

THE LONG WAIT

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Allen M. Steele's most recent news includes a new collection, *Tales of Time and Space*, which will be published in April by Fantastic Books. Allen's latest tale is the penultimate story in a new series that began with "The Legion of Tomorrow" (July 2014) and "The Prodigal Son" (October/November 2014). Readers can rest assured that the final tale will be appearing soon, but in the meantime, you'll have to settle in for . . .

THE LONG WAIT

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My name is Dhanishta Arkwright Skinner, and this is the story of my life. But to tell it correctly, I must begin not in the place where I was born, but a long way from there.

On the day of my birth—February 7, 2070—humankind's first starship, the *Galactique*, was beyond the farthest reaches of the Solar System, riding a microwave beam projected from a satellite in Lagrange-point orbit near Earth. From the perspective of an outside observer—that far from Earth, there were none—the starship would have appeared to be an enormous disk, sixty-two miles in diameter but only a few fractions of an inch thick, slightly concave in shape and vaguely resembling a parachute. The carbon-mesh beamsail slowly spun clockwise on its axis, and dragged along behind it, by threadlike nanotube cables, was the vessel itself—a cylindrical collection of modules 320 feet long, with various antennae protruding from its hull, and the bell-shaped fuselage of a landing craft flaring at its stern.

This hypothetical observer would have caught only the briefest glimpse of *Galactique* as it flashed by. Although the ship began its journey at the stately rate of 1.9 meters per second, over the course of weeks and months it gradually gained velocity while Earth shrank to a tiny blue star, and even Jupiter and Saturn became little more than small bright orbs. By the time *Galactique* passed through the orbit of Neptune and entered the Kuiper Belt, it was traveling at nearly a quarter of the speed of light and still accelerating.

Within the ship, all was dark, cold, and quiet. I wasn't aboard. In fact, *Galactique* carried no living crew. Its passengers—some of whom were destined to be-

come my descendants—were sperm and egg specimens sealed within a cryogenic crèche, circular rows of stainless steel tubes that looked like silver pens covered with a thin skein of frost. The only open space was a central passageway running down the length of the vessel, and even if I had been there, the shaft would have been barely large enough for me; it was there solely to provide access for the spider-like robots that occasionally emerged from their cubicles to perform the routine inspection and maintenance tasks delegated by *Galactique's* quantum-computer artificial intelligence.

The AI was a purely logical machine-mind. It possessed no soul and dreamed no dreams. Its thoughts—if they could be called that—were little more than digital processes of an unliving thing. It had great patience, though, because it was programmed to regard time itself as nothing but an abstraction, and it understood the language of its creators only when their words were translated to its own coded input. It maintained a log of its journey that was periodically pulsed to a receiving station on the far side of the Moon via the barrel-shaped lasers on the ship's outer hull, but it wrote no poems, sang no sea chanteys. Although I often fantasized what it might be like to be a passenger, I'm glad I wasn't; *Galactique's* guiding mind would have been lousy company.

So there was no one aboard *Galactique* who would have appreciated the fact that, on the very same day it achieved the cruise speed of half the speed of light, 0.6 light years and 920 days from Earth, I was born.

* * *

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Let me tell you about my home.

The Juniper Ridge Observatory rests atop a mountain in the Berkshires, just outside the small town of Crofton, Massachusetts. Built in 1926, it was a relic of astronomy's golden age, when the planets and stars were studied through optical telescopes in remote locations. Juniper Ridge was a planetary observatory established by Massachusetts State College—later the University of Massachusetts—and for nearly a century students had traveled to it from the Amherst campus, where they assisted professional astronomers in such tasks as confirming Clyde Tombaugh's discovery of Pluto and continuing Percival Lowell's observations of Mars.

By the end of the century, though, Pluto had been reclassified as a Kuiper Belt object, American and Russian probes had discovered Mars to be nothing like Lowell imagined, and large instruments like Juniper Ridge's thirty-inch Cassegrain reflector had been made largely obsolete, first by radioastronomy and later by orbital telescopes. When UMass and four other Western Massachusetts schools built the Five College Radio Astronomical Observatory near the Quabbin Reservoir, Juniper Ridge's usefulness for scientific research came to an end. The observatory remained open for a few more years as a place to teach undergraduate physics students and a location for star parties, but in 2012 the university closed Juniper Ridge for good. The telescope was dismantled and sold to the Boston Museum of Science, and the aperture of its concrete dome was sealed.

The observatory and its adjacent buildings went up for sale, and might have been eventually sold to a real estate developer and torn down to make room for a resort had it not been for the Arkwright Foundation. The *Galactique* Project was in its early planning stages by then, and the foundation knew that it would need a permanent location for their operations after *Galactique's* components were launched on the Caribbean island of Ile Sombre and assembled in Earth orbit. A

closed-down observatory would be an ideal site, and the fact that Juniper Ridge wasn't far from the former home of the foundation's benefactor and namesake appealed to the board of directors. So the foundation purchased the property and renovated it as the new Mission Control Center, and in August 2067 the *Galactique* Project moved in.

My birth was overshadowed by all the activity in Mission Control, located on the ground floor of the former observatory dome. At that point, it would be nearly seven months before the lunar tracking station received the laser telemetry from the distant starship and relayed it to Juniper Ridge, so the control team had to go by faith and previous reports that *Galactique* was still on course and had achieved its cruise speed of .5c. Nonetheless, they cheered when the Mission Director—my grandfather, Benjamin Skinner—issued the order for the beamsat to be shut down. The ship's two-and-half year boost phase was over; the vessel was now on its own.

While this was going on, a young midwife who lived in Crofton was handing a newborn infant (me) to the woman lying in an upstairs bedroom of the adjacent house (my mother). Despite my father's reservations, Chandraleska Sanyal Skinner had insisted upon giving birth at home and not in a hospital. She'd spent too much time in Bay State in recent years, undergoing long-term therapy for the head injury she'd sustained on *Ile Sombre* in the weeks just prior to *Galactique's* launch—a truck bomb had gone off near the launch site, a story that I won't repeat here—and the less she saw of the place, the better. My father—Matthew Arkwright Skinner, another member of the control team—had gone along with my mother's wishes only reluctantly, and not until after my grandmother found a local midwife. Dad had become accustomed to Mom's mood swings; if it was less stressful for her to have the child in the house they shared with his parents, that would be better for everyone.

My father took a few minutes to cradle me in his arms and agree with my mother that my name would be Dhanishta—eventually shortened to Dhani, just as Mom abbreviated hers as Chandi—and that, like him, my middle name would be in honor of my great-great-grandfather, the author Nathan Arkwright. Then he surrendered me to Mom and went back to the observatory to tell my grandparents the other great news of the day.

And then he got in his car, drove down the mountain into town, walked into Crofton's one and only bar—a country roadhouse called the Kick Inn, which I'd grow up hoping would burn to the ground—and celebrated this momentous day by getting ploughed. My family didn't see him again until late that evening, when his car brought him home after someone deposited him in it and set the autoreturn.

Sadly, this was something I'd come to expect from my dad.

By the time I was old enough to realize that he had a drinking problem, I'd become Juniper Ridge's child-in-residence. Seven people lived there: my parents, Matt and Chandi, and grandparents, Ben and Jill—who shared the two-story New England saltbox that had once housed the staff astronomers and visiting scholars—and Winston and Martha Crosby, a young couple who occupied a smaller cottage that once belonged to the observatory's maintenance staff. The Crosbys were childless, making me the only kid among a half-dozen grown-ups. So while I had no siblings or immediate playmates, I didn't lack for adult supervision . . . which was fortunate, because my parents, while loving, had troubles of their own.

I once had a great-grandmother as well, but I have no memory of her. Kate Morressy Skinner, the family matriarch, lived long enough to make one last trip from Boston to Crofton so she could hold her newborn great-granddaughter in her arms. Then she went home and, a couple of months later, quietly passed away in her sleep. When I got older, I learned that Grandma Kate was the person responsible for her family coming to live on Juniper Ridge. As the last surviving member of the Ark-

wright Foundation's original board of directors, she'd approved the purchase of the observatory, then delegated the task of monitoring *Galactique's* voyage to my parents and grandparents.

