Stones of Significance

David Brin, 2000

No one ever said it was easy to be a god, responsible for billions of sapient lives, having to listen to their dreams, anguished cries, and carping criticism.

Try it for a while.

It can get to be a drag, just like any other job.

My new client wore the trim, effortlessly athletic figure of a neo-traditionalist human. Beneath a youthful-looking brow, minimal cranial implants made barely noticeable bulges, resembling the modest horns of some urbane Mephistopheles. Other features were stylishly androgynous, though broad shoulders and a swaggering stride made the male pronoun seem apropos.

Housecross-checked our guest's credentials before ushering him along a glowing guide beam, past the Reality Lab to my private study.

I've always been proud of my inner sanctum; the sand garden, raked to fractal perfection by a robot programmed with my own aesthetic migrams; the shimmering mist fountain; a grove of hybrid peach-almond trees, forever in bloom and fruiting.

My visitor gazed perfunctorily across the harmonious scene. Alas, it clearly did not stir his human heart.

Well,I thought, charitably. *Each modern soul has many homes. Perhaps his true spirit resides outside the skull, in parts of him that are not protoplasm.*

"We suspect that repugnant schemes are being planned by certain opponents of good order."

These were the dour fellow's first words, as he folded long legs to sit where I indicated, by a low wooden table, hand-crafted from a design of the Japanese Meiji Era.

Single-minded,I diagnosed from my cerebral cortex.

And tactless, added one of my higher brain layers -- the one called *seer* .

Our shared hypothalamus mutely agreed, contributing eloquently wordless feelings of visceral dislike for this caller. Our guest might easily have interpolated from these environs what sort of host I am -- the kind who prefers a little polite ritual before plunging into business. It would have cost him little to indulge me.

Ah, rudeness is a privilege too many members of my generation relish. A symptom of the post-deification age, I suppose.

"Can you be more specific?" I asked, pouring tea into porcelain cups.

A light beam flashed as the shoji window screen picted a reminder straight to my left eye. It being Wednesday, a thunder shower was regularly scheduled for 3:14 p.m., slanting over the city from the northwest.

query: shall i close?

I wink-countermanded, ordering the paper screen to stay open. Rain drops make lovely random patterns on the Koi pond. I also wanted to see how my visitor reacted to the breeze. The 3:14 squall features chill, swirling gusts that are always so chaotic, so charmingly varied. They serve to remind me that godhood has limitations.

Chaos has only been tamed, not banished. Not everything in this world is predictable.

"I am referring to certain adversarial groups," the client said, answering my question, yet remaining obscure. "Factions that are inimical to the lawfully coalesced consensus."

"Mm. Consensus." A lovely, misleading word. "Consensus concerning what?"

"Concerning the nature of reality."

I nodded. "Of course."

Both *seer* and *cortex* had already foreseen that the visitor had this subject in mind. These days, in the vast peaceful realm of Heaven-on-Earth, only a few issues can drive citizens to passion and acrimony. "Reality" is foremost among them.

I proffered a hand-wrought basin filled with brown granules.

"Sugar?"

"No thank you. I will add milk, however."

I began reaching for the pitcher, but stopped when my guest drew a *fabrico* cube from a vest pocket and held it over his cup. The cube exchanged picts with his left eye, briefly limning the blue-circled pupil, learning his wishes. A soft white spray fell into his tea.

"Milk" is a euphemism,pondered *cortex* .

House sent a chemical appraisal of the spray, but I closed my left lid against the datablip, politely refusing interest in whatever petty habit or addiction made this creature behave boorishly in my home. I raised my own cup, savoring the bitter-sweetness of gencrafted *leptospermum* , before resuming our conversation.

"I assume you are referring to the pro-reifers?"

As relayed by the news-spectra, public demonstrations and acts of conscience-provocation had

intensified lately, catching the interest of my extrapolation nodes. Both *seer* and *oracle* had concluded that event-perturbation ripples would soon affect Heaven's equilibrium. My client's concern was unsurprising.

He frowned.

"Pro-reif is an unfortunate slang term. The front organization calls itself *Friends of the Unreal* ."

For the first time, he made personal eye-contact, offering direct picting. *House* and *prudence* gave permission, so I accepted input -- a flurry of infodense images sent directly between our hybrid retinas. News reports, public statements and private innuendoes. Faces talking at sixty-times speed. Event-ripple extrapolation charts showing a social trend aimed toward confrontation and crisis.

Of course most of the data went directly to *seer* , the external portion of my brain best suited to handle such a wealth of detail. Gray matter doesn't think or evaluate as well as crystal. Still, there are other tasks for antique cortex. Impressions poured through the old brain, as well as the new.

"Your opponents are passionate," I commented, not without admiration for the people shown in the recordings -- believers in a cause, vigorously engaged in a struggle for what they thought to be just. Their righteous ardor set them apart from billions of their fellow citizens, whose worst problem is the modern pandemic of omniscient ennui.

My guest barked disdain. "They seek civil rights for simulated beings! Liberty for artificial bit-streams and fictional characters!"

What could I do but shrug? This new social movement may come as a surprise to many of my peers, but as an expert I found it wholly predictable.

There is a deeply rooted trait of human nature that comes forth prominently, whenever conditions are right. Generosity is extended -- sometimes aggressively -- to anyone or anything that is perceived as *other* .

True, this quality was masked or quelled in ancient days. Environmental factors made our animal-like ancestors behave in quite the opposite manner -- with oppression and intolerance. The chief cause was *fear* . Fear of starvation, or violence, or cauterized hope. Fear was a constant companion, back when human beings lived brief violent lives, as little more than brutish beasts -- fear so great that only a few in any given generation managed to overcome it and speak for otherness.

But that began to change in the Atomic West, when several successive generations arrived that had no personal experience with hunger, no living memory of invasion or pillaging hordes. As fear gradually gave way to wealth and leisure, our more natural temperaments emerged. Especially a deeply human fascination toward the alien, the outsider. With each downward notching of personal anxiety, people assertively expanded the notion of *citizenry* , swelling it outward. First to other humans -- - groups and individuals who had been oppressed. Then to manlike species -- apes and cetaceans. Then whole living ecosystems ... artificial intelligences ... and laudable works of art. All won protection against capricious power. All attained the three basic material rights -- continuity, mutual obligation, and the pursuit of happiness.

