

The Gravity Mine

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Call her Anlic .

The first time she woke she was in the ruins of an abandoned gravity mine.

At first the Community had chased around the outer strata of the great gloomy structure. But at last, close to the core, they reached a cramped ring. Here the central black hole's gravity was so strong that light itself curved in closed orbits.

The torus tunnel looked infinitely long. And they could race as fast as they dared.

As they hurtled past fullerene walls they could see multiple images of themselves, a glowing golden mesh before and behind, for the echoes of their light endlessly circled the central knot of spacetime . "Just like the old days!" they called, excited. "Just like theAfterglow. . . !"

Exhilarated, they pushed against the light barrier, and those trapped circling images shifted to blue or red.

That was when it happened.

This Community was just a small tributary of the Conflux: isolated here in this ancient place, the density of mind already stretched thin. And now, as lightspeed neared, that isolation stretched to breaking point.

. . . She budded off from the rest, her consciousness made discrete, separated from the greater flow of minds and memories.

She slowed. The others rushed on without her, a dazzling circular storm orbiting the exhausted black hole. It felt like coming awake, emerging from a dream.

Her questions were immediate, flooding her raw mind. "Who am I? How did I get here?" And so on. The questions were simple, even trite. And yet they were unanswerable.

Others gathered around her-curious, sympathetic-and the race of streaking light began to lose its coherence.

One of them came to her.

Names meant little; this "one" was merely a transient sharpening of identity from the greater distributed entity that made up the Community.

Still, here he was. Call him Geador .

". . . Anlic?"

"I feel-odd," she said.

"Don't worry."

"Who am I?"

"Come back to us."

He reached for her, and she sensed the warm depths of companionship and memory and shared joy that lay beyond him. Depths waiting to swallow her up, to obliterate her questions.

She snapped, "No!" And, willfully , she sailed up and out and away, passing through the thin walls of the tunnel.

At first it was difficult to climb out of this twisted gravity well. But soon she was rising through layers of structure.

Here was the tight electromagnetic cage that had once tapped the spinning black hole like a dynamo. Here was the cloud of compact masses that had been hurled along complex orbits through the hole's ergosphere , extracting gravitational energy. It was antique engineering, long abandoned.

She emerged into a blank sky, a sky stretched thin by the endless expansion of spacetime .

Geador was here. "What do you see?"

"Nothing."

"Look harder." He showed her how.

There was a scattering of dull red pinpoints all around the sky.

"They are the remnants of stars," he said.

He told her about the Afterglow: that brief, brilliant period after the Big Bang, when matter gathered briefly in clumps and burned by fusion light. "It was a bonfire, over almost as soon as it began. The

universe was very young. It has swollen some ten thousand trillion times in size since then. . . .
Nevertheless, it was in that gaudy era that humans arose. Us, Anlic ."

She looked into her soul, seeking warm memories of the Afterglow. She found nothing.

She looked back at the gravity mine.

At its center was a point of yellow-white light. Spears of light arced out from its poles, knife-thin. The spark was surrounded by a flattened cloud, dull red, inhomogeneous, clumpy. The big central light cast shadows through the crowded space around it.

It was beautiful, a sculpture of light and crimson smoke.

"This is Mine One," Geador said gently. "The first mine of all. And it is built on the ruins of the primeval galaxy-the galaxy from which humans first emerged."

"The first galaxy?"

"But it was all long ago." He moved closer to her. "So long ago that this mine became exhausted. Soon it will evaporate away completely. We have long since had to move on . . ."

But that had happened before. After all humans had started from a single star, and spilled over half the universe, even before the stars ceased to shine.

Now humans wielded energy, drawn from the great gravity mines, on a scale unimagined by their ancestors. Of course mines would be exhausted-like this one-but there would be other mines. Even when the last mine began to fail, they would think of something.

The future stretched ahead, long, glorious. Minds flowed together in great rivers of consciousness. There was immortality to be had, of a sort, a continuity of identity through replication and confluence across trillions upon trillions of years.

It was the Conflux.

Its source was far upstream.

The crudities of birth and death had been abandoned even before the Afterglow was over, when man's biological origins were decisively shed. So every mind, every tributary that made up the Conflux today had its source in that bright, remote upstream time.

Nobody had been born since the Afterglow.

