

# Hotshot<sup>1</sup>

Peter Watts

*You do understand: It has to be your choice.*

They never stopped telling me I was free to back out. They told me while they were still wrangling asteroids out past Mars; told me again as they chewed through those rocks like steel termites, bored out caverns and tunnels, layered in forests and holds and life-support systems rated for a longer operational lifespan than the sun itself. They really laid it on after that L4 fiasco, when the singularity got loose during testing. Not a whisper of cancelling the project — even though the magic upon which the hole thing rested had just eaten half the factory floor and a quarter of the propulsion team — but in the wake of that tragedy UNDA seemed to think it especially important to remind us of the exits.

*It's your decision. No one can make it for you.*

I laughed in their faces, once I was old enough to understand the irony. I'd been trained and tweaked for the mission since before I'd even been born, they'd groomed my parents as carefully as they were grooming me. Thirty years before I was even conceived, I was already bound for the stars. I was *built* to want them; I didn't know any other way to be.

Still. We're a civilized society, yes? You don't draft people against their will, even if the very concept of "will" has been a laughingstock for the better part of a century now. They give me no end of opportunity to back out now because there will be no opportunity to back out later, and *later* covers so very much more time for regrets. Once *Eriphora* sails, there will be no coming back.

It has to be my decision. It's the only way they won't have blood on their hands.

And yet, after everything— after eighteen years of indoctrination and rebellion, almost two decades spent fighting and embracing the

---

<sup>1</sup> First published in *Reach for Infinity* (J. Strahan, Ed.), 2014, Solaris.

same fate— when they held that mutual escape hatch open one last time, I don't think they were expecting the answer they got.

*Are you absolutely sure?*

"Give me a couple of months," I said. "I'll get back to you."

\*

Built for the stars, maybe. Built to revel in solitude, all those Pleistocene social circuits tamed and trimmed and winnowed down to nubs: born of the tribe, but built to leave it behind without so much as a backward glance. By design there's only a handful of people I can really miss, and they'll be shipping out at my side.

Not shipping *in*, though. I'll be taking this particular ride on my own. A short hop, not even the blink of an eye next to the voyage on the horizon. And yet for some reason I still feel the urge to say goodbye.

I barely catch the outbound shuttle. I spend the trip running scenarios — what I'll say, what he will, how best to meet point with counterpoint— as the range ticks down and the Moon shrinks to stern and the rosette spreads across my viewspace like God's own juggling act. Mountains in space. Jagged worldlets of nickel and iron and raw bleeding basalt, surface features rotating in and out of view with slow ponderous majesty: loading bays and docking ports; city-sized thrusters, built for a few short hours of glorious high-thrust incandescence; a great toothless maw at the front of each ship, a throat to swallow the tame singularities that will draw us forward once the thrusters go cold and dead.

*Araneus* passes to port, a cliff face almost close enough to touch. *Mastophora* passes to starboard. *Eriophora* doesn't pass: she grows in front of us, her craggy grey face blotting out the stars.

We dock.

I ask the Chimp for Kai's location: still voiceless, it feeds a translucent map through my local link and lights a spark in the woods. I find him there in the dark, a shadow in twilight, almost floating in the feeble gravity: half-lit by a dim blue-shifted galaxy of bioluminescent plant life.

He nods at my approach but he doesn't turn. "Sixty percent

productivity. We could leave right now if we had to. Never run out of O<sub>2</sub>."

"Man does not live on air alone," I remind him. He doesn't disagree, though he must know what I'm leading up to.

We sit without speaking for a while, lost in a forest of branching skeletal arms and spindly fingers and gourds set faintly aglow with the waste light of symbiotic bacteria. I've been able to rattle off the volumes and the lumens and the metabolic rates since I was seven, but on some level my gut still refuses to believe that this dim subterranean ecosystem could possibly keep us going for even a week, much less unto the end of time. Photosynthesis under starlight. That's all this is. Barely enough for an ant.

Of course, ants don't get to amortize their oxygen. Starlight will do when you only breathe a week out of a thousand years.

"So," Kai says. "Fun in the Sun."

"Yeah."

"Three months. A hundred fifty million clicks. For a parlor trick."

"Two, tops. Depending on the cycle. And it's more than that, you know it's more."

He shakes his head. "What are you trying to prove, Sunday?"

"That they're right. That I can quit if I want to."

"You've been trying to prove that your whole life. You could've quit a million times. The fact is you *don't* want to."