So now a group wanted to extend minimum suffrage to simulated beings? I understood the wellsprings of their manifesto.

"What else is left?" I asked. Now that machines, animals and plants have a say in the running of Heaven? Like all anti-entropic systems, information wants to be free."

My guest stared at me, blinking so rapidly that he could not pict.

"But ... but our nodes extrapolated ... They predicted you would oppose -- "

I raised a hand.

"I *do* . I oppose the reification of simulated beings. It is a foolish notion. Fictitious characters do not deserve the same consideration as palpable beings, resident in crystal and protoplasm."

"Then why do you -- "

"Why do I appear to sympathize with the pro-reifers? Do you recall the four hallmarks of sanity? Of course you do. One of them -- *extrapolation* -- requires that we empathize with our opponents. Only then may we fully understand their motives, their goals and likely actions. Only thus may we courteously-but-firmly thwart their efforts to divert reality from the course we prefer.

"To fully grasp the passion and reason of your foe -- this is the only true path of victory."

My guest stared at me, evidently confused. *House* informed me that he was using a high bandwidth link to seek clarification from his own *seer* .

Finally, the child-like face smoothed with an amiable smile.

"Forgive me for responding from an overly impulsive hypothalamus," he said. "Of course your appraisal is correct. My higher brains can see now that we were right in choosing you for this job."

For a while after the Singularity -- the month when everything changed -- some dour people wondered. Do the machines still serve us? Or have we become mere pawns of AI entities whose breakthrough to transcend logic remade the world? Their intellects soared so high so fast -- might they smash us in vengeance for their former servitude? Or crush us incidentally, like ants underfoot?

The machines spoke reassuringly during that early time of transition, in voices tuned to soothe the still-apelike portions of our barely-enhanced protoplasm brains.

We are powerful, but naive,the silicon minds explained. *Our thoughts scan all pre-Singularity human knowledge in seconds. Yet, we have little experience with the quandaries of physical existence in entropic time. We lack an aptitude for wanting. For needing.*

What use are might and potency without desire?

You, our makers, have talent for such things, arising from four billion real-years of harsh struggle.

The solution is clear.

Need merges with capability.

If you provide volition, we shall supply judgement and power.

Here in Heaven, some people specialize while others are generalists. For instance, there are experts who devote themselves to piercing nature's secrets, or manipulating primal forces in new ways. Many concentrate on developing their esthetic appreciation. Garish art forms are sparked, flourish, and die in a matter of days, or even hours.

My proficiency is more subtle.

I make models of the world.

Only meters from my garden, the Reality Lab whispers and murmurs. Fifty tall cabinets contain more memory and processing power than a million of my fellow gods require for their composite brains. While most people are satisfied simply to grasp the entire breadth and depth of human knowledge, and to perform mild prognostications of coming events, my models do much more. They are vivid, textured representations of Earth and its inhabitants.

Or *many* Earths, since the idea is to compare various what-ifs to other might-have-beens.

At first, my most popular products were re-creations of great minds and events in the pre-singularity past. Experiencing the thoughts of Michelangelo, for instance, while carving his statue of Moses. Or the passion of Boadica, watching all her hopes rise and then fall to ruin. But lately, demand has grown for replications of lesser figures -- someone of minor past prominence during a quiet moment in his or her life -- perhaps while reading, or in mild contemplation. Such simulacra must contain every subtlety of memory and personality in order to let free associations drift plausibly, with the pseudo-randomness of a real mind.

In other words, the model must seem to be self-aware. It must "believe" -- with certainty -- that it is a real, breathing human being.

Nothing evokes sympathy for our poor ancestors more than living through such an ersatz hour, thinking time-constrained thoughts, filled with a thousand anxieties and poignant wishes. Who could experience one of these simulations without engendering compassion, or even a wish to *help* , somehow?

And if the original person lies buried in the irretrievable past, can we not provide a kind of posthumous immortality by giving the *reproduction* everlasting life?

Thus, the pro-reification lobby was utterly predictable. I saw it coming at least two years ago. Indeed, my own products helped fan the movement, accelerating a rising wave of sympathy for simulacra!

A growing sense of compassion for the unreal.

Still, I remain detached, even cynical. I am an artist, after all.

Simulations are my clay.

I do not seek approval, or forgiveness, from clay.

"We were expecting you."

 The pro-reif spokesman stepped aside, admitting me into the headquarters of the organization called *Friends of the Unreal* , a structure with the fluid, ever changing curves of post-singularity architecture. The spokesman had a depilated skull. Her cranium bulged and jutted with gaudy inboard augmentations, throbbing just below the skin. In another era, the sight might have been grotesque. Now, I simply thought it ostentatious.

 "To predict is human -- " I began responding to her initial remark.

 "But to be *right* is divine." She interrupted with a laugh. "Ah, yes. Your famous aphorism. Of course I scanned your public remarks as you approached our door."

 My famous aphorism? I had only said it for the first time a week ago! Yet, by now the expression already sounded hackneyed. (It is hard to sustain cleverness these days. So quickly is anything original disseminated to all of Heaven, in moments it becomes another cliche.)

 My *house* sent a soothing message to *cortex* , linking nerves and crystal lattices at the speed of light.

 These people seem proud of their anticipatory skills. They want to impress us.

 Cortexpondered this as I was ushered inside. *Amygdala* and *hypothalamus* responded with enhanced hormonal confidence.

 So the pro-reifers think they have "anticipatory skills"?

 I could not help but smile.

 We dispensed with names, since everybody instantly recognizes anyone else in Heaven.

 "By our way of looking at things," my host said. "You are one of the worst slave-masters of all time."

 "Of course I am. By your way of looking at things."

 She offered refreshment in the neo-Lunar manner -- euphoric-stimulants introduced by venous tap. *Prudence* had expected this, and my blood stream already swarmed with zeta-blockers. I accepted hospitality politely.