Nobody but Anlic .

". . . Come back," Geador said.

Her defiance was dissipating.

She understood nothing about herself. But she didn't want to be different. She didn't want to be unhappy.

There wasn't anybody who was less than maximally happy, the whole of the time. Wasn't that the purpose of existence?

So, troubled, she gave herself up to Geador , to the Conflux. And, along with her identity, her doubts and questions dissolved.

The universe would grow far older before she woke again.

". . . Flee! Faster! As fast as you can. . . !"

There was turbulence in the great rushing river of mind.

And in that turbulence, here and there, souls emerged from the background wash. Each brief fleck suffered a moment of terror before falling back into the greater dreaming whole.

One of those flecks was Anlic .

In the sudden dark she clung to herself. She slithered to a stop.

Transient identities clustered around her. "What are you doing? Why are you staying here? You will be harmed." They sought to absorb her, but fell back, baffled by her resistance.

The Community was fleeing, in panic. Why?

She looked back.

There was something there, in the greater darkness. She made out the faintest of patterns: charcoal grey on black, almost beyond her ability to resolve it, a mesh of neat regular triangles covering the sky. Visible through the interstices was a complex, textured curtain of grey-pink light.

It was a structure that spanned the universe.

She felt stunned, disoriented. It was so different from Mine One, her last clear memory. She must have crossed a great desert of time.

But-she found, when she looked into her soul-her questions remained unanswered.

She called out: " Geador?"

A ripple of shock and doubt spread through the Community.

". . . You are Anlic ."

" Geador?"

"I have Geador's memories."

That would have to do, she thought, irritated; in the Conflux, memory and identity were fluid, distributed, ambiguous.

"We are in danger, Anlic . You must come."

She refused to comply, stubborn. She indicated the great netting. "Is that Mine One?"

"No," he said sadly. "MineOne was long ago, child."

"How long ago?"

"Time is nested . . ."

From this vantage, the era of man's first black hole empire had been the spring time, impossibly remote. And the Afterglow itself-the star-burning dawn-was lost, a mere detail of the Big Bang.

"What is happening here, Geador ?"

"There is no time-"

"Tell me."

The universe had ballooned, fueled by time, and its physical processes had proceeded relentlessly.

Just as each galaxy's stars had dissipated, leaving a rump that had collapsed into a central black hole, so clusters of galaxies had broken up, and the remnants fell inward to cluster-scale holes. And the clusters in turn collapsed into supercluster -scale holes-the largest black holes to have formed naturally, with masses of a hundred trillion stars.

These were the cold hearths around which mankind now huddled.

"But," said Geador , "the superclusterholes are evaporating away-dissipating in a quantum whisper, like all black holes. The smallest holes, of stellar mass, vanished when the universe was a fraction of its present age. Now the largest natural holes, of supercluster mass, are close to exhaustion as well. And so we must farm them.

"Look at the City." He meant the universe-spanning net, the rippling surfaces within.

The City was a netted sphere. It contained giant black holes, galactic supercluster mass and above. They had been deliberately assembled. And they were merging, in a hierarchy of more and more massive holes. Life could subsist on the struts of the City, feeding off the last trickle of free energy.

Mankind was moving supercluster black holes,coalescing them in hierarchies all over the reachable universe, seeking to extend their lifetimes. It was a great challenge.

Too great.

Sombrely, Geador showed her more.

The network was disrupted. It looked as if some immense object had punched out from the inside, ripping and twisting the struts. The tips of the broken struts were glowing a little brighter than the rest of the network, as if burning. Beyond the damaged network she could see the giant coalescing holes, their horizons distorted, great frozen waves of infalling matter visible in their cold surfaces.

This was an age of war: an obliteration of trillion-year memories, a bonfire of identity. Great rivers of

mind were guttering, drying.

"This is the Conflux. How can there be war?"

Geador said, "We are managing the last energy sources of all. We have responsibility for the whole of the future. With such responsibility comes tension, disagreement. Conflict." She sensed his gentle, bitter humor. "We have come far since the Afterglow, Anlic. But in some ways we have much in common with the brawling argumentative apes of that brief time."

"Apes...? Why am I here, Geador?"

"You're an eddy in the Conflux. We all wake up from time to time. It's just an accident. Don't trouble, Anlic. You are not alone. You have us."

