could blow each other,” said the other Cobb, just as Cobb started to say it himself. Back in college, Cobb’s friend Ace Weston had idly phrased that as a central question about personality duplication: *Okay, say you duplicate your body and mind and you meet your other self in a hotel room. Do you give each other blow jobs?*

### **At JFK’s Grave**

“The eternal flame takes infinite gas,” a school chum had snickered.

### **Showing something over the uvvy**

“Show me.”

Willow held the ring up close to her face and let the uvvy show what she was seeing, so it was as if Phil were looking at the ring himself, holding it up close to his face with hands that had long red fingernails.

### **Expository Lump #1**

Yoke thought back to when she’d met Shimmer, November 6, 2053, at Corey Rhizome and Willy Taze’s palatial isopod on the Moon. Shimmer and eleven other alien minds had decrypted themselves into the richly computing flesh of twelve toy moldies. It seemed that aliens could travel across the cosmos in the form of something like radio signals, and in the right circumstances the signals could take hold and unpack themselves. Fearing that humans would be colonized and exploited by the aliens, Darla and Whitey had managed to kill off eleven of the possessed moldies — but Shimmer had escaped.

### **The Shimmer/Wowo Connection**

“You mean a cosmic ray decryption thing?” said Yoke. “Like they had for Willy Taze’s moldies?”

“These are supposed to be a more sophisticated kind of alien,” said the King. “They don’t travel as encrypted personality waves. No, they go up into the fourth dimension.”

“The thing that killed Mr. Olou was an alien from the fourth dimension?” asked Yoke. “And it’s your fault? You must realize, Onar, that it must be one of those things that killed Phil’s father. And, goddamn you, my mother, too!”

“It’s not us who’s doing it, Yoke,” said the King. “Shimmer does what she likes. And she doesn’t control the four-dimensional aliens either. We’re all only trying a little bit to ride the wave.”

### **Shimmer Met Randy Before Yoke**

“It’s nice to meet you, Cobb,” chimed Shimmer. “I don’t believe you’re aware of this, but when I first arrived still on the Moon I had considerable contact with your great-grandson.”

“Randy Karl Tucker?” exclaimed Cobb. “Randy never told me that. You were on the Moon all this time? And seeing my great-grandson? I’m flabbergasted.”

“Randy has quite a crush on Shimmer,” said Ptah. “He was very jealous when she decrypted me. He was one reason we moved to the Earth from the Moon.”

“It figures,” put in Yoke. “What with Randy being such the cheeseball.” The pale, gangly Randy had moved up to the Moon about a year ago to live with his father, Willy Taze, Willy being Cobb’s grandson. Randy was a Kentucky yokel with a passion for moldies. Yoke had avoided having much to do with him.

“I can just imagine the details,” sighed Cobb.

\*\*\*

“That’s why we’re waiting to see what Yoke does with the alla,” said Josef. “The guy on the Moon, Randy Karl Tucker, he didn’t do very well with it.”

“You gave Randy an alla?” asked Yoke. “How long ago?”

“Oh, six months,” said Josef. “He’s been doing really sick stuff. But at least he kept it secret.”

### **Extra space dimension**

“You have an extra dimension of space. Not that you seem to be aware of it. Your fourth dimension is wasted on you.”

### **Phil’s Dream of Da’s Powerball**

As he walked on past the graveyard, last night’s dream came back to him. He’d been with Da. They’d been sitting on the broken trunk of an oak tree with two — pets? — at their feet. A dog and a little round moldie with a stripe around its middle, a toy moldie with a low intelligence, a Silly Putter. The Silly Putter had talked a lot, interrupting old Kurt. Not that Phil could remember any of the conversation. The dream had ended with two women yelling — something about a Metamartian? He didn’t recall actually seeing the women, just hearing their voices, which had segued into stupid Onar holding forth about tea.

### **Genetic Alcoholics Anonymous**

I considered having Phil be a member of this, gAA or GAA or Genetic AA, but decided to use the actual “Straight Edge” instead.

### **Vaana Drowns Onar**

“But I’m not like him,” said Yoke. “Just — just end it, Vaana. There’s no safe way to let him go.”

“They say drowning is a pleasant death,” said Vaana, and sent Onar diving off the edge of the ship. He floated there face down, with Vaana apparently forcing him to breathe in lungfuls water. Onar’s arms twitched a few times and then he was still. What a terrible thing. Three days Yoke and this man had made love. She began crying.

### **Cobb Finds Relatives Through Cappy Jane**

“She was helping me search the satellite data base for phone calls by my descendants, and when she asked me what I could tell her about Vava’u, our big scene with Phil on the beach popped out. I’m sorry. I was distracted because I just found out that I have a bunch of relatives in La Jolla!”

### **The Old Theory of Powerballs**

Cobb: The powerball itself is — well, it’s a kind of teleportation booth that pops up whenever a Metamartian gets decrypted. Looks a little like a sphere of jelly. It’s supposed to clamp onto our spacetime. A Metamartian is supposed to be able to use the powerball teleport back home by way of the sixth dimension. But the things are built for two-dimensional time, you wave, so when a powerball spangs into our reality, there’s a signature mismatch and —

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“A powerball is a magic door,” said Shimmer. “A kind of teleportation booth. Each of us Metamartian explorers travels with the complete code for a powerball as part of our personality wave. It’s like a return ticket. The idea is that when we decrypt, the powerball spangs out as well, and we can use it to go back home. A powerball is the entrance to a fourth-dimensional shortcut to Metamars.”

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“I’m not going to touch that one,” said Phil. “Let me ask this instead. If you can use the powerball portals to jump all around the cosmos, why do you travel as personality waves? Why not use a powerball to come here in the first place?”

“Stupid question,” said Siss. “To tunnel through the fourth dimension you have to have a powerball set up at either end. And obviously there weren’t any powerballs here before Shimmer came. Not with your sticks-and-mud technology.”

“Well, you guys don’t have one working yet either, do you?” said Phil.

“No,” said Josef. “The powerballs here install themselves falsely. Because of your odd spacetime. A cosmologist would say that the ‘spacetime signature’ near Metamars is 3+2, while your spacetime signature is 3+1. You’re lacking the extra time dimension.”

“And that’s why your powerballs are fucking up?”

“*Ja*. They’re designed to operate with a 3+2 spacetime signature, such as one finds in a proper, upstanding part of the cosmos such as Metamars, where the

individual is living out a simultaneous infinity of lives in two-dimensional time,” replied Josef.

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“He ain’t dead,” said Wubwub. “You got dirt in your ears, boy? Yo’ daddy’s in hyperspace. Our powerballs done been pinchin’ off bubbles into the fourth dimension. And they just floatin’ around, probably gittin’ stuck together out there. Like party balloons. They got built-in femtotech for light, food and air.”

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“I ‘spect he with *two* women, plus Ptah, a dog, a toy moldie, and part of an oak tree too,” said Wubwub. “How do I know? When one of us git here, we can see in our head where our powerball set itself up. Makes it easy to find the thing, ‘cept when it float off into the fourth dimension where you cain’t git at it no more.”

“Would you like each of us to tell the story about our own powerball?” asked Siss.

“Not really,” replied Phil. He felt dizzy and confused. Surely they were lying about Da. “I have to think about what you told me. This is flocking me out. I want to go back out onto the beach. Did I come in from over there?”

“Oh tarry in our sea cave just a bit longer,” said Peg. She was in fact standing so as to block the passage where Phil had entered. Her horn, though red and silly, was also quite sharp and long. “What does the poet say? ‘Till human voices wake us and we drown’. Marvelous beads of meaning, each just so.” She lowered the horn and fixed Phil with her great golden eyes. “Phil, I command you to listen before you go. It could be that you’ll be in a position to help us with our powerballs very soon.”

“I’ll tell first,” said Shimmer. “Attention, please!” She drew herself up and laid her hand stagily upon her breast. “My powerball swallowed a miniature moldie from Willy Taze’s isopod. What they call a Silly Putter; it’s like a doll or a pet. This particular one was named Humpty Dumpty.” She cleared her throat, struck a new pose and kept talking.

“Now Ptah was the second of us to come,” continued Shimmer. “But he’s not here anymore so he can’t talk. Even though I was already down here when I decrypted Ptah, Ptah’s powerball popped up on the Moon. A powerball can spang out nearly anywhere, you know. Ptah’s powerball swallowed Darla Starr on the Moon. Perhaps I influenced it; I was still just a little bit angry with Darla for trying to kill me, you know. But don’t tell this to Yoke, Phil. In any case, when Ptah’s powerball went for Darla, Darla was near a wowo, which had a big effect on the next few powerballs. And you don’t have to look so angry and impatient, Phil, because now I’m done. Peg?”

“When Shimmer decrypted me, my powerball homed in on a wowo in Santa Cruz,” said the evil unicorn. “The attractor wowo happened to be set up as a gazing ball in someone’s garden. An old woman named Tempest Plenty was tilling the earth there, accompanied by a dog named Planet. Now they’re both sequestered in the dimensional oubliette of my powerball. You go next, Wubwub.”

“My powerball done swallered Friedl the wiener-dog and Kurt Gottner,” grunted the black pig. “It were another case of wowo attraction. That wiener-dog fussed so much that it got tore in half when the powerball pulled loose. Old Kurt’s hand got ground up too, and the churning knotted his wedding-ring. Siss?”



“My powerball went after Kurt’s ring,” intoned the pale green snake. “It ate half of an oak tree, but it didn’t affect a single person. Yes, I’m a very subtle serpent.”

“I’m last,” said the iridescent beetle Josef. “My powerball got Ptah. Shimmer blames Yoke.”

“But it was *good* for your powerball to swallow Ptah, wasn’t it?” implored Phil. “The powerballs are *supposed* to take you guys, aren’t they? That’s what they’re for! You’re not angry with Yoke are you, Shimmer? You’re not going to hurt her!”

Smiling Shimmer shook her head *no* — but said nothing.

“Remember that my powerball’s behavior was askew,” said Josef. “Just like with the others. It didn’t take Ptah to Metamars. It took Ptah into your wretched fourth dimension. The attic of your dreams.”

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“It never takes more than fifteen minutes,” said Shimmer. “The powerball hunts for something relevant. We’ve observed that each new one’s behavior is conditioned by the powerballs that already came before — and by what we’re thinking. Thanks to our precognition, we’ll be able to see it a bit before it comes, but it’s not close enough yet. Care to make a guess while we’re waiting, Phil? The powerballs follow an odd logic. The logic of two-dimensional time. Like human dreams. I think Siss told you that Metamartians don’t dream?”

### **Phil’s Wristwatch**

Oh yeah, here was the titanium and gold wristwatch from his Greek grandfather, not that anyone wore a watch anymore, but it did look kind of stylin’ and it worked, so Phil put it on.

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Phil thought of throwing something to Yoke, an anchoring memento like the wedding-ring from Da. Though the slightest motion was agony, he unbuckled his heavy wristwatch and gave it a gingerly toss towards Yoke. Just after he released the watch — *swish* — something flashed past his fingers like an invisible scythe.

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, and something plopped onto the sand next to her foot. Phil’s watch? It was running backwards. For a dizzy moment Yoke feared that time had reversed itself. But, no, the waves were flopping in the same as ever. She looked at the watch again. Yes, the second hand was moving counterclockwise, but the numbers on the watch face ran counterclockwise as well. It was a mirror-watch. When Phil had tossed it to her, the watch had flipped over in the fourth dimension. Yoke slipped the watch onto her wrist and looked around.

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She glanced at Phil’s watch on her wrist. It ran backwards, but it kept perfect time.

### **No allas for moldies**

“I think you’re right,” said Yoke, remembering how quickly the Cappy Janes had cloned themselves using the big alla-made cube of imipolex. They’d copied themselves until they’d run out of mold. At least the impossibility of alla-copying

fungus put some restraints on the moldies, just as the impossibility of copying flesh would keep any human from endlessly replicating. Yoke had a brief image of a billion copies of herself — and that reminded her that she missed her sister Joke.

