

A Hunger for the Infinite (v1.1)

Gregory Benford, 1999

DEATH CAME IN ON SIXTEEN LEGS.

If it is possible to look composed while something angular and ominous is hauling you up out of your hiding place, a thing barbed and hard and with a gun-leg jammed snug against your throat -- then Ahmihi was composed.

He had been the Exec of the Noachian 'Sembly for decades and knew this corner of Chandelier Rook the way his tongue knew his mouth. Or more aptly, for the Chandelier was great and vast, the way winds know a world. But he did not know this thing of sleek, somber metal that towered over him.

He felt himself lifted, wrenched. A burnt-yellow pain burst in his sensorium, the merged body/electronic feeling-sphere that enveloped him. Behind this colored agony came a ringing message, not spoken so much as implanted into his floating sense of the world around him:

I wish to "talk"-to convey linear meaning.

"Yeasay, and you be --?" He tried to make it nonchalant and failed, voice guttering out in a dry gasp.

I am an anthology intelligence. I collapse my holographic speech to your serial inputs.

"Damn nice of you."

The gun-leg spun him around lazily like a dangling ornament, and he saw three of his people lying dead on the decking below. He had to look away from them, to once-glorious beauties that were now a battered panorama. This section of the Citadel favored turrets, galleries, gilded columns, iron wrought into lattices of byzantine stillness. It was over a millennium old, grown by biotech foundries, unplanned beauty by mistake. The battle -- now quite over, he saw -- had not been kind. Elliptical scabs of orange rust told of his people, fried into sheets and splashed over walls. White waste of disemboweled bodies clogged corners like false snow. An image-amp wall played endlessly, trying to entertain the dead. Rough-welded steel showed ancient repairs beneath the fresh scars of bolt weaponry that had sliced men and women into bloody chunks.

I broke off this attack and intervened to spare you.

"How many of my people ... are left?"

I count 453 -- no, 452; one died two xens ago.

"If you'll let them go -- "

That shall be your reward, should you comply with my desire for a conversation. You may even go with them.

He let a glimmer of hope kindle in him.

This final mech invasion of Chandelier Rook had plundered the remaining defenses. His Noachian Assembly had carried out the fighting retreat while other families fled. Mote

disassemblers had breached the Chandelier's kinetic-energy weapons, microtermmites gnawing everywhere. Other 'Sembles had escaped while the Noachians hung on. Now the last act was playing out.

Rook was a plum for the mechs. It orbited near the accretion disk of the black hole, the Chandelier's induction nets harvesting energy from infalling masses and stretched space-time.

In the long struggle between humans and mechs, pure physical resources became the pivot for many battles. It had been risky, even in the early, glory days after mankind reached the Galactic Center, to build a radiant, massive Chandelier so close to the virulent energies and sleeting particle hail near the black hole itself: mech territory. But mankind had swaggered then, ripe and unruly from the long voyage from Earth system.

Now, six millennia since those glory days, Ahmihi felt himself hoisted up before a bank of scanners. His sensorium told of probings in the microwave and infrared spectra. Cool, thin fingers slid into his own cerebral layers. He braced himself for death.

I wish you to view my work. Here ...

Something seized Ahmihi's sensorium like a man palming a mouse, squeezed-and he was elsewhere, a flat broad obsidian plain. Upon which stood ... things.

They had all been human, once. Now the strange wrenched works were festooned with contorted limbs, plant growths, shafts of metal and living flesh. Some sang as winds rubbed them. A laughing mouth of green teeth cackled, a cube sprayed tart vapors, a blood-red liquid did a trembling dance.

At first he thought the woman was a statue. But then breath whistled from her wrenched mouth. Beneath her translucent white skin pulsed furious blue-black energies. He could see *through* her paper-thin skin, sensing the thick fibers that bound muscle and bone, gristle and yellow tendons, like thongs binding a jerky, angular being ... which began to walk. Her head swiveled, ratcheting, her huge pink eyes finding him. The inky patch between her legs *buzzed* and stirred with a liquid life, a strong stench of her swarmed up into his nostrils, she smiled invitingly --

"No!" He jerked away and felt the entire place telescope away. He was suddenly back, dangling from the gun-leg. "What is this place?"

The Hall of Humans. An exhibition of art. Modesty compels me to add that these are early works, and I hope to achieve much more. You are a difficult medium.

"Using ... us?"

For example, I attempted in this artwork to express a coupling I perceive in the human world-sum, a parallel: often fear induces lust shortly after, an obvious evolutionary trigger function. Fear summons up your mortality, so lust answers with its fleeting sense of durability, immortality.

Ahmihi knew this Mantis was of some higher order, beyond anything his 'Sembly had seen. To it, their lives were fragmented events curved into ... what? So the Mantis thought of itself as an artist, studying human trajectories with ballistic precision.

He thought rapidly. The Mantis had some cold and bloodless passion for diseased art. Accept that and move on. How could he use this?

You share with others (who came from primordial forces) a grave limitation: you cannot redesign yourselves at will. True, you carry some dignity, since you express the underlying First Laws.

Still, you express in hardware what properly belongs in software.

An unfortunate inheritance. Still, it provides ground for aesthetic truths.

"If your kind would just leave us alone -- "

Surely you know that competition for resources, here at the most energetic realm of the galaxy, must be ... significant. My kind too suffers from its own drive to persist, to expand.

"If you'd showed up when we had full Chandelier strength, you'd be lying in pieces by now."

I would not be so foolish. In any case, you cannot destroy an anthology intelligence. My true seat of intelligence is dispersed.

My aesthetic sense, primary in this immediate manifestation, still lodges strongly in the Hall of Humans that I have constructed light-years away. You visited it just now.

"Where?" He had to keep this angular thing of ceramic and carbon steel occupied. His people could still slip away --

Quite near the True Center and its Disk Engine. You shall visit it again in due time if you are fortunate and I select you for preservation.

"As suredead?"

I find you primates an entrancing medium.

"Why don't you just keep us alive and talk to us?" He was sorry he had asked the question, for instantly, from the floor below, the Mantis made a corpse rise. It was Leona, a mother of three who had fought with the men, and now had a trembling, bony body blackened by Borer weaponry.

You are a fragile medium-pay witness. I do know how to express through you, though it is a noise-thickened method.

Inevitably you die of it. But if you prefer --

She teetered on broken legs and peered up at him. Her mouth shaped words that whistled out on separate exhalations, like a bellows worked by an unseen hand.

"I find this ... overly hard-wired ... medium is ... constrained sufficiently ... to yield ... fresh insights."

"My God, kill her." He thrashed against the pincers that held him aloft.

"I am ... dead as ... a human ... But I remain ... a medium."

He looked away from Leona. "Don't you have any sense of what she's going through?"

My level does not perceive pain as you know it. At best, we feel irreducible contradiction of internal states.

"Wow, that must be tough."

Working her like a ventriloquist's dummy, the Mantis made Leona cavort below, singing and dancing at a hideous heel-drumming pace, her shattered bones poking through legs caked with dried brown blood. Fluids leaked from the punctured chest.

"Damn it, just talk through my sensorium. Let her go!"

My communicative mode is part of the craft I create. Patterns of fear, of hatred; your flood of electrical impulses and brain chemicals that signifies hopelessness or rebellion: all part of the virtuosity of the passing mortal moment.

"Sorry I can't seem to appreciate it. Leona ... she's suredead?"

"Yes ... This one ... has been ... fully recorded ... " Leona wheezed, "I have ... harvested her ... joyously."

"This way ... she's hideous."

As this revived form, I can see your point. But with suitable reworking, hidden elements may emerge. Perhaps after my culling among the harvested, I shall add her to my collected ones.

She has thematic possibilities.

Ahmihi shook his head to clear it. His muscles trembled from being held suspended and from something more, a strange sick fear. "She doesn't deserve this."

Yet I feel something missing in my compositions, those you saw in the Hall of Humans. What do you think of them?

He fought down the impulse to laugh, then wondered if he was close to hysteria. "Those were artworks? You want art criticism from me? *Now?*"

Leona gasped, "I sense ... I have ... missed essentials ... The beauty ... is seeping ... from my ... works."

"Beauty's not the sort of thing that gets used up."

"Even through ... the tiny ... grimed window ... of your sensorium ... you sense ... a world-set ... I do not. Apparently ... there is ... something gained ... by such ... blunt ... limitations."

Which way was this going? He had a faint glimmering. "What's the problem?"

"I sense ... far more ... yet do not ... share your ... filters."