From the start, I was a lonesome child. My mother, whose behavior was already erratic when she and Dad got married and moved to the observatory, became even more reclusive after I was born. The truck bomb had been set off by a member of something called the New American Congregation, and although they were no more—the Arkwright Foundation had sued them into bankruptcy—she continued to believe that an unknown disciple would try to find us and finish the job. Paranoia was a legacy of her head trauma. The nearest public school was in another town twelve miles away, meaning she'd have to travel there by car or bus every day, a commute that would take her from the familiar safety of the mountaintop retreat and into a world of strangers whom she increasingly distrusted. Once I finished preschool, she decided to home-school me. Although Grandpa and Grandma argued against this, Dad didn't mind; he'd disliked making the twenty-four-mile round trip to my kindergarten five days a week, and figured that Mom's new role as their child's teacher might help stabilize her precarious mental state. And since Uncle Win and Aunt Martha were willing to pitch in, Mom wouldn't have to do it by herself . . . which was also just as well, because Dad was often too hung-over to keep up his end of the bargain.

So after age six, I saw children my own age only occasionally. A set of twin girls lived on a horse farm three miles down the road from the observatory, and a boy lived with his father in a trailer a mile further on, but the sisters were a little younger and the boy a couple of years older, and at that time of life even a year difference in age can seem like an impassable gulf.

And it wasn't just this. In the constant company of six intelligent and highly educated adults, three of whom took turns every day as my teachers, I grew up in an intellectual environment. I was reading at a middle-school level before I was ten, and by the time I was in my teens I was fluent in French, Spanish, and Hindi, adept in higher forms of algebra and physics, knowledgeable of American and world history, and had read most of the classics of Shakespeare, Poe, Hemingway, Marquez, Clarke, Swanwick, and Le Guin. I was a brainy little girl, but precocious children often don't have a lot in common with kids their own age, and that made me even more lonesome.

I also knew something most kids didn't know: the details of humankind's first starship, now bound for Eos—or, if you want to get technical, Gliese 667C-e, a terrestrial planet in close orbit around an M-class red dwarf twenty-two light-years from Earth. Every day, my family and the Crosbys took turns standing watch in the observatory, which we called the MC. Inside the dome, a ring-shaped array of computers, control consoles, and holoscreens had been installed on the ground floor, while on the newly renovated second floor, a twenty-foot radio dish antenna had taken the place of the old telescope. Once the dome's aperture slot was open, the dish was able to slowly rotate on its pedestal, tracking a network of communications satellites across the sky. The comsats relayed information sent to them from another pair of satellites in orbit above the Moon, which in turn transmitted data gathered by the laser receiving station on the lunar farside.

This data was the voice of *Galactique*. The ship was already three and a half light-years from Earth the day my father took me in his lap and, in a moment of sobriety that was becoming increasingly scarce, patiently explained what he and Mom and Grandpa and Grandma and Uncle Win and Aunt Martha did for a living: they were listening for reports sent from a vessel on a long, long journey to a distant star, waiting for the day many years in the future—sometime in July 2135, in fact—when we

would finally learn that it had safely arrived.

“See, everything the ship tells us about what it’s doing comes to us here.” Dad shifted me from one knee to another as he pointed to the holoscreen floating before us. “All those numbers are codes, and the codes let us know that the ship is doing just fine.”

“Uh-huh.” I gnawed the knuckle of my left thumb as I gazed at the glowing columns of letters and digits. “I don’t know what they mean.” I was pretty smart for a seven-year-old, but not *that* smart.

“Don’t do that.” Dad gently pried my thumb from my mouth. “It’ll make your teeth crooked. Sure, you don’t know what they mean, because they’re in code . . . short for what the ship wants to tell us. But since we know what the codes stand for, we can figure all it out, and if they tell us something’s going wrong, we can tell the ship how to correct itself and make things right.”

“Although it takes a while,” Grandpa added. My grandfather was seated in a chair on the other side of the ring, studying another display as he listened to us. “We can’t tell at once what *Galactique* is telling us because it’s so far away, and *Galactique* won’t know what we’re telling it for the same reason.”

“I don’t understand.” I fidgeted in my father’s lap, but nonetheless I was fascinated. I tended to chew my thumb when I was trying to figure something out. “Why does it take so long?”

“How fast does light travel? Do you remember?”

“Umm—” I sought to remember what Uncle Win had taught me just last week —186,000 miles per second.”

“That’s right! Good girl! And that’s also how far the laser beam carrying data from *Galactique* travels in one second. It can’t travel any faster because a laser is just a concentrated form of light, and . . . ?” He waited for an answer.

“Nothing moves faster than light!” I was proud of myself for knowing what Dad meant. “Nothing! Nothing at all!”

“Okay, so let’s figure it out. How many seconds are in a year?”

“Ummmm . . .” I started to raise my knuckle to my mouth, and he pulled it away again. “A lot?”

“That’s as good an answer as any. A lot. And if you multiply all those seconds by 186,000, and then take that number and multiply it by . . .” Dad paused to run his forefinger down the display, pulling up the figure for *Galactique’s* current distance from Earth “. . . 3.523 lights, or light-years. That’s how far away the ship is from us. Which means that it now takes three and a half years for us to hear anything *Galactique* has to say to us, and another three and a half years for it to hear anything we’d have to say to it today.”

I stared at the holo. “Three and half *years*?”

“Uh-huh. And getting longer all the time.”

I remember that day well, for in that instant, I had an epiphany seldom experienced by little girls, and sometimes never fully realized by quite a few adults: a sense of the vastness of space and time, the sheer enormity of the cosmos. Not only was the distance between the stars greater than I thought it was, but the implication that the Universe itself was unimaginably huge was a revelation both awesome and frightening.

Suddenly, I’d become a tiny and inconsequential little thing. The bottom had dropped out from under me, and I was an insignificant particle of a far greater whole.

I shivered. The hollow concrete eggshell of the MC had become a cold and forbidding place. I had an urge to scramble out of my father’s lap and run from the building, never to return again. But Dad put his arms around me and pulled me closer,

and then he whispered something in my ear that I'd never forget.

"Do you want to know a secret?"

I looked at him. "What?"

Dad glanced over his shoulder to make sure that Grandpa wasn't listening in. Satisfied that he wasn't, he went on. "There's a little boy aboard *Galactique*."

"Really?" I was astonished.

"Shh!" Dad raised a finger to his lips. "Yes, there is. He's asleep just now, and won't wake up until *Galactique* reaches Eos, but . . . yes, he's there. And it's our job to make sure he gets safely to the place where he's going. Understand?"

"Uh-huh." I thought about this a moment. "Dad . . . what's his name?"

My father hesitated, then he gave me an answer: "Sanjay."

* * *

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Later in life, I'd often wonder why my father told me that this imaginary child was a boy and why he picked the name Sanjay. Perhaps it was only a spur of the moment decision, the sort of embellishment a father would add to a fairy tale. Yet it's also possible that he might have been revealing a subconscious regret. Maybe he'd wanted a boy instead of a girl, and he would have named this boy Sanjay if things had been different.

Yet this didn't occur to me at the time. The revelation that there was a little boy asleep on *Galactique* provoked a different kind of wonder. As I lay in bed that night, the lights turned off and the blankets pulled up against the winter cold, I didn't sleep but instead gazed up at the ceiling, thinking about Sanjay. Dad told me very little about him, but it didn't matter; my imagination supplied the details, and before long he became as real to me as any living person.

Sanjay was my age, naturally, and like me, he also had the dark skin and straight black hair of someone with an Indian-American heritage. He slept in what my father called "suspended animation" because that was the only way he'd be able to survive the half-century-long voyage to Eos, but I figured that, every now and then, he'd wake up, knuckle the crust from his eyes, then rise from his little bed and wander through the ship, just to see what was going on. In my mind's eye, *Galactique* was very different from what it actually was; it was the kind of spaceship I was familiar with from the old science fiction movies I sometimes watched with Uncle Win, who had a fondness for these things. Sanjay would gaze through portholes at the passing stars, have a cup of hot chocolate and a cookie, check the instruments to make sure the ship was still on course, and then he'd get sleepy and return to bed again.

