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THE SHAPE OF EVERYTHING

THEY COULDN'T FIND HIM. The party had just become a party, tame scientists finally imbibing enough to act a little careless and speak their minds, every mind happy, even ecstatic. That's when someone noticed that the old man was missing. To bed already? Just when the celebration had begun? But someone else mentioned that he never slept much, and it still was early. And a little knot of technicians went to his cabin and discovered that he wasn't there, precipitating a good deal of worry about his well-being. The next oldest person in the observatory was barely seventy -- young enough to be his granddaughter -- and almost everyone feared for his health. His strength. Even his mind. Where could he be? they asked themselves. On a night like this . . . of all nights . . . ?

Search parties began fanning through the facility, and the security net was alerted. Cameras watched for a frail form; terminals waited for his access code. But wherever the man was, he wasn't visible or working. That much was certain after an hour of building panic.

It was one of his assistants who finally found him. She was a postdoc and maybe his favorite, although he was a difficult man to read in the best of times. What she did was recall something he'd mentioned in passing -- something about the cleansing effects of raw light -- and she remembered a certain tiny chamber next to the hull, built long ago and never used by the current staff. It had a window to the outside, plus old-style optics, an old-time astronomer able to peer into a simple lensing device, examining the glorious raw light coming straight from the giant mirrors themselves.

She found him drifting, one hand holding him steady, the long frail body looking worn out in the bad light. It looked even worse in good light, she knew. Bones like dried sticks and his flesh hanging loose, spotted with benign moles too numerous to count. The cleansing effects of light? She'd always wondered where a committed night-owl had found time and the opportunity to abuse his skin. More than a century old, and the postdoc felt her customary fear of ending up like him. Lost looks; diminished energies. And she wasn't an authentic genius like him. No residual capacities to lean against, the great long decline taking its toll --

"Yes?" said the astronomer. "What is it?"

She cleared her throat, once and again, then asked, "Are you all right, sir? We were wondering."

"I bet you were," he replied. Only then did he take his eye off the eyepiece, the haggard face grinning at her. "Well, I'm fine. Just got tired of the

noise,
that's all."

She didn't know how to respond. Leave now? Perhaps she should leave, if he wanted quiet.

But when she turned, he said, "No," with force.

"Sir?"

"Here. Come see this."

As always, she did as she was told. She kicked across the room and used a single eye, knowing the trick but not having done this nonsense in years. Why did anyone bother with lenses? Even when this observatory was built, digitized images were the norm. The best. And besides, what she saw here was just the focused light from a single mirror -- a representative sampling of the whole --

meaning it was almost useless to their ongoing work. Too simple by a factor of ten million. Yet she wasn't the old man's maybe-favorite for nothing, feigning interest, squinting into the little hole until he seemed satisfied.

"It's the same as last time," he said, "and the time before. It's always the same, isn't it?"

She looked at him, nodding and saying, "Why shouldn't it be?"

"But doesn't it amaze you?" He asked the question, then he spoke before she could answer. "But not like it amazes me. Do you know why? Because you grew up expecting to see the beginning of time. When you were a little girl, this place was catching first light with its first mirrors, and by then the goal was obvious. Isn't that right?"

A little nod, and she thought of what was out there. It did amaze her, yes, and what right did he have to minimize her feelings? But it wasn't exactly the beginning of time either. She remembered the digitized images, scrubbed clean by computers, contrasts added and the noise deleted. She could see little blobs of spiraling light-- the earliest galaxies -- and the best images resolved individual stars. No, it wasn't fair of him to claim a greater amazement. Not when she thought of the work she'd done, the long hours and the years invested in helping him and everyone else, a great mystery now solved, more than likely --

-- and the old man was laughing almost gently.

Was it a trick? A joke? Had he been teasing her? It wouldn't be the first time, of course.

"No, I'm not laughing at you, dear." He smiled, implanted teeth too white to be real. "I'm the amusing one. I look at you and remember someone else. Please, please don't take this wrong but you've always reminded me of her."

He's been drinking, she realized. At least a little bit.

"A young woman, but she seemed infinitely old at the time. Seventeen years old, give or take, and nearly as beautiful as you. And the first woman I ever loved."