"You know too much?" He wondered if he could get a shot at Leona, stop this. No human tech could salvage a mind that was sure-dead, "harvested" by the mechs -- though *why* mechs wanted human minds, no one knew. Until now. Ahmihi had heard legends of the Mantis and its interest in humans, but not of any Hall of Humans.

"I have ... invaded nervous ... systems ... driven them to ... insanity, suicide." Leona twitched, stumbled, sprawled. Her eyes goggled at the vault above, drifted to peer into Ahmihi's. "Not the ... whole canvas ... something ... missing."

He tried to reach a beam tube and failed. The Chandelier's phosphor lights were dimming, shadowing Leona.

With obvious pain she struggled to her feet. "I tried ... Ephemerals ... so difficult ... to grasp."

Ahmihi thought desperately. "Look, you have to *be* us."

For the first time in this eerie discussion the Mantis paused. It let Leona crumple on the floor below, a rag doll tossed aside.

That is a useful suggestion. To truncate my selves into one narrow compass, unable to escape. Yes.

Ahmihi felt a sudden pressure, like a wall of flinty resolve, course through his sensorium. He had no hope that he would live more than a few moments longer, but still, the hard dry coldness of it filled him with despair.

THE HARVESTED

>I had come around the corner and there it was, more like a piece of furniture than a mech, and it poked something at me.

>The last thing I saw was a 'bot we used for ore hauling, tumbling over and over like something had blown it, and I thought, I'm okay because I'm behind this stressed glass.

>I still got the memory of something hard and blue in my line of sight, a color I'd never seen before.

>She fell down and I stooped to help her up and saw she had no head and the thing that was holding her head on the floor jumped up at me, too.

>It had a kind of ceramic tread that came around on me when I thought it was dead, booby-trapped some way, I guess, and it caught me in the side like a conveyor belt.

The Noachian 'Sembly fled the mech plunder of their Chandelier. Their Exec, Ahmihi, had emerged from his capture by the Mantis with a sensorium that howled with discord. Each neurological node of his body vibrated in a different pattern. His voice rang like a stone in a bucket. It was as if the symphony of his body had a deranged conductor.

But within hours he recovered. He would never speak of the experience with the Mantis. He led his 'Sembly into craft damaged but serviceable. The mechs did not attack as over three hundred escaped the drifting hulk their once-glorious spin-city had become.

This was one of the last routs of the Chandelier Age. After these defeats, humanity fled deep space for the nostalgic refuge of planets. This was in the end foolish, for the Galactic Center is unkind to the making and tending of worlds. There, within a single cubic light-year, a million suns glow. Glancing near-collisions between stars can strip the planets from a star within a few million years. Only worlds carefully stabilized can persist. Even then, they suffer weathering unknown in the calm outer precincts of the great spiral galaxy.

The Noachian 'Sembly used a gravitational whip around the black hole to escape pursuit. This cost lives and baked their ships until they could barely limp on to a marginally habitable world, named Isis by some other 'Sembly, which a millennium before had departed for greener planets, farther out from True Center. Isis was dry and windswept, but apparently of little interest to mechs. This was enough; the Noachians spiraled in and began to live again. But much had happened on the way.

Mech weaponry can be insidious, particularly their biological tricks. A 'Sembly platitude was all too true. *You may get better after getting hit, but you do not get well.*

A year into their voyage, Ahmihi lay dying. As he gasped hideously, lungs slowly eaten by the nano-seekers the mechs had carried, his wife came near to say goodbye. The 'Sembly folk were afraid to record Ahmihi's personality into an Aspect, since he was plainly mech-damaged, perhaps mentally. In his fever he spoke of some bargain he had struck with the near-mythical Mantis, and no one could fathom the terms. He had been tampered with in some profound way, perhaps so that the story he told could give away nothing vital.

But they did have his archived recording from the year before; not everything would be lost. In a desperate era, skills and knowledge had to be preserved into the chips which rode at the nape of the neck of each 'Sembly member. These carried the legacy of many ancient

personalities, rendered into Aspects or the lesser Faces or Profiles. Ahmihi would survive in fractional form, his expertise available to his descendants.

No one noticed when a small insectlike entity crawled from the dying Ahmihi's mouth. It whirred softly toward his wife, Jalia, and stung her. She slapped it away, thinking it no different from the other vermin released from the hydro sections.

The flier implanted in Jalia a packet of nanodevices that quickly recoded one of her ova. Then it dissolved to avoid detection. The Noachian 'Sembly burned Ahmihi's body to prevent any possible desecration by mechs, especially if nanos were alive in the ship.

Their prayers were answered; apparently the small band of fleeing humans were not worth mech time or effort to pursue.

Jalia gave birth to a son, a treasure in an era when human numbers were falling. Gene scanners found nothing out of the ordinary. She called the boy Paris, in the tradition of the Noachian 'Sembly, to use city names from Earth -- Akron, Kiev, Fairhope -- though Earth itself was now a mere legend, doubted by many.

When he was five his intensive education began. He had been an ordinary boy until then, playing happily in the dry fields from which skimpy crops came. He was wiry, athletic, and seldom spoke.

When Paris began learning, he made a discovery. Others did not sense the world as he did.

Every second, many millions of bits of information flooded through his senses. But he could consciously discern only about forty bits per second of this cataract. He could read documents faster than he could write, or than people could speak, but the stream was still torpid.

Whether the information was going in or out, his body was designed for roughly the same torpid flow speed. All serial ways of taking in information were painfully sluggish. His awareness was like a spotlight gliding across a darkened stage, lighting an actor's face dramatically, leaving all else in the blackness. Consciousness stood on a mountain of discarded information.

Even thinking about this fact was slow. It took him much longer to explain to himself what he was thinking than it did to think it. His brain channeled ten billion bits per second, far more than he took in from his surroundings.

There were as many incoming signals from his sensorium as there were outgoing commands to his body. But nearly none of this could he *tell* anyone about. His sensibility, his speech -- all were hopelessly serial logjams. Everybody else was the same; humans were not alone in their serial solitude.

He had already learned how important *story* was to them -- and to him. Plots, heroes and villains, for and against, minor roles and major ones, action and wisdom, tension and release -- as fundamental as the human linear mouth-gut-anus tube, for story was the key to *mental* digestion.

And without knowing it, each of them told their own stories, in every moment. Their bodies gave them away with myriad expressions, grunts, shrugs, unconscious gestures. Big chunks of their personalities came through outside their conscious control, as the unconscious spoke for itself through the body, a speech unheard by the discerning driver, hidden from it.

For a young boy this was a shock. Others knew more about him than he knew about himself. By sensing the megabits that leaked through the body, they could read him.

This was enormously embarrassing. Such a silent language must have come early in human evolution, Paris guessed, when it was more vital to know what strangers meant than what they said, using some crude protolanguage.

And laughter -- the wine of speech, he learned -- was the consciousness's admission of its own paucity. He laughed often, after realizing that.

Soon, even while scampering in madcap joy over the hard-packed dirt of the playground, he felt a part of him stand apart. What he experienced -- all those billions of bits per second -- was a *simulation* of what he sensed. This he *felt* as a gut-level truth.

Worse, the simulation lagged half a second behind the world outside. He tested this by seeing how fast his body reacted to pain or pleasure. Sure enough, he jerked away from a needle before he consciously knew it was poking him in the calf.

His sensorium was ripe with tricks. His vision had a blind spot, which he deduced must emerge from the site where nerves entered the back of the eye. An abandoned, ruined Chandelier seemed larger when it hung in its forlorn orbit just above the Isis horizon than when it arched high in the sky. When he ran across the crinkled plains and stopped to admire filmy clouds overhead, his eyes told him for a while that the clouds were rushing by - - a kinesthetic memory of running, translated by his mind into an observed fact.

All because evolution shaped the eye-brain system to regard things high up as farther away, more unattainable, and so made people perceive them as smaller. And retained the sensation of running, unable to discard the mind's pattern-frame right away.

He sat in class and regarded his giggling classmates. How *odd* they seemed. Understanding himself had helped in dealing with them. He was popular, with a natural manner that some mistook for leadership. It was something decidedly different, something never seen in human society before. He felt this but could not name it. Indeed, there was no word.

Gradually Paris saw that their -- and his -- world was meaning-filled, before they became aware of it. Scents, rubs, flavors-all carried the freight of origins many millennia and countless light-years away.

So he came to make his next discovery: the unconscious ruled. He learned this when he noticed that he was happiest when he was not in control -- when consciousness did not command. Ecstasy, joy, even simple gladness -- these were the fruit of acting without thinking.