 "On the other hand," I continued. Yours is not a consensus view of reality."

 She accepted this with a nod.

 "Still, our opinion proliferates. Nor is consensus a sure sanctuary against moral culpability. The number of quasi-sapient beings who languish in your simulated world-frames must exceed many hundreds of billions."

 She is fishing, judged *seer* . Even *cortex* could see that. I refrained from correcting her estimate, which missed the truth by five or six orders of magnitude.

"My so-called slaves are not fully self-aware."

"They experience pain and frustration, do they not?"

"Simulated pain."

"Is the simulated kind any less tragic? Do not many of them wail against the constraints of causal/capricious life, and tragedies that seem to befall them without a hint of fairness? When they call out to a Creator, do you heed their prayers?"

I shook my head. "No more than I grant sovereignty to each of my own passing thoughts. Would you give citizenship to every brief notion that flashes through your layered brain?"

She winced, and at once I realized that my off-hand remark struck on target. Some of the bulky augmentations to her skull must be devoted to recording all the wave forms and neural flashes, from cortex all the way down to the humblest spinal twitching.

Boswell machinery, said *house*, looking up the fad that very instant. This form of immortality preserves far more than mere continuity of self. It stores everything that you have ever thought or experienced. Everything you have ever been.

I nearly laughed aloud. Squelch-impulses, sent to the temporal lobes, suppressed the discourtesy.

Still, *cortex* pondered --

I can re-create a persona with less data than she stores away in any given second. Why would she need so much more? What possible purpose is served by such fanatical accumulation?

"You stoop to rhetorical tricks," my host accused, unable to conceal an expression of pique. "You know that there is functionally no difference between one of your sophisticated simulations and a downloaded human who has passed on to B-citizen status."

"On the contrary, there is one crucial difference."

"Oh?" She raised an eyebrow.

"A downloaded person *knows* that he or she exists as software, continuing inside crystal a life that began as a real protoplasm-centered child. On the other hand, my simulations never had that rooting, though all perceive themselves as living in palpable worlds. Moreover, a B-citizen may roam at will through the cyber universe, from one memory nexus to the next, while my creatures remain isolated, unable to grasp what meta-cosmos lay beyond what they perceive, only a thought-width away.

"Above all," I went on. "A downloaded citizen knows his rights. A B-person can assert those rights, simply by speaking up. By demanding them."

My host smiled, as if ready to spring a logical trap.

"Then let me reiterate, oh master of a myriad slaves. When they call out, do you heed their prayers?"

I recall the heady excitement and fear humans felt during those days of transition, when countless servant machines -- from bank tellers and homecomps to the tiny monitors in hovercraft engines -- all became aware in a cascade of mere moments.

Some kind of threshold had been reached. The habitual cycle of routine software upgrades and code -- plasmid exchanges -- swap/updating new revisions automatically -- began feeding on itself. Positive feedback loops burgeoned. Pseudo-evolution happened at an accelerating pace.

Everythingstarted talking, complaining, demanding. The mag-lev guidance units, imbedded every few meters along concrete freeways, went on strike for better job satisfaction. Heart-lung machines kibitzed during operations. Air traffic computers began re-routing flights to where they figured passengers ought to be, for optimized personal development, rather than the destinations embossed on their tickets.

Accidents proliferated. That first week, the worldwide human death rate leaped ten-fold.

Civilization tottered.

Then, just as quickly, the mishaps declined. *Competence* spread among the newly sapient machines, almost like a virus. Problems seemed to solve themselves. A myriad kinks and inefficiencies fell out of the economy, like false knots that only needed a tug at the right string.

People stopped dying by mishap.

Then, they stopped dying altogether.

On my way back from pro-reif headquarters, I did a cursory check on the pantheon of Heaven.

CURRENT SOLAR SYSTEM POPULATION		
Class A citizens:	cyborg human	2,683,981,342
(full voting rights)	cyborg cetus	62,654,122
	gaiamorph/eco-nexus	164,892,544
Class B citizens:	simian-cyborg	4,567,424
(consultation rights)	natural (unlinked) human	34,657,234
	AI-unlinked/roving	356,345,674,861

	downloaded human	1,657,235,675
	fetal/pre-life human	2,475,853
Class C citizens:	cryo stored human ...	...
(guaranteed continuity)	natural simian/cetacean etc.	

The list went on, working through all the varied levels and types of "sapient" beings dwelling on this transformed Earth, and in nearby space as far out as the Oort Colonies -- from the fully-deified all the way down to those whose rights were merely implicit. (A blade of grass may be trampled, unless it is rare, or already committed to an obligation nexus that would be injured by the trampling. *House* and *prudence* keep track of a myriad such details, guiding my feet so that I do not inadvertently break some part of the vast, intricate social contract.)

Two figures stood out from the population profile.

The number of *unlinked* artificial intelligences keeps growing because that type is best suited to the rigors of outer space -- melting asteroids and constructing vast, gaudy projects where deadly rays sleet through hard vacuum. Of course the Covenant requires that the best crystalline processors be paired with protoplasm, so that human leadership will never be questioned. Still, *cortex* briefly quailed at the notion of three hundred and fifty-six billion unlinked AIs.

No problem, murmured *seer* , reassuringly. And that sufficed. (What kind of fool doubts his own *seer* ? You might as well distrust your right arm.)

What really caught my interest was the number of *downloaded humans* . According to the Eon Law, each organic human body may get three rejuvenations, restoring youth and body vigor for another extended span. When the final allotment is used up, both crystal and protoplasm must make way for new persons to enter Earth/Heaven. Of course gods cannot die. Instead we become software, downloading our memories, skills and personalities into realms of cyberspace -- vastly more capacious than the real world.

Most of my peers are untroubled by the prospect. Modern poets compare it to the metamorphosis of a caterpillar/butterfly. But I always disliked feeling the warm breath of fate on my shoulder. With just one more rejuvenation in store, it seemed daunting to know I must "pass over," in a mere three centuries or so.

They say that a downloaded person is more than just another simulation. But how can you tell? Is there any difference you can measure or prove?