She said nothing.

"Can I tell you about her? Let me, then you'll be free to go back to the party. I promise. It's just a little story, a slice of life tale. I know you don't want to hear it --"

"Not true," she heard herself blurt.

" -- but indulge me. For a few moments, please."

Of course. She held the eyepiece in one hand, feeling the residual heat left by his hand and knowing she had no choice. This was a duty, perhaps even an honor. Nodding she looked out the thick window, watching half a dozen mammoth mirrors hanging motionless against the starry background, collecting photons from near the beginning of time . . . helping to support the theory that he, in part, had formulated

"I was eight years old at the time."

The woman's imagination strained, picturing him as a boy.

"Forever ago," he said, "or yesterday. Depending on how you count these things."

His parents sent him to a day-camp in the country, and he still could remember waiting for the yellow bus that picked him up at the corner. It was a noisy, stinking bus full of loud kids, and he always sat alone near the front, as close to the driver as possible. The driver was authority, and he believed in authority when he was eight. He thought it was important not to make enemies or get into trouble. A lot of the kids were older and larger, a few of them almost thirteen, and they seemed dangerous. It was the same as school -- the same as all life, he imagined-- survival depending on being quiet and small, keeping in the shade of authority whenever possible.

His parents meant well. To them, the camp was a peaceful retreat with docile horses, a spring-fed swimming pool and a staff of smiling well-scrubbed adults.

At least the brochures promised as much. The truth was that the horses were fatty and ill-tempered, and the pool's water had a suspicious odor. The staff were teenagers, one particular fellow holding sway over the others. His name was Steve or something equally ordinary--a fellow almost big lean and strong in a haphazard youthful way. He wore Western clothes, complete with a cowboy hat, and he smoked and chewed tobacco every waking moment. His greatest pleasure in

life

was bossing around children. It was Steve who introduced the future astronomer to horseback riding and archery, plus a variety of games learned from a stint with that quasi-military organization, the Boy Scouts of America.

One afternoon, on a whim, Steve divided the kids into pairs and said, "This is a tracking game. Shut up and listen." The rules were transparently simple. One person walked from a starting point, heading for the nearby trees, and every time he or she changed direction, two sticks had to be laid down, making an arrowhead to show the new direction. It was a race in time, and it shouldn't take long. Steve promised to sit on the porch of the main lodge, drinking beer and keeping track of the minutes. "And when you're done," he promised, "we'll go down to the pool and you can take your daily pees in the deep end. All right? All right!"

The astronomer's partner was maybe a year older, a boy both confident and bold, and he went first, vanishing into the green woods while Steve counted down five minutes. "Go!" He remembered running hard, reaching the woods and cool shadows, then pausing to let his eyes adjust, eventually spotting his partner in a little clearing uphill from him. The boy was kneeling in sunlight, setting a pair of sticks into position. Catching him meant walking a straight line. "That's not fair!" the boy protested. "You've got to follow the arrows!" And as if to prove his hard work and correctness, he took the astronomer back to each arrow, pointing to them with a barely restrained fury.

The other teams took longer. Once done, everyone reassembled, and Steve, using a fancy Boy Scout knife to open a new beer, said, "Five minutes head start. Set. Go!"

"And play fair," warned the astronomer's partner. "Or else!"

Of course he'd play fair. He believed in rules and authority. Yet he had an idea on his run to the woods -- a legal possibility-- kneeling in the shade and pointing his first arrow in a random direction. Then he started to jog, heading uphill without varying his direction. The rules were being met, after all. The other boys and rare girls were behind him when the five minutes were up. He didn't pause, barely even slowed, and eventually it felt as if he'd gone miles. He was utterly alone, and only then did he kneel and make a second arrow pointing ninety degrees to his first course. It was a big arrow, and the rules were more than satisfied.

Time passed. The angle of the sun changed. After a while he didn't feel sure about any directions, or even his approximate position. Some places looked familiar --perhaps they'd passed here on horseback -- but other places resembled virgin forest. What if he couldn't find camp before the bus left? What if he had to spend tonight in the wilderness? Angry with his own cleverness, he turned and

pushed straight up a likely hillside, right through the heart of thorny brush and into the open green ground above the lodge, no sight ever so lovely in his long little life.