No one knew about Sanjay except my father. The little boy was a shared secret that we tacitly agreed to keep from my mother, grandparents, and the Crosbys. And since I'd found that there was little I could talk about with the few other children I knew—the two girls, Joni and Sara Ogilvy, were only interested in their dolls and the pony they wouldn't let me ride, and I tried to avoid seeing the boy, Teddy Romero, who was scary and a little mean—I didn't reveal his existence to them. Which was just as well. Sanjay was as lonely as I was, which made me feel a certain kinship toward him. He was the little brother I didn't have, the playmate I'd been denied. He became a friend I'd never actually met yet with whom I carried on many conversations, always when I was certain no one else was around.

As imaginary friends go, Sanjay was wonderful. Nonetheless, I was aware of the fact that my little chats were rather one-sided and that he wasn't really talking to me. I also knew that, even if he did occasionally wake from his long slumber, any-

thing that he might actually want to say to me wouldn't be heard for years. Still, I wanted very much to speak to him. I considered the problem for quite a while, then one day I approached my father with my solution.

"I want to send a message to Sanjay," I said.

It was an afternoon in late spring. The winter snows had melted and there were new leaves on the trees. My father was behind the observatory, standing on a stepladder to clean the solar panels that, along with a small wind turbine on a nearby hilltop, supplied Juniper Ridge with its electricity. His eyes were puffy—he'd slept on the living room couch again, having come home from the Kick Inn late the night before—but he managed a smile as he climbed down the ladder to patiently listen while I explained what I wanted.

"You know it'll take a long time for it to get there," he said when I was done.

"Yeah, I know. But he can hear it when he . . ." I stopped myself. Dad didn't know that Sanjay wasn't always asleep. "Whenever he wakes up," I finished.

My father nodded, but didn't say anything as he wiped his hands on the cloth he'd been using to clear the spring pollen from the photovoltaic cells. "It's very expensive to send a signal to *Galactique*," he said at last. "If I let you do this, it can only be one time. And you'll have to make it very short . . . no more than a minute. Understand?"

A minute seemed much too short for everything I wanted to say to my friend, but . . . "All right. Just a minute. Please, Dad . . ."

"Okay, then. We have to send some course data next Wednesday anyway. Write down what you want to say and show it to me first, and if I think it's short enough, I'll let you record it and we'll attach it to the next pulse." He paused. "But don't let anyone else know you're doing this, okay? Sanjay is still our little secret."

I grinned and happily nodded, and over the next week I wrote a short script for what I wanted to say. Knowing that I had only sixty seconds, I rewrote it again and again, pruning unnecessary words and revising my thoughts, then carefully rehearsed it while keeping an eye on the clock to make sure that I didn't exceed the time limit. The following Tuesday, I showed the handwritten script to my father while he was standing watch in the MC. He liked what I had to say, but made me read it aloud while he timed me. Satisfied, he told me to come back the next night, which was when he was scheduled to send the transmission.

The scheme almost fell through at the last minute. After dinner, I walked over to the dome at the appointed hour, only to discover that Dad and I weren't alone. Uncle Win was there, too . . . and while he and I got along just fine, when it came to *Galactique* he tended to be rather humorless, often saying that keeping track of the ship was "a sacred trust." He wouldn't understand the notion of sending a nonessential video to the ship.

Dad caught my eye when I came in and silently placed a finger to his lips. I kept the message in my pocket and remained quiet while he and Uncle Win checked and rechecked the coded material they were preparing to transmit. Then Dad drained the last of the coffee in his mug, idly wished aloud that he had more, and asked Winston if he'd mind going back to the house and brewing another pot. Uncle Win was a coffee bug, and everyone was in favor of doing whatever it took to keep Dad away from the Kick Inn, so Win was only too happy to comply.

As soon as he was gone, my father hustled me to a chair in front of the console where the videocam was located. He fitted me with a headset and did a brief mike check, then stepped out of range of the lens. "We're all set," he said, then pointed to the keyboard. "Whenever you're ready, just push the Return key and start talking."

"Okay." I spread the wrinkled notebook pages out on the console.

"You've only got one shot at this. Make it count."

"Okay. I will." I took a deep breath, and nervously fussed with my appearance. I was wearing my nicest blouse and skirt, and even put a little yellow silk flower in my hair. Then I touched the key and looked straight at the lens.

"Hello, Sanjay," I began. "My name is Dhanishta Arkwright Skinner, and I'm calling you from Earth . . ."

* * *

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Sanjay wasn't real, but thinking about him so much accustomed me to imagining *Galactique* in vivid terms. So it's easy for me to visualize what was happening there, like so:

A little more than three and a half years later, my message was received by the ship, along with a related set of instructions my father hadn't told me about. Since they were prefixed as a nonessential communiqué not to be opened until after the ship reached Gliese 667C-e, the AI stored them in memory, then proceeded to the more important material.

Galactique's course was taking it in the general direction of the galactic center, just below the plane of ecliptic. By then, the ship's point of origin was no longer visible; Earth's sun, along with its family of planets and neighboring stars, had vanished into a conical zone of darkness that had appeared behind the ship. The same Doppler effect caused by the ship's relativistic velocity—a little more than 93 million miles per second—caused the stars around and in front of *Galactique* to red-shift, changing hues slightly as they seemingly migrated in the direction of travel, while at the same time causing infrared and ultraviolet sources to enter the visible spectrum as seemingly new stars.

If there had been any living passengers aboard, they would have been confused by the display. *Galactique's* AI, along with the array of lesser computers it managed, was prepared for these phenomena. The navigation subroutine ignored the visual distortions and instead took its bearings from galactic coordinates, taking into account the parallax motions of the nearby stars. There was little chance that the ship would get lost on its way to Eos, but just to make sure, Juniper Ridge periodically transmitted navigational updates.

In turn, *Galactique* responded by confirming its status, using the twin high-power lasers that had been elevated from its service module shortly after launch. The beam-sail itself, no longer serving as the propulsion system, now performed a second role as the ship's receiving antenna, using sensors threaded through its carbon-mesh surface.

On the whole, though, the ship's navigation system was mainly autonomous. It had to be. Although the time dilation effect of .5c caused the hours to pass much more slowly aboard *Galactique* than they did on Earth, many years went by between the moment the ship sent back its confirmation signal and the moment it was received on Juniper Ridge.

I was fifteen years old when I learned that the message I'd sent Sanjay had been heard.

* * *

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This was one of the few good things that happened to me in that year of my life. When my grandfather, who'd read the message the night before during his watch in the MC, told me about it the following morning over breakfast, it came as a poignant

reminder of one of the last fond memories I had of my father, who was no longer living on Juniper Ridge.

Dad had become tired of the observatory's isolation. As the years went by, he gradually came to regret leaving behind the freewheeling life he'd led before rejoining his family and sharing their commitment to the Galactique Project. He'd been a drifter before then, and as he approached his forties, he began to miss his old ways. My father still loved me, but relations with my mother had become strained. They still slept in the same bed, but days would go by when they wouldn't even look at one another, let alone share a kiss. The Kick Inn had become the center of his social life, and there were nights when he didn't even bother to come home but instead crashed on the couch of one of his drinking buddies.

We didn't know it, but he'd also met a local woman, a lady named Sally Metcalfe who liked single-malt whiskey as much as he did. Their friendship didn't become a full-blown affair for quite a while, but it wasn't lost on Mom that her husband's eye had begun to wander. She never fully recovered from the head injury she'd sustained years earlier, and her distrust of outsiders soon extended to Dad as well. I often heard my parents arguing from the other side of the wall that separated my bedroom from theirs, and although my grandparents tried to bring peace to the family, it was becoming increasingly obvious that, little by little, Dad was withdrawing from us.

One Saturday afternoon shortly after my fifteenth birthday, I went with Grandpa and Grandma on a shopping trip to Pittsfield, the nearest large town. Uncle Win and Aunt Martha were in California for an astrophysics conference at UC Davis, and Dad claimed to not be feeling well, so we left Mom in the MC while we went to buy new clothes for me.