### **Mold for the aliens**

“Let me get a sample from one of your veins, Cobb,” said Shimmer, stepping forward. “Do you mind?”

“Go ahead,” said Cobb, holding out his arm.

Shimmer thinned two of her fingers down to pincers and poked into Cobb’s flesh, tweezing out a pinch of redolent blue-green pulp. She smeared it against the palm of her other hand. A cluster of feelers and sensors appeared on the thumb of that hand, to help her decipher the makeup of the fungi and algae in Cobb’s lichenous mold.

“Got it,” said Shimmer shortly. Her body wavered a bit, and then her once alabaster flesh was veined with bright, glowing lines that became blue shadings of algae and mold. Shimmer really did look like a moldie now.

“How did you do that?” asked Babs.

“We Metamartians have the power of an alla built right into our bodies,” said Shimmer. “We can actualize any object we can think of.”

“Phew,” said Yoke. “Maybe you overdid it.”

### **Yoke fighting with Phil**

“Once it’s in the alla catalog it’s a universal freebie.”

“Above the skyline was a warm, pink sunset with the fog coming in.”

“You talked to your family today?” Phil had noticed that recently whenever Yoke made an uvvy call to the Moon it put her in a low mood.

“Proud, angry Yoke.”

### **Jellyfish was Shimmer?**

It’s face was a pile of transparent face masks stacked up, with each mask wearing a slightly different smile.

Yoke thought back to the way the cyberspace jellyfish thing had been in two places at once. And how it had been a whole stack of faces. Higher dimensions.

### **Pseudonyms for Yoke and Cobb**

“What’s with all this ‘Sue Miller’ and ‘Squanto’?” asked Cobb.

“Those are to be your identities while we’re here,” said Onar. “I suppose I should have told you earlier. We’re going to carry out some rather confidential business for H.R.H. In the event there’s any kind of repercussions from the mission, it will be better all around to leave a false trail.”

“But — *Squanto*?” asked Cobb.

“It’s what you’re stuck with now,” said Onar, smiling thinly. “And please, Cobb, try and remember to use it at all times, especially when you’re uvvying with the local moldies. And yes, I promise to explain later what this is all about. Just not right now.”

### **Alla is like Quantum Measurement**

“We are curious to see what people with the allas will do,” said Josef. “At a deeper level I am seeing the alla as a symbol of your reality. Why so? Because with

an alla you can make anything — but you must in fact pick out some one particular thing. Analogically, in two-dimensional time all the futures happen — but in your part of the cosmos only the one thread of reality is truly becoming. It is as if —”

### **Phil’s Toy Flappers**

The flappers were stored under his bed, and he got them out too. They were like gliders with folding wings, a bit like toy birds. They twitched a little at Phil’s touch, as if waking up. Phil had done a lot of research on how to make a flapper big enough to carry a man, but this technical problem was oddly difficult. First of all, it was very expensive to buy enough imipolex to carry a man. And secondly, a sufficiently large mass of computational imipolex tended to turn into a fully intelligent moldie, likely to fly away and never return.

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Phil handed over the flappers, and Derek set them to fluttering around the warehouse space, launching them like gliders. Once launched, a flapper would circle around for half an hour, then land somewhere and fall asleep.

## ***Old Technology***

### ***Ytterbium***

#### **Ytterbium Notes From FREEWARE**

Andrea gets high on chelated rare-earth polymers. The rare-earth elements, also called lanthanides, are Lanthanum, Cerium, Praseodymium, Neodymium, Promethium, Samarium, Europium, Gadolinium, Terbium, Dysprosium, Holmium, Erbium, Thulium, Ytterbium, and Lutetium. Ytterbium was first found in a mineral called yttria in the 1890s near Ytterby, Sweden. “Ytterbium” was first applied to a substance found in yttria that was in fact a compound of the elements lutetium and ytterbium. Yttrium, though not a rare earth, resembles the rare-earth elements and is often associated with them.

Andrea’s preferred drug is *yttrium-ytterbium-twist*. Call it YYT? No, whoah, call it *BETTY* which is YTTEB spelled backwards. “I’m high on some fine, fine Betty.” That’s the new drug for robots, like I had *dreak* in WETWARE, I’ll have *betty* in FREEWARE.

The chemical symbols and atomic weights of yttrium and ytterbium are, respectively, Y 39 and Yb 70. Y is silvery and metallic; Yb is a soft silvery metal. Y is used in the red phosphor on TV screens.

#### **New Ytterbium Ideas**

Now let’s assume that these elements play a role in imipolex. Imipolex is a hydrocarbon doped by rare earth metals. Yttrium’s use in TV screens makes it logical that the others are also useful for the characteristic bright colors of the flickercladding for which imipolex was originally used.

### ***My Letter to Walker About Carbon on Moon, January 22, 1997***

Hi John,

Well, guess what, I'm starting another \*WARE book, this one to be called REALWARE. I just can't let go of this world, and am so curious to see what else I can find out.

Even though I left in the "Hilbert prism" formulation of the alien soul freeware in FREEWARE, I do plan to switch to your "white noise-like encoding" formulation. The Hilbert prism idea is, let us say, a complementary view, perhaps not quite accurate.

So now I turn again to my tech expert, you.

The biggest problem confronting the moldies is the difficulty in obtaining imipolex. I view imipolex as a hydrocarbon-based long-chain polymer doped with rare earth metals. Normally petroleum byproducts are needed as the raw materials.

The one surviving alien, Shimmer, now happens to be enjoying herself with a bunch of rogue moldies down in the Tonga trench. She's annoyed at the impending difficulty of getting a new body. Also she'd like to try some more sophisticated decryptions of aliens herself. So she's going to implement a cool alien technology for easily making imipolex out of either (a) nanotechnology solution: any old carbon, hydrogen, oxygen and rare earths or (b) femtotechnology solution: energy and raw spacetime.

My desire is to go for the femtotechnology option, as it's stuzzier, and hasn't been polluted by the slobberings of a pack of sword-n-sorcery dweebs like nanotech has. But I need to at least \*mention\* the option so as not to look ignorant.

My question is this: is there much carbon on the Moon? If not, then that would be a good reason for preferring the femtotech solution there. And of course the femtotech solution is going to be much more useful in empty outer space as well.

"Realware" by the way will mean the matter you create by writing up the software spec and sending it to your femtotech matter-maker.

#### **Walker's Letter On Moon Carbon, January 22, 1997**

>> My question is this: is there much carbon on the Moon?

Next to none. No hydrogen either, except for trace amounts in the regolith resulting from solar wind protons that stuck, or in the recently reported ice in the permanently-shadowed craters at the south pole (which probably doesn't amount to more than a small lake). On the other hand, most moon rocks are about 50% oxygen by weight and aluminum and silicon are abundant, but all in tightly-bound oxides that take hellacious amounts of energy to reduce.

On the other hand, it takes less delta-V to get to most of the near-Earth asteroids than to land on the Moon (since you don't need to make a powered descent as you do on the Moon, and the difference between a lunar apogee trajectory and low-hyperbolic escape orbits isn't very much). If, as is true for asteroids in the main belt, a majority of the near-Earth population are carbonaceous (Type C in asteroid geek-speak), they are an abundant source of carbon and volatiles, including organic precursor compounds. The chemistry of Type C's is well known from studying meteorites originating from them. So, if a grex can fly to the Moon, it/they could presumably visit a near-Earth asteroid and extract whatever was needed to fab imipolex, or just drop a nanotech factory that processed it in place and lobbed completed chunks back to aerocapture at the Earth and then be delivered to the Moon.

Unless imipolex degrades in space, you could use very low energy return trajectories since once the pipeline was filled it wouldn't matter if each block took two or twenty years to come back to Earth/Moon.

>> My desire is to go for the femtotechnology option

Notwithstanding the resources of the NEAs, it opens up lots of new ground. And after all, creation of matter from energy is completely mainstream physics and engineering--it's just extraordinarily inefficient and expensive at the moment.

In the '70s, in a paper in *Nature* with the delightful title "Eternity is Unstable" (*Nature* 276: 453), Barrow and Tipler calculated that, assuming there is no lower mass limit on black hole (no limit is suggested by present theories), then a proton has a nonzero probability of spontaneously turning into a quantum black hole due to the uncertainty principle causing its quark components to instantaneously occupy a small enough volume to trigger gravitational collapse. The black hole would then, almost instantaneously decay into radiation by the Hawking process, releasing a large amount of energy.

Don't worry about this happening. The probability is so low that the odds are enormous against it having happened even once since the Big Bang. But it's nonzero, and much of modern electronics is based on manipulating matter and energy to tilt the odds of quantum processes....

I'm just finally getting around to reading Stephenson's "Diamond Age". I agree that the nano thing is getting to be worked out terrain, at least in terms of the "Wow! Isn't it cool you can do that!" story.

### ***Multiple Bodies***

I first heard of this idea in a Sheckley story, I think. I used to be so puzzled by the idea of having two bodies. At that time, I assumed that you'd be the same "I". Later I decided you would not be the same "I," that you'd just be like identical twins with the same memory, and that you would not be in telepathic contact via your sharing of the same *soul*. But now say that you *are* in radiotelepathic contact via uvvy. How would it feel? Would you get confused over which body was which? Say that right now as I write this, there's a Rudy2 over at SJSU in my office there typing. I can see through my eyes or through his eyes. But I feel like *I* only control *my* body. One part of the *me* comes down to the free will, the volitional control of this bit of matter.

But what if I can control his body. If he could also control mine, then I'd be like two people in one body, the body would sometimes do things that my main self didn't want it to. But I'd see the other volition coming.

I can control my left hand and my right hand. There's only one I. The hands have no independence. Yet in a small way they do. If a hot match is applied to one hand, it recoils quickly instinctively automatically.

But if there are the two Rudy's it seems that there are two I's, there isn't that higher I like for the two hands. Could the two Rudys fuse to make a higher I? Or could I annihilate the other Rudy's I and have the two bodies all to myself. In any case each body would still have its autonomous self protection and maintenance actions.

I can write about this as one Cobb simulation being in touch with another Cobb simulation. Write about it and see what happens. What if you had a hundred Cobbs. Freeman Dyson hints at this in his new book, see the “p.157” excerpt.

## **Chunks**

### ***Randy And The Realware Snail***

*October 30, 2054*

Randy Karl Tucker woke to see the huge realware snail inching towards him. He'd just been dreaming about the snail, as he often did, and now here it was in the flesh, really and truly following him down through the dusty corridors of his waking life. No matter how far Randy ran, the snail kept catching up. Well, it was time to teach the snail a lesson. He sat up in his sleeping bag and checked over the equipment around him.

Randy's smart little plastic chicken Willa Jean strutted back and forth, squawking. “You done good, Willa Jean,” said Randy. “You woke me up before the snail could crawl on me. You can hush now.” Randy got to his feet and stuffed his sleeping bag into a pocket of his knapsack.

“What taahm is it?” wailed the snail in its bewildered, Kentucky-accented voice. “You goin' be late for school if you don't hurry up, Randy Karl. When is Tuesday?” The snail pronounced *when* like *whiyun*. It was always confused about what time it was and when things were supposed to happen. Tardiness and incest were the themes that the snail, qua nightmare, was all about.

Its silver-frosted black shell clattered against the tunnel's jagged rock walls as it came creeping closer. “Ah'm real hot to crawl on you, Randy. But we have to hurry.”

“You're not real,” said Randy wearily --- more to himself than to the stubbornly advancing realware. “You're an accidental copy of a bad dream.” He looked at the ceiling, making sure that the thermite charges were all in place.