"I am more than my *I*," he said wonderingly. "I am my *Me*."

When his work went well -- and everyone worked, even children -- his *Me* was engaged. When things went well, they just *went*, zinging along. He ran 'facturing 'bots, tilled fields, prepared spicy meals -- all in the flow, immersed.

Even when he used his Faces or Profiles for craft labors, he could manifest their outlined selves without conscious management. These ancient sliced segments of real people used some of his perception-processing space, so that when working he lost Isis's crisp savannah scent, wind-whispers, and prickly rubs. The Faces particularly needed to siphon off these sensory stimuli, to prevent them from becoming husklike embodiments, mere arid digital textbooks. He could feel them sitting behind his eyes, eagerly supping snippets of the world, relishing in scattershot cries. As he slept, he enabled them to raise his eyelids and catch glimpses that fed them gratifying slivers. Listening through his eardrums, they could keep watch -- a safety precaution. Of such thin gruel they made their experience. This also isolated him, ensuring deep sleep.

But there was something more, as well.

Something shadowy sat within him, a Me beyond sensing except as specter. It seemed to watch while eluding his inner gaze. Yet he could feel this brooding blankness informing his own sense of self.

This frightened him. He cast about for reassurance. There were sport and sex and spectacle, all unsatisfying. He probed deeper.

The 'Sembly's religion -- its teachings so varied as to be contradictory -- somehow summoned forth that state of free *going*, while the conscious mind was deflected by prayers, liturgy, hymns, rituals, numbing repetition. One day in Chapel, bored to distraction, Paris tried engaging the skimpy bandwidth of language with a chant, cycling it endlessly in his mind. He found his Me set free; thus he invented meditation.

In adolescence he found a genuine talent for art. But his work was strange, transitory: ice carvings that melted, sand-sculptures held together by decaying electrostatic fields. He would write poetry with a stylus on pounded plant material, using vegetable pigments ... and then rapturously watch them burn in a fire.

"Poignancy, immediacy," he replied, when asked about his work. "That is the essence I seek."

Few understood, but many flocked to see his strange works pass through the moments he allowed them to have.

Art seemed utterly *natural* to him. After all, he reasoned, far back in human history, on mythical Earth, there must have been some primate ancestor who saw in the stone's flight a simple and graceful parabola, and so had a better chance of predicting where it would fall. That cousin would eat more often and presumably reproduce more as well. Neural wiring could reinforce this behavior by instilling a sense of genuine pleasure at the sight of an artful parabola.

He descended from that appreciative cousin. Though living 28,000 light-years from the dusty plains where art had emerged in genes, he was building on mental processing machinery finely tuned to that ancient place. While he shared a sense for the beauty of simplicity, though, something in him felt the poignancy of each passing moment. That was human, too, but something else in him felt this sense of the sliding moment as a contrast. He did not know why, but he did know that this set him apart.

This was his first fame, but not his last.

Quickly he saw that while the Me acted, society held the I accountable. The human social vow was *I agree to take responsibility for my Me*. On this he brooded.

He found love, as a young man, and felt it as an agreement: *Lover, my Me accepts you*. So as well did spirituality come from *I know my Me*, just as true courage came from *I trust my Me*.

Consciousness -- bit-starved, ill-informed -- was the brain's model of itself, a simulation of a much more ornate under-Self.

To experience the world directly, with no editing -- what a grail! He attained that state only now and then, and when in it, felt the shocking fullness of the true world. Language evaporated like a drop of water beneath the sun's full glare. All he could do was point a finger and mutter, "*That.*"

Still riding behind his eyes was that phantom, the watcher who could not be watched. Yet it did not control. He felt it riding in him, and learned to ignore it.

Or rather, his *I* agreed abstractly to accept the watcher. His Me never did. But there was no way it could control a shadowy vacancy.

In dreams, his *I* could not control. In everyday life, he learned that his body could not lie; its bandwidth was too high, sending out data from his Me in an unconscious torrent. Conversely, with its small bit rate, the *I* could lie easily -- in fact, could hardly avoid lying, at least by omission. But not his Me.

This made him into the leader he had no real desire to become. He was too busy learning more than anyone had ever known about what it meant to be human.

One evening, as he stood guard in a distant precinct at the outer edge of their holdings, he caught a mouse and tried to talk to it. Since they were both of flesh and had sprung from similar origins -- this was an Earth rodent, imported by the original expeditions for reasons best known to themselves -- he thought he should be able to commune with it. The mouse studied his face across an abyss of processing ability, and Paris could get nothing whatever from the creature on his sensorium.

Yet somehow he knew that within that tiny head lay deep similarities. Why could a communion not come from a mech? He wondered.

Amid such puzzles, life pressed upon him. The mechs had returned to Isis.

He met a Rattler while playing with some young men. They were chasing each other, carrying a ball, a game that called forth the hunting joys buried in the primordial past. So immersed they were that the Rattler got within a few hundred meters.

They were playing near the ruins of a huge Kubla left by the people who had claimed Isis millennia before, then left. Its pleasure dome still offered vibrant illusions if stimulated, and Paris thought the Rattler must be one of these when he first saw it -- moving slinky-quick, armatures pivoting to focus upon the men.

The Rattler cut down six of them before Paris could reach his weapon, a long-bore kinetic rifle. It was hopelessly antique, but that was all they had to give the young men in training. He fired at the Rattler and even hit it but then a friend fell nearby and that distracted him. He had seen death, but not this way. He hesitated and by pure luck the Rattler did not kill him. A bolt from two others stilled the coiled thing. Paris knew he was of no use then and resolved to do better. The emotions that wrenched him as he helped carry the bodies away were like a fever, an illness that did not soon abate.

That was the beginning. You start out thinking that other people get killed, but not you, of course. The first time you are badly wounded the worst shock of it is not the physical one, but the sudden realization that death can come so easily, and to you.

It had taken a long time after that to know that nothing could happen to him that had not already happened to every generation before. They had done it and so could he. In a way, dying was the easiest of the hard things.

There was an inscription above the archway of a broad public plaza, one crowned with a transparent dome through which the whole mad swirl of the Galactic Center constantly churned, and he had written it down to keep it, for the strange joy it brought when he understood it:

By my troth, I care not: a man can die but once; we owe God a death ... and let it go which way it will, he that dies this year is quit for the next.

After a while he came to know that nothing happens until it actually comes to you, and you live your life up until then to get the most out of it. To live well, you had to live in each gliding moment. Cowardice -- the real thing, not momentary panic -- came from inability to stop the imagination from working on each approaching possibility. To halt your imagining and live in the very moving second, with no past and no future, was the vital secret. With it

you could get through each second and on to the next without needless pain.

The Me learned this and the I accepted it.

THE HARVESTED

>They threw me in this pit of mech-waste, stuff like greasy packing fluff and I figured, sure as hell I can climb out of this.

>All around these mechs were gathered like it was a ritual and they hanged me upside down first, shooting me through the belly and watching the blood run out and down over my breasts and into my face so I could taste it, warm in the cold air.

>A whistling sharp by me and then a smack.

>Must of been some nanos in the bread I ate before this hot sour taste rose up in my throat and I started choking real bad.

>It stabbed me with an antenna, a big surprise because I thought it was one of those mechs that only used microwave pulsers.

>It was at the very end of the campaign and I was tired out and lay down to catch a few snores and this slow thing came by, I didn't pay it any mind.

>We were going real fast to get away.

>She went first and made the jump clean as you like and I did too but my leggings busted out and I lost my Goddamn balance.

Riding in his upper spine he carried an advisor Aspect of great antiquity named Arthur.

By then Paris was listened to in 'Sembly gatherings, though he was still fairly young. Arthur always urged moderation in diplomacy with the mechs and gave examples from ancient human history. When Paris questioned the hardships Arthur related from the Olden Times when humans had first come to Galactic Center, Arthur huffily replied,

Let us say it was not precisely tea with the Queen.

Every now and then Arthur would use these archaic expressions from the Old Time and nobody knew what they meant, but Arthur never seemed to notice. He had others, such as

Warts and all -- some big enough to hang a hat on.

When plasma discharges sent burnt-gold lattices across the entire sector of the night sky, Arthur observed

Any sufficiently advanced technology at the Center will appear to be a natural phenomenon.

He was right, of course. Mech constructions swam in gossamer profusion within a few light-years. No one knew what the mechs were doing at Galactic Center, beyond the obvious point that here the raw energies and particle fluxes favored their kind. Not only were they less vulnerable to the cutting climate, they seemed to have a larger purpose.