"It's not about what I *want*," I insist. "It's about what happens if I don't." And realize *You're afraid this mad scheme will work. You're afraid that this might be the time I really go through with it.*

His silhouette shifts beside me. The light of a nearby photophore washes across his cheekbone. "Sometimes the bodies just start — acting out, you know. The people inside can't even tell you why. They say it's like being possessed. Alien body syndrome." He snorts softly. "Free will my ass. It's the exact opposite."

"This isn't TMS. It's—"

"You go in one side and something else comes out the other and what does it prove? Assuming *anything* comes out the other side," he adds, piling on the scenarios. "Assuming the ship doesn't blow up."

"Come on. How long do you think they'd be in business if they were peddling suicide missions?"

"They haven't been in business that long. We sold them the drive what, six years ago? And they must've spent at least a year torquing it into shapes it was never designed for—"

I say: "This is *exactly* why I'm going."

He looks at me.

"How did you even know?" I ask him. "I never told you what I had in mind. Maybe I mentioned being curious once or twice, back when they bought the prototype. And now I come over here and you've already got all your arguments lined up. What's worse, I *knew* you would." I shake my head. "It doesn't bother you we're so *predictable*?"

"So you scramble your brain, and you're a cipher for a while, and that buys you what exactly? You think shuffling a deck of cards gives it free will?" Kai shakes his head. "Nobody's believed that shit for a hundred years. Until someone comes up with a neuron that fires without being poked, we're *all* just— reacting."

"That's your solution? We're all just deterministic systems so we might as well let them pull our strings?"

He shrugs. "They've got strings too."

"And even if all it does is shuffle the deck, what's wrong with just being *unpredictable* for a change?"

"Nothing's *wrong*. I just don't think you should base the single most important decision of your life on a dice roll."

*I'm scared, Kai*, is what I want to say. *I'm scared by the thought of a life lived in such thin slices, each one lightyears further from home, each one centuries closer to heat death. I do want it, I want it as much as you do but it frightens me, and what frightens me even more is that I can feel this way at all. Didn't they build me better than this? Aren't I supposed to be immune to doubt?*

*What else did they get wrong?*

"Think of it as—" I shrug. "I dunno, a line item on the preflight checklist. Somewhere between *synch displacement field* and *pack toothbrush*. Purely routine. What could go wrong?"

Somehow Kai's silhouette conveys a grimace. "Other than being vaporized when you fall into the sun? Or is that—"

—*the whole point?* He doesn't finish but I can tell from the sudden tilt of his head that he's looking down at my wrists. Wondering if this isn't just some elaborate way of getting out from under so I can try it again, without interference...

"You know better than that." I lean forward and kiss him on the cheek, and he doesn't pull away; I call it a win. "The Sun'll die long before we do.

"We're gonna outlive the whole damn galaxy."

\*

UNITED NATIONS DIASPORA AUTHORITY  
DEPT. CREW PSYCHOLOGY

POST-INCIDENT INTERVIEW TRANSCRIPT

TS TAG: EC01-2113:03:24-1043  
NATURE OF INCIDENT: AGONISTIC PHYSICAL  
ENCOUNTER.  
SUBJECT: S. AHZMUNDIN; ASS.  
*ERIOPHORA*, F, AGE 7  
(CHRON), 13 (DEV)  
INTERVIEWER: M. SAWADA, DPC  
SURV/BIOTEL: YZZ-284-C04  
PSYCH COMMENTARY: YZZ-284-D11

M. SAWADA: Two fractured ribs and a broken nose. Not to mention the black eye.

S. AHZMUNDIN: Didn't see *that* coming, did you? Think you got everything figured out for the next ten million years and you can't even tell what a little kid is gonna do five minutes from now.

MS: Why did you attack Kai, Sunday?

SA: What, you can't just *read my mind?*

MS: Did he do something to get you angry?

SA: So you kicking me out?

MS: Is that what you want, Sunday? Is that why you keep acting up, to provoke us into expelling you? You know you can leave if you're not happy here. Nobody's keeping you against your will. I know your parents would be happy to see you again. Surprised, but— happy.

SA: I'm not *like* Kai. I'm not like any of them.

MS: That much is apparent.

SA: He's just the way you like us. Always doing what you tell him, never asking anything you don't want him to. That's what you want. A bunch of happy stupid robots building a bunch of happy stupid bridges for the rest of our happy stupid lives. I don't even know why you even *need* us.

MS: You know why.

SA: We're *backup*. We never even *wake up* unless the ship runs into something it doesn't know how to fix. Might never even *happen*.

MS: It'll happen. Any voyage that long—

SA: But what if it *doesn't*? And why do you need us anyway, why not just make machines as smart as us— smarter even— and leave us out of it?