Deliberately she moved away from him. "But I am not like you," she said bleakly. "I do not recall the Afterglow. I don't know where I came from."

"What does it matter?" he said harshly. "You have existed for all but the briefest moments of the universe's long history-"

"Has there been another like me?"

He hesitated. "No," he said. "No other like you. There hasn't been long enough."

"Then I am alone."

"Anlic, all your questions will be over, answered or not, if you let yourself die here. Come now..."

She knew he was right.

She fled with him. The great black hole city disappeared behind her, its feeble glow attenuated by her gathering velocity.

She yielded to Geador's will. She had no choice. Her questions were immediately lost in the clamor of community.

She would wake only once more.

Start with a second.

Zoom out. Factor it up to get the life of the Earth, with that second a glowing moment embedded within. Zoom out again, to get a new period, so long Earth's lifetime is reduced to the span of that second. Then nest it. Do it again. And again and again and again...

Anlic, for the last time, came to self-awareness.

It was inevitable that, given enough time, she would be budded by chance occurrence. And so it happened.

She clung to herself and looked around.

It was dark here. Vast, wispy entities cruised across spacetime's swelling breast.

There were no dead stars, no rogue planets. The last solid matter had long evaporated: burned up by proton decay, a thin smoke of neutrinos drifting out at lightspeed .

For ages the black hole engineers had struggled to maintain their Cities, to gather more material to replace what decayed away. It was magnificent, futile.

The last structures failed, the last black holes allowed to evaporate.

The Conflux of minds had dispersed, flowing out over the expanding universe like water running into sand.

Even now, of course, there was something rather than nothing. Around her was an unimaginably thin plasma: free electrons and positrons decayed from the last of the Big Bang's hydrogen, orbiting in giant, slow circles. This cold soup was the last refuge of humanity.

The others drifted past her like clouds, immense, slow, coded in wispy light-year-wide atoms. And even now, the others clung to the solace of community.

But that was not for Anlic .

She pondered for a long time, determined not to slide back into the eternal dream.

At length she understood how she had come to be.

And she knew what she must do.

She sought out Mine One, the wreckage of man's original galaxy. The search took more empty ages.

With caution, she approached what remained.

There was no shape here. No form, no color , no time, no order. And yet there was motion: a slow, insidious, endless writhing, punctuated by bubbles that rose and burst, spitting out fragments of mass-energy.

This was the singularity that had once lurked within the great black hole's event horizon. Now it was naked, a glaring knot of quantum foam, a place where the unification of spacetime had been ripped apart to become a seething probabilistic froth.

Once this object had oscillated violently, and savage tides, chaotic and unpredictable, had torn at any traveler unwary enough to come close. But the singularity's energy had been dissipated by each such encounter.

Even singularities aged.

Still, the frustrated energy contained there seethed, quantum-mechanically, randomly. And sometimes, in those belched fragments, put there purely by chance, there were hints of order.

Structure. Complexity.

She settled herself around the singularity's cold glow.

Free energy was dwindling to zero, time stretching to infinity. It took her longer to complete a single thought than it had once taken species to rise and fall on Earth.

It didn't matter. She had plenty of time.

She remembered her last conversation with Geador . Has there been another like me? . . . No. No other like you. There hasn't been long enough.

Now Anlic had all the time there was. The universe was exhausted of everything but time.

The longer she waited, the more complexity emerged from the singularity. Purely by chance. Much of it dissipated, purposeless.

But some of the mass-energy fragments had sufficient complexity to be able to gather and store information about the thinning universe. Enough to grow.

That, of course, was not enough. She continued to wait.

At last-by chance-the quantum tangle emitted a knot of structure sufficiently complex to reflect, not just the universe outside, but its own inner state.

Anlic moved closer, coldly excited.

It was a spark of consciousness: not descended from the grunting, breeding humans of the Afterglow, but born from the random quantum flexing of a singularity.

Just as she had been.

Anlic waited, nurturing, refining the rootless being's order and cohesion. And it gathered more data, developed sophistication.

At last it-she-could frame questions.

". . . Who am I? Who are you? Why are there two and not one?"

Anlic said, "I have much to tell you." And she gathered the spark in her attenuated soul.

Together, mother and daughter drifted away, and the river of time ran slowly into an unmarked sea.