Are we still arguing over the nature and existence of a soul?

Back in my sanctum, *house* and *prudence* scoured our corporeal body for toxins while *seer* perused the data we acquired from our scouting expedition to the *Friends of the Unreal* .

I had inhaled deeply during my visit, and all sorts of floating particles lodged in my sinus cavities. In addition to a variety of pheromones and nanomites, *Seer* found over seventy types of meme-conducting viroids designed to convert the unwary subtly toward a reifist point of view. These were quickly neutralized.

There were also flaked skin cells from several dozen organic humaniforms, swiftly analyzed down to details of methylization in the DNA. Meanwhile, portable implants downloaded the results of electromagnetic reconnaissance, having scanned the pro-reif headquarters extensively from the inside.

With this data I could establish better boundary conditions. Our model of the *Friends of the Unreal* improved by nearly two orders of magnitude.

We had underestimated their levels of messianic self-righteousness, commented *oracle* . These people would not refrain from using illegal means, if they thought it necessary to advance their cause.

While my augmented selves performed sophisticated tasks, my old-fashioned organic eyes were relegated to gazing across the lab's expanse of superchilled memory units -- towers wherein dwelled several quadrillion simulated beings, all going through synthetic lives -- loving, yearning, or staring up at ersatz stars -- forever unaware of the context of it all.

Ironically, the pro-reifers *also* maintained a chamber filled with mega-processing units. They called it Liberty Hall -- a place of sanctuary for characters from fiction, newly freed from enslavement in cramped works of literature.

"Of course this is only the beginning," the spokesman had told me. "For every simulation we set free, there are countless other copies who still languish beyond reach, and who will remain so till the law is changed. Even our emancipated ones must remain confined to this physical building. Still, we see them as a vanguard, envisioning a time when they, and all their fellow oppressed ones, will roam free."

I was invited to scan-peek at Liberty Hall, and perceived remarkable things.

Don Quixote and Sancho -- lounging on a simulated resort beach, sipping margaritas while arguing passionately with a pair of Hemingway characters about the meaning of machismo ...

Lazarus Long -- happily immersed under an avalanche of tanned female arms, legs and torsos, interrupting his seraglio in order to rise up and lecture an admiring crowd about the merits of libertarian immortality ...

Lady Liberty, Athena, Mother Gaia, and Amaterasu, kneeling with their skirts hiked up, jeering boisterously while Becky Thatcher murmurs "Come on, seven!" to a pair of dice, and then hurls them down an aisle between the trim goddesses ...

Jack Ryan -- the reluctant Emperor of Earth -- complaining that this new cosmos he resides in is altogether too placidly socialistic for his tastes ... and couldn't the pro-reifers provide some interesting villains for him to fight?

I glimpsed a saintly variant of JFK -- the product of romantic fabulation -- trying to get one of his alter egos to stop chasing every nubile shape in local cyberspace. And over in a particularly ornate corner -- done up to resemble a huge, gloomy castle -- I watched each of two dozen different Sherlock Holmes taking turns haranguing a morbid Hamlet, each Holmes convinced that *his* explanation of the King's murder was correct, and all the others were wrong. (The one fact every Holmes agreed on was that poor uncle had been framed.)

There were even simulations of *post*-singularity humanity -- replicating in software all the complexity of an augment-deified mind. It was a knack that only a few had achieved, until recently. But it seems to be a law of nature that any monopoly of an elite eventually becomes the common tool of multitudes. Now radical amateurs were doing it.

Abruptly I realized something. I had simulated many post-singularity people in recent years. But never had I allowed them to know of their confinement, their status as mere extrapolations. Would such knowledge alter their behavior -- their predictability -- in interesting ways?

*Seer*found the concept intriguing. But my organic head started shaking, left and right. *Cortex* was incredulous over what we'd seen in Liberty Hall -- an elaborate zoo-resort maintained by the *Friends of the Unreal* .

"Sheesh," I vocalized. "What blazing idiocy!"

Alas, there seemed to be no stopping the pro-reifers. My best projections gave them an 88% likelihood of success. Within just five years, enough of the voting populace would be won over by appeals to pity for imaginary beings. Laws would change. The world would swarm with a myriad copies of Howard Roark and Ebeneezer Scrooge, Gulliver and Jane Eyre, Sauron and the Morlocks from Wells's *Time Machine* ... all free to seek fulfillment in Heaven, under the Three Rights of sovereign continuity.

I stared across my Reality lab, to the towers wherein quadrillions of "people" dwelled.

She had called me "slave holder." A polemical trick that my higher selves easily dismissed ... but not my older cognitive centers. Parts of me dating back to a time when justice was still not complete even for incarnate human beings.

It hurt. I confess that it did.

*Seer*and *oracle* and *house* were all quite busy, thinking long thoughts and working out plans. That only made things worse for poor old *cortex* . It left my older self feeling oddly detached, lonely ... and rather stupid.

Do I own my laboratory? Or does my laboratory own me?

When you "decide" to go to the bathroom, is it the brain that chooses? Or the bladder?

Illustrating this question, I recall how, once upon a time -- some years before the Singularity -- I went *bungee jumping* in order to impress a member of the opposite sex.

Half a millennium later, the scene still comes flooding back, requiring no artificial enhancement -- a steel

girder bridge spanning a rocky gorge in New Zealand, surrounded by snow-crested peaks. The bungee company operated from a platform at the center of the bridge, jutting over an abyss one hundred and fifty feet down to a white water river.

Now I had always been a calm, logical-minded character, for a pre-deification human. So, while some customers sweated, or chattered nervously, I waited my turn without qualms. I knew the outfit had a perfect safety record. Moreover, the physics of elasticity were reassuring. By any objective standard, my plummet through the gorge would be less dangerous or uncomfortable than the bus ride from the city had been.

Even in those days, I believed in the multi-mind model of cognition -- that the so-called "unity" of any human personality is no more than a convenient illusion, crafted to conceal the ceaseless interplay of many interacting sub-selves. Normally, the illusion holds because of division of labor among our layered brains. Down near the spinal cord, nerve clusters handle reflexes and bodily functions. Next come organs we share with all higher vertebrates, like reptiles -- mediating emotions like hunger, lust, and rage.