Pittsfield shopping trips were always special, and I didn't get new clothes as often as I would have liked. It was a happy day for me until we returned. The first thing we noticed when we pulled up in front of the house was that Dad's car was missing.

Mom was still in the observatory, analyzing the latest data received from *Galactique*, so she was completely unaware that, sometime in the last several hours, he had thrown his clothes into a couple of suitcases, left a brief, impersonal note on the kitchen table—*Going away for awhile. Don't call me . . . I'll come back when I'm ready!*—and taken off.

Grandpa tried calling him anyway, but he never received an answer. Although my father's car was found in the parking lot of the Boston transtube station, his phone's GPS locator remained active for a few days, so Grandpa was able to track Dad's westward route on the tube through New York, Pennsylvania, and Ohio, until the signal vanished in Indiana. Apparently Dad remembered that he could be traced that way and ditched the phone while changing trains at the Indianapolis station. Grandma went into Crofton and visited the Kick Inn, and from its denizens she confirmed what Mom had suspected: Dad had been seeing another woman, and apparently she'd persuaded him to run away with her. Where they were headed, though, was anyone's guess. The drunks only knew that Sally used to live "somewhere out west" and that she'd often talked about going back.

I spent the next couple of days in my room, lying in bed with the blankets pulled up over my head, refusing to talk to anyone. Through the wall, I often heard Mom crying. Sometimes we both wept at the same time, but never together. Truth is, I had never been as close to my mother as I'd been to my father. Mom had always been a little aloof, preferring the role of tutor and disciplinarian, while Dad had been the one who gave me piggy-back rides when I was little, took me hiking and swimming in the summer and snow-shoeing in the winter (when he wasn't drinking, that is), and told me about Sanjay.

Although I'd long since learned the truth—there wasn't a little boy aboard *Galactique*; it was just a story my father had made up—deep in my heart I'd always be-

lieved that Sanjay was real, if only in a metaphysical sense. But when my father broke my heart, he also broke what little faith I still had in that childhood fantasy.

My family was shattered by the loss, but we did our best to pick up the pieces. Yet things only got worse. Six weeks later, Uncle Win and Aunt Martha came to Grandpa and Grandma with news of their own. While they were at the conference, Uncle Win had learned about a teaching position that was opening up in UC Davis's physics department. The job was tenure-track, with a salary considerably higher than what he was earning from the Arkwright Foundation; without telling anyone except his wife, Winston had quietly submitted his resume. Now the position was being offered to him, and the Crosbys had come to the conclusion that this was an opportunity too good to pass up.

I could be cynical and say that Winston Crosby's idea of the Galactique Project being a sacred trust apparently had an expiration date, but in hindsight I can't blame him or Martha. Their titles as my aunt and uncle were honorary, after all, and although we'd always thought of them as family, they'd been on Juniper Ridge for almost eighteen years. Like Dad, they were pushing forty. My mother and grandparents didn't want to see them go, but they reluctantly agreed that the time had come for the Crosbys to move on. Their car was the next to leave Juniper Ridge, never to be seen again.

Since the observatory was now being staffed by my family alone, Grandpa and Grandma decided that I needed to take on some of the work in the MC. Perhaps it was just as well. Mom had become even more reclusive, if that was possible. A borderline agoraphobic by then, she seldom left the house anymore, and when she did it was only to putter around the greenhouse that was attached to the main house, and have a silent communion with the cucumbers, radishes, and tomatoes she planted after Dad went away. In many ways she was an invalid, but it was even worse than that; heartbreak had made her a ghostly presence, a specter of the woman she'd once been.

I was old enough to look after myself, though, and since there wasn't much else to do besides watch my mother silently suffer, I gratefully let my grandparents teach me what I needed to know: how to monitor the communications equipment, how to rotate the radio dish so that it could properly receive signals from the lunar tracking station, how to interpret the coded messages that periodically appeared on the screens. Grandpa still reserved for himself the crucial task of calculating the astro-metric updates that occasionally needed to be transmitted to *Galactique*, but we both knew that responsibility would eventually become mine as well. Despite the retrotherapy he and Grandma had undergone when they were younger, it was clear that the years were finally catching up with them. Their hair was graying, their postures were becoming stooped, and there were times when their short-term memories for little things weren't as sharp as they used to be. Perhaps they'd never leave Juniper Ridge, but neither would they outlive *Galactique*.

But I was getting older, too, and I was no longer sure I wanted the role that was being imposed upon me.

* * *

vi

My teens were not an extension of the idyll in which I'd spent my childhood. Although I was smarter than most kids my age, Mom had done me no favors by keeping me out of school. By the time I was sixteen, I'd become painfully aware that I was not only mostly friendless, but also rather naïve.

I wasn't entirely lonely. I'd established my own online social network, and although I'd never met any of the other kids with whom I communicated, I knew who they were and what they were up to. They often hid behind avatars and screen names, but I realized that their daily lives were much different from mine. I knew nothing of what it was like to be in homeroom with a cute boy whom they really liked, and when sex came up I had to pretend to be just as wise about it as they seemed to be (they probably weren't, but I didn't know that). They bought their clothes in malls; I went shopping maybe two or three times a year, and a big day for me was when I'd get a new winter parka. They dropped casual references to sock bands of which I was only dimly aware, let alone had seen. Yes, I could explain the Drake equation or the Doppler effect, but how many teenagers want to hear about that? Next to them, I was either a country bumpkin in bib overalls or a virgin princess locked in a castle tower, depending on the way I felt that particular day.

Naturally, I began to rebel.

I lost the argument with my mother about going to school, but she couldn't stop me from using my feet. In the afternoons, I started walking down the road to Joni and Sara's house, where I made a deliberate effort to cultivate their friendship. The twins were both fourteen by then, but in some ways the three of us were the same age; I'd learned to dumb-down a little bit when talking to them, and in return for helping them with their homework, they introduced me to music and movies and girl stuff that I wouldn't have been exposed to otherwise. Sara continued to be a bit snooty—the Ogilvys had money, as she seldom missed an opportunity to remind me—but Joni and I became close friends. In years to come, that friendship would become valuable.

And I introduced myself to sex. Let's be honest about this: I had no interest in being a thirty-year-old virgin. I wanted to get laid, and wasn't very particular about how I'd go about it. Which was just as well, because the only likely prospect was Teddy Romero. His father was another regular habitu  of the Kick Inn, and Ted himself was just a few years away from elbowing up to the bar alongside his old man. He had the necessary equipment, though, and that's all that really mattered. He was a bit surprised when I started coming down the road to the double-wide where he and his father lived and practically threw myself at him, but he obligingly took me out on a couple of dates, and didn't mind too much that I wouldn't drink with him (liquor was something I'd shun my whole life, for obvious reasons). Two or three nights like that, and I finally got what I wanted; he drove me out to an abandoned granite quarry on the outskirts of Crofton and did the deed.

Losing my virginity wasn't the rapturous experience I'd been led to believe it would be. Ted fumbled with my bra until I helped him open it and he ruined my nicest pair of panties; he had beer on his breath and he handled my breasts like they were wads of dough. I was glad I'd insisted that he wear a condom. Altogether, it was messy and rather degrading, but at least my curiosity was satisfied. Yet I had to brush my teeth twice to get the taste of his mouth out of my mouth, and I came away from the experience wondering why everyone made such a big deal about sex.

That was it for Ted. My mother was locked in her own little world, so she was unaware of my brief affair, and my grandparents obligingly looked the other way. I think they knew what I was doing and why, though, because when Ted showed up at the observatory a couple of nights later, Grandpa chased him away and told him not to come back again. I saw Teddy a few times after that, and he'd favor me with a leer and a wink, but after a while he lost interest in me, and in years to come I'd occasionally spot him while I was in town, usually when he was lurching in or out of the Kick Inn.

By then, I had other things to worry about.

* * *

When I was eighteen, two things happened: I left home, and the Arkwright Foundation got in trouble.

College was both inevitable and welcome. I'd earned a GED after passing the state exams with such high scores that the local board of education made me take the tests again, this time under close supervision, just to make sure I wasn't cheating. They had a hard time believing that a girl who'd been home-schooled since age six could still manage to land in the top 1 percent of all students in a state known for the quality of its public education. Not only did I ace the GED exams, though, but also the SATs, and those scores got me into UMass.