Walking downhill, he imagined the celebration accompanying his return. But instead of relief, he found Steve sitting on a folding chair beside the mossy pool, a swimming suit instead of jeans but the hat and beer in place. Steve's response was to belch, saying "Look what drug itself in, would you? We were thinking of getting up a search party. But I guess you mined that fun too. Huh?"

The astronomer's partner was even less understanding "What happened to you?" he squealed. "You cheated! I knew you'd cheat!"

The lone sympathetic voice came from the life guard's chair. Her name was Wendy. She had a pretty face tanned brown, a nose whitened with cream and big sunglasses hiding her eyes. Wendy was easily the nicest person on the staff, and when he walked past her, she made a point of saying "I was worried. I thought you might be hurt."

"The kid's fine," Steve shouted. "Don't make a big deal out of it, Wendy, Jesus Christ!"

"And," she said, "I don't think you cheated. I don't."

She looked at Steve while she spoke, her face strong and unperturbed, and he felt there was something between them. He tasted it in the air. There was an understanding, real and precious. She glanced back down at him, the white nose shining. "You are all right, aren't you?"

"I'm fine."

"Good," she said emphatically. "I'm very glad."

MEMORY EXPANDS what's important and what is strange, and that's why his memories of day-camp seemed to cover months, not just a single week. Every day was rich with adventures and horrors, his young body sore every night and his parents curious in a careful way. Was he enjoying himself? They had to hear that their money was well spent. But can a young boy know if he's having a wonderful time? He had never been to camp; he had no basis for comparisons. Maybe it was his fault that he wasn't having great fun. "Oh, I like it," he told them, wanting to please. His parents smiled. Was he making any new friends? He thought of Wendy. Nobody else. But instead he mentioned his partner in the tracking game, which again pleased his audience, Mom and Dad nodding and grinning congratulating themselves for sending him to that piece of Hell.

It was Thursday when Wendy reminded everyone, "Bring your sleeping bags tomorrow, and a change of clothes too." It was a day-camp, but the last day -- Friday -- reached into Saturday morning. They'd eat dinner here and camp outdoors, then ride home in time for the late morning cartoons.

"We'll sleep up on the hill," Steve told them. "Coyote bait in baggies. It's

going to be fun!"

"Quiet," growled Wendy. "Don't say that stuff!"

Steve grinned, stained teeth capable of a menacing air. "They know I'm kidding, girl. They're smart kids. Hell, they love me. Everyone loves me, Wendy. 'Cept you. Ever think why?"

She just shook her head, turning away.

Next morning, at first light, the astronomer woke and found himself hoping to be sick. He looked for a nameless rash, for any excuse not to go. But there were no excuses, him dressing and collecting his belongings, his mother making a snap inspection and then passing him the miraculous sum of five dollars. "For emergencies," she confided. The words seemed full of grim possibilities. No, he wouldn't spend it. He made a pact with himself. There wouldn't be any emergencies, and he'd come home alive and well.

Friday followed the usual routines. There was a horseback ride, his stallion fat and breathing wetly. Steve rode his thundering beast through the trees, trying to spook the others. Like always. Then came the morning archery contest, and the astronomer almost broke one hard rule. He was winning, even beating one of the older boys, and he saved himself unknown horrors by sending his last arrow into the gully behind the range. Steve made him climb after it, but that was okay. He found a fine old bottle near the arrow, which made it worthwhile. Then came lunch, cold sandwiches and cheap strawberry pop. Then a round of capture-the-flag, followed by a long swim; and somewhere Steve and most of the rest of the staff vanished. No one mentioned where to or why. Wendy sat above the pool, and she seemed uneasy. Or was he imagining things?