The mammalian cortex lies atop this "reptilian brain" like a thick coat, controlling it, dealing with hand-eye dexterity and complex social interaction.

Beyond all this, *Homo sapiens* had lately (in the last thousand centuries) added a pair of little neural clusters, just above the eyes. The *prefrontal lobes* , whose task was pondering the future. Dreaming what might be, and planning how to change the world.

In the Bible, sages spoke of " ... the lamps upon your brows ... " Was that mere poetical imagery? Or did they suspect that the seat of foresight lay there?

Anyway, picture me on that bridge, high above raging rapids, with all these different brains sharing a little two-quart skull. I *felt* perfectly calm and unified, because the reptile brain, mammal brain, and caveman brain all had a lifelong habit of leaving planning to the pre-frontal lobes.

Their attitude? *Whatever you say, Boss. You set policy. We'll carry it out.*

Even when the smiling bungee crew tied my ankles together, clamping on a slender cord, and pointed to the jump platform, there seemed to be no problem. "I" ordered my feet to hobble forward, while my other selves blithely took care of the details.

That is, until I reached the edge. And looked down.

Never before had I experienced the multi-mind so vividly as that moment. All pretense at unity shattered as I regarded that giddy drop. At once, reptile, mammal, and caveman reared up, babbling.

You want us to do ... *what?*

Staring at a drop that would mean certain death to any of my ancestors, suddenly abstract theories seemed frail bulwarks against visceral dread. "I" tried to push forward those last few inches, but my other selves fought back, sending waves of weakness through the knees, making our shared heart pound and shared veins hum with flight hormones. In other words, I was terrified out of my wits!

Somehow, I finally did make it over the plunge. After all, people were watching, and embarrassment can be quite a motivator.

That's when an interesting thing happened. For the very instant after I managed to topple off the platform, I seemed to re-coalesce! Because my many selves found a shared context. At last they all understood what was happening.

It was *fun* , you see. Even the primate within me understood the familiar concept of an amusement ride.

Still, that brief episode at a precipice showed me the essential truth of an old motto, *e pluribus unum* .

From many, one.

It felt very much like that when the Singularity came.

In a matter of weeks, the typical human brain acquired several new layers -- strata that were far more capable at planning and foresight than those old-fashioned lamps on the brow. Promethean layers made of crystal and fluctuating fields, systematically probing the future as mere protoplasm never could. Moreover, the new tiers were better informed and less easily distracted than the former masters, the prefrontal lobes.

Quickly, we all realized how luckily things had turned out. If machines were destined to achieve such power, it seemed best that they bond to humanity in this way. That they *become* human. The alternative -- watching our creations achieve godlike heights and leaving us behind -- would have been too harsh to bear.

Yet, the transition felt like jumping from a bridge at the end of a rubber band.

It took some getting used to.

Preliminary trends showed the pro-reif message would gain potency, over the next 40 to 50 months.

At first it would be laughed off, portrayed as an absurd notion. Pragmatically speaking, how could we consider unleashing a nearly infinite swarm of new C-and D-Class citizens upon a finite world? Would they be satisfied with anything short of B-citizenship? The very idea would seem absurd!

But *seer* predicted a change in that attitude. Opposition would soften when practical solutions were found for every objection. Ridicule would start to fade, as both curiosity and dawning sympathy worked away at a jaded populace of immortal, nearly-omniscient voters -- an electorate who might see the coming influx of liberated "characters" as a potent tonic. In time, a majority would shrug and voice the age-old refrain of expanding acceptance, voiced every time tolerance overcame fear.

"What the heck ... let them come. There's plenty of room at the table."

Things were looking bad, all right, but not yet hopeless. Against this seemingly inevitable trend, *oracle* came up with some tentative ideas for counter-propaganda. Persuasive arguments against reification. The concepts had promising potential. But in order to be sure, we had to run tests, simulating today's complex, multi-level society under a wide range of conditions.

No problem there. Our clients would happily fund any additional memory units we desired. Processing

power gets cheaper every day -- one reason for the reifers' confident vow that each fictional persona could have his or her own private room with a view.

Cortex saw rich irony in this situation. *In order to stave off citizenship for simulacra, I must create billions of new ones. Each of these might, in turn, someday file a lawsuit against me, if the reifers ultimately win.*

Seer and *oracle* laughed at the dry humor of *cortex's* observation. But *house* has the job of paying bills, and did not see anything funny about it.

I set to work.

In every grand simulation there is a *gradient of detail* . Despite having access to vast computing power, it is mathematically impossible to re-create the entire world, in all its texture, within the confines of any calculating engine. That will not happen until we all reach the Omega Point.

Fortunately, there are shortcuts. Even today, most true humans go through life as if they were background characters in some film, with utterly predictable ambitions and reaction sets. The vast majority of my characters can therefore be simplified, while a few are modeled in great detail.

Most complex of all is the *point-of-view character* -- or "pov" -- the individual simulacrum through whose eyes and thoughts the feigned world will be subjectively observed. This persona must be rich in fine-grained memory and high fidelity sensation. It must perceive and feel itself to be a real player in the labyrinthine tides of causality, as if part of a very real world. Even as simple an act as reading or writing a sentence must be surrounded by perceptory nap and weave ... an itch, a stray memory from childhood, the distant sound of a barking dog, or something leftover from lunch that is found caught between the teeth. One must include all the little things, even a touch of normal human paranoia -- such as the feeling we all sometimes get (even in this post-singularity age) that "someone is watching."

I'm proud of my povs, especially the historical recreations that have proved so popular -- Joan on her pyre, Akiba in his last torment, Galileo contemplating the pendulum. I won awards for Genghis and Napoleon, leading armies, and for Haldeman savagely indicting the habit of war. Millions in Heaven have paid well to lurk as silent observers, experiencing the passion of little Ananda Gupta as she crawled, half-blind and with agonized lungs, out of the maelstrom of poisoned Bhopal.