“It's tin minutes after tin,” said the great snail, reaching Randy's feet. Its shell reached waist-high. “*Whiyun* do we have to be wheyure?” The snail stretched the front half of its body upwards, resting its cool, slimy flesh against Randy's chest. “You feel naahce and warm, Randy boy.” Its feelers and eyestalks reached forward to touch his face.

Randy stepped to one side and circled around the snail, with Willa Jean hopping along after. “Wait right here,” he told the snail. “I'll get ready and then I'll come back to you.”

The snail was derived from a recurring nightmare of Randy's which had started up the week he'd heard of the death of his mother Sue, three years ago. After leaving home he'd totally neglected getting in touch with his mother, and then suddenly it was forever too late and Randy's subconscious mind got hung up on that and kept making Randy dream about a giant time-obsessed snail that wanted to crawl up onto his face, a nagging, sexual snail that somehow was his mother. Though Randy was no motherfucker, he had indeed been seduced by one of his mother's woman friends, and that was enough for his subconscious to have started in on the incest thing.

The repeated nightmare would have been nothing more than a nagging neurosis, but then, during a femtotechnology experiment last week, Randy had managed to make his nightmare real --- he'd twinked the idea of the snail into realware.

"What taahm is it, Randy?" whimpered the nightmare snail as Randy hurried away from it, back down the abandoned mine tunnel towards civilization. Thanks to femtotechnology, all of the old mining tunnels were full of air now, but people hadn't yet moved into them. Randy had the place all to himself. Randy and the realware snail.

"Just wait," called Randy again. "I'll be right back." He scooped Willa Jean up into his pocket and broke into a run. And as soon as he'd rounded the tunnel corner, he sent out the coded remote-control command to blow up the thermite.

He knew right away that he'd miscalculated badly. The roof of the tunnel collapsed all around him. By some miracle he wasn't killed. But one of his legs was crushed beneath a boulder. Willa Jean moved around on Randy Karl, pinching off his severed veins and arteries.

Somehow the realware snail hadn't been harmed at all. Sighing softly, it picked through the rubble until it uncovered Randy. And then, slowly, leisurely, it settled onto his face.

### ***Cobb's Limpware Body***

*July, 2054*

[Pulled out this entry to use as a short story called "Cobb Wakes Up", November 23, 2005), to appear in OTHER magazine in SF and possibly in my upcoming story anthology.]

...

"You lookin' wiggly, brah," said the Ebonic beet in his bass voice. "Burnt Rome in a day!" He spoke via direct sound vibrations that traveled pleasantly through Cobb's chest.

"Willy's eager for you to come up and live with him," said Chunky.

"Yeah, and help out with Randy Karl," said Gaston.

### ***Original Start of Chapter One: Stahn's Funeral***

"Wake up, Saint. It's your sister on the uvvy. Something's happened." Kevvie's breath was alkaloidal and bitter in the dawn.

Saint Mooney woke slowly. He liked to take the time to think about his dreams before they evanesced. Just now he'd been dreaming about hiking again. For some reason, he always dreamed about the same three or four places, and one of the places was an imaginary range of little mountains, an arc of them arranged like the peaks above Yosemite, but whiter and rockier.

"Wake up!" repeated Kevvie. Her voice was, as always, flat and affectless, though now a bit louder than before. As Saint's eyes fluttered open it suddenly hit him that the mountains he always dreamed about were his teeth. His dream ascents were his tongue moving around on his teeth. He started to tell Kevvie.

"My teeth are the mountains that ---"

But she wasn't listening. Her blue eyes were flat and blank, her triangular face was pinched with urgency. "You talk to Babs right now," she said, plopping the rubbery uvvy onto the back of Saint's neck. Instantly a ghostly image of his sister appeared. Plumb-cheeked cheerful Babs. But today Babs wasn't cheerful. Her eyes were red and wet with tears.

"Da's dead," said Babs. "It's horrible. A wowo got him. He and Ma were in bed and all of a sudden there was a wowo in the air next to them, all bright and swirly, and it jumped inside Da's head and the light was shining out of his eyes like searchlights and he was running around yelling and then his body collapsed and the wowo sucked him inside and crushed him. There was a lot of blood and it got all over Ma. She was still bloody when she called me. It was really gnarly?" Babs's voice twisted up an octave on the last word and she began sobbing. "I can't believe it."

Saint felt a savage torrent of emotions, too fast to nail down. Relief, terror, joy, wonder, sorrow, confusion. His father was dead and he was free. His father was dead and he was alone. Sudden tears sprang to his eyes.

"Dead? What --- when --- when did Ma call you?"

"Just now. She's scared it'll come back. She's going to run. She told me to call you. She's flying down here."

"But is she sure he's really dead?"

"The wowo ground him up like hamburger."

"Are they going to clone him? They have tapes of his brain, don't they?"

### ***Yoke In Tonga***

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The elevator in the Foreign Ministry building had a marble floor. It was the only elevator in Tonga, and it was manned by a man in a tie and a blue serge skirt.

"Hello," Yoke said.

"Malo e lelei," said the elevator operator. "You must learn to say hello in the Tongan way. Malo e lelei."

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After she flew down from the Moon to LA, Yoke took Air New Zealand to Honolulu, and Royal Tongan Air to Nuku'alofa, the largest city in Tonga. She had to wait four hours, midnight to 4 AM, in the Honolulu airport. She skipped July 16, or only got a couple of hours of it, because of the dateline, not that Earth dates meant much to her yet.

The Honolulu air-terminal buildings were open to the breeze. Yoke lay down to rest on a smooth concrete bench under some huge tropical plants, just outside the terminal building. Yodeling Hawaiian music played softly. She stared at the leaves tossing in the gentle breeze, thinking about chaotic motion.

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The Tongans used fans woven of palm, hand-held fans with feathery fringed edges. Yoke mused that a vortex is like a boulder. You hit a boulder and it breaks into smaller rocks; shock a vortex and it decomposes into a passel of smaller vortices. You can't just make the vector curl disappear anymore than you can get rid of matter.

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The town of Neifu in Vava'u under the moon, with the barking dogs, the grunting pigs.

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A giant clam with crenellated shell lay on the bottom. Rising up off the side of it was a bumpy staghorn coral. The clam and coral made wonderfully unbalanced composition, something nobody would ever think of designing, yet something with a beautiful inner logic. One single fish lived in the branches of the coral.

\*\*\*

Overheard conversation in the Vava'u Bounty Bar between an Australian electronics man and a New Zealand sheep-farmer about Onar Anders: "Typical American, a loudmouth, always bragging. A real name-dropper, mentioned H.R.H. But he actually gets things done."

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She was annoyed by the voices of the drunk New Zealanders, the Kiwis. They sounded so aggressive, so plucky, so manfully squaring their little shoulders for the next obstacle to be fox-terriered through.

Duty Free Liquor = Kiwi Cultural Center.

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The dusting of pixels that makes a pupa's pattern converges as if on a strange attractor.

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Going out on the dive boat with Paul and his assistant Yoke thought of the three "godless heathen Feejee islanders," the harpooners in *Moby Dick*: Tashtego, Daggoo, and Queequeg. Her dive partner Paul was a Tashtego.

Yoke kept finding odd bubbles while diving, opalescent pearly membranes, like little pearl-skinned balloons, wedged in the reefs. If you pop them --- as Tashtego did --- they seemed empty. Pearly sacs. Leathery, iridescent.

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July 26, 2054. Yoke walked to the village of Toula on Vava'u, went past the fales, up a little hill with a graveyard, down the hill to the sea and rocky beach. Brittle sea stars were everywhere on the shallowly covered rocks, most with two or three arms in a hidey-hole and the other arms out snaking around. "Thank you, God," thought Yoke. "Thank you for making the world."

Coming back through the graveyard, she saw a thin young woman with a pack of children working on a grave; sweeping it with a stick broom and burning the rubbish in a small fire. The woman made a gesture Yoke hadn't seen yet in Tonga. The woman held her hand palm up, slightly cupped, with the fingers stiff and outspread and then flipped the hand down towards Yoke, a bit as if sowing seed. The gesture definitely meant *go away* rather than *come here*.

As Yoke walked back down the hill into the village, the children came after her, friendly and laughing, three or four girls and a boy. Yoke asked them to catch a pig, but they wouldn't. Afraid of the tusks. The boy, about four, had fun poking her back-pack with a long and rather sharp stick. The girls asked her name and had her spell it for them and then they danced around her saying, "Yoke, Yoke, Yoke." *Wow*, thought Yoke, that's me. *I'm really here*. It felt like being awake in a dream.

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Yoke found Onar on the porch at the Beach House in Tongatapu. He was sitting calmly in a rocking chair next to his bed by a window. A guesthouse, an older building with a wide porch. They had bedbugs. Onar had a special bike he'd made for Tonga, assembled all out of stainless steel parts.

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On the way up to the hill where they would find the bean --- this was "Mt." Talau (131 meters high) --- they encountered an old man walking down the dirt street. His shirt had several buttons missing, many of his teeth were missing as well, and he was carrying a small aluminum tub holding a big steak of fish flesh. He struck up a conversation with Yoke and Onar, talking about his sister in California. His name was Lata Toumolupe. He invited Yoke and Onar into his house to look at his shells. They took off their shoes, sat on his couch, and he brought out his treasure, his little plastic bag with tied handles and some paper in it wrapped around his shells. Such shiny nice shells, like he'd gathered them and played with them for years. Yoke took a big whelk, two brown cowries and two tooth cowries.

"It was so touching, him offering us his treasure," said Onar. "I plan to send him something nice."

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Onar found a giant lofa bean. Yoke felt a little guilty about making off with the giant bean. She tried to hide it in the knapsack, but it wouldn't fit completely; it peeked out at the top. In a snack bar she put her hat on the knapsack and the waitress thought the pack, bean and hat were a baby. Odd, that. Yoke took the backpack to the post office.

"That bean is getting us into trouble," she said when she came back.

"What do you mean?"

"A woman asked me where I'd gotten it."

"Was she mad we took it?"

"No, she just wanted to know where we got it, so she could find one. She said it was used for Tongan ceremonies."

"I stole the ceremonial bean?"

At the hotel desk the girl told Onar that, "If you let it ripen and get brown, the lofa bean seeds can be used for --- dancing." Yoke surmised that she meant castanets.

"What a beautiful green color our lofa bean is, Yoke." Yoke was tired of talking about the bean, so Onar began riffing to renew her interest. He wondered out loud if it might be the larva on an alien centipede. After all the bean's vine had seemed to hang down from nowhere. Like Jack and the Beanstalk.

"What if it splits open and eats my brain tonight, Yoke?"

"It would get a small meal."

\*\*\*

View from the porch. A volcano in the distance, a papaya tree, other trees with little fruits like lanterns, translucent and green when young, red when ripe. Inside is a black, matte octagonal seed. The little waves lapped. A bit of wind today. Lassitude. They napped all the time. *So relaxing.*

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Yoke mused over the great parallel computation inherent in a coral reef: Would it be best modeled as a cellular automaton or as a particle system? She

relished the computer-scientist fun of studying the shapes of nature --- a tree, a leaf's waving, a chunk of coral, an insect pupa --- and wondering *how to compute it*.

\*\*\*

Onar had a tendency to forget to tell people about the other things he'd done. He was so into his latest project --- the compressed Internet fax filter TESS (Tonga Electronic Secretarial Services) --- that he didn't bother to tell his friends about the VTV bubbles he'd created. Onar's mind seethed with so many joyful new schemes that he forgot all about the old ones --- the successes as well as the failures.

\*\*\*

The King's driver came to pick up Onar and Yoke. His name was Whitten. He was a 6'2" Polynesian Mormon in a blue gabardine skirt. He wore a tattered woven-palm tu-ovala round his waist, an inheritance from his father. He had an Afro and big Tongan features. He said *yis* instead of *yes*. He drove Yoke to the palace of His Royal Highness, H.R.H. for short. The palace was an Italian villa with 30 foot ceilings and walls painted in a faux design to look old and cracked.