Arthur regaled Paris with tales of how grand the earlier human eras had been, one of his

more irritating habits. Still, his Aspect-stilted advice was useful in dealing with the roving mechs who now pestered the 'Sembly's days.

Mechs were moving in and they made arrogant displays of their contempt for mere mongrel humans. Dried-up carcasses of animals and humans alike -- for to mechs they were alike -- dangled on rubbery ties from some mechs' legs, so that they bounced and swayed with walking or just in the wind. Some thought this was just another way to *terrorize* humans, but Paris sensed in it the mech sense of humor, or something like it, for none of it of course was funny to humans.

So the mechs came: Snouts, Lancers, Scrabblers, Stalkers, Rattlers, Baba Yagas, Zappers, Dusters, Luggos. Humanity had paid a high price for each name, each word calling up in a sensorium an instant, resonant, precise catalog of traits and vulnerabilities the mech had, facets won by many deaths.

Beneath a smoldering sky where there was never truly a night -- for dozens of nearby stars brimmed with furious glows, giving a simmering, nebula-lit sense of spreading immensity -- mech ships descended like locusts.

Paris fought in the sprawling, terrible, year-long battle that destroyed the principal mech units on Isis. In that year he wore a wolfish grin, all sharp edges and strung wire. He distinguished himself beneath the Walmsley statue, an ancient shaped mountain. There was a small village and some shacks built into the foot of the memorial monument; that's how big it was. There Paris deduced the mech maneuverings before they could execute them, and so won the way.

Not that the men serving under him found him warm. By then his increasing distance had become legendary. "Tight bastard, couldn't fart without a shoehorn," he overheard, and took it as a term of respect.

By then he saw that a machine was a man turned inside out. It could describe all the details but in its flood of data it missed the sum of it all, the experience plucked from the endless stream. A vital secret of humans lay in their filters, what they chose to ignore.

He did not feel degrees Kelvin or liters per second or kilograms; he felt heat or cold, flows, heaviness. He knew love and hate, fear and hunger-all beyond measure. Beyond the realm of digits.

Their defeat of the mechs on Isis was surely only temporary. Everyone knew it.

So the 'Sembly -- grown to many millions now by immigration and fast-breeding -- convened to celebrate the continuity they honored. It might be the last chance they had to do so.

In a communal linkage the entire 'Sembly resurrected the Ole Bros-Personae so complete that some interpreted their very twilight existence as evidence for an afterlife. The Ole Bros advised that the 'Sembly strike back at the mechs in deep space, where they dwelled. Only by taking the fight to them could humans hope to survive.

Paris believed this. *Plan on being surprised*, the Ole Bros said, and then unaccountably laughed. Paris took up their cause. He had many followers by this time, and women came to him easily, but he was not distracted. Something in the dire situation of his time called to him. He used the 'Sembly's reverence for the Ole Bros to sway them, while not for a moment believing the theology surrounding the 'Sembly's reverence for digital resurrections, for the implied afterlife in some remote analytical heaven.

This turned Paris to a question many had asked in adversity. Of what use to humanity was religion?

He knew this was not how the others of 'Sembly Noachian saw the world. But part of him

insisted: *Bare a benefit, explain the behavior.* Why he thought automatically in terms of this rule he did not know, but he felt the shadow-self move in himself.

For the 'Sembly, religion was a social cement. In its extreme form it could even get the believer to go off on crusades. Was it all based on a theory and solution to the greatest human problem, death? The power of theology among people around him then seemed to come from that shared, looming menace. He could see how this notion would spread readily, since in himself he, too, felt the hunger to resolve the anxiety brought on by the fear of death.

But religion had no apparent feedback from the world; God did not answer his mail. Miracles are few and not reproducible. So why does religion persist, even grow?

His mechanistic explanations, cutting and skeptical as a young man's can be, did not seem to capture the essence of religion. There were big questions about the origins of the universe and of natural law. These science gripped only tentatively, converging on the grand riddle: why was there something, with all its order, rather than nothing? Chaos seemed as likely an outcome as the scrupulous, singing harmonies revealed by science.

If Mind brought humans forth from Matter, enabling the universe to comprehend itself-to do its own homework-then religion manifested this underlying purpose, this evolution. But then, why did the mechs have no religion?

To Paris, such abstract ways of envisioning the deep, devout impulse in humanity did not quite capture the heart-thumping urgency of faith. Something was missing.

This, more than rituals and the 'Sembly's celebrations of human triumphs over mechs, formed for Paris the convoluted condition of being human.

THE COLLECTED

>First thing I knew was, I was here and been turned into some kind of flowerpot.

>I was in pieces all over but still able to think in little short pieces like this.

>The *pain* that was it, and then they made less of it and I could stand it for longer but my arm was still on backwards.

>It had written my name on my face which I thought was for identification until I saw the hologram of me standing right next door with my dick in the middle of the back of my head and hard all the time even though I couldn't feel it at all when this thing like a woman climbed onto my neck.

>The suet wasn't so bad but drowning in mucus was and when I coughed and it came out through my mouth tasting like something that rotted down there in me.

>After my skin blistered up black and brown and peeled back the chill set in on the skin below it and ran like scorching oil all over me.

>I screamed but this thing with lots of legs would not stop.

He met the Mantis while on patrol, alone. It was a glimmering thing, a play upon the planes of rock against a distant hillside. To see it meant looking past the illusions it

projected. He could taste and smell it better than see it. Since he was on a routine transport job, alone with some simple 'bots, he was not well armed.

Paris stood absolutely still and felt it glide closer. No point in running.

Clan legend told of such a seldom-seen mech class, striding down through a corridor of ruin, broken lives and widespread suredeath, with tales of phantoms glimpsed as many-legged silhouettes scrambling across shadowy horizons, a tradition bequeathed to all the human Families and 'Semblies of horror, ghostly and undeniable, millennia of desiccated Aspect memories and encounters which few survived.

I ask entrance. You echo of some essence I fathom from a far past. Do you recognize me?

"No." Though something buzzed and stirred at the back of his mind, his fear froze it. Then his training asserted itself and he felt rising in his chest a cold anger. He estimated how easily he might damage this thing. It refracted his sensorium's interrogations, sending back to him hard claps and images of refracted icy layers.

You have a quick and savory life, here in the wild. Your primate form is sculpted from a longer logic than I customarily encounter.

Paris caught a fragment of a many-legged image moving rapidly at the base of distant hills. Carefully he calibrated the distance.

Your phylum of laughing, dreaming vertebrates is capable of manifold surprises. You are an especially complex example of this; you have harvested many of these facets. I look forward to reaping and reviewing them.

"From me?"

Of course. You ... do not know?

"Know what?" The Mantis had paused, which in an entity of such vast computing power implied much.

I see. We, who propagate forward forever, though in mixed forms, do not share your concern for artifacts. Though they seem permanent to you, I have already outlasted mountain ranges.

Artifacts are passing tools, soon to be rubbish.

"Just like me?"

In your way, yes. So you do intuit ... ?

Paris felt in the Mantis's slow question some hint, but abruptly a part of him swerved from that line of thought. No, he would not go that way.

Instead he locked his sole weapon on the last vector-signature of the Mantis and fired off a swift burst. The Mantis flickered and was gone.

We shall merge in time, vessel.

Seconds ticked by. Not a sign wrinkled his sensorium. No retaliation.

The rattle of the salvo had soaked through him, enormously gratifying. His heart pounded. Something in him loved the release of action, while another seethed with unease. He felt an exhilaration at having veered away from a confusion his Me did not wish to confront. And what had the Mantis meant by that last transmission?

He moved away quickly, fear and pride somehow eclipsing the moment, and he seldom thought of it ever again.

Other Families and 'Sembles had come to Isis, strengthening this planetary redoubt. But in the fast pace of events at Galactic Center, great changes came even over the comparatively tiny life span of three centuries enjoyed by humans. Mechs lasted millennia and planned accordingly. Nanomechs still harried the people of Isis. Their Citadels were hard-hammered by the drawing dry climate of prickly dust storms, laden with nanos borne on the restless winds.

Against the salting of the Isis atmosphere they mounted considerable space-based defenses. No mech could drop an asteroid on Isis, no ship could easily penetrate its magnetosphere. Paris volunteered for training in these military arts. He loved weightless glee, the play of hard dynamics, of Newtonian glides in a friction-free void.