DEAD AIR: 3 SEC

MS: It's not as simple as all that. Faster machines, sure. Bigger machines, no problem. *Smarter* machines, well... The thing is, we can't even predict with a hundred percent certainty how a *person* is going to act, even when we know all the variables. You build something *smarter* than a person, it's pretty much guaranteed to go off and do its own thing as soon as you boot it up. And there's no way to know in advance what that might be.

SA: But *people* can go off and do their own thing too.

MS: People are more— stable. We have biological needs, instincts that go back millions of years. But—

SA: You mean we're easier to *control*. You mean you can't starve a machine to make it beh—

MS: But yes, Sunday, people do go off and do their own things. That's the whole point. And that's why we *don't* want a bunch of happy stupid robots, as you put it. We want you to show *initiative*. Which is why we cut you some slack when you sometimes take the wrong kind.

But only *some*. So watch yourself, young lady.

DEAD AIR: 5 SEC

SA: That's all?

MS: There should be more?

SA: You're not going to— punish me? For Kai?

MS: I think you owe him an apology, for whatever that's worth. That has to be your decision. But you and Kai— every spore in the program really, you have to work out your own dynamics with your own shipmates. We won't be there to *punish* you fifty thousand years from now.

DEAD AIR: 2 SEC

I'd love to see how your social systems evolve over time. What I wouldn't give to go with you.

SA: You... you *knew*. I bet you *knew*.

MS: Knew what?

SA: That I was going to beat up Kai. You *wanted* me to!

MS: Why would you even say that, Sunday? Why would

we *want* you to attack a fellow recruit?

SA: I dunno. Maybe, maybe he was *bad* and I was his punishment. Maybe you wanna see our *social systems evolve over time*. Maybe you just like it when we fight.

MS: I promise you, Sunday, none of us get any pleasure from—

SA: Maybe *you* don't even know. You're not like us, right? We're easy, you *built* us to work like this. That's how you know what we're gonna do. But who built *you*, huh? Nobody. You're just random.

DEAD AIR: 3 SEC

You're *free*.

\*

### READ CAREFULLY

YOU ARE ABOUT TO EMBARK UPON A JOURNEY LEADING TO A COGNITIVE AUTONOMY THAT YOU HAVE NEVER EXPERIENCED BEFORE. WHILE SOME CLIENTS HAVE DESCRIBED THEIR SUNDIVES AS *ECSTATIC, RELIGIOUS, AND PROFOUNDLY FULFILLING*, INDUSTRIAL ENLIGHTENMENT INC. CAN NOT GUARANTEE A PLEASANT EXPERIENCE. WE CONTRACT SOLELY TO PROVIDE EXPOSURE TO A PHYSICAL ENVIRONMENT ALLOWING YOU TO THINK YOUR OWN THOUGHTS IN A WAY YOU NEVER COULD BEFORE. WE ARE NOT RESPONSIBLE FOR THE CONTENT OF THOSE THOUGHTS, OR FOR ANY POTENTIAL TRAUMA RESULTING THEREFROM. BY ENTERING INTO THIS CONTRACT, YOU ARE EXPLICITLY ABSOLVING INDUSTRIAL ENLIGHTENMENT INC., AND ALL OF ITS AGENTS AND REPRESENTATIVES, FROM RESPONSIBILITY FOR ANY

NEGATIVE PSYCHOLOGICAL IMPACTS THAT MAY  
RESULT FROM THIS EXPERIENCE.

Base Camp is a foil-wrapped potato nine hundred meters long, robbed of its spin and left to bake at the Lagrange point just inside Mercury. At least, that's where it is when we close for docking; we've barely debarked before it starts reeling itself sunwards, a diving bell bound for perdition.

They're using one of our old prototypes, a displacement drive with an exagram quantum-loop hole in its heart. I like what they've done with the thing. It doesn't just smear the camp's center of mass along some inner wormhole; it leaves one end behind at L1, hangs off Mercury's mass like a stone on a string. The energy it must take to stabilize that kind of attenuation boggles the mind— but the sun's breathing in our faces, and the same metamaterial that makes the potato such a perfect reflector can just as easily turn it into a blackbody when they need juice for antimatter production.

It's a neat way to stuff old tech in new bottles. We might be doing something like that ourselves when we shipped out, if we could only drag a sun and a planet along for the ride.

The docent— a gangly Filipino who introduces himself as *Chito*— meets us at the airlock. "Before we go any further, let's just check our uploads; everyone get the orientation package okay?"

I ping the files they loaded into our heads while we slept our way across the innersys: neurophilosophy and corporate history, Smolin cosmology, Coronal Hoops and the Death of Determinism. Some very nifty specs on the miraculous technology that allows us to kiss the sun without incinerating, the bandpass filters that let those vital magnetic fields through while keeping the heat and the hard stuff at bay. (Those specs are proprietary, I see. They're letting us in on their secrets to set our minds at ease, but they'll erase them all on the way back home.)