King Tupou was sitting on a couch waiting for them. He was a plump man with a kind smile. A prognathous chin. The side teeth missing on top. He limped from gout. Edith, the landlady of the Niu'akalo Hotel in the Lifuka island of the Ha'apai Group of Tonga (dig how fractal an island address is) had told Yoke, "HRH has gout." But he moved with the nimbleness of a large man. He wore a short-sleeved brown silk sport shirt and white linen pants. Through the translucent pants, Yoke could make out the King's purplish bikini briefs, worn very low down on the crack, as befits a large man. He had a strong British accent, had been to Oxford, did a good imitation of his tutor there: "King Tupou, you need to write up a paper, don't you know."

He happily told Yoke, "I'm going to Fiji to sign a treaty!"

He didn't like the villagers' loose pigs. "They're required by law to pen them up. But Tongans ignore laws they don't agree with. And if you send a policeman to shoot a stray pig with a shotgun, the owner will say, 'You can't shoot my pig, I went to school with you!'"

Sometimes he would trail off a story and make a humorous blithering sound: bou-bou-bou-bou. He seemed like a fat hacker kid, like the pal you go visit on Saturday, someone a little like Corey Rhizome's friend Willy Taze.

\*\*\*

Yoke had an attack of paranoia on the ride to the airport with Whitten and the Foreign Affairs minister Louisa. What if the Tongans were to take her and Onar into a taro field and shoot them? Or what if a bunch of guys come running up to H.R.H.'s villa with O.J. ugly-sticks.

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Onar and Yoke at the Samoa Wonder Circus of the South Pacific. "We partied till dawn and saw the green flash when the Sun came up over the Pacific."

\*\*\*

Diving on the deep outer wall of the Vuna reef near Taveuni Island in Fiji. It felt like being on the steep slope of a mountain, like dustboarding on Haemus on the Moon. Flying along the slope, holding on sometimes to coral to keep from floating up or from being pulled by the current.

Over and over, looking ahead, Yoke would barely notice something disappearing. It was feathery polyps pulling themselves \*zip!\* back into hidey-holes in the coral. They were almost like a childhood dream of Yoke's about there being very fast forms of life that you never quite see, or only see as a flicker from the corner of your eye.

\*\*\*

A pig tusk. Beach shells with cockroaches. A pocketful of baby acorns. A triton shell. Coral. Giant clam shells. A reef pearl.

\*\*\*

It was pouring rain. Yoke sat in the large common room of Susie's Plantation. Coconut palms. Orchids. Dark red ginger flowers. Orange flowers. The locals laughing and talking out in the kitchen. Such peace.

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A lion fish. Red and black fins, long. They turn white from the tip inward when hassled. The clown fish live in anemones, and swim out of them at you. The anemone is pinkish, tan, fleshy. The tips are darker ball shapes. At first Yoke thought the clown fish were friendly, but it turned out they were territorial, being aggressive. Looking closely at some of the larger ones, she could see that they have rows of jagged sharp teeth top and bottom inside their clown smile. Aggressive, menacing clowns. Dylan: "You never noticed the frowns on the jugglers and the clowns who did *tricks* for yew."

The "fish of the day" like a tiny flatworm.

The soft coral was fat and chubby. It was like turning a parameter in a fractal generator and seeing a series of shapes. Pale purple, lavender.

\*\*\*

Three teenage Fijian kids took Yoke and Saint to see some lava tubes. These were horizontal tunnels just underground. One of the boys carried a big machete. Yoke started joking nervously about cannibalism. "Yes, eat white people."

\*\*\*

They took a long bus ride around Taveuni to the Bouma waterfall. The bus was Indian-made a SHREEDHAR MOTORS product. The virgin forest by the second Bouma waterfall seemed like rain forest, though another tourist termed it "low jungle." All the trees had lianas on them (a liana being a climbing woody tropical vine), and epiphytes (a plant such as a tropical orchid which grows on another plant upon which it depends for mechanical support but not for nutrients). Life upon life upon life. Like a reef! A place where there's total ambient nutrients available and all you really need is an anchor spot. So you attach yourself to others.

The lower Bouma waterfall was a high cascade, maybe 100 feet, going into a pool. Not huge. Yoke swam out into it, and as she approached the 20 foot wide shower she felt fear --- the cascade seemed pretty strong and she couldn't see through it. The location of the heaviest part of the waterfall shower wandered about as a chaotic orbit on a strange attractor. The heaviest part of the torrent was almost too much, really hard, and it pushed Yoke under. Where it was falling the water was so agitated and foamy that you could hardly float in it. Dense mist was rising up. Yoke swam through the core three times.

\*\*\*

The Christmas Tree Worms. “It’s a combination of the two most perfect forms,” explained Onar. “The triangle and the helix.” Tiny little balls were forming on the altered Christmas tree worms, silvery little spheres like glass mirror-balls. “Eadem mutata resurgitur,” said Onar. “Do you know it? The inscription on the tomb of the mathematician Bernoulli, beneath a drawing of a logarithmic spiral. The same, yet altered, I am reborn. Now imagine a quaternionic spiral. That’s the Christmas tree worm.”

\*\*\*

A little piece of coral with a tiny zebra striped angelfish. Fish of a heart-stopping, mouth-watering neon blue. Fish-shaped fish. Like an aquarium, but untransportable.

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Some of the help wore name-tags, which seemed dehumanizing. A tag says, “I am a servant.”

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Diving at “Yellow Tunnel,” a reef in the Somosomo Straits off Taveuni in Fiji. The guide drew a chalkboard picture. The little Fijian guide Lui swam ahead across the top of the reef, using his hands on the coral. Yoke swam after him as if into a gale-force wind. Kicking as hard as she could, an inch above the reef surface. Lui went further and Yoke gave up, drifting back.

### *Phil’s Phlyte Wings*

“Hi guys,” said Phil, looking up from a thirty-foot wingspread lying on the roof. “I’m working on the Phlyte wings.”

“You makin’ them smart like I told you?” said Randy, setting Willa Jean down on the roof. “You remember what happened the taahm I tried attachin’ dumb wings to a motorcycle. I couldn’t get it to work nohow. Too hard to control the xoxxin’ thing.”

That had been over two months ago, mused Randy. The day on the bluff when he’d realized that he loved Babs. And in a month from now they’d be married. He stared off into the distance, smiling. It was a pleasant spring day with fluffy white clouds against a pale blue sky.

“Yeah, yeah, I’m souping this one up,” said Phil. “The wings have gotta be able to fly by themselves. Look here, Saint, see how I stuck on a bunch of DIMs copied from my smaller flapper models, and I hooked up the DIMs with chipmold pathways that I alla-etched in between them like Randy said. My Metamartian fuzz-knife was a big help.” Phil stepped back and stared at the wings. They were weakly flapping. “I think they’re just about ready to go. Are you listening, Randy, or are you just staring at the clouds?”

“Use a dummy for your first test-flight,” said Randy, looking down. “Cause more’n likely it’ll crash.”

“No way,” said Phil. “I trust my work. Anyway — I’ve got my Phlyte Blimp design all ready in my alla catalog. If the wings start to go down, I pop out a Phlyte Blimp. It’ll make a good story for marketing.”

Randy was getting a little burnt with Phil's constant jabbering about his flying machines and his plans for the 'Phlyte' start-up company. What Yoke had said was right. Phil was sounding like a numberskull.

"What did you do to Yoke?" asked Randy, deciding to give Phil a jolt. "She's downstairs cryin' while you're making your hot-shot invention."

"Yaaar," said Saint, throwing his arm across Phil's shoulders. "Where's the old Phil? 'No ambitions, no goals,' you used to say. 'I just want life hassle-free.' You were a role model for me, brah. The perfect slacker. And now we've got the alla giving us everything you need, but you're talking like Henry fuckin' Ford. It doesn't compute, man."

"I used to be afraid to *try*, Saint, that was all. But deep down I always dreamed there might be something important I could do. And now there's an opportunity. First of all, I got rid of a lot of my old hang-ups about success and my Dad. And second, with the allas changing everything, the world's a blank slate. I want to write my name on it. And I didn't 'do' anything to Yoke, Randy. I just told her that her father was going to have to help pay to rent a ballroom at the Fairmont. Why are you guys looking at me that way? I'm trying to invent something, and everyone's treating me like an asshole!"

"'Thou sayest it.' — *Mark 15:2*," said Saint. "Scripture quote for Randy here." Saint got a kick out of teasing Randy about his Heritagist years, but Randy didn't mind. Now Saint alla-made himself a hummus, Roquefort and avocado sandwich on sourdough rye. "Anyone else want one? I've got this sandwich design very highly tweaked. People could use the One-Zip for food products, too, Randy. Hey, Phil, I'm gonna start a company like you. One-Zip Incorporated. You're not the only asshole."

But Phil had heard enough out of Saint and Randy. While they'd been talking, Willa Jean had been busy tearing little shreds of imipolex off of the Phlyte Wings. He shooed the chicken away, shrugged his way into the Phlyte Wings harness and struggled to the edge of the roof. "Here I go, guys."

"I'll viddy this for the Show," said Saint, putting on his stunglasses. The glasses had little cameras that linked into the Web. "Go, Phil, go!"

Phil sprang forward and the Phlyte Wings began to flap. Willa Jean flapped her stubby wings too, as if inspired, but she didn't lift off the roof one bit. Phil circled, rose up to maybe a hundred feet above the ground, and then something happened. One of the wings got out of synch, and Phil was zooming towards the ground. With a great *whomp* a blimp the size of a living-room appeared on Phil's back. His flexible harness straps bounced a few times, but he was safe, dangling above the ground at fifty feet.

Phil's Phlyte Blimp was covered with something like imipolex hair — or maybe linguini. It was Phil's other new invention. The linguini began beating, slowly powering Phil back to the rooftop. Phil turned the blimp back into air and dropped to the roof's surface. Willa Jean ran out of the way.

"Shitfire, Phil," said Randy. "I told you to use a dummy."

"I'm okay," said Phil. "Stop filming now, Saint, I don't want people to know exactly how I'm designing this." He flopped the Phlyte Wings back down and

walked up and down them with his alla, using his fuzzy pocket-knife to affix a few dozen more DIMs and adding new channels of moldie nervous system.

“If this won’t do it, nothing will,” said Phil. “The thing’s got as much computational power as a moldie now.”

“That’s right,” said the Phlyte Wings, suddenly flipping themselves over. “And I’m too smart to work for a stupid flesher like you.” With a few quick, efficient motions, the Wings sprang up into the air and flew off like a great seagull.

“What the —” said Randy. Saint was whooping with laughter.

“Oh xxx it,” said Phil. “I should have known that would happen. I’m gonna go downstairs and make up with Yoke.”

“It self-organized?” asked Randy.

“That’s the problem with making something really big and smart out of imipolex,” said Phil. “Unless it’s as dumb as Willa Jean, it’s likely to wake up and turn into a moldie. And then it says ‘Fuck you’ and takes off. I’ve been doing research on the Silly Putter algorithm. It uses something called ‘cubic homeostasis’ to damp down any bursts of intelligence in the imipolex. Makes it act like an animal instead of a person — so the thing just putters along at the low twilight border of consciousness. Invented by Willy Taze, Randy, your Dad! He can show me how to hook it into my flappers. How soon is he coming, anyway?”

“Could be any taaahm now.” Randy peered up at the sky. “In fact I think I’ll wait up here for a little while.”

“Okay,” said Phil. “See you guys later.” He jumped off the edge of the building and slid down the fire pole.

## ***Writing***

### ***What Should The Title Be?***

December 23, 1996.

