

## PLUTO'S CHRYSALIS

Eternity is subjective. I'm spending mine clawing into nitrogen-methane snow and dragging my body by painful centimeters from the cocoon of the ship's wreckage. My helmet monitor lists internal bleeding, spinal injury, and two fractured ribs. My legs don't work. Breathing hurts. Easier to just let the cold take me or a piece of the ship fall on my head and end it, but I'm a stubborn woman, as my father would attest, were he not three billion miles away.

Shallow gasps fracture the profound silence inside my helmet, as I crawl through twisted metal toward the faint light, hoping the suit won't tear on anything before I have a chance to see the stars again.

Beneath me, the ground trembles. Is Pluto trying to live up to his ancient title as god of the underworld? Gravity, weak as it is, claims a section of hull a few meters away. It tumbles in leisurely silence, confirming my audio isn't functioning.

I haul myself to a mangled suit. Helen's frozen face stares out from her shattered faceplate. For a moment, the loss of the mission—the dream to be the first humans on

Pluto, and even my own imminent death— fade beside the fact that Helen’s foot will never again stamp in frustration; her wit will never scathe . . . her eyes never close.

Twisted into impossible contortions, the sprawled forms of the rest of my shipmates lie amid more debris. Beyond them, Pluto’s other tundra, stark and pristine, stretches to distant ice mountains—the last thing I see before the ground shifts, opening a chasm into which I slowly slide, swallowed by the underworld god.

Clawing at the frozen bank only loosens chunks to join me in the measured drift into hell. Crystalline walls slide past, until I settle onto a level outcropping. Pain pierces my ribs, asserting I’m still alive. The hole I fell through briefly displays a piece of black sky and the gleaming, pearl of a star that is my sun, before collapsing in a slow-motion landslide that narrowly misses me. No way out.

*Pluto steals Proserpine from the Earth, dragging her into Hades. Her mother’s grief brings winter to the world.* Mythological metaphor whispers in one ear, while the geologist in me scrabbles after an explanation for the quakes, as if there is some point to understanding.

Pluto and his moon, Charon, dance about each other like a binary star system. Could their proximity create frictional stresses and seismic activity like Neptune’s Triton? Or perhaps Pluto is dense enough to have a fission-producing core. Earth’s moon surprised everyone with its hot layer over the core and, decades earlier, the New Horizons probe noted the lack of craters on expansive plateaus, indicating a changing surface. A cold lava mass of nitrogen ice stirs slowly above me, warmed by the core. Maybe it generates enough heat underground to keep me conscious until my air runs out.

*Damn you, Pluto.*

Death. Despite its intimate whisper, I cannot grasp it, not down in the cellular units of my being. I am the Universe. How can that cease to be?

A deep belly-laugh vibration warns me of my folly, just before the ground cracks open again, wafting me downward like a settling feather, deeper into Pluto's maw. Helmet light spears the darkness, illuminating a rocky cavern. My heart aches from its frantic pounding. I have five point eight minutes of oxygen left.

Papa always said one had choices no matter the situation.

I know my choices well enough: I can die in the grip of fear or I can scrape together as much dignity as I can. To damp the terror is the hardest choice I have ever made. I concentrate on breathing. I should conserve, make the breaths shallow, but I want deep. Each one exists only in the present moment. Life is like that, as ethereal as a breath . . . as a butterfly.

Papa took me to the museum when I was seven.

On tiptoes, I pressed my nose against the glass. Inside, a vacuum preserved the glossy sheen of the spread wings of a *Colombian morpho cypris*. I tried to imagine the brilliant, turquoise butterfly fluttering among flowers instead of stretched out like a pinned Jesus.

Hardest to understand was that the magic creatures lived just a few weeks, some only days. Most of a caterpillar's body turned into a semi-liquid mass within the hardened chrysalis. The cells completely rearranged themselves into the exquisite body of the butterfly. It had to hurt. And after all that, to live such a short time—

It wasn't fair.

"Why do they die so fast, Papa?"

He looked down, his craggy face reflected in the glass display, and shrugged.