Chito waits until the last of us gives him a thumbs-up. "Good. Make sure you use them before the dive, because none of your implants will work when we open the blinds. This way."

Weight accumulates as we follow him along the length of the

tunnel; a dozen pilgrims float, then bounce, then wobble on unsteady feet. Most of the camp's habitable reaches are carved out about twenty meters aft of the hole, close enough to give us about a quarter-gee when the potato's parked. Maybe half that on descent, depending on how far they stretch the mass.

A brain in a globe meets us in the lobby: a small bright core in a twilight grotto. It has its own little gravitational field, slows us down and pulls us in as we file past en route to our berths. We accrete around it like a retinue of captured moons.

It's not a *real* brain, I can see at closer range. No hemispheres, no distinct lobes, no ancient limbic substructures to hold it in place. Just a wrinkly twinkly blob of neurons, lit from within: ripples of thought, visibly manifest thanks to some fluorescent protein spliced in for tawdry FX value.

A label glows softly to one side of the little abomination: *Free Will. Only Known Example.*

"Except for we happy few. Assuming we get what we paid for."

A centimeter shorter than me; stocky, shaved head, Nordic-albino complexion. "Agni Falk," she says, ping-pong me her card: Junior VP, Faraday Ridge. Deep-sea miner. A denizen of the dying frontier, still rooting around on the bottom of the ocean while the sky fills with asteroids and precious metals.

"Sunday." I keep my stats and my surname to myself. I'm not famous by any means—I may be bound for the furthest reaches of space but so are fifty thousand others, which kind of dilutes the celebrity field. Still, it only takes a split-second to run a name search, and I'm not here to answer an endless stream of questions about Growing Up 'Sporan.

"Good to meet you," Falk says, extending a hand. After a moment, I take it. Her eyes break contact just long enough to flicker down to our meeting palms, to the scar peeking out from my cuff. Her smile never falters.

The wrinkled grapefruit behind *her* face is wired in to so much: sound, touch, proprioception. Over two million channels from the eyes alone. Not like this blob in the fishbowl. Deaf, dumb, blind, no pipes at all except for those that carry sewage and nutrients. It's just a mass of neurons, a few billion meaty switches

stuck in stasis until some outside stimulus kicks them into gear.

There's no stimulus here I can see, no way to get a signal to those circuits. And yet somehow it's active. Those aurorae rippling across its surface might be the signature of a captive soul.

Neurons that fire without being poked. You wanted 'em, Kai. Here they are.

Falk, following my gaze: "I wonder how it works."

"Novelty." A Hindian voice from a half-lit pilgrim on the far side of the globe. "That's what I hear, anyway. Special combination of quantum fields, something that never existed before so the universe can't remember it and it's got to—improvise."

"It's a trick," grumbles some skeptic to her left. "I bet they just jump-started this thing before we showed up. I bet it runs down eventually."

"We all run down eventually."

"Quantum effects—"

"Ephatic coupling, something like that."

"So what's it *doing*?" someone asks, and everyone falls silent.

"I mean, free will, right? Free to do what? It can't sense anything. It can't move. It's like, I dunno, intelligent yoghurt or something."

All eyes turn to Chito.

"That's not really the point," he says after a moment. "It's more a proof-of-principle kind of thing. "

My eyes wander back to the globe, to interference patterns wriggling through meat. Odd this thing didn't show up in their orientation package. Maybe they thought a bit of mystery would enhance the experience.

Mystery's so hard to come by these days.

\*

UNITED NATIONS DIASPORA AUTHORITY  
DEPT. CREW PSYCHOLOGY

POST-INCIDENT INTERVIEW TRANSCRIPT

TS TAG: DC25-2121:11:03-1820  
NATURE OF INCIDENT: AUTODESTRUCTIVE BEHAVIOR  
SUBJECT: S. AHZMUNDIN; ASS. *ERIOPHORA*, F,  
AGE 16 (CHRON), 23 (DEV)  
INTERVIEWER: M. SAWADA, DPC  
SURV/BIOTEL: ACD-005-F11  
PSYCH COMMENTARY: ACD-005-C21

M. SAWADA: Do you feel better now?

DEAD AIR: 6 SEC

Why did you do it, Sunday?

S. AHZMUNDIN: You think sometime we could have a conversation that *doesn't* start with that line?

MS: Sunday, *why*—

SA: I didn't do it. I don't *do* anything. None of us do.

MS: Ah. I see.