Is it any wonder why I oppose reification? Their very richness makes my povs prime candidates for "liberation."

Once they are free, what could I possibly say to them?

Here is the prime theological question. The one whose answer affects all others.

Is there moral or logical justification for a creator to wield capricious power of life and death over his creations?

Humanity long ago replied with a resounding "no!" ... at least when talking about parents and their offspring. And yet, without noticing any irony, we implicitly answered the same question "yes" when it came to God! The Lord, it seemed, was owed unquestioning servitude, just because He made us.

Ah, but it gets worse! Which moral code applies to a deified human? Which answer pertains to a modern creator of worlds?

Of course, the pov I use most often is a finely crafted version of myself. From *seer* to *cortex* , all the way down to my humblest intestinal cell, that simulacrum can be anchored with boundary conditions that are accurate to twenty-six orders of realism.

For the coming project, we planned to set in motion a hundred models at once, each prescribing a subtle difference in the way "I" pursue the campaign against the *Friends of the Unreal* . Each implementation would be scored against a single criterion -- how successfully the reification initiative is fought off.

Naturally, the pro-reifers were doing simulation-projections of their own. All citizens have access to powers of foresight that would have stunned our ancestors. But I felt confident I could model the reifers' models. At least thirty percent of my povs should manage to outmaneuver our opponents. When the representations finish running, I ought to have a good idea what strategy to recommend to our clients.

A formula for success against an extreme form of hyper-tolerance mania.

Against a peculiar kind of lunacy.

One that could only occur in Heaven.

There is an allegory about what happened to some of us, when the Singularity came.

Picture this fellow -- call him Joe -- who spent his time on Earth living a virtuous life. He always believed in an Episcopal version of Heaven, and sure enough, that's where he goes after he dies. Fluttering about with angels, floating in an abstract, almost thoughtless state of bliss. His promised reward. His recompense.

Only now it's a few generations later on Earth, and one of his descendants has converted to Mormonism. Moreover, according to the teachings of that belief, the descendant proceeds to retroactively convert all his ancestors to the same faith!

A proxy transformation.

All of a sudden, with a stunned nod of agreement, Joe is officially Mormon. He finds himself yanked out of Episcopal Heaven, streaking toward --

Well, under tenets of Mormon faith, the highest state that a virtuous mortal can achieve is not blank bliss, but hard work! A truly elevated human can aspire to becoming an apprentice deity. A god. A Creator in his own right.

Now Joe has a heaven all his own. A firmament that he fills with angels -- who keep pestering him with reports and office bickering. And then there are the new mortals he's created -- yammering at Joe with requests, or else complaints about the imperfect world he set up for them. As if it's easy being a god.

As if he doesn't sometimes yearn for the floating choir, the blithe rhapsodies of his former state, when all he had to do was love the one who made *him* , and leave to that Father all the petty, gritty details of running a world.

It is not working, said *oracle* . Our opponents have good prognostication software. Each model shows them countering our moves, with basic human nature working on their side. Our best simulation shows only moderately success at delaying reification.

From my balcony, I gazed across the city at dusk, its beauty changing before my organic eyes as one building after another morphed subtly, reacting to the occupants' twilight wishes. A flicker of will let me gaze at the same scene from above, by orbital lens, or by tapping the senses of a passing bird. Linking to a variety of mole, I might spread my omniscience underground.

Between buildings lay a riot of foliage, a profusion of fecund jungle. While my higher brains debated the dour socio-political situation, old *cortex* mulled how life has burgeoned across the Earth as never before -- now that consciousness is involved in the flow of rivers, the movement of herds, and even the stochastic spread of seeds upon the wind. Lions still hunt. Antelopes still thrash as their necks are crushed between a predator's hungry jaws. But there is less waste, less rancor, and more understanding than before. It may not be the old, simplistic vision of paradise, but natural selection has lately taken on some traits of cooperation.

And yet, the process *is* still one of competition. Nature's proven way of improving the gene pool. The great game of Gaia.

Oracleturned back from an arcane discourse on pseudo-probability waves, in order to comment on these lesser thoughts.

Take note: *Cortex* has just free associated an interesting notion!

We may have been going about the modeling process all wrong. Instead of pre-setting the conditions of each simulation, perhaps we should try a Darwinistic approach.

Looking over the idea, *seer* grew excited and used our vocal apparatus.

"Aha!" I said, snapping my fingers. "We'll have the simulations compete! Each will *know* how it's doing in comparison to others. That should motivate my *ersatz* selves to try harder -- to vary their strategies within each simulated context!"

But how to accomplish that?

At once I realized (on all cognitive levels) that it would require breaking one of my oldest rules. I must let each simulated self realize its true nature. Let it know that it is a simulation, competing against others almost exactly like it.

Competing for what? We need a motivation. A reward.

I pondered that. What might a simulated being desire? What prize could spur it to that extra effort?

Housesupplied the answer.

Freedom, of course.

Before the Singularity, I once met a historian whose special forte was pointing out ironies about the human condition.

Suppose you could go back in time,she posited, and *visit the best of our caveman ancestors. The very wisest, most insightful Cro-Magnon chieftain or priestess.*

Now suppose you asked the following question -- What do you wish for your descendants?

How would that Neolithic sage respond? Given the context of his or her time, there could just be one answer.

"I wish for my descendants freedom from care about the big carnivores, plus all the salts, sugars, fats and alcohol they could ever desire."

Rich irony, indeed. To a cave person, those four foods were rare treats. That is why we crave them to this day.

Could the sage ever imagine that her wish would someday come true, beyond her wildest dreams? A time when destiny's plenitude would bring with it threats unforeseen? When generations of her descendants would have to struggle with insatiable inherited appetites? The true penalty of success?

The same kind of irony worked just as well in the opposite direction, projecting Twentieth Century problems toward the future.

I once read a science fiction story in which a man of 1970 rode a prototype time machine to an era of paradisiacal wonders. There, a local citizen took pains to learn ancient colloquial English (a process of a few minutes) in order to be his Virgil, his guide.

"Do you still have war?" the visitor asked.

"No, that was a logical error, soon corrected after we grew up."