Book 4 in the WARE series. I’m not sure yet about the title. But I think it should end in “WARE” to make it match the others. And I don’t think the name should be any kind of pun, i.e. I don’t think “EVERYWHERE” or “EVERYWARE” would be a good idea. Nor other jokey ones. RUDYWARE. WAREWARE. The palindromic ERAWARE.

An obvious choice would be HARDWARE, although someone has in fact used this name for an SF movie and for an SF book which is possibly a novelization of the movie. But it would be nicer to go off into the future and maybe make up a NEW word. Thinking back, in 1980 “software” seemed like a modern and outre word. “Wetware” was so new a word in 1986 that some people think I invented it, although I didn’t. “Freeware” was not such a terribly new word in 1996, though it is rarely used. In each case of course, the word has an integral relationship to the book’s theme. (See the “Comparisons Among The Ware Books” section below for theme summaries.)

What will be in the new book?

(a) Cobb’s software will get a new body. The suggestion at the end of FREEWARE is that Cobb’s new body will be an imipolex moldie. This is probably the most interesting, though it might be worth looking into also combining the

SOFTWARE and WETWARE technologies to build people a new flesh body. Maybe Cobb first gets the imipolex body then gets back to a meat body. Bring him full circle! MEATWARE. FLESHWARE.

(b) Some people will get chirped like aliens. They will travel very far. SOULWARE. GODWARE.

(c) More aliens will show up. They'll be nicer. SHAREWARE.

(c) Some alien technology will take hold. Direct matter control. Quarkbag manipulation. Femtotechnology. FEMTOWARE. MATTERWARE. MASSWARE. Direct manipulation of the fabric of reality. REALWARE. Better this should be a word people really can't guess what it means. "There was a knock on the door. Randy kicked it open and there, just as he'd feared, was the realware giant snail that had been pursuing him through his dreams and down the dusty sublunar corridors of Einstein." The old thing about making matter out of a bump in spacetime. BUMPWARE. A texture map.

(d) More about Randy Karl Tucker. Some new characters as well. But a lot of the same ones.

(e) I'd like to do something about the dream landscapes, about the same few dream landscapes I'm always exploring. METAWARE. DREAMWARE. ARCHETYPEWARE.

I kind of like METAWARE? No, that's kind of like LIMPWARE, it leaves me wide open for insults, it's almost like VAPORWARE. FEMTOWARE is a cool idea, it's obsessed and specific, it's outrageous, it's not what you expect, it breaks the sequence. But maybe it's too perverse, too alienating. REALWARE seems pretty good.

December 31, 1996

What might be smart would be to *tell* people it's called FEMTOWARE, just like I *told* people the third one would be LIMPWARE. And let them mock that and get sick of that. And then in fact call it something else, switch to REALWARE like I switched to FREEWARE. Actually I usually tell people everything right away, I didn't really use any strategy with LIMPWARE/FREEWARE, it was just that first I liked the first name and then I liked the second name. I already told BOING the new book is FEMTOWARE, so at least that'll get printed once. I really should keep saying that, probably. It seems kind of bad luck to put the name out there too soon.

REALWARE feels maybe a bit pushy? How about TRUEWARE? No, that would be even pushier. LIVEWARE is good. That's kind of like LIVE ROBOTS. I almost feel like I've used LIVEWARE before. It looks like LIVER, and like LIVEWIRE. ALLWARE is good. "There was a knock on the door. Randy kicked it open and there, just as he'd feared, was the allware giant snail that had been pursuing him first through his dreams and then, after instantiation, down the dusty sublunar corridors of Einstein." No, *realware* is better than *allware*. So for today, REALWARE it still is.

### ***Why Write This Book?***

December 31, 1996.

(i) First of all, I feel idle and uncreative if I'm not working on some piece of fiction; if I'm not writing fiction I'm not exercising one of my finest abilities.



When I talked to my Japanese translator Mr. Ohmori when he visited this fall and said I wasn't currently planning a new novel he was so bitterly disappointed it gave me pause for thought. He clearly thought that for me to be writing *The Joy of Hacking and/or Gnarly* was a far less preferable occupation than for me to be writing a novel. (Of course, given that he gets paid for translating my novels, his feeling may not be solely motivated by an objective assessment of aesthetic and cultural values.)

But I really do feel a sense of waste when I'm not doing any SF.

(ii) Secondly, I'm inspired to do a WARE book in particular because Avon just sent me cover flats for new editions of SOFTWARE and WETWARE matching their cover for FREEWARE. Even though they are not what I would have chosen, the covers are slick and professional, suggesting a concerted publicity push that might get these books selling well. So it seems to make sense in terms of the market to get another WARE book out.

(iii) Thirdly, FREEWARE ends feeling slightly incomplete. First of all, we never got back to the powerful character of Randy Karl Tucker after those two intense chapters about him at the beginning. Secondly, we want to know what happened to Shimmer, and whether the aliens are going to come back.

Those are the three *practical* reasons: (1) I need to write SF; (2) There's a market for a WARE book; (3) There's a plot hook for a WARE book.

But for undertaking the Herculean task of writing a novel there need be *personal* reasons as well. There has to be some idea I want to work out, some thought experiment to perform, some obsession I want to ventilate, some character to explore.

Well, there are a few things.

(iv) I'm really interested in doing the femtotechnology thing. What would it be like if you could make ANYTHING you want. It would just be cool. I've wanted to do it ever since I read in Heinlein (?) about "direct matter control." And I like the idea of quarkbag matter. Really NEW stuff.

(v) I want to do more with the aliens and to have a character get out into the galaxy. I've never done intergalactic travel. This would happen towards the latter part of the book, I think.

(vi) It would be nice to explore the land of dreams. That thing I'm always talking about, that I only dream about three or four different landscapes. But is there much zing there? Well, it would be cool to have dream things come to life. The puzzling thing that always messes things up, like the stationmaster who gives you bum steers. Or the woman you want to eat out, but your tongue and mouth have turned to sand.

January 21, 1997.

(vii) I'm really writing it now, am eight pages into Chapter One about Cobb waking up in the Nest. I've even started telling people the name REALWARE. When I mentioned this to my friend John Pearce the other day, he was like, "I think you should be writing a sequel to THE HACKER AND THE ANTS instead; I liked that book much more than FREEWARE," and I was inwardly upset and worried.

But writing REALWARE is something I *want* to do, it's in the irrepressible category of being almost a guilty pleasure.

(viii) I feel a little dumb to be writing a fourth book in the same world, but others have done many books in the same world, and this is such an interesting world, I'm not nearly done exploring it. It would be a drag to have to invent plastic robots and uvvies again and get everything up to this nice futuristic speed. The WARE world is this great platform to work off of. And so what if I've described the Nest twice already. New York's been described many times more. And you can actually go there.

(ix) It's exciting to explore the idea of multiple bodies for a personality as I'm getting into with Cobb at the beginning now. This theme can come back, for once we got realware, it'll be a snap to have a dozen or a thousand bodies.

### ***Comparisons Among The WARE Books***

<b>Written</b>	<b>Published</b>	<b>Title</b>	<b>Theme</b>
1979-1980	1982	SOFTWARE	Saving a human mind as a computer program
1986	1988	WETWARE	Encoding a robot's program as DNA
1994-1996	1997	FREWARE	Decoding a mind from a cosmic ray
1997-1998?	1999?	REALWARE	Directly converting information into matter

### ***Dept. of Synchronicity***

December 23, 1996. Just as I'm starting these notes, the phone rings and it's the Washington Post Book Review asking me to review a new book by Freeman Dyson of his lectures on his imaginings of the future. Can do, can do!

January 7, 1997. Thinking about Prince Tupou, I get my dictionary to look up "prognathous," and open it to Liluokalani, Queen of the Hawaiian Islands (1891-1893). Secondary synchronicity: I'd been wondering how to spell *Hawaiian*. What was the name of that famous Queen of Tonga? Queen Salote.

January 29, 1998. I recently used the word *schlieren* to mean streaks because years ago I saw some scientific images called "Schleiren photography." Dictionary definition is "Regions of a transparent medium, as of a flowing gas, that are visible because their densities are different from that of the bulk of the medium." Today I looked in a German porno mag with a "first person" story by a woman who mentions having *Schlieren* of you-know-what on her face. "Noch kaute ich auf dem weichen Stück Männerfleisch, leckte mit der Zungenspitze die Schlieren um meinen Mund, die ich erreichen konnte, in meinen Rachen ..." In German it just means *streaks*, not the special scientific streaks like in English.

January 30, 1998. I said a DIM-spider would spin rayon, looked up rayon and found that it is extruded through spinnerets.

### ***Journal and Email***

#### **January 5, 1997**

I think this time I should have an outline and write the thing in chronological A-Z order instead of going into it ass-backwards like I usually do.

#### **January 6, 1997**

Looking at the list of characters and thinking about possible chapters, it's like looking into this seething anthill. So much going on in there already! I only need to look closer. Tonga or Fiji looks very promising. At the end of FREWARE, the

lovely young “Yoke said she was going to spend a few years on Earth, diving and studying oceanography.” Perfect. The Somosomo Strait off Taveuni! And I really feel like doing something with Tempest Plenty. That’s such a great name. Yet another hillbilly character? Well, hey, it’s something I’m good at. Tempest is 60 in 2054. Have her be a Heritagist.

**January 26, 1997**

I’m 3,000 words into Chapter One, I’ve woken Cobb up. At present I have the date as January 25, 2054. But today I’m beginning to wonder about the wisdom of this project. It’s like I’m doing the same thing again, and there is so much baggage of things to dovetail and explain, and FREEWARE is so good I don’t want to have to be trying to top that. Why not start a completely fresh book for my new novel? Writing a Cobb wake-up scene feels so been-done-before.

And two technological issues are bothering me. (1) I feel like I should deal with the WETWARE biotech issue, which I just completely punted and ignored in FREEWARE. (2) Before introducing femtotechnology I feel like I have to deal with nanotechnology.

A bad thing is that I seem to get getting into this exactly ass backwards just like I didn’t want to do, scrambling the whole time for what happens next.

**September 27, 1997**

So now it’s been eight months I’ve been off REALWARE. In the meantime I wrote SAUCER WISDOM.

In SAUCER WISDOM I developed a pretty good theory of the aliens, of biotechnology, and of femtotechnology. I’d like to bring these things into REALWARE. In SW, these things didn’t really kick in till maybe a thousand or two thousand years from now. But I’d like REALWARE to be set, I think, in 2054. So the time scale will be vastly accelerated. The reason I want it to be so “early” in time is that I’d like to use some of the same characters from FREEWARE again. Randy Karl Tucker in particular.

The Cobb-waking-up chapter is, yes, rather been-done-before. But it’s good. Just don’t use it for the lead chapter. The lead chapter should be something fresh and unhooked to the older books, so the new reader doesn’t feel like s/he is reading a sequel. Maybe Saint and Onar.

I feel a guilty pleasure in returning to the \*WARE world. Originally I’d planned to do a transreal book next after FREEWARE. But, duh, that’s what I just did with SAUCER WISDOM. It happened a lot faster than I expected, and I wrote it so *easily*, that I almost feel like it wasn’t a novel. Well, really it was, though with a very different kind of line, it had just a simple short-story action arc but it got long because of a zillion tacked-on mini-fictions (Frank’s visions). “Transreal non-fiction.”

So I really don’t feel like doing a transreal book right now. Like not a HACKER AND THE ANTS type book. Naw, I want to do REALWARE and use all this new technology that I “developed” in SAUCER WISDOM.

I think I’ll dedicate REALWARE to Frank Shook.

“For my teacher, Frank Shook”

**October 1, 1997**

I've just started MICROCOSMOS by Lynn Margulis and Dorion Sagan (I wonder if she was the wife of Carl Sagan?) Big theme of how the bacteria have been around for so much longer than us, that we are like the epiphenomenon on top of all the hard groundwork the bacteria did. This could be somehow a theme for REALWARE.