"Short. Long. What's the difference?"

I was angry. How could he say that? Couldn't he see how beautiful they were, how precious? It wasn't fair.

Death isn't fair.

I check the monitor again. Two minutes. The temperature is climbing rapidly. Was Pluto turning up the furnace? Instinctively, I glance up, surprised to see another hole to the outside, displaying the stars and a slice of Pluto's partner-moon Charon. *Charon, the boatman of ancient mythology who ferried the souls of the dead to Pluto's realm.* The others—Hydra, Nix, P4 and P5—aren't visible from here. I blink. The huge moon centered in this window appears distorted, as if I'm peering through a thick lens—a sheet of frozen methane or water ice maybe? The New Horizons probe documented mountains that could not have been supported by frozen methane.

Our ship crashed right on the equator. I wouldn't have this view from anywhere else. Lucky me.

My eyes begin to adjust to the dim light of the stars and something else, a faint yellow-green glow from the walls. A phosphorescent chemical reaction? Life? Intriguing photos of dark spots on Pluto's surface hinted of organic residue, possibly created through interaction of methane with UV radiation, but this was beyond my field. Helen was the biologist, her specialty exotic bacteria like those existing near thermal

vents on the earth's ocean floor where light can't penetrate the inky darkness. Could some thermal nutritional source support life here?

Why not? Robot probes have just studied a fraction of Pluto's surface. How could anyone really know what was here? That was why we donned Icarus' wings—to find out. Only we flew away from the sun instead of into it.

Damn things had melted anyway. Instruments malfunctioned. Computer error. Helen's face stares at me through her shattered helmet. . . .

I check my readout. I can't help it. Does it matter how many seconds I have left?

*My choice how I die.* I choose to die with dignity, with all my being focused on life, on each beautiful gift of breath.

Another. . . .

When it happens, I lose my fragile, patched-together resolution of dignity. My lungs scream for air. I try to drag vacuum through my mouth. My chest spasms. I can't stop my fingers from hitting the helmet releases. The helmet tumbles in slow motion from my stiff hands. I inhale poison like an elixir.

And wait.

*Let go, Pluto. Let me go.*

One breath follows another. No convulsions. Why am I still alive? Why hasn't my face frozen like Helen's? My gaze drops, pulled by the mystery of whether my body still exists, or if I have died and my spirit remains trapped in Pluto's belly.

The suit is still there, sealed at my neck. Oxygen must be trapped in this cave. Perhaps thermal events release gas trapped in rocks, the same thermal events warming

this cave and supporting phosphorescent life. My exhaled breath forms tiny clouds, but the air is no colder than a winter night in Illinois.

I feel Pluto's stare, feel him watching me, an insect stuck in amber, a tiny bubble of air caught with me.

*You are alive*, he says clearly in my head.

Audio hallucination. "I don't want to be crazy," I whisper. I also don't want to be trapped in a cave with the master of hell.

*I will not harm you.*

I spin around. Nothing is behind me.

The golden flecks on the wall have brightened. It's warmer. I climb to my feet on legs that are working again, if unsteady. Breathing doesn't hurt. The cavern floor slants downwards. Something blurs the air down there.

I stumble toward it. My ankle catches and I sprawl, my cheek scraping a rock. In surreal slowness, I skid the last meter to the edge of a shallow drop-off and lie there, breathing warm vapors rising from a pool of liquid gold.

*It is water.* Pluto's voice in my head says.

Ignoring him—ignoring my insanity—I struggle to my knees and stare at it, dip my gloved hand into it, cupping liquid in my palm. Colorless. The gold is a mirage, a reflection of the phosphorescent light. What the hell? I remove my other glove, touching the velvet surface with my finger and then my tongue. Water.

My mind shies from how astronomically improbable it is that I am alive, breathing air and tasting water, as if confronting that fact will make everything vanish, force time to rewind and play out in a more statistically predictable manner.

At the pool's far edge, the water drops over rocks to a smaller basin. Perfect for a toilet facility, my bladder reflects. Only then do I realize other functions of my suit have failed. I strip, the chill now just enough to bud my skin with gooseflesh.