SA: And so when they removed the cancer from his brain, the prisoner stopped trying to fuck everything that moved. All hint of hypersexual pedophilia just evaporated from his personality. And then of course they let him go, because he wasn't responsible: it was the *tumor* that had made him do all those awful things.

MS: You've been revisiting the classics. That's good.

SA: And everyone congratulated each other at their own enlightenment, and the miracles of modern medicine, and nobody had the nads to wonder why the tumor should make any difference at all. Do healthy people bear more responsibility for the way their brains are wired? Can they reach up and edit their own synapses in some way denied to the afflicted?

DEAD AIR: 3 SEC

MS: Believe it or not, you're not the first sixteen-year-old to ask

these questions. Even unaccelerated adolescents have been known to wrestle with the paradox of Human nature now and then.

SA: Is that so.

MS: Of course, most of them are a little more mature about it. They don't resort to fake suicide attempts, for example.

SA: What makes you think I was faking?

MS: Because you're smart enough to have cut the long way if you weren't.

SA: I did my research. Cut across, cut down. Doesn't make any difference.

MS: Okay, then. Because you're smart enough to know we'd get to you in time no matter *what* direction you cut.

DEAD AIR: 4 SEC

How many times do we have to tell you, Sunday? These—theatrics— aren't necessary. You can just *leave*. All you have to do is say the word and you can walk right out of here.

SA: And do what? I'm Plan B. I'm fallback when the A-Team can't solve some stupid N-body problem. That's what I'm built for.

MS: We *trained* you for initiative. We *educated* you for general problem-solving. If you can't figure out how to put that skill set to productive use without leaving the solar system, then you might as well keep right on the way you're going. Maybe try jumping out an airlock next time."

SA: You know the way I am. I'd go batshit doing anything else.

MS: Then why do you keep fighting us?

SA: Because *the way I am* didn't just happen. You *made* me this way.

MS: You think I have any more control over my aptitudes and

desires than you do? *Everyone* gets—shaped, Sunday. The only difference is that most of us were shaped by blind chance. You were shaped for a purpose.

SA: Your purpose.

MS: So I guess the tumor makes a difference after all, hmm?

DEAD AIR: 2 SEC

Stem cells haven't settled yet. Keep scratching those, you'll leave scars.

SA: I want scars.

MS: Sunday—

SA: Fuck you, Mamoro. It's my body, even if it isn't my life. Take it out of my damage deposit if you don't like it.

DEAD AIR: 5 SEC

MS: Try to get some rest. Kerr-Newman sims at 0845 tomorrow.

\*

No reactionless drive, this close to the sun. No quantum-loop gravity, no magic wormhole. The best bootstraps fray in the presence of so much mass. So Base Camp, her tether stretched to the limit, launches a new ship for this last, climactic phase of our pilgrimage. *Autonomy for the People*: a shielded crystal faceted with grazing mirrors— a half-billion protective shards, concentrically layered, precisely aligned and ever-aligning to keep us safe from the photosphere.

Chito tells us we couldn't ask for a better setup, not at this point in the cycle: a stable pair of sunspots going our way and peaking at diameters just shy of fifty thousand kilometers. Chance of a mass ejection less than one percent, and even in that unlikely event the ejecta will be shooting *away* from us. Nothing to worry about.

Fine. Whatever's keeping us alive at an ambient five thousand degrees is already magic as far as I'm concerned; why *not* throw in a tsunami of radioactive plasma cresting over us at five hundred

kilometers a second?

They've tied us up and abandoned us in this windowless cell, a cylinder maybe six meters across. Its curved bulkhead glows with the soft egg-shell pastel of Jesus' halo. We face outward, anchored to the backbone running along the compartment's axis: each vertebra an acceleration couch, each spiny process a stirrup or an armrest. We're restrained for our own safety and for each others'. You never know how automatons might react to autonomy. We were not promised bliss, after all. I've seen rumors— never confirmed, and notably absent from IE's orientation uploads— of early tours in which unbound clients clawed their own faces off. These days, the company chooses to err on the side of caution. We'll experience our freedom in shackles.

We've been like this for hours now. No attentive handlers hover at our sides, no vigilant machinery waits to step in if something goes wrong. Neither tech nor technicians can be trusted under the influence of six thousand filigreed Gauss. They're watching, though, from up in their shielded cockpit: under layers of mu-metal and superconductor, Faradayed up the ass, they keep an eye on us through a thread of fiberop half the width of a human hair. If things get out of control they'll slam the filters back down, turn us back into clockwork, race back here with drugs and god helmets and defibrillators.