I want to have plenty of young characters. Maybe Saint and Onar at work. Then Onar goes to Tonga and hooks up with Yoke there. But he is wrong for her. And slowly Yoke moves to have a Tongan boyfriend, who is a new character.

The main tech is the femotechnology, I suppose.

Going back to the WARE world is like going home, I feel good about it. I don't see this as a majorly difficult or ambitious book. Not trying to knock the ball out of the park. I wasn't trying to "kill the ball" with SAUCER WISDOM either. Just an easily hit hall-of-famer's base-hit that maybe is in fact a home run after all, his swing is so smooth you can't tell from looking at him.

Now I'm going biking, then to an Al-Anon meeting, then to the ear doctor because I've been deaf in my right ear for a month or so.

OK, now it's 4 PM and I'm observing Melody Moh teaching. How science fictional and odd for me to be here listening to a pleasant Chinese woman talk about token ring network protocols as an alternative to ethernet with its potential gigabit rate. And I'm supposed to be deciding if she's doing a good job.

**October 3, 1997**

I'm eager to start this book, to be working on it. Otherwise my time goes to Windows programming and my endless incompletable book THE JOY OF HACKING.

**October 4, 1997**

Like I was saying in an email to Mavrides, nothing else feels hard enough, no occupation other than writing fiction feels like it is really using all of my mental abilities to the maximum. Nothing else is as challenging and as fulfilling.

I keep feeling like a bit of a loser to be writing a fourth in a series. It's going to be tough to not repeat myself, tough to top myself.

Having Saint hear about Stahn's death in Chapter One would be kind of cool. There could be something odd about the way Stahn dies. A mystery of some kind.

It's tempting to put the Randy and the realware snail in the first chapter as it's so striking. But it's also a little repellant, would be nicer to have something sweeter to draw people in. If I put the realware snail in later, then will it still work? I think, yeah, it probably would. I'd almost like to write this one in a pretty straight time-order, make it easier to understand. In FREEWARE, I think the original first chapter was Darla at the spaceport, and then I moved that forward into the book and it was fine.

I need some new tech things, not just the things from SAUCER WISDOM.

**October 17, 1997**

Just saw Booty Call, what a pleasant movie. "Riding the baloney pony."

### November 17, 1997

Wow, a month gone with no *Realware* progress. What have I been up to? Hacking, mostly, getting Animat ported to MFC. It's pretty much there, now, though it still needs the dialog box. The hardest thing was to get the interactive resizing of the MDI windows to keep the screen scale, MDI being Multiple Document Interface. I had to learn some really tricky new Windows stuff. Stuff that won't be worth knowing in a couple of years, on a par with the tricky assembly language stuff. But, hell, I get off on doing it. It's almost like taking drugs, so obsessive and time-wasting and isolating.

Anyway, Saturday I was walking around North Beach thinking about *Realware*, and it felt good to think about it.

I like the love-story idea, Saint and Yoke. In Chapter One, Saint hears that Stahn has died, not only is Stahn dead, all of his memory tapes got erased, he's really GONE. He's been seeing a lot of Willy, Cobb and Randy. They come down for the funeral.

The thing about Cobb waking up, I'm going to just cut that. If I use that at all, it'll be with Sta-Hi. As it stands, it's repetitive of Cobb's wake-up in *Wetware*. And looking up at the walls of the Nest, I can't stand having that in a book again. Cobb is just already there at the start of *Realware*, he's very sincere, Saint doesn't trust him, he comes to the funeral. Saint gets drunk and Cobb sits there talking with him and just for a goof cuts himself in half. Like the Baldwin brass knob.

### December 11, 1997

Okay, now I'm going to really try and get into this. I've pissed away the whole fall hacking. It's vacation and time to have some fun. *The Joy of Hacking* can wait. I think. I finished the Beta of CAPOW98 (Version 6) and put it on the web last night.

### January 15, 1998

So actually I spent most of the last month working on *Real Programming*. And now vacation's almost over. *Was tust du für den Front? Was tust du für die Sieg?* (I.e. in re. my true writing career, e.g. a new SF novel.)

Well, I have a nice lead page or two, a guy hearing that his father died. The thing is, now I'm thinking I shouldn't have it be *Realware*, this new novel. A fourth in a series really is pushing it, particularly a series that hasn't sold all that well. England won't buy Freeware, but they didn't buy Hacker and the Ants either, the rotten fags. But Japan's not picking up Freeware. And when I saw the cover for Benford's new book *Cosm* in the EOS catalog with *Freeware*, I thought how much more attractive a book is if it's a fresh start.

I'm feeling unconfident and anxious after *Saucer Wisdom* getting rejected all over the place. Susan Protter says, "Don't be anxious, be strong." She also said, "Don't let the next project choose you. Take charge." And I had kind of been letting *Realware* choose me.

So now I'm leaning towards making it a new stand-alone book.

**January 20, 1998**

Called up my acquisition editor, Jennifer Hershey, and she said either way was OK. Liked idea of near-future with love and 4D. But said Borders had really bought into Freeware, so the series idea really is viable. I'm a bit torn, though I've been focussing it as a standalone now for a couple of days. Title like *Love 21C* or *Love 4D*. Was totally set on that, now the call makes me have second thoughts.

**January 21, 1998, Email to Jennifer Hershey**

Here's some more thoughts on the question of what my new book should develop into. I've been working on notes for it and I'm in the first chapter now. I'm right at the switch point where the book could either be a stand-alone single novel with a working title *Love 4D*, or it could be a new \*Ware book called *Realware*. Up until about two weeks ago, I'd continually been thinking of the book as being *Realware*, but just recently I thought I might make it be *Love 4D*.

PRO *Realware*. Hearing your remark that Borders was quite enthusiastic about buying into the three \*Ware books as series makes me lean towards doing it as *Realware*. And the increasing likelihood of *Software* beginning production this summer also makes me think it might be best to get a new \*Ware book out to capitalize that much more on the publicity. It's very easy for me to see how to write another \*Ware book. I'd love to write about Randy Karl Tucker again.

PRO *Love 4D*. I have a fear that new readers might be put off by a FOURTH book in a series. My agent Susan Protter leans towards this viewpoint, she's also concerned that *Freeware* hasn't sold yet in Japan, where ordinarily all my books sell. Also I'm made a little hesitant by some of the mixed reviews *Freeware* got. In some ways it would be nice to start a book without the baggage of the old characters and \*Ware universe.

My confidence is generally kind of low right now, what with the ongoing *Saucer Wisdom* fiasco and I'm perhaps overly susceptible to outside advice. My wife didn't like the nasty cheeseball sex in *Freeware*, and keeps bugging me about that. One of my friends says I should write another HACKER AND THE ANTS. A different friend says I should do another MASTER OF SPACE AND TIME. Yet fans keep emailing me that can't wait for a sequel to *Freeware*. Since YOU'RE the one who I hope to sell this book to, Jennifer, I thought it would make sense to get input from you, which is why I phoned you yesterday and am sending this follow-up today.

The plot idea I have is a love story which could fit into either the *Love 4D* or the *Realware* framework. It's the tried-and-true romance story where there's a Man and Woman who are clearly right for each other, but who are initially each hooked up with someone who is wrong for them. And then over the course of the book they slowly get together, with a reversal along the way. Like in "Jerry McGuire." The whole book you are rooting for the lovers to successfully get together, and when they finally do, you're happy. I've never done a love story and am looking forward to it.

The book opens with The Man, his name is Phil Gottner, he's about 25, he's living in a warehouse space in San Francisco and he's just getting word that his father has died very oddly. The father Kurt Gottner was killed by something called a wowo, which had started as a kind of holographic special effect designed by the father, but which somehow took on a life of its own, acting as hole into a higher dimension.

Even if the book is *Realware*, I want the Man to be a new character unrelated to the old characters, so that a new reader doesn't start the first chapter with a sense of not being in on what's happening.

We will later learn that the hole into the higher dimension is controlled by or represents an individual alien intelligence. If the book is *Realware*, this entity was attracted to Earth by a signal from the alien Shimmer who remained on Earth at the end of *Freeware*. The fact that Kurt Gottner's wowo suddenly became a man-eater is not so much because of Kurt's brilliance but because the alien occupied it. It happened to look like the kind of "body" the alien likes to use. I think of the wowo as a bit like the object in Lethem's AS SHE CRAWLED ACROSS THE TABLE.

At his father's funeral is where Phil meets The Woman. The Woman is headed for Tonga and Fiji where she wants to do a lot of diving and oceanographic research. They click, but Phil is saddled with his current (obnoxious) partner, a low-empathy air head named Kevvie. And The Woman gets swept off by a friend of Phil's named Onar Anders who also has a reason to go to the South Pacific.

If the book is *Realware*, the Woman is Yoke Starr-Mydol, daughter of Whitey and Darla, who's just come to Earth. She's in the company of the new all-imipolex Cobb Anderson who used to be a friend of Kurt Gottner's. He's this very kind of boring old groover, like a Wal-Mart greeter. (Being made entirely of plastic is a perfect objective-correlative for being that kind of senior citizen!) Though around, Cobb would be a fairly minor character.

The second chapter is the Woman in Tonga and Fiji with Onar Anders. They find something weird down in the depths, something relating to the wowo (and, in the *Realware* scenario, to the aliens, in fact Shimmer is probably living down there). Onar is kind of annoying and the Woman's sick of him. Phil turns up near the end of the chapter and they have a nice interlude together.

From here on, the two possible book-universes diverge a lot. I've thought it through more thoroughly in the *Realware* case. What happens in *Realware* is that the aliens give humans control over femtotechnology, which is the "direct matter control" technology I worked out in *Saucer Wisdom* (which I actually wrote as tech-notes for future SF novels!) It becomes possible to use computers to interface to a femtotech "alla" device to manufacture objects that you think of, so there will be a lot of things to explore with that --- I also worked some of that out in the *Saucer Wisdom* sketches.

A kicker in *Realware* is that the hapless Randy Karl Tucker falls asleep wearing one these thought-realization devices, and a nightmare object from his dreams becomes real, it's a giant snail that wants to crawl on top of him. I've already worked on this scene, I laugh whenever I think about it.

Looking back over what I've written here, it kind of sounds like I want to write *Realware*, doesn't it? Can you visualize buying such a book?

### **January 22, 1998, Email to Jennifer Hershey**

Regarding my perplexity about which book to do next, today I'm working on it some more and today it's feeling more like *Love 4D*. Just the line about the love story and the 4D might be enough without bringing in all the other topics. Maybe it's better to save femtotechnology off for *Realware* as a separate book. There could end up being aliens in both books, though.

What can I say, I'm a little undecided here. Your input will indeed be appreciated. Given my ingratiating yet contrary nature, I may or may not end up going along with whatever you suggest, so don't feel too responsible or invest too much emotion into it! But it's nice to get a little dialog going instead of just being in my head arguing with myself.

I'm going to be on sabbatical in 98 - 99, so hope to do a lot of writing over the next year and a half, maybe I can finish one novel and get a start on the next one, though there's also a textbook project I'm trying to get finished off.

### **January 27, 1998**

I've been working on Chapter One, "Kurt Gottner's Funeral," and have 4,500 words now. Phil Gottner has met the Woman, currently called Jane. And now I need an SF effect to wind up the chapter.

Well, I could have the wowo reappear and do something.

Thinking of it as *Love 4D*, I kind of feel a paucity. And, also, it occurred to me in bed last night, that I already did a book based only on 4D: *The Sex Sphere*.

I think today I'll try and rework my Chapter One back into a *Realware* format and see how it looks that way.

### **January 29, 1998**

Yeah, it's gonna be *Realware*. Jennifer Hershey at Avon likes the idea of *Realware*, she says the *Freeware* trade paperback has an 85% sellthrough rate which is really high, so they'd definitely like another. And plugging it back into the *\*Ware* world adds so much energy.