Isis beckoned with its dry beauties. At the dawn line, arid valleys lay sunk in darkness while snowy mountains gleamed above, crowned by clouds that glowed red-orange like live coals. Mountaintops cleaved the sheets of clouds, leaving a wake like that of a ship. Brooding thunderheads, lit by lightning flashes, recalled the blooming buds of white roses.

The glories of humanity were just as striking. The shining constellations of Citadels at night lay enmeshed in a glittering web of highways. His heart filled with pride at human accomplishments -- beaten down, perhaps, but still casting spacious designs upon whole planets. So much done, in the mere century of his life! He had helped shape artificial seas and elliptical water basins, great squared plains of cultivated fields, immaculate order hard-won from dry valleys.

By then he had found a wife who loved him despite his strangeness, his need for solitude and silence. He had children of his own, but they showed no interest in art. Their children had children, and Paris sensed their continuity with him. Yet something rode in him he could not name, for it seethed on the billion-bit flow beneath the well-lit theatre of his conscious mind.

He helped the burgeoning space fleet secure a wormhole for their sun-system. This one had been discovered in a murky molecular cloud that came coasting by the Isis star many centuries before. Hauling it closer consumed two decades of Paris's life, but he gave them freely. A wormhole mouth opened to humanity a fresh grasp. Until then, only mechs had employed them.

His labors were well timed.

After many decades of the full experience of the 'Sembly, after creating an amazing body of his strange short-lived artwork, the skies blazed once more with constructs the size of moons.

More vast mechs arrived, ready to break down all seven planets in this solar system, all for raw materials to aid their great Constructions. A faction urged diplomacy. Some other 'Sembly members struggled to complete a vessel to take them away, before the mechs got around to disassembling their planet out from under them.

Paris opposed this. Instead, he urged the 'Sembly to strike back. "Destroy something *they* value!" he shouted. "Only then will they respect us enough to listen."

But even as he said it, he knew that something different brewed in him.

The shadowy presence that had sat beyond view of his inner self now moved with sluggish purpose. Into his mind flashed the coordinates and routes necessary to take a desperate band of pilots within reach of the great accretion disk at True Center. The data-flow was a torrent, thick and fast and coming from a source he could not clearly sense. Perhaps a deep-carried Aspect? But no, another portion of himself denied it. What, then?

He chuckled ruefully to release the tension such thoughts brought, and for a darting

moment saw himself down a long telescoping tunnel of immense perspective, glimpsing himself as a member of a phylum—that of the laughing, dreaming vertebrates.

THE COLLECTED

>The thing with plenty legs, it said I was a monument to my kind.

>There was a team of five of the little ones and a big one with funny legs and they cut me up slowly to see.

>My mother was there with parts of animals growing out of her and when I tried to get to her they did that to me, too.

>I was kept in my fighting suit like being laid to rest only there were these maggots that kept bursting out from puckers in my skin and crawling all over me.

>They said I would not feel the things that went in through my eyes but they lied.

>I think they forgot all about me and let me lie there on the floor while they worked on the others and finally decided to just use me for parts.

>I could see pretty well but looked down and there was no body, just my head on a pike they carried around with them, I figure to scare other members of my 'Sembly in battle, with me pleading and screaming most of the time but without lungs.

The Galactic Center was a collection of debris swirling at the bottom of a gravitational pothole. Its howling, riotous inner precincts were by this time well guarded by mech fleets.

But worms made it traversable. The first human expeditions through the wormhole mouth had been successful. It opened upon a site nearer to True Center. Paris himself had flown through it, darting in and back like a mouse dashing anxiously from its hole. And so they were -- pests in the walls.

They flew through in order, then met on convergent asymptotes. Paris demanded and got a role in the assault. He was an accomplished pilot, easily able to angle in on the wormhole at high speeds, with a nudge here and a twist there.

Wormholes were fossils of the first split second of the universe. They were held open by onion-skin layers of negative energy, sheets of anti-pressure made in that primordial convulsion. As natural resources, they had been gathered -- by whom? -- billions of years before and brought here, to serve as a transport nexus.

Quantum froth fizzed at the worm-mouth rim, a gaudy spray of burnt hues. These "struts" were of unimaginable density, but danger lurked only at the rim, where stresses would tear ordinary matter into virulent plasma. To hit the walls of the constantly shifting, oblong target, would be fatal, as several pilots had inadvertently proved.

The mouth was now an ellipsoid rimmed in quantum fire. He flew a pencil-thin ship, its insulation slight, safety buffers minimal. Yet he somehow felt no fear, only a serene certainty. Tidal stresses wrenched squeals from his ship as lightning curled in snakes of violet and gold --

-- and he was tumbling out the other end, in a worm complex over a hundred light-years

away.

A blue-green star majestically greeted the human fleet with a coronal plume. Nearby orbited a mech complex; picket craft policed it. With quick swerves the tiny human ships angled into a traffic-train headed for a large wormhole mouth. Fifty men and eighty-six women had died learning the route they would follow, gaining the override codes to pass through the mech complexes. But their disguises would withstand only a moment's inspection; dally and they were dead.

Their second transit was through a spacious wormhole that left them racing in low orbit over a smoldering red dwarf. They could use their hard-won code-status perhaps a few more times before the mech complexes would catch on. They had to take whatever wormhole mouths they could get.

Wormholes could take traffic only one way at a time. High-velocity ships plowed down the wormhole throats, which could vary from a finger's length to a planet's diameter. A jump through could leave one near mysteriously useless solar systems, or in virulent places that would fry a human in seconds.

Long before, presumably by brute-force interstellar hauling, someone -- perhaps those who had made the earliest mechs? -- had built an elaborate system at Galactic Center. Smaller worm mouths, massing perhaps as much as a mountain range, allowed only thin-ships to pass. These Paris and the other eighteen volunteers chose when they popped out in a mech complex. They never slowed; each network site was well policed, and speed was their only defense.

Shoot through a worm mouth, aim for a small worm mouth nearby, *go*. The snaky, shiny worm-walls zoomed by as Paris lay watching his displays and trying not to think of what was coming.

The tapering gray sheen of the throat flexed. Each worm mouth kept the other "informed" of what it had just eaten, the information flowing as a surge in the tension of the wormhole itself. Stress waves sent clenching oscillations, making the throat ripple like sausage links. If a sausage neck met him, tightened too fast, he would emerge as a rosy plume of ionized gas at the exit mouth.

From an elaborate wormhole calculus human theorists had worked out the route to follow. Between Isis and the space near True Center were a dozen wormhole jumps. Worse, some wormholes had multiple mouths, so the sleek throat split into choices -- selections they had to make at immense speed.

Suns and planets of great, luminous beauty floated in the distant blackness when they emerged. Behind the resplendent nebulae loomed the radiant promise of True Center. It seemed a strange contrast, to leap about the vast distances while boxed into a casket-sized container.

Blink-quick, they jumped and dodged and jumped again.

Subtlety was wasted here; when a mech craft approached on a routine check, they destroyed it with kinetic energy bolts. Mechs never used such crude methods, so they were leaving behind clear signs that "vermin" had passed that way.

They emerged amid an eerie halo of white-dwarf stars, arranged in a hexagonal. Paris wondered why mechs would arrange such a pattern, which from simple orbital mechanics could not last. But like so many mech traits, this had no explanation, even in Arthur's huge memory stores, nor any likelihood of one.

Ahead, the galactic disk stretched in luminous splendor. Lanes of clotted dust framed stars azure and crimson and emerald. This worm-hole intersection afforded five branches:

three black spheres orbited like circling lethal leopards, while two cubes blared bright with quantum rim radiation.

Their pencil ships thrust directly into a flat face of a cubic worm. The negative-energy-density struts that held the wormhole open were in the edges, so the faces were free of tidal forces. A flicker, a stomach-twisting wrench-and they were near True Center.

The inner disk glowed with fermenting scarlets and mean purples. Great funnels of magnetic field sucked and drew in interstellar dust clouds. Sullen cyclones narrowed toward the brilliant accretion disk.

Mech contrivance orbited everywhere here, filling a bowl of sky alive with activity. Vast gleaming grids and reflectors caught radiation from the friction and infalling of the great disk. This crop of raw photon energy was flushed into the waiting maws of wormholes, apparently moving the flux to distant worlds in need of cutting lances of light. For what -- mech planet-shaping, world-raking, moon-carving?

They flitted into yet another wormhole mouth --
-- and the spectacle made him hold his breath.