I would have liked to have gone to school a bit further away than Amherst, but my mother wasn't willing to loosen the leash quite that much. So I compromised with her; I'd spend two years at UMass, and if my grades held up and I still wanted to move on, she'd let me transfer to an out-of-state college if I could get into one. Which was fine with me. I intended to major in physics, and I had my eyes set on UC Davis. Although they'd long since left Juniper Ridge, my family had kept in touch with the Crosbys, and Uncle Win promised me that he'd put in a good word for me with the admissions office.

Try to understand: I'd lost interest in *Galactique*. I'd grown up hearing about the ship, but it had been years since I'd believed in the little boy I'd once thought was aboard. For me, the Arkwright Foundation was something that was started by my great-great-grandfather and now belonged to Mom and my grandparents. I'd be an old lady by the time it reached Gliese 667C-e; the last thing I wanted was to find myself still sitting around the observatory, waiting for a weak signal from a distant star. My father was gone, the Crosbys had moved away, and now it was my turn to do the same.

So I packed my bags, kissed Mom and Grandma goodbye, and then Grandpa drove me down from the mountains. Compared to where I'd come from, the UMass campus was like a major city, and the dorm I moved into was more alien than the starship now a little more than nine light-years from Earth, but within a few weeks I'd almost entirely forgotten about *Galactique*.

Unfortunately, the rest of the world didn't do the same.

I'd settled into undergraduate life and was making friends with my fellow students—I was shy at first, but soon discovered that I wasn't that much weirder than anyone else there—when the Arkwright Foundation found itself receiving unwanted attention. A couple of years earlier, Grandpa had come to realize that the foundation was beginning to run low on funds. From the beginning, it had depended on investments made in various private enterprises, mainly the space companies that had developed the technologies upon which the *Galactique* Project depended. The seed money for those initial investments had come from the royalties and licensing rights of Nathan Arkwright's work; the foundation derived its start-up income from the *Galaxy Patrol* books and movies, and for a long time the cash flow had been sufficient for the foundation to pursue its objectives.

But *Galactique's* enormous development, construction, and launch costs had drained the funds. Since then, most of the investments that once provided a stable source of income had dried up when the supporting companies either folded or were bought out. Even the *Galaxy Patrol* franchise had sputtered into oblivion; no one but old people remembered Hak Tallus anymore. For a short while there had been talk of building *Galactique II*, but the money simply wasn't there. And although the foundation no longer had to pay for anything except Juniper Ridge, even those costs had

become burdensome.

So Grandpa, who'd become the foundation's president and chief financial officer as well as *Galactique's* mission director, decided to take the unprecedented step of approaching the federal government for financial assistance. He'd made a request to the National Science Foundation for an annual grant of five hundred thousand dollars on the grounds that *Galactique* was an interstellar probe launched for the benefit of all humanity and that the world would benefit from whatever knowledge we eventually learned. *Galactique* was well known to everyone, of course—the book Grandma had written about the project had been a bestseller—so the NSF had no trouble agreeing to Benjamin Arkwright's request, and soon Juniper Hill had a new source of funds.

Then some tightwad junior congressman from a red-dust state caught wind of this particular line item in the federal budget, and although five hundred thousand was barely worth mention in the grand scheme of things, he decided that it was worth investigating. He claimed that the money would be better spent on drought relief in his district, but I suspected that he was looking for a way to bolster his own political career. In any case, he sicced his staff on the foundation and they dug deep into its history, and within the dim shadows of the past they discovered a dirty little secret: it seemed that the Arkwright Foundation had once bought a senator.

My grandparents didn't tell me about the subpoena they'd received. They were worried that it might distract me from my studies, and besides, neither of them took it very seriously. And my mother, of course, was mostly oblivious to the whole thing. So I was unaware of what was going on until my advisor happened to read about it in the news, and when he told me about it, I immediately called Grandma.

"What the hell is going on?" I demanded.

"Oh, it's nothing to worry about," she said, as breezily as if we were talking about the unseasonal nor'easter that had just dumped six inches of snow on our part of the state. "Some fool in Washington sticking his nose where it doesn't belong, that's all. You shouldn't be concerned about it."

"It's a subpoena, Grandma! It means you and Grandpa are going to have to testify before Congress!"

"Just a subcommittee hearing, dear. Grandpa's doing the talking, and he's getting a lawyer to help him with the testimony. . . ."

"A lawyer!" The only time my family had ever hired a lawyer was when a contractor had done a lousy job installing a new septic tank for the house. We'd smelled trouble then, and I was getting the same kind of stench now.

"Just to give advice. Honestly, Dhani, it's . . ."

"And what's this about the foundation paying off a congressman to get an exemption from—" I stopped to glance at the news article I'd pulled up on my slate—"the Domestic Space Launch Act? No one ever told me about that."

A pause. "That was a long time ago, and it's not what it sounds like. The press have got it all wrong, and so does the subcommittee." Another pause. "Honey, I really can't talk about it. Besides, you know how bad the phones are out here."

The phones at Juniper Ridge had always worked fine. Grandma was giving me a hint that she suspected they might be tapped. Something cold slithered down my back. "Do you want me to come home?" I asked. "I can get out of classes and take the bus back if you . . ."

"Oh, I don't think that's necessary." Another pause; this time, I heard Grandpa say something in the background. "Well, it would help if you could come back for a few days and keep your mother company when we're in Washington. Do you think you could do that?"

"Sure, of course." After Dad had gone away, we'd been careful never to leave Mom

alone for very long. My mother's mental state was too fragile for us to expect her to take care of herself. "When do you want me to come home?"

"Two weeks from tomorrow." Grandma's voice brightened again. "Really, Dhani . . . it's nothing to worry about. We've got the situation well in hand."

A couple of weeks later, I took a few days off from school and returned home, catching an omnibus from Amherst and getting off in Crofton, then hiking the rest of the way to the observatory. My grandparents had left for D.C. only a few hours earlier and Mom was already beside herself; it took an hour or so just to calm her down and let her know that she hadn't been abandoned. Besides gardening, the one thing she was still capable of doing on her own was standing watch in the MC, but I checked anyway to see if there were any new messages. The last was a routine status report transmitted nearly twenty years ago and received just last week. All was well. I went back to the house and made dinner for Mom and me.

Next morning, we sat together in the living room and watched the subcommittee hearings. They were being carried live on one of the Fedcom sites; I put it up on the holo, and it was almost as if we were seated in the hearing room. As Grandma told me, Grandpa was the one doing the talking; a young woman not much older than me was seated at the witness table beside him, and while only a handful of people were visible in the background, I spotted Grandma directly behind Grandpa and his attorney.

They were outnumbered by the members of the House Ways and Means oversight subcommittee. The chairman wasn't the same congressman who'd made the accusations against the foundation; that was Rep. Joseph Dulle (pronounced "doo-lay," unlikely as that was), a moon-faced guy with a flattop haircut who looked like he'd probably spent his adolescence yanking up the underwear of smaller kids.

The chair yielded the floor to Rep. Dulle, and he opened with a broadside attack. After it had come to his attention that the Arkwright Foundation had been the recipient of over one million dollars in federal outlays—"for a project of dubious value even in terms of scientific research"—his staff had investigated the matter and discovered that, even though the foundation was claiming to be a nonprofit organization, it had derived most of its income from investments in some highly profitable enterprises, "making its nonprofit status suspicious at the very least." To make matters worse, his staff discovered that, during the 2036 presidential election, the foundation had contributed nearly three million dollars to the political action campaign supporting the late Sen. Clark Wessen, who'd unsuccessfully sought his party's nomination. Wessen, in turn, had not only publically come out in support of the Galactique Project—"an unusual thing for a presidential candidate to be addressing when there were far more important matters on the agenda"—but also introduced and pushed through a Senate bill granting the foundation an exemption from the Domestic Space Access Act, thereby allowing it to use the Ile Sombre Space Launch Center instead of U.S. launch sites "as another means of avoiding having to pay federal taxes and user fees."