And! *Software* is really going to be a movie! Yes, diary, today I got a Fed-Ex copy of this:

*The Hollywood Reporter, Wednesday, January 28, 1998, page 1.*

#### **Phoenix Pics loads 'Software'**

Edward R. Pressman will produce and Scott Billups will direct Phoenix Pictures' "Software," a futuristic story about a robotic war on the moon based on a Rudy Rucker novel.

The cyberpunk story centers on a 21st-century slacker who takes on a generation of super-robots created by his best friend and surrogate father.

Larry Wilson is scripting the project, with Jeff Most and Chris Hanley producing and Stuart Volkow co-producing.

The picture marks the directorial debut of Billups, who trained as a cinematographer under Oscar winner James Wong Howe and has made many TV commercials and music videos. Billups also cofounded the American Film Institute's media lab and created animatics for "Jurassic Park."

"It's one of the most substantial books in science fiction," Billups said. "And (unlike some other sci-fi projects), this is being made by a guy who has enormous respect for Rudy Rucker.

"Anybody who's a science-fiction fan will love this because both (he and Wilson) are almost at the stage of fanaticism about (Rucker) and his characters."

Wilson's credits include "Beetlejuice," "The Addams Family" and "Tales From the Crypt."



### **February 7, 1998**

I'm sick, I have a terrible cold, I've been sick for three days. I don't feel able to focus enough to work. A reminder of the old drinking days when I was "sick" so much of the time.

Also I'm slightly stuck now. I've done Kurt's death and the funeral and Phil has met Yoke. Now what? They meet again at LoLo maybe. And I think we need a special effect, an appearance of the wowo.

### **February 16, 1998**

Unaccountable depression today, alone in NYC, Sylvia split off to go shopping with a friend. I'm lonely, I'm tired of being away from home, we've been in NYC for four days. Last night for the first time it occurred to me, "You won't be able to write forever." Thinking of how stiff and stereotyped and boring Updike's books have become. This morning we went to a big Léger show at the MoMA. His early paintings were, I thought, better than his late ones. The earlier ones less assured, more provisional, more cubist. His late ones very fixed, outlined in black, exactly this and exactly that. Some non-integral washes of color. Anxiety that my work is becoming like that. Still, though, the hope of making REALWARE a positive life-affirming book, a fine grand resolution. I'm in the nice old Reggio coffee house just now, writing, I feel better, the keyboard is like the Earth was for Antaeus, I draw my strength from it.

### **February 24, 1998**

Ok, so Chapter One is done now, 40 pages, 12,800 words, and I need seven more of them. Seven! One step at a time, Ru. The next is the Tonga/Fiji chapter. My arms feel too tired to type. Maybe I should nap.

### **March 4, 1998**

Thirteen pages into Chapter Two now. Cool.

Killed off someone else in the story, one death per chapter so far, despite my occasional pontificating about not liking violence, it's always an easy attention-getting trick to use. Makes the heart beat faster to read about, just like sex. I think Onar is probably a sleaze-ball, up to something.

Hey, guess what, this week David Hartwell bought *Saucer Wisdom* as a non-fiction book for Tor! It'll be out in mid-1999, perfect. Millennium Madness. And now I get a new advance on top of the advance I had from Wired for it. To make it perfect, they want to use my art. That's really exciting, though kind of scary. Am I good enough? Well, I'll redraw the pictures a little more carefully. Rapidographs? I'll get a set like the nice new ones I got Georgia. And some hard pencils and big beige cube of a gum eraser. And good paper. What fun.

### **May 3, 1998**

I'm into Chapter 3 and I'm a little worried I'm getting too many balls into the air. (a) the aliens, what would it be like on their world, (b) the alla, what is its effect on civilization, (c) the powerball what is it like in higher D space, (d) putting people's software onto tank-grown clones. Of course for the first-time WARE reader there's the whole issue of (e) moldies and (f) software immortality. And we have (g) the love story (h) Randy (i) Cobb. I still want to bring in (j) the realware objects created

by dreams. And how will it all end? In a fiasco? Blow up the world? “We died of too much science-fiction.” Definitely don’t need more new elements.

**May 9, 1997**

The pieces I saw with Sylvia in the art glass gallery on Sutter St. Candidates for what someone might make with an *alla*. The big rough prism of green with inclusions and with little peek-through windows. The flat glass pancake with slant-cut canes. The bulged and self-intersecting surfaces, kind of like lampshades, by a man with an East European name.

**June 1, 1998, Letter to Jennifer Hershey at Avon**

*Sent with Chaps 1-3*

Dear Jennifer,

I’ve decided to send you my REALWARE proposal sooner rather than later. I hope you like it! The book is close to half done, and I’m about to go to Kauai with my family for two weeks, so this seems like a good time for your input.

The mainspring idea of REALWARE is that it is a love story between two young people called Phil and Yoke. The book is set in San Francisco, Tonga and four-dimensional hyperspace.

The alien Shimmer who escaped at the end of FREEWARE is back. She gives Yoke a device called an *alla* which can physically create any object that a person can think of. These *alla*-made objects are the “realware” of the title. “Realware” is also used to mean the idea or pattern that you use to create an *alla* object.

Shimmer is trying to bring in more and more aliens like herself and their arrival has the side effect of producing some four-dimensional hyperspace anomalies called powerballs. Several people get trapped in the powerballs, including our old FREEWARE friend, Randy Karl Tucker.

At the end of the book, Phil and Yoke get together, the realware technology is spread to everyone, and the aliens are prevented from invading, and there is a feeling of full closer and completion.

I’ve gone over the first three chapters carefully and I think they are now in something very much like finished form. Notice that in REALWARE, I’m using a rhythm of four longish sections per chapter. The details of the outline of the remaining chapters are not absolutely certain, as I only become really sure about what works the best when I actually write the whole story out. I expect a finished length of 100,000 to 110,000 words and a completion date of January 30, 1999.

First and foremost, REALWARE will be to be a complete, integral novel that can be read independently of the other \*WAREs. But people can also think of it as the end of a \*WARE tetralogy.

Even so, REALWARE might not be the last of my \*WARE books. I’m fond of the \*WARE universe and there are still a lot of possibilities left. I might return to it one of these days, perhaps to start a new cycle of the series.

**July 3, 1998**

Okay, now I’ve had a full month off and it’s time to get back into REALWARE. What have I been up to? First we went to Kauai from June 6 - June 21. And then June 26 - June 29 we were in LA at Alife 6, and in La Jolla to visit

niece Siofra, great-niece Tinsley and brother Embry. All this time I was working on doing the 57 pen and ink illos for SAUCER WISDOM. Yesterday I sent the illos off to Dave Hartwell.

Maybe I should reread REALWARE to get my head back into it? But I'd just reread it before I left, so I don't so much feel like doing that. But maybe I will anyway? I'll try just reading the outline I sent Jennifer Hershey first.

It's always problematic to break the ice. That first penstroke on the blank paper. I'm — um — supposed to just start *writing*?

### **July 9, 1998 Writing and Drawing**

Going pretty good again. Just finished the first ten-page section of Chapter Four. These sections are kind of like illustrations. Each one kind of a single scene.

At the Alife conference, Sylvia and I sat at the banquet with an attractive psychotherapist our age named Joanna Poppink who said that if you're an artist in one field, working at an art in another field revitalizes you. She was a real L.A. type, with the full armory of buzzword language, but this point she made was a very good one.

And I *am* seeing a lot of analogies now between drawing and writing. (i) In drawing I'd get some quick sketch in pencil, then ink it in, then have to white out pieces and redraw them. In writing I try and write a rough version of the section pretty quickly, then go over it and tune it, and then there will be things that don't work that I have to keep redoing. (ii) In drawing, whenever there was a part I was confused about (like two hands holding each other) I'd end up having to use lots and lots of white-out there, it would end up all bumpy and crufty on the paper and never would look so smooth and clean as the rest of the picture. This is the same in writing, the transitions or actions I'm not clear about take the most rewriting and reworking. But I don't think it's necessarily true that a rewritten patch has to be bumpy and crufty as does a redrawn patch; the bumpiness is partly a result simply of the not-so-great physical properties of the white-out I use. (iii) In drawing I'd sometimes think that if only I could take the time to fully visualize the difficult passage then I'd be able to draw it clean and right the first time. But often it just seemed too hard to think, and I'd go ahead and draw it wrong, just so I could have something to work off of. In writing I think that if only I could fully think a scene through I can write it much more effectively. But many times it's just too hard to think the whole scene through, I feel like being active, in touch with the medium, so I go ahead and write even though I'm not sure what I'm doing. (iv) In both cases I need to be clear when something that might have the superficial appearance of a finished piece really is still just a sketch that needs to be reworked. I was kind of surprised how prolonged a process doing a drawing it; I hadn't realized it would take so much revision. By long experience, I am of course familiar with the huge amount of revision a written scene takes. But it's good to see this confirmed by my experience with drawing. (v) Mavrides said about my cartooning, and cartooning in general, "It's not the realistic style that matters so much. It's having something to say." And this makes me feel free to write a little more cartoony and sketchy sometimes. And helps me fight my feeling of being inferior to a fine literature exponent who creates beautifully textured descriptions and aperçus (shading and perspective!) in a work that perhaps doesn't

have as much to say as I hope mine do. (vi) As I go back and fill scenes in a bit more, it's just like getting out the pen and adding little details.

**July 24, 1998.**

I need to try and pull more strands of *Realware* together. It would be best to have an integral unified theory of the aliens, powerballs and allas. I'm about to go to the scene of Phil crawling out of the powerball into hyperspace and I'm not sure what is supposed to happen. Also I need to start duplicating the allas.

I'm also concerned because I heard some vague information that Avon doesn't like the first three chapters. I'm imagining that they think it's not focused enough. I sent them the 3 chaps and a (bogus, of necessity, for I never know how my books will end) outline of the rest to Avon on June 1. Susan called to "noodge" and they said they had some problems with it, they wanted to put a new girl on it as editor, in place of my "old" editor who was a 24 year old SF fan who always just said "fine". But Susan didn't pass on any info to me about the specifics of what Avon's problem was, and told them not to talk to me directly, only to talk to her, and then left town for a week, leaving me very uncertain and anxious. I'm not sure why Susan doesn't want them to talk to me, maybe it's just the practical matter that everything is partly "for show" as we don't have a contract yet, maybe it's that she's scared I'll quarrel with them, maybe she just likes to keep herself in the center of things.

I was quite uptight about this Tuesday night. In the old days I would have been rippin' and runnin' for sure for sure. But being in recovery helped. "It's in God's hands." "Don't be afraid." A lot of the fear is not so much of what Avon will or won't do, but of my anxiety that I won't be able to weave the threads together, catch all the rabbits I've set loose, pocket all the balls I've tossed into the air.

And now I've been praying for help some, and being really uptight and on a "dry drunk" some with poor Sylvia (arguments about home repairs and travel plans). And then finally got back on good terms with her and a great idea came to me: i.e. that I should have the aliens' powerball object be their literal God. Their God follows them to the new part of the cosmos they go to. They are so evolved that they have a physical interaction with God (unlike us, who are more primitive). It's a cool SF-y idea, and kind of ironic that I'd pray for God for help about my book and He's all, "Well, look, I can be a character for you, would that help?"

**July 27, 1998**

Today Susan called, she just got back in town, and Avon made an offer of for *Realware* in the same amount as for *Freeware*. She tried to get them to go higher and they won't. The movie plans seem to have no effect here. She hadn't even seen the desperate email I sent her last Tuesday with my worries at the vaguely (I thought) negative news from Avon, and when I described this email to her, she said she thought she'd delete it without reading it, and I said yeah, do that. Avon did say they thought the book needed some work, and indeed the first three chaps did need some work and I've been doing that work all last week. The two Jennifers at Avon are fully scheduled so I will have a new editor, a woman named Diana Gill.