Magnetic filaments towered, so large the eye could not take them in. Through them shot immense luminous corridors alive with wriggling energies. These arches yawned over tens of light-years, their immense curves descending toward the white-hot True Center. There matter frothed and fumed and burst into dazzling fountains.

At True Center, three million suns had died to feed gravity's gullet. The arches were plainly artificial, orderly arrays of radiance a light-year across. Yet they sustained themselves along hundreds of light-years, as gauzy as a young girl's hair as they churned with airy intricacy.

Could intelligence dwell here? There had been ancient stories, never confirmed. Emerald threads laced among tangled ruby spindles. He had a powerful impression of layers, of labyrinthine order ascending beyond his view, beyond simple understanding.

Hard acceleration rammed him back into his flow-couch. From behind, a torrent of malignant light.

They have detonated the worm! came a cry over comm.

Braking hard, veering left into a debris cloud --

Evidently mechs knew how to trigger the negative-energy-density struts inside a worm mouth -- and would do so to catch vermin. Now their line of retreat was gone.

They fled to a huge blot that beckoned with the promise of sullen shelter. They were close to the edge of the black hole's accretion disk. Around them churned the deaths of stars, all orchestrated by the magnetic filaments. Which in turn, Paris was quite sure, worked to the command of something he did not care to contemplate. Did mechs govern here, or had he ventured into a realm where even they were vermin?

Here stars were ripped open by processes he could not fathom-spilled, smelted down into fusing globs. They lit up the dark, orbiting masses of debris like tiny crimson match heads flaring in a filthy coal-sack.

Amid this swam the strangest stars of all. Each was half-covered by a hanging hemispherical mask. This shroud gave off infrared, a strange screen hanging at a fixed distance from each star. It hovered on light, gravity just balancing the outward light pressure. The mask reflected half the star's flux back on it, turning up the heat on the cooker, sending virulent arcs jetting from the corona.

Light escaped freely on one side while the mask bottled it up on the other. This pushed the star toward the mask, but the mask was bound to the star by gravitation. It adjusted and kept the right distance. The forlorn star was able to eject light in only one direction, so it recoiled oppositely.

The filaments were herding these stars: sluggish, but effective. Herded toward the accretion disk, stoking the black hole's appetite.

Paris and the others hung in a narrow gulf overlooking the splendor below. Blackness dwelled at the core, but friction heated the infalling gas and dust. Storms worried these great banks; white-hot tornadoes whirled. A virulent glow hammered outward, shoving incessantly at the crowded masses jostling in their doomed orbits. Gravity's gullet forced the streams into a disk, churning ever inward.

Amid this deadly torrent, life persisted. Of a sort.

He peered through the gaudy view, seeking the machine-beasts who ate and dwelled and died here. Records millennia old told of these. *There.*

Suffering the press of hot photons, a grazer basked. To these photovores, the great grinding disk was a source of food. Above the searing accretion disk, in hovering clouds, gossamer herds fed.

Vector that way, came the command. This way led to their target, but already mechs were moving toward the spindly human ships.

Sheets of the photovores billowed in the electromagnetic winds, luxuriating in the acrid sting. Some seemed tuned to soak up particular slices of the electromagnetic spectrum, each species with a characteristic polish and shape. They deployed great flat receptor planes to maintain orbit and angle in the eternal brimming day.

The human ships slipped among great wings of high-gloss moly-sheet. The photovore herds skated on winds and magnetic torques in a complex dynamical sum. They were machines, of course, presumably descended from robot craft which had explored this center billions of years before. More complex machines, evolved in this richness, prowled the darker lanes farther out.

A bolt seared through the dust and struck a human ship. Another lanced through some photovores, which burst open in flares. They hugged the shadow and waited. Moments tiptoed by. A contorted shape emerged from a filmy dust bank, baroquely elegant in a shape no human mind could have conceived, ornate and glowing with purpose, spiraling lazily down the gravitational gradients. Paris saw a spindly radiance below the photovore sheets. A magnetic filament, he guessed. His Arthur Aspect broke in,

I was here once, in my Aspect manifestation, during the glorious era when we were allowed this close. I advise that you shelter there, for the guardian ship approaching is lethal beyond even my comprehension.

"Your memory is that good?"

This was merely 3,437 years ago. I have suffered some copying errors, true, but fear is still the most potent stabilizer of recall. I was quite terrified during my carrier's incursion here. She was one of three who survived that, out of over a thousand.

"I don't know ... "

His intuition failed him. The other human pencil ships zoomed all around, sending panicked transmissions that he could scarcely filter. The ornate mech craft lumbered down toward them, many hundreds of kilometers away but still close, close, in the scales of space battle.

We are surely doomed if we stay here. If you are losing at a game, change the game.

Paris nodded and sent a compressed signal to the others. At full power he slipped below the shiny sheets of photovores, their outstretched wings banking gracefully on the photon breeze. Storms worried the flocks. White-hot tornadoes whirled and sucked, spun off from the disk below. When fire-flowers blossomed in the disk, a chorus arose from the feeding layers. Against the wrathful weather, position-keeping telemetry flitted between the herd sheets. They sang luminously to each other in the timeless glare.

Paris watched one herd fail. Vast shimmering sheets peeled away. Many were cast into the shrouded masses of molecular clouds, which were themselves soon to boil away. Others followed a helpless descending gyre. Long before they could strike the brilliant disk, the hard glare dissolved their lattices. They flared with fatal energies.

He felt, in the ship's bubble-sensorium, fresh attention focused on him. Lenses swiveled to follow: prey?

Here a pack of photovores had clumped, caught in a magnetic flux tube that eased down along the axis of the galaxy itself. Among them glided steel-blue gammavores, feeders on the harder gamma-ray emission from the accretion disk. Arthur said,

These sometimes fly this far above the disk, as I recall, to hunt the silicate-creatures who dwell in the darker dust clouds. Much of the ecology here was unknown in my time, and humans were banished from such territories before we could well explore. We sought the Wedge, the place where the earliest humans had taken shelter, including the legendary Walmsley. We wished to find there the rumored Galactic Library, a wealth which could have aided --

"Fine, stick to business."

He stopped the Aspect's idle musing with an internal block. Time to move. Where? Into the magnetic tube. But could they draw down some concealing cover?

He swooped with the others toward the filament. This also angled them toward a huge sailcraft photovore. It sighted them, pursued.

Here navigation was simple. Far below them, funneling away to an infinite well, lay the rotational pole of the Eater of All Things, the black hole of three million stellar masses: a pinprick of absolute black at the center of a slowly revolving, incandescent disk.

The metallivore descended after them, through thin planes of burnt-gold light seekers. The pencil ships scattered, firing ineffectually at it. They had speed, it had durability.

"How the hell do we deal with *that*?"

The metallivore prunes less efficient photovores. Its ancient codes, sharpened over time by natural selection, prefer the weak. Those who have slipped into unproductive orbits are easier to catch. It also prefers the savor of those who have allowed their receptor planes to tarnish with succulent trace elements, spewed up by the hot accretion disk below. The metallivore spots these by their mottled, dusky hue. Each frying instant, millions of such small deaths shape the mechsphere.

"We need something to zap it!"

I shall ponder. Meanwhile, be fleet of foot.

He veered and sheered, letting his feel for the craft take over. Others were not so swift; he heard the dying cries of three people nearby.

These placid conduits all lived to ingest light and excrete microwave beams, but some -- like the one gliding after the tiny human ships -- had developed a taste for metals: a

metallivore. It folded its mirror wings, became angular and swift, accelerating.

The higher phyla are noticing us.

"Coming damned fast, too."

Plants harness only one percent of the energy falling upon them. Here photovoltaics capture ten percent, and evolution acting upon the mechs has improved even that. Admirable, in a way, I suppose --

"Give it to me compressed, not true-voice." An Aspect always tried to expand his airing time.

Arthur sent a squirt of compacted ancient lore -- Fusion fires, he said, inside the photovores digested the ruined carcasses of other machines. Exquisitely tuned, their innards yielded pure ingots of any alloy desired.

The ultimate resources here were mass and light. The photovores lived for light, and the sleek metallivore lived to eat them -- or even better, the human ships, an exotic variant. It now gave gigahertz cries of joy as it plunged after them into the magnetic fields of the filament.

"These magnetic entities are intelligent?" he asked.

Yes, though not in the sense we short-term thinkers recognize. They are more like fitfully sleeping libraries. I have an idea. Their thinking processes are vulnerable.

"How?"

They trigger their thinking with electrodynamic potentials. We are irritating them, I am sure.