"Now the Arkwright Foundation has found another means of fleecing the American taxpayer," Dulle continued. "Get it to pay millions of dollars to support a space probe that was launched over twenty years ago. In essence, we're being asked to spend money on an abandoned observatory occupied by the surviving members of the family who started the foundation in the first place, who use technical jargon and high-minded promises as a way of misappropriating taxpayer funds for their own use."

Dulle was staring straight at my grandfather when he said this, as if expecting his angry gaze to cause Grandpa to hide under the table. If so, he must have been disappointed. My grandfather listened with an amused smile and patiently waited until the congressman was done. Then the chair gave the floor to him, and Grandpa

switched on his table mic and began his defense.

Grandpa held his ground well. While maintaining a respectful tone, he managed to be just patronizing enough to sound like a respected scientist lecturing an upstart political hack on the nuances of public policy. He pointed out that, while he appreciated the subcommittee's interest in these matters, the fact remained that the principal figures in this investigation were long gone; Sen. Wessen's presidential campaign was a footnote in the history books, my great-grandmother, Kate Morressy Skinner, had passed away nearly twenty years ago, and neither of them were still around to defend themselves. He then went on to say that, under the federal laws of the time, nothing either of them had done was illegal. The Arkwright Foundation's contributions to Sen. Wessen's PAC had been in the interest of a public servant whose social agenda the foundation agreed with; likewise, there had been no pressure on the senator to support the Galactique Project or introduce legislation that would make its launch operations more viable from Ile Sombre than if they had been conducted at similar facilities on American soil. The foundation's investments had been completely legit, with the profits being wholly devoted to research and development of *Galactique*, and since most of those companies were no longer supporting the project's operations in western Massachusetts, the foundation had been forced to request modest funding from the federal government.

"This isn't a free ride for anyone, Mr. Dulle," Grandpa said. "This isn't an attempt to fleece anyone. Galactique is an ongoing effort to expand the human presence into the cosmos, to establish a new home for our race. Until recently, the Arkwright Foundation has succeeded in doing this with the barest support from the American government. The money we've received from the National Science Foundation keeps the lights on in our Mission Control center and allows the three people who monitor the spacecraft to live there full-time. You're welcome to visit us at any time, and you'll see that we're hardly in the lap of luxury."

It was a good defense. I thought Grandpa's testimony was a superb takedown. But as he finished, my mother spoke up for the first time.

"He's right, you know," she said quietly.

"Of course he's right." I was grinning. "Grandpa kicked his . . ."

"No . . . I mean *he's* right." She pointed to Dulle, who was taking a moment to study his notes. "He knows the truth. Ben's just covering up."

I stopped grinning. "You're saying the project's just a scam? Mom, you know better than that."

She glared at me. "Of course it's not a scam. I built *Galactique* with my bare hands, didn't I?" She often said that, even though it technically wasn't true. "But your great-grandmother told me the whole story after I married your—" she stopped herself before she could mention Dad, which she no longer did—"after I got married. Yes, the foundation bought off Wessen. The money was funneled through his PAC, but I bet he didn't spend a dime of it on his campaign. Everyone knew he didn't have a chance, anyway . . . he got knocked out of the race in the New Hampshire primary."

This was the first time in ages my mother had spoken much about anything except radishes and tomatoes, but I hardly noticed. "So you're saying there really was a payoff?"

"Senator Wessen was the best politician money could buy, and we had him in our pocket." Then she smiled at me. "I think I'd like some tea, dear. Would you make some?"

I didn't know what else to say or do, so I got up from the couch, went into the kitchen, and put the teapot on the stove. I stood there for a long time, watching the steam slowly rise from the spout as I played with the teabag between my fingers. No one had ever told me any of this. Until a couple of weeks ago, I'd never even heard of Sen. Wessen. And while I could hardly blame my great-grandmother for doing what

needed to be done in order to get *Galactique* off the ground, it was still disturbing to learn that the Arkwright Foundation had indulged in some rather sleazy tactics to achieve its goals.

The subcommittee had begun to question Grandpa when I returned to the living room. Rep. Dulle had distributed copies of Sen. Wessen's campaign records to the other members, and they were coming at my grandfather from all sides. Suddenly, Grandpa didn't look so certain of himself. Behind him, Grandma sat stiffly in her chair. Although her face showed no expression, I could tell that she was nervous.

"Better hope those guys don't have the goods on us," Mom said as I handed the tea mug to her, "or we're screwed."

But they did. And we were.

* * *

viii

The congressional investigation was the beginning of the end of federal funding for the Arkwright Foundation. Despite Grandpa's best efforts, Dulle got his way. He had allies on both sides of the hill, and under pressure from the House and Senate, the National Science Foundation cut its appropriation, as meager as it really was. Once again, Juniper Ridge was on its own, but even as my grandparents scrambled to find a way to make up for the loss, worse things were happening far, far away.

About the same time this was going on, *Galactique* was approaching a star system about midway to Eos: Gliese 832, a M-class red dwarf 10.5 light-years from Earth. This nameless little star didn't have much going for it: a couple of gas giants, but no Earth-mass planets within its habitable zone. The ship would pass through the outermost reaches of the system, though, so the mission planners had decided to have the ship conduct a brief survey as it swept by, just in case there was anything there worth noting. Besides, it would give them a chance to calibrate the ship's sensors and make sure they were functioning the way they were supposed to once *Galactique* reached Gliese 667C, even though it would take more than a decade for the results to reach Juniper Ridge.

Galactique's beamsail had long since ceased its primary function, but since then it had become useful for something else, a shield against the interstellar dust that would have chewed the ship apart if the sail hadn't been there. The sail was probably riddled with pinholes by the time *Galactique* made its flyby of Gliese 832, but it should have deflected anything that might have damaged the ship.

It didn't.

We'll never know exactly what happened, because the AI didn't report a specific cause, so we can only guess. The most likely scenario is some bit of transient debris in the outer system—a tiny piece of a long-dead comet, a minuscule fragment of a stray object—came in at an oblique angle that caused it to miss the sail entirely and, in a one-in-a-billion chance collision, hit the ship. It couldn't have been very big, or else it would have destroyed *Galactique*; in fact, it may have not much larger than a piece of gravel.

Size doesn't matter when it comes to something like this, though, because the effect was catastrophic. It knocked out communications with Earth.

Galactique carried two 1,250-watt lasers, powered by the ship's nuclear reactor and mounted side by side outside the service module. The reason for this redundancy was that, even if one laser went dead, the other would continue to function. Yet it wasn't the lasers themselves that were hit, but something else: the electrical bus that supplied juice to the array. That was in an exposed part of the service module

outside the hull plates protecting the ship's interior components. Perhaps the lasers should have been independently mounted, each with its own bus, but no one can predict every possible contingency; we can't blame the engineers too much for failure of foresight.

In any case, our hypothetical little rock clipped the line. In that instant, *Galactique* went dark.

The AI would have detected the problem immediately, if not the precise cause, and acted upon it. The array was withdrawn into the service module, where the spider-bots went to work on it. By the ship's internal chronometer, the repair job probably took only a few days, but time dilation made it seem much longer to observers back on Earth. We didn't even know about the accident for more than ten years.

By then, a lot had changed back home.

* * *

ix

I met Robert in the second semester of my sophomore year, which I'd originally intended to be my last hurrah at UMass. If it hadn't been for him, I might have gone ahead with my original plan to transfer to UC Davis and move out west.

By then, I felt comfortable enough about matters at home to think about leaving Massachusetts and setting out on my own. Although the Galactique Project was no longer receiving federal funds, Grandma came up with the idea of turning the Arkwright Foundation into a publicly supported nonprofit, thus allowing them to sell memberships, conduct fund-raising drives, and otherwise do whatever it took to keep the MC open and maintain the communications lifeline with the ship (it would still be many years before we learned about the accident). My mother found a new pastime in running the foundation website, and Grandma took to writing a monthly newsletter that told the foundation's supporting members what was happening on Juniper Ridge.