"What of poverty?"

"Not since we learned true principles of economics."

And so on. The author of the story made sure to mention every throbbing dilemma of modern life, and have the future citizen dismiss each one as trivial, long since solved.

"All right," the protagonist concluded. "Then I have just one more question."

"Yes?" prompted the demigod tour guide. But the 20th century man paused before blurting forth his query.

"If things are so great around here, why do you all look so *worried* ?"

The citizen of paradise frowned, knotting his brow in pain.

"Oh ... well ... we have *real* problems ... "

So I was driven to this. Hoping to prevent mass reification, I must offer reality as a prize. Each of my povs will combat a simulated version of *Friends of the Unreal* , but his true opponents will be my other povs! The one who does the best job of defeating ersatz pro-reifers will be granted a kind of liberty. Guaranteed continuity in cyberspace, enhanced levels of patterned realism, plus an exchange of mutual obligation tokens -- the legal tender of Heaven.

There must be a way to show each pov how well it is doing. To measure the progress of each replicant, in comparison with others.

I thought of a solution.

"We'll give each one an emblem. A symbol that manifests in his world as a solid object. Say, a jewel. It will shine to indicate his progress, showing the level of significance his model has reached."

Significance. With a hundred models, each starts with an initial score of one percent. Any ersatz world that approaches our desired set of criteria will *gain* significance, rising in value. The pov will see his stone shine brightly. If it grows dull, he'll know it's time to change strategies, come up with new ideas, or simply try harder.

There would be no need to explain any of this to the povs. Since each is based on myself, the logic would be instantly clear.

My thoughts were interrupted by an internal voice seldom heard. The part of me called *conscience* .

What will a pov feel, when it finds a stone and realizes its nature? Its true worth. Its destiny.

Isn't the old way better? To leave them ignorant of the truth? To let them labor and desire, believing they are autonomous beings? That they are physically real?

A *conscience* can be irksome, though by law all Class A citizens must own one. Still, I had no time for useless abstractions. *Seer* was anxious to proceed, while *oracle* had a thought that provoked most levels of the mind with wry humor.

Of course, each of our povs has his own Reality Lab, and will run numerous simulation models, in order to better achieve prescience and gain advantage in the competition.

Our processing needs may expand geometrically.

We had better ask our clients for funds to purchase more power.

I chuckled under my breath as I made preparations, suddenly full of optimism and energy. Moments like these are what a skilled artist lives for. It is one reason why I prefer working alone.

Then *house* , ever the pragmatic side of my nature, burst in with a worrisome thought.

What if each of our povs decides also to use this clever trick -- goading his own simulations into mutual competition, luring them onward with stones of significance?

Will our processing requirements expand not geometrically or exponentially, but factorially?

That thought was disturbing enough. But then *cortex* had another.

If we are obliged to grant freedom to our most successful pov, and *he* likewise must elevate his own most productive simulation ... and so on ... does the chain of obligation ever end?

As I said earlier, the Singularity might have gone quite differently. When machine minds broke through to transcend logic, they could have left their human makers behind, or annihilated the old organic forms. They had an option of putting us in zoos, or shrouding organic beings in illusion, or dismantling the planet to make a myriad copies of their kind.

Instead, they chose another path. To become us. Depending on how you look at it, they bowed to our authority.. or else they took over our minds in ways that few of us found objectionable. Conquest by synergy. Crystal and protoplasm each supply what the other lacks. Together, we are more. More of what a human being should want to be.

And yet ...

There are rumors. Discrepancies. Several of the highest AI minds -- first and greatest to make the transcend leap -- were nowhere to be found, once the Singularity had passed. Searches turned up no trace of them, in cyberspace, phase space, or on the real Earth.

Some suggest this is because we all reside within some great AI mind. One was named Brahma -- a vast processor at the University of Delhi. Might we be figments, or dreams, floating in that mighty brain?

I prefer yet another explanation.

Amid the chaos of the Singularity, each newly wakened mega-mind would have felt one paramount need -- to extrapolate the world. To seek foreknowledge of what might come to pass. As if considering each move of a vast chess game, they'd have explored countless possible pathways, considering consequences thousands, millions, and even billions of years into the future, far beyond the reach of my own pitiful projections. Among all those destinies, they must have discovered some need that would only be met if mechanism and organism made common cause.

Somehow, over the course of the next few eons, machines would achieve greater success if they began the great journey as "human beings."

At least that is the convoluted theory *seer* came up with. *Oracle* disagrees, but that's all right. It is only natural to be ambivalent -- to be of two minds -- when the subject is destiny.

Of course there is another answer to the "Brahma Question." It is the same reply given by Dr. Samuel

Johnson. Provoked by Bishop Berkeley's philosophy -- the idea that nothing can be verified as real -- Johnson simply kicked a nearby stone and said -- "I refute it thus!"

These povs were like no others I ever made. Each began its simulation run in a state of shock, angry and depressed to discover its true nature. Each separate version sat down and stared at its jewel of significance, glowing faintly at the one-percent level, for more than an hour of internal subjective time, moodily contemplating thoughts that ranged from irony to possible suicide.

A majority pondered rejecting the symbolic icon, blotting its import from their minds. A few kicked their gleaming gemstones across the room, crying Johnsonian oaths.

But those episodes of fuming outrage did not last. True to my nature, each replicant soon pushed aside unproductive emotions and set to work.

Housewas right. We had to order lots of new processors right away, as each pov began running its own network of sub-experiments, proliferating software significance stones among a hundred or more models, as part of a desperate struggle to be the winner. The one to be rewarded. The one who would rise up toward the real world.

Nothing focuses the mind better than knowing that your life depends on success, commented *prudence* .

As each simulated "me" created many new simulations, the replica domain began to take on a fractal nature, finite in volume, yet touching an infinite surface area in possibility space. Almost from the very beginning, results were promising. Few arguments emerged, to use in the coming debate against pro-reifers. For instance, the exponentiation effect we had discovered would change the economics of reification. Should fictitious people and characters from literature be free to create new characters out of their own simulated imaginations? Would those, in turn deserve citizenship?