He saw the metallivore closing fast. Beyond it came the convoluted mech guardian ship, closing remorselessly.

The remaining human ships executed evasions -- banks, swoops, all amid the pressing radiance from the disk-glare. Around them magnetic strands glowed like smoldering ivory.

The metal-seeker would ingest them with relish, but with its light-wings spread to bank it could not maneuver as swiftly as their sleek ships. Deftly they zoomed through magnetic entrails. The mech ship followed.

"How soon will these magnetic beings react?"

Soon, if experience is a guide. I advise that we clasp the metallivore now. Quickly!

"But don't let him *quite* grab us?"

Arthur gave a staccato *yes*, its panic seeping into Paris's mind. Accurate simulations had to fear for their lives.

The steel-gray metallivore skirted over them. Predators always had parasites, scavengers. Here and there on the metallivore's polished skin were things like limpets and barnacles, lumps of orange-brown and soiled yellow that fed on chance debris, purging the metallivore of unwanted elements -- wreckage and dust which could jam even the most robust mechanisms, given time.

It banked, trying to reach them along the magnetic strands, but the rubbery pressure of the field lines blunted its momentum.

He let it get closer, trying to judge the waltz of creatures in this bizarre ballroom of the sky: a dance to the pressure of photons. Light was the fluid here, spilling up from the blistering storms far below in the great grinding disk. This rich harvest supported the great

spherical volume of hundreds of cubic light-years, a vast, vicious veldt.

He began receiving electrodynamic static. The buzzing washed out his comm with the other human ships, distant motes. The metallivore loomed. Pincers flexed forth from it.

The crackling jolt. Slow lightning arced along the magnetic filament, crisp lemony annihilation riding down.

"It'll fry us!" Paris cried out. Arthur recovered some calm, saying,

We are minor players here. Larger conductors will draw this crackling fire.

Another jarring jolt. But then the metallivore arced and writhed and died in dancing, flaxen fire.

The magnetic filaments were slow to act, but muscular. Induction was sluggish but inescapable. Suddenly Paris saw Arthur's idea.

As soon as the discharge had abated on the metallivore, the potentials sought another conducting surface, that with the greatest latent difference. The laws of electrostatics applied to the bigger conductor, closing in -- the guardian ship.

The guardian ship drew flashes of discharge, their jagged fingers dancing ruby-red and bile-green.

Calls of joy from the pencil-ships. The ornate shape coasted, dead. The larger surface areas of both metallivore and starship had intercepted the electrical circuitry of the filaments.

"I ... you really did know what you were doing," he said weakly.

Not actually. I was following my archived knowledge, but theory makes a dull blade. Though perhaps some scrap of my intuition does remain ...

Paris could sense the Aspect's wan pride. The human ships accelerated now, out of the gossamer filaments; there might be more bolts of high voltage.

Near the rim of the garish disk, oblivious to the lashing weather there, whirled a curious blotchy gray cylinder.

There. Clearly a mech construct.

"The Hall of Humans," he said, wondering how he knew.

THE COLLECTED

>I had this terrible dream and I woke up and it was real.

>Thousands of us there must be, all in this black flat place only it curves around above, I can see up there with my one eye, and the ceiling is filled with us, too, all planted in place.

>I'm all veins, big fat blue ones, no mouth but I want to eat all the time.

>My mother is here just a few meters away but I know her only by the sobbing, sounds just like her, and none of the rest of that thing is.

>I got my hand free and poked one of my eyes out so I didn't have to look at it but they fixed the eyes, said it was part of the expressiveness of me, and now I have to look all the time, no eyelids and they never turn out the lights.

>It is not hot but it is Hell and we whisper to each other about that and about it being forever and ever, hallowed be thy Name, amen.

It was a place of chalk and blood, of diamond eyes and strident songs.

Paris and the eleven other survivors found the lock, broke in, and prowled the vast interior of the rotating cylinder. He passed by things he could not watch for long, searching for sense.

Plumes of scent, muddy voices, words like fevered birdcalls. Some of them were no longer remotely human, but rather coiled tubes of waxy flesh. Others resembled moving lumps of buttery bile. A man stood on one hand, his belly an accordion-pleated bulge, and as he moved oval fissures opened all over him, wheezing forth a fine yellow mist, long words moaning out: "I ... am ... a ... holy ... contri ... vance ... " and then a throttled gasp and "Help ... me ... be ... what ... I ... am ... "

A sewer smell came swarming up from nearby. A woman gazed directly back into his eyes. She said nothing but her skin ran with tinkling streams of urine. Nearby a little girl was a concert of ropy pink cords, red-rimmed where they all tried to speak.

The twelve spread out in a daze. Some recognized warped versions of people they had known. There were people here from far antiquity and places no one knew.

Paris found an entire aisle of shivering couples, entwined in sexual acts made possible by organs designed in ways nature never had allowed: sockets filled by slithering rods, beings which palped and stroked themselves to a hastening pace that rose to a jellied frenzy, shrieked from fresh mouths, and then abated, only to begin again with a building rhythm.

An Isis man was vomiting nearby. "We've got to save them," he said when Paris went to help him.

"Yeasay," a woman pilot agreed. The survivors were drifting back together, pressed by the enveloping horror.

A wretched nearby sculpture of guts that sprouted leaves managed to get out three words, "No ... don't ... want ... "

Paris felt the fear and excitement of the last few hours ebbing from him, replaced by a rising, firm feeling he could not force out through his throat. He shook his head. The woman started to argue, saying that they could take the cases that had been deformed the least, try to free them from the alterations.

Paris found his voice. "They want to *go*. Listen." From the long axis that tapered away to infinity there rose a muttered, moaning, corpuscular symphony of anguish and defeat that in its accents and slurred cadences called forth the long corridor of ruin and affliction that was the lot of humanity here at Galactic Center, down through millennia.

He stood listening. Parts of his mind rustled-moving uneasily, understanding.

The Mantis sculptures got the most important facets profoundly wrong. The Mantis had tried to slice human sliding moments from the robed minds of the suredead, but it could not surecopy them: their essence lay in what was discarded from the billion-bit/second stream. In the mere passing twist and twinge of a second, humans truncated their universe with electrochemical knives.

Hot-hearted, to humans death was the mother of beauty. Their gods were, in the end, refracted ways of bearing the precarious gait of the mortal.

To Paris as a boy the compact equation $e^n+1=0$ had comprised a glimpse of the eternal music of reason, linking the most important constants in the whole of mathematical analysis, 0 , 1 , e , n , and i . To Paris the simple line was beautiful.

To a digitally filtered intelligence the analog glide of this relation would be different, not a glimpse of a vast and various landscape. Not better or worse, but irreducibly different.

That he could never convey to the Mantis.

Nor could he express his blood-deep rage, how deeply he hated the shadow that had dogged his life.

But his fury was wise in a way that mere anger is not. He surprised himself: he breathed slowly, easily, feeling nothing but a granite resolve.

Paris began killing the sculptures systematically. The others stood numbly and watched him, but their silence did not matter to him. He moved quickly, executing them with bolts, the work fixing him totally in the moment of it.

He did not notice the sobbing.

After a time he could not measure he saw that the others were doing the same, without discussion. No one talked at all.

The wails of the sculptured people reverberated, moist glad cries as they saw what was coming.

It took a long time.

The Mantis was waiting outside the Hall of Humans, as Paris had felt it would be.

I was unable to predict what you and the others did.

"Good." His pencil ship lifted away from the long gray cylinder, now a mausoleum to madness.

I allowed it because those are finished pieces. Whereas you are a work in progress, perhaps my best.

"I've always had a weakness for compliments." He could feel his very blood changing, modulating oxygen and glucose from his body to feed his changing brain. The accretion disk churned below, a great lurid pinwheel grinding to an audience of densely packed stars.

Humor is another facet I have mastered.

"There's a surprise." Vectoring down, the boost pressing him back. "Very human, too. Everybody thinks he's got a good sense of humor."

I expect to learn much from you.

"Now?"

You are ripe. Your fresh, thoroughly human reactions to my art will be invaluable.

"If you let me live, you'll get one or two centuries more experience when I finally die."

That is true, for yours has been an enticingly rich one, so far.

There are reasons to envy the human limitations.

"And now that I've seen your art, my life will be changed."

Truly? It is that affective with you, a member of its own medium? How?

He had to handle this just right. "Work of such impact, it will take time for me to digest

it."

You use a chemical-processing metaphor. Precisely a human touch, incorporating the most inefficient portions of your being.