By evening, clouds had rolled in. Dinner was hotdogs, boiled and bland. By then Steve and the others had reappeared, laughing and shouting, moving the furniture to one side of the lodge while drinking beer from a big metal keg. There never was any chance to sleep outdoors. By dusk, it was raining, not hard but enough, and Steve told the kids to spread their bags in a corner and keep out of trouble. He already was drunk, though it would be years before the astronomer would appreciate what kind of fellow Steve was. Possessing an alcoholic's constitution, his nervous system could function despite being thoroughly pickled. Kids and nondrinkers stayed clear of him. Particularly Wendy. Meanwhile others arrived from somewhere. They were teenagers, big and loud, and maybe there weren't many of them. Maybe they weren't even badly behaved. But to an eight-year-old from a tame, sober household, it seemed as if there were thousands of them packed into the lodge. A hi-fi played stacks of records. People danced while others drank beer and smoked, sometimes pointing to the kids huddled in their corner, making jokes and breaking into raucous laughter.

Steve would watch Wendy, sometimes cocking his cowboy hat and making his

approach. But she'd spot him and shy away somehow. She'd vanish into the bathroom or around to the other side of the room, Steve becoming puzzled, walking circles and finally spotting his love all over again.

It was a great drama -- a drama that must have been played out through the summer -- and it had rhythms and its rules. Wendy usually placed herself near the kids, perhaps feeling protective of them. And Steve's approaches became bolder, failure having a cumulative effect on his frustration. It became late, probably not even midnight but that was very late back then; and the party was running without pause, without even needing to breathe. "Which," confessed the astronomer, "might be where I learned to dislike parties." Then he smiled at the postdoc, pausing, nodding to himself and the eyes losing their focus.

The postdoc wondered if the story was finished. Was that all there was to it?

Seemingly changing the subject, he told her, "We've done astonishing work here. You know, you deserve to feel proud."

"I do," she promised.

He drifted closer, and for an instant she feared he would make a clumsy romantic pass. But no, all he wanted was to peer through the eyepiece again. He squinted, watching galaxies forming in the first billion years after Creation. It was then that the universe had cooled enough and diluted itself enough to allow suns to form. But why like this? Why make galaxies of that particular size and composition? It had been a mystery for decades. Why did these oldest galaxies have a sameness of size and color? And what mechanism caused them to be arranged in enormous groups, forming distinct wall-like structures stretching for hundreds of millions of light-years?

Now they knew, or at least they thought they did.

The best clues had remained hidden. It had taken every mirror and every interlinked computer to bring them out. Black holes and cosmic strings were just part of the explanation. More important were some dim dense plasma clouds -- relics of a hotter, older era -- and how each cloud was aligned beside one new spiral galaxy. Cosmic strings ran through both of them, making eddies in the primordial gases which in turn made suns. Just five years ago, researchers had determined that those earliest suns were divided into distinct sizes and colors. They came in twenty-three flavors, in essence. They ranged from orange pinpricks to blue-white giants, and what was stranger was their orderly spacing. Very odd, they seemed. Unlikely. Bizarre.

It was the old man's suggestions that had made the difference. He hadn't done the hard work -- he wouldn't have known how, the youngsters much more skilled with computer simulations and high-energy physics -- but he was the crazy one who suggested they were looking at the work of ancient, possibly extinct intelligences. What if the plasma clouds were organized? What if they were truly conscious? They manipulated matter and the superstrings to create the first

galaxies, arranging them in space in order to fulfill a great purpose. "Just suppose," he had told everyone. "That's all I want. Just suppose."

Even the postdoc, loyal by any measure, had to wonder if the old man was losing his mind and common sense. "Why would they build galaxies?" she had asked him. "What possible role could they serve?"

But he'd had an answer waiting. "Distinct kinds of stars might imply some kind of alphabet. A code. Maybe a coherent language. The giant black holes at the center can act as anchors or reference points. Look at the galaxy from above, and you can read everything at a glance."

"Can plasmas be alive?" she had inquired.

"Perhaps. In a smaller, hotter universe, perhaps they'd evolved into intelligence. Maybe galaxies were used as elaborate transmitting devices."

"Transmitting what? And to whom?"

"I don't know, but I can guess." A long pause. "What audience? I don't think the plasmas were chatting with each other. Look at the background temperatures then. Space must have been very, very cold already. From their perspective, I mean. Building galaxies was something done just before they dissolved. Before they died. It was the end of their time, and I think their intended audience hadn't even been born yet."