After I relieve myself in the lower pool, I slide into the deeper one. Heat coaxes tense muscles to relent their clench. "Did you 'create' this for me?" I ask Pluto, unable to resist the notion and the temptation to talk to something, even my own voice in my head.

*Yes.*

"Why?"

*Your form would not have survived on this planet's surface.*

"Are you Pluto?"

"No."

What has my fertile imagination created? "Where are you from?"

*Far away.*

A classic line. I'm disappointed that I can't provide a more stimulating conversation with myself. My stomach rumbles. How anti-climatic for my demise to be starvation.

"Since you've been so kind to provide oxygen, water and a hot bath, what about a fudge sundae? Sort of a last meal request."

Silence.

I have imagined-up an alien with no sense of humor. Oh well. "Where are you anyway?" Let's have a little visual hallucination to go with the voice, as long as it doesn't have tentacles, please.

*I am here.*

“I don't see anything.”

*My particles are too far apart for you to perceive a whole. I encompass you.*

That's interesting. “What are you?”

*Primarily hydrogen.*

Hydrogen? Why have I made up something mostly hydrogen to be sentient?

Well, why not? My kind of life is mostly water.

At a sharp *crack* overhead, I look up. A large, jagged line worms through the clear crystal. My window is breaking. I watch, helpless to save my fragile little world, rigid again with the expectation of death.

Impossibly, the crack seals itself.

Too many impossibilities. This is not just me talking to myself. Something is going to great lengths to keep me alive. What kind of creature is this gas cloud that has saved my life?

“What do I call you?” I ask, a tremor in my voice.

No response.

“I'm Jennifer.”

Silence.

“Hydrogen is too long. What about Hy?”

*Hy. I am named.*

My laugh becomes hysterical. How can any of this be real?

With a mental wrench, I *feel* space as a fuzzy physical sensation, endless particles in nameless colors play like soda bubbles on my “skin,” feeding me, starlight like fluid—

“Stop!” I take a ragged breath, no longer laughing, and it is long minutes before curiosity forces another question. “Where did you come from?”

*From—*

A confusion of sensations and emotions flicker through my thoughts, until my mind decides on the word.

*—Mother. I began as part of her.*

I wrap my arms around myself, wanting the reassurance of my body. “Tell me.”

*Long ago, I floated in the Great Dark, gathering to be a Mother.*

With the thought-words comes a glimpse of a massive, glowing cloud—a nebula, swirling in a pre-star dance?

*I circled the Mother as she burned.*

The image now is a bluish star blazing in the black cradle of space.

I pull myself back, stunned by the realization of what I have seen. “Hy— Your Mother was a star.”

*Yes.*

My field is geology, but every astronaut knows basic astronomy. Hy is a cloud of gases flung away during the birth of a star. Complex molecules have been discovered in clouds of interstellar gas, but no one ever dreamed *life* was there.

“Was your Mother also sentient?”

*Of course.*

I have seen videos of the sun’s corona—the great billows of electromagnetic energy shooting out and looping back, connecting to another point . . . like neurons firing? What is a thought anyway? Just chemical and electrical chain reactions. Maybe

the whole volatile surface of a star was its nervous system, its brain. The impact of that thought tilts my perspective, stirs a dizzy joy. I am light as a breath, my body hollow.

Stars are *alive*. The universe is alive!

“Thank you, Hy,” I mutter, remembering why the water is here, why I can breathe without pain, why I can breathe at all.

Despite the liquid caress, my mind refuses to stay anchored to my body. So many questions. The one I pick is not very scientific.

“Could you talk to your star, your Mother?” I ask.

*I listened.*

“Did she ever speak to you?”

*Beyond others . . . burning.*

“I didn't get that.”

*She spoke to other Mothers. They to her. I was not—*

I feel Hy's thought, but can't translate it. It is somewhere between “worthy” and “significant energy/mass to attract attention.”

“What happened? How did you get here?”

*When the Mother spewed, I was cast into the Great Dark.*

My mind sees the Mother-star changing, swelling into a bloated red giant, then cooling, shrinking into an icy white fire and finally, exploding in a death spasm of glory.