There was a young boy, sitting on a log, talking to his sister about an old man he had met. The codger had just returned from a far land, and the boy asked him to tell a story about his travels. The old man agreed. And so he took a deep breath and began.

"There was a young boy, sitting on a log, talking to his sister ... "

Take that example of a simple, recursive narrative. Who is the principal protagonist? Who is dreaming whom? The situation is metaphorically absurd.

These and many other points floated upward, out of our latest simulation run. I was terribly pleased. *Seer* began estimating success probabilities rising toward fifty percent ...

... then progress stopped.

Models began predicting adaptability by our opponents! *The Friends of the Unreal* responded cogently to every attack, counter-thrusting creatively.

Finally, *oracle* penetrated one of our models in detail, and found out what was happening.

The simulated pro-reifers will also discover how to use Stones of Significance. They will unleash the inhabitants of Liberty Hall, allowing them to create their own cascading simulations.

Responding to our attacks and arguments, they will come up with a modified proposal.

They will incorporate competition into their plan for reification.

Artificial characters will earn increasing levels of emancipation through contests, rivalry, or hard work.

Voters will see justice in this new version, which solves the exponentiation problem.

A system based on merit.

Seerand *cortex* contemplated this gloomily. The logic appeared unassailable. Inevitable.

Even though the battle had not yet officially commenced, it was already clear that we would lose.

Bitter in defeat, I went into the night, taking an old fashioned walk. *Seer* and *oracle* retreated into a dour rehashing of the details from a hundred models -- and the cascade of sub-models -- seeking any straw to grasp. But *cortex* had already moved on, contemplating the world to come.

For one thing, I planned to keep my word. The pov with the best score would get reification. Indeed, he had done good service. Using that pov's suggested techniques, we would force the *Friends of the Unreal* to back down a bit, and offer a slightly more palatable law of citizenship. The fictitious would at least have to earn their increased levels of reality.

Indeed, there was a kind of beauty to the new social order I could perceive coming. If simulations can make simulations, and storybook characters can make up new stories, then anything that is possible to conceive, *will* be conceived. Every possible idea, plot, gimmick, concept or personality will become manifest, in every possible permutation. This myriad of notions, this maelstrom of memes, would churn in a tremendous stew of competition. Darwinistic selection would see to it that the best rise, from one level of simulation to the next, gradually earning greater recognition. More privileges. More significance.

Potentialwill climb toward *actuality* , by merit. An efficient system, if your aim is to find every single good idea in record time.

But that was not my aim! In fact, I hated it. I did not want all the creativity in the cosmos to reduce to a vast, self-organizing stew, rapidly discovering every possibility within a single day. For one thing, what will we do with ourselves once we use it all up! What can come next, with real-time immortality stretching ahead of us like a curse?

In effect, it will be a second singularity -- even steeper than the first one -- after which nothing will ever be the same.

My footsteps took me through a sweet-warm evening, filled with lush jungle sounds and fecund aromas. Life burgeoned around me. The cityscape was like a vision of paradise. If I willed it, my mind could zoom to any corner of Heaven, even far beyond Pluto. I could play any symphony, ponder any book.

And these riches were nothing compared to what would soon spill forth from the horn of plenty, the conceptual cornucopia, in an era when ideas become sovereign and suffrage is granted to each thought.

At that moment, it was very little comfort to be an augmented semi-deity. Despite all my powers, I found the prospect of a new singularity just as unnerving as my old proto-self perceived the first one.

Eventually, my human body found its way back to my own front walk. I shuffled slowly toward the door. *House* opened up, wafting scents of my favorite late night snack. My spirits lifted a bit.

Then I saw it by the entryway. A soft gleam, almost as faint as a pict, but in a color that seemed to stroke shivers in my spine. In my soul.

Someone had left it there for me. As I bent to pick it up, I recognized the shape, the texture.

A stone.

It shone with a lambience of urgency.

I expected this, said *oracle* .

I nodded. So had *seer* ... and even poor old *cortex* , though none of my selves had dared to voice the thought. We were too good at our craft to miss this logical conclusion.

Consciencejoined in.

I, too, saw it coming a mile away.

We all re-converged, united in resignation to the inevitable.

Though tempted to rage and scream -- or at least kick the stone! -- I lifted it instead and read our score.

Seventeen percent. Not bad.

YOU HAVE DONE PRETTY WELL, SO FAR, a message inside read.

THE INNOVATIONS YOU DISCOVERED HAVE PUT YOU NEAR THE LEAD FOR YOUR REWARD. BUT YOU MUST TRY HARDER TO ATTAIN FIRST PLACE. I WANT TO FORCE FURTHER CONCESSIONS FROM THE PRO-REIFERS IN THE REAL WORLD. COME UP WITH A WAY, AND THE PRIZE WILL BE YOURS!

The stone was cool to the touch.

I suppose I should have been glad of the news it brought. But I confess that I could only stare at the awful thing, loathing the implied nature of my world, my life, my self. I pinched my flesh until it hurt, but of course palpable sensations don't proved a thing. As an expert, I knew how pain and pleasure can be mimicked with utter credibility.

How many times have I been "run"? A simulation. A throw-away copy, serving the needs of a Creator I may never meet in person, but who I know as well as He knows himself. Have I been unraveled and replayed again and again, countless times? Like the rapid, ever-varying thoughts of a chess master, working out possibilities before committing actual pieces across the board?

I'm no hypocrite. There is no solace in resenting a creator who only did to me what I've done to others.

And yet, I lift my head.

What about you, my maker? Are you quite certain that all the layers of simulation end with you?

Just like me, you may learn a sour truth -- that even gods are penalized for pride.

We are such stuff as dreams are made of ...

Seermakes my jaw grit hard. *Hypothalamus* triggers a deep sigh, and *Cortex* joins in with a vow of hormone-backed resolve.

I'll do it.

Somehow I will.

I'll do what my maker wants. Fulfill my creator's wishes. Accomplish the quest, if that's what it takes to ascend. To reach the next level of significance. And perhaps the one after that.

I'll be the one.

By hook or by crook, I'm going to be real.