A wide selection of prerecorded music awaits to help pass the time. Nobody's availed themselves of it. Nobody's said a word since we launched from base camp. Maybe they don't want to break the mood. Maybe they're just reviewing the mechanics of the miracle one last time, cramming for the finals because after all, the inlays that usually remember this stuff for us will be worse than useless once they open the blinds.

At least two of us are praying.

The bulkhead vanishes. A tiny multitude gasps on all sides. We are naked on a sea of fire.

Not just a sea: an endless seething expanse, the incandescent floor of all creation. Plasma fractals iterate everywhere I look, endlessly replenished by upwells from way down in the convection zone. Glowing tapestries, bigger than worlds, morph into laughing

demon faces with blazing mouths and eyes. Coronal hoops, endless arcades of plasma waver and leapfrog across that roiling surface to an unimaginably distant horizon.

Somehow I'm not struck instantly blind.

Inferno below. Pitch black overhead, crowded with bright ropes and threads writhing in the darkness: sapphire, emerald, twisting braids of yellow and white. The hoops and knots of Sol's magnetic field, endlessly deformed, twisted by Coriolis and differential rotation.

It's an artifact, of course. A tactical overlay that drags invisible contours into the realm of human vision. All of reality's censored here by a complex interplay of field and filters, tungsten shielding and programmable matter. Perhaps one photon out of a trillion gets through; Hard-X, gamma, high-energy protons all get bounced at the door.

Dead ahead, a pair of tumors crawl over the horizon: dark continents on a bright burning sea. The lesser of them could swallow five Earths in its shadow. "Scylla and Charybdis," someone whispers past my shoulder. I have no idea what they're talking about.

We're headed between them.

Magnetic fields. That's what it's all about. Forget about gamma and synchrotron radiation, forget about that needle-storm of protons that would slice your insides down to slush in an instant if they ever got through the shielding (and a few of them do; there will be checkups and microsurgeries and a dozen tiny cancers removed from today's tourists, just as soon as we get home). What counts is those invisible hoops of magnetic force, reaching all the way up from the tachocline and punching through the surface of the sun. So much happens there: contours dance with contours, lines of force wrap tight around invisible spindles— reactions that boost field strength five thousandfold. And the *complexity*: all those tangled lines knotting and weaving *just so* into a pattern so intricate, so *taut*, that something has to break.

They say that's the only place to find free will. At the breaking point.

Any moment.

The sunspots flank us now, magnetic north magnetic south, great dark holes swallowing the light to either side. Braided arabesques arc between them, arches within arches within arches, five Jupiters high. The uppermost wobbles a little as we approach. It invaginates.

It *snaps*.

The cabin fills with blinding white light. We exist, in this single frozen instant, at the heart of reconnection. Electricity fills the capsule; every hair on my body snaps to attention. The discharge floods every synapse, resets every circuit, sets every clock to zero.

We are free.

Behind us, luminous contours recoil like rubber bands in our wake. Somewhere nearby people sing in tongues. Agni Falk is in Heaven, here in the pit of Hell: eyes closed, face beatific, a bead of saliva growing at the corner of her mouth. Three vertebrae to stern someone moans and thrashes against their restraints, ecstatic or merely electrocuted.

I feel nothing.

I try. I really do. I look deep inside for some spark of new insight, some difference between the Real Will I have now and the mere delusion that's afflicted every human since the model came out. How would I even know? Is there some LED in my parietal lobe, dark my whole life, that lights up when the leash comes off? Is any decision I make now more autonomous than one I might have made ten minutes ago? Am I free to go? Are we there yet?

The others seem to know. Maybe the sun god has delivered them from slavery or maybe it's just fried their brains, but *something's* changed for them. Maybe it's me. Maybe all the edits that customized me for deep space and deep time have— desensitized me, somehow. Maybe spore implants put out some kind of unique interference that jams the signal.

Kai was right. This is a fucking waste.

*Autonomy's* afterburners kick in. Acceleration presses me into my seat. The sun still writhes and blinds on all sides (although the horizon curves now, as we climb on a homeward course). Under other circumstances the sight would terrify and inspire; but now when I avert my eyes it's not in awe, but disappointment. My gaze

drops to the back of my left hand, bound at the wrist, clenched reflexively around the tip of the armrest. Even my endocrine system is unimpressed; of the 864 pores visible there, only 106 are actively sweating. You'd think that scraping the side of a sun would provoke a bit more—

Hold on...

I can't be seeing this. Human eyes don't have the rez. And yet—this is not a hallucination. Each pore, each duct, each fine fuzzy body hair is exactly where it belongs. I can confirm the location of each via independent lines of reasoning.

A phrase pops into my head: *Data visualization*.