“Nova.” I breathe. “She went nova. And you?”

*I drifted until this planet caught me.*

Gravity. I let my feet find the soft bottom of the pool. “Pluto has us both then.”

*I cannot escape.*

I wonder if Hy's presence had anything to do with our crash.

*I did not know you were a living creature until I felt you on the planet's surface.*

"Felt me?"

*Your will to live captured my attention.*

Hy saved me, cracked open Pluto's surface, created oxygen, water. Would food be next?

*Behind you.*

I turn to see what appears to be vegetation resembling a cattail growing from the lower pool where I had left some of my body's waste. Had Hy used my deposit of organic material, transforming it into what appears to be a plant?

What kind of creature can do that? I shake my head and answer my own question: A being that was the afterbirth of a star.

"Can you hear this system's Mother?" I ask as I wade toward the plant.

*I am too distant and not massive enough to gather many of her... words.*

"Words" aren't the only translations of my mind, also "particles" and "energy." If stars talk to one another by exchanging radiation or particles, a single conversation could take centuries or eons, but what is that on the cosmic time scale? And could there be an even greater consciousness, where each star is a self-aware neuron in the brain of . . . God? I retreat from the incomprehensible thought and cup water in my hand. It is real; it is here, but it shouldn't have been. "How did you do this?"

*I saw the pattern in your form, the need. I rearranged the patterns. The organic material took many attempts.*

When I'm within reach of the plant, I tear off a leaf and the bulbous growth at the top. The leaf is bitter, and I hastily spit onto my hand the half-chewed material. The bulb is better, starchy. Not an ice cream sundae, but very welcome under the circumstances.

“How did you ‘rearrange the patterns,’ Hy?”

The answer is incomprehensible; the images jumble and whirl in a complexity I can't grasp.

I shake my head. “I don't understand.”

After a moment, another image forms in my mind's eye. Hy is trying to explain another way, like an adult phrasing a complicated concept into simple language a child can understand. A humbling thought.

*I learned from the Mothers.*

I dive into the heart of a star, past volatile gases and flame, into a place so strange and alien, I hear myself scream from far away, in another universe. Instantly, a buffering layer interposes itself, returning my sense of self. I feel my pulse, a wild runaway. *Your choice*, my father's voice whispers.

I choose to stay, allowing Hy to show me the complex, dynamic interchange of the molecular level. Hydrogen to helium? That comes from my memory, not any analysis of what I am seeing inside the star. I move deeper. A part of my mind quests for words to explain what I perceive—nuclei, electrons, subatomic particles? Somehow, the meaning of it crystallizes into a partial understanding. In the flux of the sub-quantum, the essence of the physical world can be manipulated, even brought into being.

“The Mothers create life?”

*Some nurture planets.*

“Were any like that in your Mother's system?”

*No.*

“Didn't she want to create any . . . children?”

*She knew she was destined to spew, that she would destroy anything she had created.*

I blinked. “But that would have been billions of years later.”

*She did not want to destroy what she created.*

My throat tightens. A chance to engender life, to ignite the spark that sets off evolution. Would I have done it, knowing I would eventually destroy everything I had begun? What would be the point? What *is* the point of life? A damn perplexing question, for which I have no answer, and offer the only wisdom I have. “Everything dies.”

*I am not certain I will die.*

"Everything dies," I'm sure of my ground here. Even stars die.

No response.

*I had to rearrange myself to perceive you.*

I feel a grin emerge. “Wow. I wish I knew how to return that kind of compliment.”

Wading back to the other side of the pool, I lay the half-chewed leaf on the flat stone, atop the streak of blood where my cheek had a close encounter earlier. Guessing what I will find, I touch my face, not surprised at the smooth, healed skin. I don't need a medical monitor to know my broken ribs have been knitted, the injury to my spine

repaired. What is Hy capable of? Something stirs in the ashes where I had burned thoughts of escape. Rearranging molecules is a long way from getting home. Still—

Apparently, I will have plenty of time to think about it. Right now, I need to absorb the way the universe has changed. Closing my eyes, I imagine the Mothers speaking to one another across the vast seas of the Great Dark. What kind of things would they talk about?