Rep. Dulle continued to harass us—not satisfied with depriving the Arkwright Foundation of NSF funding, he was also determined to have the Justice Department open its own civil investigation—but we were assured by the foundation's attorney and our own congressman that he wouldn't get far. With Sen. Wessen's buy-off decades in the past and the principal figures involved with the scandal long since deceased, no one was taking Dulle very seriously. The bastard got his pound of flesh, and he'd have to be happy with it.

The foundation was just scraping by, but Grandpa was confident it would survive. I came home for the summer and helped around the place, but already I was itching to leave. During my freshman year I'd taken weekend trips with my friends to Boston and New York, where I'd ridden gondolas through flooded downtown streets and caught plays at rooftop theaters. I'd seen a side of life far different from tiny little Crofton, and I wanted more of it. And although Mom still wanted me to stay close enough for her to feel as if I was safe from the sinister forces she persisted in believing were ready to pounce—Dulle had replaced the New American Congregation as her nemesis—Grandma assured me that Mom was getting along well enough that I didn't need to be concerned about her. If I still wanted to go to California, no one would stand in my way.

Then I met Robert.

As these things sometimes happen, it was entirely accidental. Some oaf brushed up against me as I was leaving the serving line in the student union cafeteria and caused me to drop my tray. The carton of milk on it fell upon the shoes of the student

behind me, and as I stammered my apologies he stooped down to help me clean up the mess. I looked up and found a pair of quiet grey eyes regarding me with amusement and just a bit of interest. He put aside his own tray, asked me to wait a minute, then went back into the line and replaced everything I'd lost, running his thumb across the scanner to pay for them. And then he asked if I'd join him for lunch.

That was Robert Ignatz. Not Rob or Bob, and never Bobby—Robert. He was tall and kind of skinny, with a thatch of dark brown hair that was comb-resistant and a shyness that was almost as deep as my own. He was an art student, studying holosculpture with a minor in industrial design, which is why we'd never shared a class. Indeed, if it hadn't been for the cafeteria accident, we might never have met. Speaking to girls had always been a problem for him, so he took his milk-soaked shoes as a heaven-sent opportunity to meet one.

Hell if it didn't work. Robert and I had lunch together, and when it was over I gave him my number and let him know that I wasn't doing anything special that weekend, and that was how things got started. I'd met a few guys during the last couple of years at UMass, but none were especially attractive. Indeed, most reminded me of Teddy Romero; ten minutes with them, and it was obvious what their intentions were. I'd begun to wonder whether I was a lesbian or destined to become a nun when I met Robert, who didn't even try to take my hand until I took his first and nearly fainted when I stopped him on the sidewalk outside the theater where we went for our third date and told him that I wouldn't mind a kiss.

Besides social awkwardness, Robert and I had a couple of other things in common. The first was little previous sexual experience. When we finally mustered the courage to go to bed together—I kicked my roommate out for the night; she didn't argue, just went down the hall to shack up with her own boyfriend—I discovered that it didn't matter very much that I'd only once before been with a guy, because that was one time more than my dear sweet Robert had been with a girl. But he was as tender as Teddy had been callous, and also delightfully indefatigable. We didn't sleep much that night.

The second was that he'd also come from a broken family. His mother had left when he was young, and his father never seemed to care very much for him. Although they lived in Connecticut, he went back as little as he could; his dad considered the presence of a grown-up son to be an impediment to his new life as a roaming stud. So Robert had made the UMass campus his home, and he'd already decided that he'd remain in Amherst after graduation; he liked it there, and he had a line on getting a job at an industrial design studio in Springfield where he worked part-time as an intern.

When he told me this, I knew that I was going to give up California. If the choice was between transferring to UC Davis and staying at UMass with Robert, then it was obvious which way I'd go. No regrets. By the second semester of our junior year, we'd left the dorms and found an off-campus apartment, and when we graduated a year and a half later, I walked away with a diploma under one arm and the other around my best friend, lover, and chosen companion for life.

So I didn't move out west, but instead remained in New England. That's another reason why I was lucky to have met Robert. The decision to stay close to home changed my life when Na came.

* * *

X

Everyone who was alive at the time remembers where they were and what they were doing when the world learned of the existence of 2099 NA-2.

I was twenty-nine years old, a science teacher at Amherst High, and living with

Robert in a two-century-old farmhouse in the nearby town of Leverett. We'd never married and saw no real reason to do so; our relationship was solid, and since we both had parents whose marriages had ended badly, we didn't want to jinx things by repeating their mistake. Robert worked out of the house; his rising reputation as a holosculptor had enabled him to leave his job at the design firm a couple of years earlier to set up his own studio, where he earned a little extra money teaching students the fine art of painting with light. We had no children, but that was something we were considering; in the meantime, we were happy contributing to the education of other people's kids.

So I was in the faculty room between classes, having coffee and glancing over the homework my students had just sent me, when another teacher said, "Oh, my god, *no!*" I looked up. The wallscreen was logoned to a newsnet, and the first thing I saw was something that looked like a fuzzy little white blob against a black background.

From my childhood on Juniper Ridge, I'd learned to recognize a radiotelescope image when I saw it. My first thought was that it was a star, or perhaps a newly discovered exoplanet somewhere many light-years from Earth. But it was neither, and much closer than that. It was the monster we'd all come to know as Na.

When it was first discovered four months earlier by Spaceguard's orbital telescope, 2099 NA-2 appeared to be just another near-Earth object whose elliptical orbit would carry it past our world. There are nearly countless NEOs like it, but the vast majority come no closer than the Moon. This particular asteroid was a little more than half of an a.u. from Earth when it was initially spotted, and it was first believed that it would come no closer than the Moon; as a matter of routine, it was classified as a Potentially Hazardous Object, worth watching but probably no more hazardous than any of the many PHOs discovered every year. Shortly after this particular asteroid crossed Mars' orbit, though, planetary astronomers reexamined the data and came to the realization that it was much more dangerous than that. A Spaceguard alert team at the Lowell observatory in Arizona was assigned to study 2099 NA-2, and what they found caused them to immediately contact their counterparts in Hawaii and ask them to confirm their findings. A few days later, the Maui observatory delivered its verdict . . . and it was grim indeed.

First, 2099 NA-2 was on collision course with Earth. Traveling at 27,000 mph, in two and a half months it would sail straight into our planet.

Second, and worse, this was a *big* asteroid. A class-C carbonaceous-chondrite rock shaped like a potato, it was about half a mile wide and a little more than a mile long—as newscasters would become fond of calling it, "a flying mountain" (the name "Na" came a little later; the phonetic pronunciation as "nah" was irresistible). It wasn't going to be another dinosaur-killer like the one that turned tyrannosaurus rex into an interesting fossil, but nonetheless June 17, 2099, was going to be a very bad day for every living creature on Earth.

Typically, the public was the last to know. The highest echelons of the world's governments were the first to receive the information, and as conference room lights burned late in capitals from Washington D.C. to Beijing, it was secretly agreed that the news would be withheld until the various defense and science ministries got their acts together and all the options were studied. By then, it had been determined that Na would likely come down somewhere in the Pacific, which was both good news and bad; good because it would miss any major land masses, bad because of the potential long-term effect on the global climate, not to mention the immediate consequences for the coastal areas and islands in the region.

There was one mitigating factor: Na was still far enough away that something could be done about it. Obviously, the coastal population centers and island chains of the Pacific would have to be evacuated in advance of the inevitable tsunamis. Yet

there was also the possibility, however slim, that Na might be diverted. In fact, when the first news conference was held, it was announced that the *Comstock*, an asteroid-mining spacecraft belonging to Translunar Resources that was currently operating just beyond the Moon, was already on its way to deep-space rendezvous with Na. Once it arrived, *Comstock's* crew would undertake the mission of planting their mass-driver on Na and using it to nudge the asteroid into a new trajectory,

We were told not to panic, that the authorities were on top of the situation and that doomsday was not inevitable. And for the most part, people took it well. Generally speaking, there wasn't the mass hysteria and anarchy that many predicted would come from an announcement like this. To be sure, there were those who fortified their homes, grabbed every firearm they could lay their hands on, and prepared themselves for the end of the world (for which, I suspect, many of them secretly hoped). By and large, though, the vast majority of individuals determined that they would do what they could to help their friends and family survive. Some found solace in religion, others in a steadfast faith in the human spirit. Some even believed that the whole thing was either a hoax or just a scare that would soon blow over, and everyone would wake up on June 18 to find that the world was just the same and nothing had changed.