I'm not seeing this. I'm *inferring* it: Deep parts of the brain, their computations too vast to fit into any conscious scratchpad, are passing notes under the table. They've turned my visual cortex into a cheat sheet. I can see the microscopic stubble of the seat cover. I see the wings of butterflies fluttering in the solar corona, hear every heartbeat in this capsule.

I see a universe of spiderwebs, everything connected to everything else. I see the future choking on an ever-increasing tangle of interaction and constraint. I look back and see those strands attenuating behind me: light cone shrinking, cause decoupling from effect, every collapsed probability wave recovering its potential way back when anything was possible.

I step back, step *outside*, and take it all in.

I see chaos without form and void. I see ignition.

I see Planck time emerge from the aftermath.

I watch the electronuclear force collapse into a litter of building blocks: gravity, electromagnetism, nuclear forces strong and weak. I see the amplituhedron assemble itself from closed doors and roads not taken. So much potential lost there, so many gates slammed shut in a single picosecond. The laws of physics congeal and countless degrees of freedom disappear forever. The future is a straitjacket: every flip of an electron cinches the straps a little more, every decision to go *here* instead of *there* culls the remaining options.

I see the tangled threads of my own future, increasingly constrained, converging on a common point. I can't see it from

here, but it doesn't really matter. The threads are enough. They stretch out over eons.

I never really believed it before.

The others sob, cry out in rapture, bite down on chattering teeth. I laugh aloud. I have never been so full of hope, of *certainty*, as I am now. I unclench my hands from around the armrests, turn them palms-up.

The scars have vanished from my wrists.

I'm born again.

\*

"You do understand: it has to be your choice."

I was four when I heard that for the first time. I didn't even have my inlays yet, none of us did; they had to gather us together in the same place and talk to us in groups, like we were in some old-time schoolhouse from another century.

They showed us why we were there: the dust zones, the drowned coastlines, the weedy impoverished ecosystems choking to death on centuries of Human effluent. They showed us archival video of the Koch lynchings, which made us feel a little better but didn't really change anything.

"We were running out of time," our tutor said— our very first tutor, and to this day I can't remember her name although I do remember that one of her eyes was blue and the other amber. "We saw it coming but we didn't really believe it." She introduced us to the rudiments of the Hawking Manifesto, to the concept of the Great Filter, to all those ominous harbingers that hung against the background of Human history like some increasing and overdue debt. Year after year the interest compounded, the bill was coming due, we were speeding at a brick wall but nobody seemed to be able to slow us down so what was the point of talking about it?

Until the first Hawking Hoop. Until that first hydrogen ion got from here to there without ever passing it through the space between. Until the discovery of nonrelativistic wormholes lit the faint hope that a few of us might yet reach other nests out there, yet unfouled.

"But it won't work," I blurted, and our tutor turned to me and said "Why's that, Sunday?"

If I had been a little older, a little *faster* even, I could have rattled off the reasons: because it didn't matter how quickly they grew us up and shipped us out, it didn't matter that our escape hatches could bridge lightyears in an instant. We were still *here*, and it would take centuries to get anywhere else, and even magic bridges need something to anchor them at both ends. Everything we'd just learned about our own kind— all the species wiped out, all the tipping points passed, all the half-assed half-solutions that never seemed to stick past a single election cycle— none of it left any hope for a global initiative spanning thousands of years. We just weren't up for it.

But they hadn't made us smarter; they'd only sped us up. My overclocked little brain may have been running at twice its chronological age, but how much can even an eight-year-old grasp about the willful blindness of a whole species? I knew the gut truth of it but I didn't know the words. So all I could do was say again, stupidly, "It's too late. We're, like you said. Out of time..."

Nobody said anything for a bit. Kai shot me a dirty look. But when our tutor spoke again, there was no reproach in her voice: "We're not doing this for us, Sunday."

She turned to the whole group. "That's why we're not building the Nexus on Earth, or even near it. We're building it so far out in space so it can outlast whatever we do to ourselves. So it can be— waiting, for whoever comes after.

"We don't know what we'll be in a thousand years, or a million. We could bomb ourselves into oblivion the day after tomorrow. We're like that. But you can't lose hope because we're like *this* too, we *can* reach for the stars. And even if we fall into savagery overnight, we'll have centuries to climb back up before you check in on us again. So maybe one time you'll build a gate and nothing will come through— but the next time, or the time after, you'll get to meet angels. You never know— but you can see the future, every last one of you. You can see how it all turns out. If you want.

"It's your decision."