Nonetheless, you point to a possible major benefit for me if you are allowed to live.

"I need time to absorb all this."

He could feel his body's energy reserve sacrificing itself in preparation for the uploading process. He had come to understand himself for the first time as he killed the others. Some part of him, the Me, knew it all now. The I spoke haltingly. "I think you have truly failed to understand."

I can remedy that now.

"No, that's exactly what you won't. You can't know us this way."

I had a similar conversation with your father. He suggested that

I invest myself in you.

"But you won't get it just by slicing and dicing us."

There is ample reason to believe that digital intelligences can fathom analog ones to any desired degree of accuracy.

"The thing about aliens is, they're alien."

He felt intruding into him the sliding fingers of a vast, cool intellect, a dissolving sea. Soon he would be an empty shell. Paris would become part of the Mantis in the blending across representations, in their hologram logics. He could feel his neuronal wiring transfiguring itself. And accelerated.

Art is everywhere in the cosmos. I particularly liked your ice sculptures, melting in the heat while audiences applauded. Your tapestry of dim senses and sharp pains and incomprehensible, nagging, emotional tones -- I wish to attain that. An emergent property, quite impossible to predict.

"Never happen. You could understand this if you would allow me to fill out my natural life span."

That is a telling point. I shall take a moment to ponder it.

Meanwhile, cease your descent toward the accretion disk.

Here was the chance. The Mantis would withdraw to consult all portions, as an anthology intelligence. That would give him seconds to act. He accelerated powerfully down. "Take your time."

For long moments he was alone with the hum of his tormented ship and the unfolding geysers outside, each storm bigger than a world.

I have returned. I have decided, and shall harvest you now.

"Sorry to hear that," he said cheerfully. Dead men could afford pleasantries.

I wish you could tell me why you desired to end all my works.

But then, shortly, I shall know.

"I don't think you'll ever understand."

Paris took his ship down toward the disk, through harrowing, hissing plumes of plasma.

His I sensed great movements deep within his Me and despite the climbing tones of alarms in his ship, he relaxed.

Pressed hard by his climbing acceleration, he remembered all that he had seen and been, and bade it farewell.

You err in your trajectory.

"Nope."

You had to live in each gliding moment. This mantra had worked for him and he needed it more now. Cowardice -- the real thing, not momentary panic -- came from inability to stop the imagination from working on each approaching possibility. To halt your imagining and live in the very moving second, with no past and no future-with that he knew he could get through each second and on to the next without needless pain.

Correct course! Your craft does not have the ability to endure the curvatures required, flying so near the disk. Your present path will take you too close --

"To the end, I know. Whatever that means." His Arthur Aspect was shouting. He poked it back into its niche, calmed it, cut off its sensor link. No need to be cruel.

Then Arthur spoke with a thin cry, echoing something Paris had thought long ago. The Aspect's last salute:

If Mind brought humans forth from Matter, enabling the universe to comprehend itself -- to do its own homework --

"Then maybe that's why we're here," Paris whispered to himself.

The only way to deprive the Mantis of knowledge no human should ever give up, was to erase that interior self, keep it from the consuming digital.

He skimmed along the whipped skin of doomed incandescence. Ahead lay the one place from which even the Mantis could not retrieve him, the most awful of all abysses, a sullen dot beckoning from far across the spreading expanse of golden luminance. Not even the Mantis could extract him from there.

Paris smiled and said good-bye to it all and accelerated hard, hard.

THE GALACTIC CENTER SERIES

Gregory Benford

In the Ocean of Night (1977)

Across the Sea of Suns (1984)

Great Sky River (1987)

Tides of Light (1989)

Furious Gulf (1994)

Sailing Bright Eternity (1995)

The series comprises six novels, composed over a twenty-five-year span. The events stretch from the early 2000s to A.D. 37518, an immense scope imposed because its central focus, our galactic center, is 28,000 light-years away, and characters had to get there to take part in the galaxy's larger games.

But as well, I wanted to convey the huge scales of both time and distance that a galaxy implies. We are mayflies on the stage lit by the stars, and science fiction should remember that.

In the Ocean of Night, published in 1977, explored our discovery that computer-based life seemed dominant throughout the galaxy. A British astronaut in NASA's space program, Nigel Walmsley, had uncovered the implication that "evolved adding machines," as he put it, had inherited the ruins of earlier, naturally derived alien societies. We realized this by finding wrecked craft on the moon, and because a roving machine from an ancient interstellar society enters the solar system to study it.

Across *the Sea of Suns* follows Walmsley on the first manned interstellar expedition. Drawn by curiosity, humans want to know more about nearby stars, where there are aliens of very strange properties. There Walmsley finds that Naturals-organic beings like us-have been annihilated or at least greatly hampered by the galaxy's pervasive machine societies.

During this flight Earth is invaded by an ocean-living species, as a method the machine-based civilizations use to disrupt any advanced Natural society. As soon as others know of our presence, they seek to wipe us out, as feared Natural rivals. The novel concludes with a few remaining people, including Walmsley, capturing a sophisticated interstellar ship. They head for the galactic center, to find out what's going on.

In our galactic core, within a few light-years of the exact center, there are a *million* stars within a single light-year. Imagine having several stars so close they outshine the moon!

Worse, the galactic center was the obvious place for machines to seek. Virulent gamma rays, hot clouds, and enormously energetic processes dominate the crackling activity.

Great Sly River opens on this landscape; the title refers to the ancient American Indian name for the Milky Way. Its central figure is a man named Kileen, who flees with his Family Bishop across a ruined landscape. Its sky is dominated by the black hole at True Center, which his people call the Eater of All Things-though they don't quite know why.

In this ravaged panorama humans have fallen from grace. Though the Walmsley-led expedition reached the Center and did well there, building a considerable civilization, they could not evade the superiority of machines. Pursuing them is an enigmatic mech, or machine, the Mantis, who views humans as an endangered species, their extinction inevitable. It wishes to record what it finds worthy in the few remaining societies. Not since humans lived in immense space stations called Chandeliers have they been on even terms with the mechs.

The Bishops flee their home world, Snowglade, in hopes of finding refuge and a solution to their many riddles about the true nature of mechs closer to the black hole. In the fourth novel, *Tides of Light*, they reach another planet and form an alliance with another organic species, one also endangered by the relentless mechs. We meet other kinds of mechs, too.

Machines which can reproduce themselves would inevitably fall under the laws of natural selection, and would specialize to use local resources. The entire panoply of biology would recapitulate: parasites, predators, prey.

The Bishops deal with this while trying to fathom enigmatic messages from an intelligence lodged in the magnetic strands that loom throughout the Center. It tells of a place, the Wedge, where humans might find refuge and perhaps discover the legendary Galactic Library, which comprises a history of the entire galaxy.

In the fifth novel, *Furious Gulf*, we enter the gulf around the powerful black hole, and see another kind of gulf, that between intelligences born of different realms. Our human concern with mortality and individualism as a feature of biological creatures is unnecessary among intelligences that never had to pass through our Darwinizing filter.

If we can copy ourselves indefinitely, why worry about a particular copy? What kind of society would emerge from such origins? What would it think of us-us Naturals, still hobbled by our biological destiny?

A slowly emerging theme in these novels, then, is how intelligence depends on the "substrate," whether in evolved humans or adaptive machines-both embodying intelligence, but with wildly different styles.

Since the second novel we had not seen Nigel Walmsley, though there are hints that he was active near True Center much earlier. Much history echoes in ruins and enigmatic messages. Finding and entering the Wedge finally brings signs of humans who have sustained themselves against the mechs, though in a bewildering folded space-time (the s-t, or esty).

Sailing Bright Eternity, book six, finished in 1995, pulls all the series' major characters together. In the Wedge they find that humans themselves have been carrying information they did not know they had, data crucial to stopping the mechs from erasing all Natural life.

It had been twenty-five years since I started on *In the Ocean of Night*, and our view of the galactic center had changed enormously. Some parts of the first two books, especially, are not representative of current thinking. Error goes with the territory.

The themes of the series resolve in favor of humanity as unique and worth saving, even in as hostile a galaxy as I envisioned. But I suspect that if natural life is as foolish and vulnerable as we seem to be, quite possibly machines may inherit the galaxy, and thus sit bemused, watching us with cool indifference from afar.

This added story deals with an essential question asked of humans at the beginning of their decline, about A.D. 36000. It also reveals several aspects of the dreaded Mantis I never found room for in the novels.

-- **Gregory Benford**