**August 14, 1998. Finished REALWARE! Email to Kids.**

I just finished writing REALWARE! The first chapter has a funeral, and the last has a double wedding: Yoke and Phil, Babs and Randy. Saint playing flute

motets with heavy metal accents on the side. Double wedding of two familiar-seeming young female characters? Now THAT'S science fiction. I'm an old fool playing with action figures. I hope you guys don't mind forever being called into service in Ye Olde Transreale Theatre Troupe. But it's only fun play-acting, very positive this time around. I think the book came out well. A big theme in all the WARE books is father/son relations (remember Pop was the inspiration for "Cobb"), and I think I got that resolved pretty well in here for my purposes, though of course you, Rudy, like every new generation, will do it your own way for yourself. But I think you'll all dig this. There's actually TWO old father figures in the book, (1) Phil's father, who ends up nobly flying into a God symbol called "the SUN" after Phil meets him (after the father's "death") in the fourth dimension (I finally say a proper goodbye to Pop!), and then (2) Cobb himself, who nobly leaves in a Saucer at the end after telling them to GET RID of all the software backups of him so that next time he dies, he too can go into the SUN. (Don't worry about plot giveaway, this book is such a page-turner it don't matter.) This is the (probably) last WARE book, it feels complete now, 20 years after starting it, and it needed all of those 20 years to get it right. The capstone of the WARE tetralogy.

**November 3, 1998. Working on Diana Gill's revisions.**

So now Diana Gill of Avon wrote back. She enjoyed REALWARE, "I liked Phil a lot and thought Yoke was a great character. I also loved the Metamartians and their varying attitudes." But she wants the plot strengthened. One concern is that it feels like the climax is in Chapter 5, not Chapter 6. There should be something bigger at the end.

Her hardest question is "What is the Metamartians' role in all this?" Are they good, just alien godmothers as it were? OR if they are in some way sinister or unknowable, have them put more pressure on Phil at the wedding.

Also, why is Cobb so willing to go?

Also, what are some more effects of the alla on humanity?

**November 14, 1998. Do I need to write another chapter?**

I've been fighting the idea of a new chapter because I'm frightened of the work and frightened of going back into the uncertainty and anguish of not knowing how to end. It's existentially depressing to have the wonderful dry land of "The End" pulled out of my clawing fingers; it's a hard thing to find that was only a sodden life-ring and that I'm still several leagues out to sea, still have to swim towards shore for another six weeks or so, sigh. But "it's God's will" to do this thing right, to give more than full weight, to *really* finish the tetralogy. No shirking, Ru!

What makes me realize I really have to do the new chapter was Walker's cheerful remark that he suspected I was planning to properly wrap things up in another book, a "Knowware". (Impossible spelling, so not really a possible title, unless I made it "Noware" or "Nowhere" — *pace* Samuel Butler (as an English professor might groovily say).) The only reason I would be planning another book would be if I left so many loose ends that I *need* another book, as was the case at the end of Freeware, with the one big loose end of Shimmer's survival. That was a deliberate loose end, to some extent, but I deliberately put it in because there was the non-deliberate loose end that I didn't really do enough with the aliens — so I made

this loose end explicit. Even if I do someday want to do a fifth *Ware*, it would be better to be able to come back to a world which *doesn't* have the alla, so that it was more of a recognizable, normative kind of world. So it would be well to get rid of the alla at the end of *Realware*.

**November 23, 1998. The Final Wrap-up**

I didn't need an extra chapter after all. Instead I'm going back and thickening everything up. I'm even now at this minute not quite sure about the very last scene. I think I will let people keep the allas? No, no, I won't. The violence with alla-make weapons is too insoluble a problem. Too bad people are such jerks. Thinknig about Brueghel's made me a little less sanguine about mankind, I guess. Cool idea: I used a note Sylvia emailed me for my last sentence. Sylvia's email, sent as she left for Europe with me to meet her:

\*\*\*\*\*

Date: Tue, 25 Aug 1998 15:04:38 -0700 (PDT)

To: rucker@mathcs.sjsu.edu

From: sylvia@ave.net (Sylvia Rucker)

Subject: yr books

SOFT are your eyes in the summer morning bedroom;  
WET are my lips remembering yours at night;  
FREE are our hearts together on a big empty beach;  
REAL is every minute loving you.

Bon voyage to us both.

I love you.

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My last paragraph of REALWARE:

And then things were wonderful. The newlyweds' eyes were soft, their kisses wet, their hearts free, the big world real.

***November 24, 1998, Summary of Changes for Diana Gill***

[Copy of cover letter sent back with the changed REALWARE to Diana Gill at Avon.]

Hi Diana,

Thanks for your useful comments in your letter of October 28, 1998. In your Global Concerns, you put your finger on some issues that had been troubling me as well. I've been working hard on them, and I think I have now reached good solutions. I'll outline below the changes I've made for these Global Concerns, and I also outline what I did about your Detailed Comments and Line Edits, which were comparatively easy to take care of.

Most of the changes are in Chapters Five and Six.

**The Metamartians' Motives**

I'm making it clear now that the Metamartians are non-malicious nomads. They have no plan of returning to Metamars, they are travelling beings who (a) zip along till they get a body on some world (b) assemble a group of seven of their

fellows, which turns out to be their preferred size group for mating (c) help Om spread the alla to all citizens of the world they are visiting (d) mate and produce a single new offspring (e) investigate the new world a bit, and (f) chirp back into personality waves and move on.

I got rid of having the Metamartians start looking like Grays, this was silly and distracting. This meant that, as you suggested, I could drop their concern with how humans expect them to act.

In order to leave Earth, the Metamartians need to know which “direction” to head in to go towards two dimensional time. Before I had them using Phil’s star map, but they can actually get this map directly from Om themselves. So instead they are going to use a human’s ability to dream in order to find 2D time. The Metamartians don’t dream, but humans do. This fits in nicely with the fact that Phil is dreaming on page 1. Om “knows” where 2D time is, but can’t explain it to the Metamartians. So they need a local dreaming person to come with them as a kind of “harbor pilot” or “native guide”. They really want Phil, but Cobb volunteers instead.

I went through and did rewrites of all six passages where the Metamartians talk to the characters. These are when Yoke meets the Metamartians and gets the alla in the bubble beneath the sea, when Josef talks about the alla to Yoke and Phil by the swimming pool, when Phil talks to the aliens in the cave by the beach before being eaten by the powerball, when the Metamartians crawl out of the bean and talk to Yoke and Babs in San Francisco, when the aliens leave the Anubis, and when the saucer appears at the double wedding.

### **Om’s Motives**

I am adding some complexity to Om’s motives and I downgraded the Metamartians’ contribution to the technology of the alla, making it more explicit that the alla is a gift from Om. To position the alla as more magical and less technological, I dropped the distracting word “femtotechnology” entirely in talking about the alla, and just speak of it as a tool for making “realware”. I mention from the very start that the allas are connected to Om via higher dimensional vortex threads.

Here is the reason why Om wants to spread the allas to each and every sentient being she encounters. When someone gets an alla, it “registers” them and makes a complete copy of their body and mind. This information is stored in the hyperdimensional body of Om. Om views this as a valuable thing. Like shell collecting or taking photos. Making the allas work “costs” Om next to nothing, but in giving them away, she gets complete copies of lots of people.

### **Consequences of the Alla**

I think it is realistic to assume that the allas would have some unacceptably bad consequences. I ignored these before. In particular, there would be a huge number of murders, a lot of little wars, and individuals would repeatedly destroy cities with bombs. The bombings could happen either deliberately (terrorism or madness) or inadvertently (falling asleep wearing an uvvy/alla hookup and having a very bad dream).

So I’ve woven this into the last chapter with a rising wish to be rid of the allas. This keeps the flow of tension going through Chapter Six; you had mentioned

that things felt before like they'd been wrapped up already in Chapter Five, so it's good now to have the A-bombs to worry about right up to the end. To remove the feeling of slackness that Chapter Six had, I took out most of the scene where Phil is building a flapping device on his warehouse roof, and replaced this instead with having the boys fly in Phil's blimp to try and help some of the people injured in fighting across the bay in Oakland.

It turns out the Metamartians never had such big problems with the allas because they live in 2D time where one screwup in one timeline doesn't matter so much.

In the end the people get Metamartians to ask Om to remove the allas. In addition, Om removes all the weapons that people have made with their allas.

### **Cobb's Departure**

He makes a deal with the Metamartians that he'll go with them and serve as a dreaming guide towards 2D time provided that they ask Om to turn off the allas. The realization that a moldie like Cobb can dream as well as a person has some impact in making people realize moldies are more than machines.

### **Detailed Comments**

[For reference purposes, I'll number these as you numbered them in your letter of October, 28, 1998, with the current correct page numbers in brackets. ]

18/24 "Kevvie" not "Kevin" is fine, I do think of Kevvie as short for Kevin, but it's not important enough to introduce confusion.

36/3 I added another line or two about Phil's early attraction to Yoke "There was something about Yoke — her smell, her voice, the way she moved, the things she said — she fit into Phil's heart like a key in a lock." and "It was wonderful to be with this girl. Nobody had ever understood him so well before." and changed the "I love her" to "I think I love her".

55/56 I did two things to change the fake ID. First of all it occurred to me to make it an "ID virus" which replaces images of Yoke with images of Sue Miller. This is so that later when the moldies post pictures they took of Yoke in Tonga, they show up as pictures of Sue Miller. Second, as you suggest, I add some explanation here of why the Tongans want to cover Yoke's identity. They think Yoke is going to get something valuable from the aliens and don't want people to hound her. I mention this again in the scene where Yoke is having dinner at the King's house. You can search for "ID virus" to find the places where the changes are made.

116/3-4 I dropped "Phil knew the feeling."

121/5-8 I now mention palladium with rhodium as you suggest.

128/18-22 I changed this as you say to emphasize Phil's proud of the bean and wanting more attention.

203-208 Randy's change of heart/rebirth. I rewrote the early part of this chapter extensively to make Randy's agony and renewal more dramatic as you suggest.

### **Line edits.**

I should mention that it's easier for an author to find your line edits if you flag them by putting Post-It labels on the margins or, even simpler, turning down the page corners. Well, maybe you thought at first that you'd be doing them on every page, as



the density of line edits drops off drastically after the first dozen pages. I guess after then you started trusting me! I incorporated all of your line edits but three. There are three requested deletions I'd rather not make. The contested phrases that I would prefer to keep are in italics:

"Phil sighed as if his heart would break" on p. 9. I want to crank up the pathos here. Phil is sadder than he's ever been in his life.

"which had been, on the whole, more fun." on p. 10. It wasn't purely more fun, it was only on the whole more fun. This usage gives a taste of Phil's somewhat cautious and deliberate way of thinking.

"This, Eve's opinion. Phil, however," on p. 10. I think this adds a comic, ironic touch. And technically, this phrase serves to close off the bracketed sentence of Eve's thoughts started by "Eve hated Bass". This trick helps keep it clear that we are still in Phil's point of view. (I have a horror of inadvertent "wandering p.o.v.")

### **Other changes.**

I showed the manuscript to my scientist friend John Walker, and I've incorporated some additional suggestions that he made.

A six-miles deep air bubble would become white-hot upon collapse, so I moved Cobb and Yoke out to the edge of the bubble before the aliens take the dome down.

I had some of my dates wrong for the corresponding days of the week, and fixed that.

Walker thought Kevvie's sudden killing of Yoke seemed like too abrupt a change of her character, so I prefigured this side of her personality by having her abuse a dog named Umberto (a pet of Phil's housemate Derek), and even had her try to kill the dog while she was high.

Thanks again for your good work on my manuscript.