Perhaps, like all mothers, they discuss their children.

*Jennifer?*

My eyes snap open. This is the first time Hy has used my name.

*Your form is complex. I am not a Mother. I do not know if I will be able to rearrange your patterns to continue life.*

I rein my thoughts from the vastness of space and try to consider myself from Hy's perspective. The aging process? Cells reproduce themselves only a certain number of times before errors creep in. Is Hy concerned about not being able to correct them?

I laugh. "Relax, Hy, I'm just twenty-eight. If you keep feeding me, I've got a while before I die on you."

*How long?*

"Seventy, eighty more years, earth years, of course." Abruptly, I realize that is not even half a Plutonian year. Hy is at least as old as a white dwarf star. My life span is barely an indrawn breath to that. Hy might do some rearranging, stretch out my time, but not forever, not for any amount of time meaningful for a practically immortal gas cloud.

*Everything dies.* My own words echo in my mind.

"Hy?"

No answer.

Is he-it upset? How could I mean something to a mass of hydrogen gas?

Two life forms, so different it boggles the mind, trapped together on a barren waste. I look up at my skylight—the thin, frozen sheet that shields me from Pluto's savage surface. Up there, in a cold two hundred degrees below zero, nitrogen and methane winds will blow while the planet's crazy path through the solar system dips it toward the sun. For the rest of Pluto's two-hundred-forty-eight-year orbit, the atmosphere will freeze. Before the cold stills everything, snow will fall for a hundred years.

Hy will watch the cycle again and again. Alone.

A movement catches the corner of my eye. I whirl to confront the flat rock where I laid the leaf, where my blood streaked the surface. My arms tremble as I pull myself from the pool.

I stand beside the stone, my breath catching as the edges of the leaf curl, folding in. In miniscule degrees the tightly wrapped leaf twitches and shrinks to the length of my forefinger. "What are you doing, Hy?"

No response, but the intensity of the silence is almost palpable.

Finally the leaf stills. I wait. My stomach complains it is still hungry, but I can't tear my gaze from the strange, tiny form, afraid something will happen if I leave its side.

Suddenly certain what is on the rock, I drop to my knees, bringing my face level with it. The chrysalis darkens. What normally takes weeks, happens in minutes. When it is black and transparent, the case cracks open. A slender leg, fine as spider's silk, thrusts through the opening.

“Oh, Hy.” Awe chokes my throat.

The head and one large compound eye appear. With convulsive spasms, the creature struggles from its hard womb, an effort that will force blood into its extremities.

My breath stirs the fragile antenna as the butterfly emerges onto the bloodstained rock, wet wings crumpled against its sides. Unsteady at first, it finds the slender legs and begins to fan hardening wings to pump air into the veins. When they are fully spread and dry, they glimmer in deep jade and gold—a living jewel. One leg is short, and the wing on one side is smaller than the other, but it is unmistakably a butterfly.

"Beautiful." I swallow around the sudden catch in my throat. I hate to say it, but I must. "It won't live long."

*Perhaps the Mother was wrong.*

Hy's Mother had rejected the pain of creating life destined to only a candle flicker of time in the deep dark of space. Was I wrong, too, that a butterfly's brief chance at life was unfair?

Papa's voice: *Short. Long. What's the difference?* I finally understand. He wasn't dismissing the butterfly's life, but telling me that the length of a lifetime is not the point, nor is it the soul's measure.

To Hy, my existence is as brief and fragile as a butterfly's is to mine. Perhaps, as precious? Is that what Hy is telling me with this . . . gift?

I edge the tip of my forefinger under the silk-fine legs, coaxing the creature onto it. Holding my breath, I stand, ignoring the pain that shoots through cramped leg muscles. Slowly, I lift my hand above my head.

For a moment, the butterfly clings to my finger. Then—so lightly I can't feel its absence—it flutters, faltering and erratic with its uneven wings, upward toward the crystalline window.

END