It was a crazy notion, and a great one, and a few people found the craziness appealing. They did some tests, made mathematical models, and found that indeed, each galaxy had its own inherent code. The best images were just good enough to read a kind of dictionary encircling the central black holes. It was stunning news, and the first translations had answered most of the central questions. Those plasma clouds, using cosmic strings as their pens, were visible writing their autobiographies. In effect, they were telling of their births and development, sentience evolving from the heat and hard radiations. Evolving and growing aware enough to recognize a doomed future. Billions of stars constituted life stories, their authors like old men and women huddling about a waning fire, jotting down a few last notes before their great sleep.

Die they did. Nearer, younger space showed no plasmas, but the galaxies persisted for a little while. Patient observers could resurrect old meanings, if they wished. But eventually the original stars aged and exploded, helping to form wild suns while spewing out carbon and oxygen and iron. And meanwhile, the central black holes swallowed anything close, the first quasars igniting, and human beings spotting those scalding lights back when this old man was a mere eight-year-old waif, attending summer camp, wholly unaware that he was the audience whom the great clouds had anticipated.

He was the new ruler of the universe

The postdoc thought of leaving, glancing at the door, wondering if she should

tell the others that he was found. Found and a little drunk and babbling.

"Actually," he said, "you don't remind me of Wendy. I barely remember the girl, quite frankly."

With honesty and a certain impatience, she asked, "I don't understand. Why are you telling me this story now?"

"Because it's pleasant. Because it's important." He sighed and said, "Because I want to tell it."

She nodded and waited.

"Steve eventually caught Wendy, and by then he was titanicly drunk. And I'd guess, dangerous too. In my mind he seemed awfully dangerous."

She knew those kinds of men. Too many of them, in fact.

"As it happened, she was near me when she was caught, and he shouted, 'Aren't you going to dance with me?' Poor Wendy. She had a look on her face, brave and scared at the same time. Then she made herself smile, telling him, 'I promised my friend this dance.' With that she snatched me off my sleeping bag and took me

into the middle of the room, a new song beginning. I can't remember the song but

I remember dancing and how I looked at the hi-fi as we passed. Each time I looked, measuring how much time remained. There is a certain similarity between

these galaxies and our old-fashioned records, and maybe that's the point of my story." A long pause, then he said, "If anyone asks, tell them that I had my inspiration while remembering an out-of-date technology. The hi-fi."

She gave a nod, thinking he was done.

But he said, "Later we went outside together. Wendy led me outdoors." A sigh and

a smile. "The lodge's roof overhung a patch of dry ground, and we sat together and talked. I don't remember about what. Though I think she told me, 'We're okay

if you stay with me. Steve's gutless, and good people like you scare him."

The postdoc said, "I see . . ."

"No, I haven't thought about Wendy in a long time," he admitted. "It's the atmosphere tonight. It's the meanings of stars." He smiled at her with his too-white teeth. "I'm glad you're the one who found me. And just you."

She felt honored and uncomfortable.

"Everyone's so happy tonight, and why?" He told her, "It's because a great race

from the dawn of time was dying. Dying and feeling the urge to leave some memory

of themselves. And we're the clever ones who are going to be lionized for seeing

what's obvious."

She gave a little nod.

"For all we know, the Milky Way itself began as someone's autobiography. We're built on the scrambled, incoherent epic of something vast. And when our time passes, when every sun bums out, perhaps we'll leave some similar kind of record for those who follow us."

The postdoc cleared her throat, then asked, "What happened to Wendy?"

A smile grew on the weary face. "Later, much later, a friend of hers came outside and told her that Steve was asleep. Unconscious. She was safe again, and she turned to me, saying, 'Thank you for your help.' Then she gave me a little kiss on the forehead -- my first kiss outside my ugly old family -- and she walked with me back inside.

"I remember my heart.

"I remember feeling its beat, and how I held Wendy's hand with both of mine, wishing I didn't have to let go. Wishing time would stop itself and save this moment. I kept wishing I was special enough to make time stop. And that's when I learned that I wasn't so special, and everything is eventually lost, making room for everything else. And that's not too sad. If you think about it. There's always room being made for the future, and that's altogether not a bad thing."