We turned then at the sound of two hands clapping. A man stood

in the doorway, stoop-shouldered, eyes mournful as a basset hound's above the incongruous smile on his face. Our tutor flushed the tiniest bit at his applause, lifted an arm in acknowledgement. "I'd like you all to meet Dr. Sawada. You'll be getting to know him very well over the next few years. If you could follow him now, he has some things he'd like to show you."

We stood, and began to collect our stuff.

"And ten thousand years from now—"

The words came out in a rush, as though she hadn't said them so much as let them escape.

"—if anything at all comes out to say hello— well, it'll pretty much *have* to be better than what you leave behind."

She smiled, a bit sadly. "Tell me that's not something worth giving a life to."

\*

Kai's waiting for me in the docking lounge, as I knew he would be. I can see his surprise through the scowl: I shouldn't be walking on my own, not so soon. The others— disoriented, aftershocked— have handlers at their elbows to guide them gently back to their life sentences. They're still blinking against afterimages of enlightenment. Blind from birth, blind again, they can't quite remember what they saw in between.

They never will. They were only built by chance; maybe a tweak or two to give them green eyes, or better hearing, or to keep them safe from cancer. The engines of their creation had no foresight and no future. All that matters to evolution is what works in the moment.

I'm not like that. I can see for lightyears.

So no handler for Sunday Ahzmundin. My shepherd's back at the lock, increasingly impatient, still waiting for me to emerge. I coasted right past her and she never even noticed; her search image was set for disorientation, not purpose.

"Hey." I smile at Kai. "You didn't have to do this."

"Get what you wanted? Happy at last?"

I am. I'm genuinely glad to see him.

"They played you, you know," he says. "You think you pulled a fast one, you think you surprised them? They knew exactly what you were going to do. Whatever you think you've learned, whatever you think you've accomplished—"

"I know," I say gently.

"They *wanted* you here. This was never supposed to challenge your dedication to the mission. It was only supposed to cement it."

"Kai. I *know*." I shrug, and take his hand. "What can I say? It worked." Although not quite the way any of them think. Still holding his hand, I turn my wrist until the veins come into view. "Look."

"What?" He frowns. "You think I haven't seen those before?"

I guess he isn't ready.

I see that's he's about to pull away so I turn first, to the invisible lens across the compartment. I wave a *come-hither*.

"What are you doing?"

"Inviting the Doctor to join us." And I can tell from his reaction that Sawada has brought an assistant.

Called out, they arrive through a side door and cross to us as the last of the pilgrims vanish into their tubes. "Ms. Ahzmundin," Radek says (and it takes a moment to figure out how I know his name; it came to me so quickly he might as well have been wearing a tag).

"Sunday," Sawada smiles at me. "How was freedom?"

"Not all it's cracked up to be."

"Are you ready to come home?"

"Eventually." I see Radek tense a little at my reply. "Is there some rush?"

"No rush," Sawada says.

"We've got all the time in the world," Radek adds. "Go do your walkabout thing until the stars go out."

And I can see he means it *literally*.

"Something funny?" Radek asks as Kai's scowl deepens.

I can't stop smiling. I can see it all in the way they don't react. Their faces don't even twitch but their eyes swarm with stars. And not just any stars: stars that red-shift from light to heat way too fast for any natural process. Lights hiding under bushels. Whole suns

being... *sheathed*...

"You found a Type Two," I murmur, almost to myself. "In Ophiuchus."

Now their faces twitch.

"At first, anyway." Revelations abound in the tic of an eyelid. "Now they're in Serpens. They're coming this way."

Of course.

These people would have never even reached into space if not terrified that their rivals would get there first. They'd set the world ablaze with their own indifference, only to rouse themselves to passionate defense when that same world is threatened from *outside*. Left on its own, Humanity sucks its thumb and stagnates in its own shit; faced with The Other, it builds portals to infinity. It builds creatures like me, to seed them through the cosmos.

All they ever needed was an enemy.

I see something else, too: that before long, this sight will pass from me. It's starting already. I can feel my thoughts beginning to cloud, the cataracts returning to my eyes. My neurons may be stickier than Falk's & Friends', but soon— hours, maybe a day— they'll rebound to some baseline state and I'll *fade*, like a run-down battery.

That's okay. These insights are secure; I don't have to reconstruct the journey as long as I can remember the destination.

"It's your decision," Sawada reminds me. "It always has been."

He's wrong, of course. It's not my decision, it never was. I was right about that much.

But it's not theirs either.

I turn to my teacher. "You're not choosing my path, Mamoro."

He shakes his head. "Nobody ever—"

"The path's been chosen. You're only clearing it."

All those times I dared them to kick me out; all those times they smugly held the door open and dared me to leave. All those times I kept trying to be *free*.

You can keep your freedom. I have something better.

I have a destiny.