In any case, the public was repeatedly assured that there was a strong probability that *Comstock's* mission would be a success and that the mandatory evacuations were only a precaution. Only a relatively few people knew the mission was a long shot. Until then, asteroid miners had succeeded in moving NEOs no more than a few hundred feet in diameter. Na was much larger than that, and its greater mass meant a correspondingly higher inertia; *Comstock's* mass-driver might not be adequate for the task. And blowing up the asteroid was out of the question; even if *Comstock* was carrying explosive charges sufficient for a job of that magnitude—which it wasn't—it would have only meant that, instead of getting hit by one big rock, Earth would be subjected to a rain of smaller rocks, some of which might come down in populated areas. Not only that, but it would take the mining team almost three weeks to reach Na, during which time the asteroid would have traveled over twelve million miles closer to Earth, shaving the odds of success that much finer.

The authorities deliberately understated the chances for a successful diversion in order to avoid a mass panic, and for a while they were successful. For a little while, life went on as usual. But as the realization of the magnitude of the disaster and its long-term consequences—namely, a global winter that could last several years—slowly sank in, even communities far from the projected impact zone began making preparations.

The week after the announcement was made, the Amherst board of education voted to suspend school indefinitely so that children could help their families do whatever needed to be done. Suddenly, I no longer had a job. Which was just as well, because a couple of days later, Grandpa called and asked me to come home.

Grandma had passed away a couple of years earlier, leaving him and Mom alone on Juniper Ridge. So he'd been forced to divide his time between monitoring the MC and taking care of her, and although she'd lately become a little more independent, it was still a stretch for a man in his eighties who'd passed the age for retrotherapy. But that wasn't all.

"Dhani, your mother's scared," Grandpa said. "She'd been doing better, but now . . ." "Is she pulling back into her shell?"

"I'm afraid so, yeah. There's days when I can barely get her out of the house, and when I talk to her, she keeps saying that she wishes you were still around." A sigh. "I know it's a lot to ask, but if you and Robert could bring yourselves to come home, even for a little while . . ."

His voice trailed off. He didn't say the rest, nor did he need to. Mom had accepted Robert only grudgingly, and not without some initial suspicion. She'd always distrusted strangers; in her mind, Robert was the outsider who'd taken her daughter away from her. Robert had done his best to get along with her, but she'd never completely warmed up to him, and so our visits had been for only a few days at a time. What Grandpa was talking about, though, was a longer stay. Much longer.

I glanced across the living room at Robert. He'd linked his earjack to the house phone and was quietly listening in. Our eyes met, and he answered my silent question with a nod. "Of course we will," I replied. "Just give us a few days to board up the place and we'll be back."

"Thanks. I appreciate it." He let out his breath in relief. "Tell you what . . . I'll even move upstairs and let you two have the downstairs bedroom."

"That's all right, Grandpa. I think we can manage without it." Hearing this, Robert gave me a grim smile. We'd have less privacy upstairs, with Mom's room next to mine, but I didn't want Grandpa to have to climb stairs more than he had to. I decided to change the subject. "How's *Galactique* doing? What's the latest?"

Another pause, this time longer. "I don't know," he said at last. "I didn't want to tell you this, but . . . we lost contact about ten days ago. The lunar station hasn't received any telemetry for over a week."

"Nothing?"

"Nothing. Not even a status report. *Galactique's* gone dark."

Again, Robert and I traded a look. He knew what that might mean as well as I did.

"We'll be home as soon as we can," I said.

* * *

xi

In hindsight, it's fortunate that Juniper Ridge had always been self-sufficient. Because my father and grandparents dreaded having the MC knocked out of commission by a local power failure, they'd set up solar panels to provide the observatory with electricity, and the rest of our power came from the town's wind turbine on a nearby hilltop. The house drew its water from deep artesian wells, and Mom's obsession with the greenhouse meant that we'd have food, even though we would probably have to tighten our belts a bit. And there were other things, like the snowplow Grandpa had attached to the front of his truck and the stockpiles of canned food we customarily kept for the winter months when we couldn't easily go shopping. So we were better prepared than most.

Still, Robert and I had our hands full as soon as we arrived. The roof of the main house badly needed to be reshingled, the firewood supply was down to half a cord, and the windows would have to be freshly weather-stripped. Grandpa was in no shape to tackle these jobs on his own, so it fell to us to prepare for Na's aftermath. Luckily, the asteroid had picked a good time to make its appearance; in New England, late spring is the best season to take care of such matters.

But Mom was in bad shape. As Grandpa told me, the news about Na had messed up her mind, sending her back into the depression she'd struggled with for as long as I could remember. She welcomed me with open arms and tears, but only gave Robert a tentative handshake and stared in horror as he carried our bags inside. Things might have been a little better if we'd been officially married, but . . . well, too late for that now. She gradually accepted the fact that he was living in the same house, but it took her a week just to get used to the idea that she'd have to share the upstairs bathroom with a strange man.

Yet we received aid from an unexpected source: Joni Ogilvy.

In the years since I'd grown up and moved away, my teenage best friend had changed as well. While her twin sister Sarah had moved to London and become an executive at Lloyd's, Joni had remained in Crofton after her parents' deaths to get married and take over the family's horse farm.

Tall and well-built, with long cornsilk hair and cool green eyes, Joni could have been a runway model if she'd cared to go that way, but she was as direct and no-nonsense as only a country lady could be. It had been quite a few years since I'd last seen her, so I was surprised the day she and Brett walked down the road to our house. Noticing Robert climbing a ladder to the roof, Joni told me that they had a couple of pallets of extra shingles behind the barn left over from their own reroofing job and that we were welcome to them. Considering that every hardware store in western Massachusetts was being cleaned out of stuff like that, it was an offer that was both generous and impossible to refuse.

Teddy Romero was long gone. After his father died, he'd sold the trailer and left Crofton. No one had ever seen him again. Good riddance. At least I wouldn't have to worry about having him show up at the house. On the other hand, having Joni and Brett as neighbors was a comfort. Once she and I renewed our friendship, I knew that our families would be able to rely on each other during the tough times ahead.

If only all our problems could have been solved as easily. The MC was something else entirely. While it wasn't critical to our survival, nonetheless it was the reason why my family had remained on Juniper Ridge in the first place. Yet the Arkwright Foundation had suffered greatly from Grandma's death; member donations had dwindled to a trickle, and while the computers in the MC were old and badly in need of an upgrade, replacing them was out of the question. Grandpa had kept them going as best as he could, but without Mom helping him his efforts were inadequate at best.

I knew how to run the MC, but I didn't know how to fix it. The computers were still operational, more or less, but the radio dish no longer had a full range of motion; we could hear the gears of its platform creak from the floor above when it moved. And the screens remained resolutely dark whenever we tried to download new data from the lunar tracking station.

Was *Galactique* no more? Was its long silence an indication that the ship had somehow been destroyed? Or was it simply a communications blackout, and eventually we'd receive new data? We had no way of knowing. Every day, Grandpa sent a new query, one approximately asking *Hello? How are you? Where are you? Please respond at once!* No reply. Just more silence.

"You realize, of course, there's great irony to this," Grandpa said one afternoon.

"How's that?" I took a sip of water from a canteen and passed it to Robert. The three of us were sitting in a clearing on the hillside below the observatory, taking a break from using a chainsaw to cut up some dead trees on our property. Mom was in the dome, taking her turn at what had begun to appear to be an exercise in futility, waiting for *Galactique* to tell us that it was still alive and well.

"Your great-great-grandfather started this whole thing because he was concerned about the human race getting wiped out by an asteroid." I must have had some sort of expression on my face, because he grinned and nodded. "It's true. Not many people know it, but that's the reason why he willed his estate to the Arkwright Foundation in the first place."

"I thought it was because he wanted to build a starship. That's what Mom told me." I might have added that my father told me the same thing, too, but it had been so many years since the last time I'd seen him that I seldom even thought about him anymore.

“Oh, I’m sure that was a reason, too. Otherwise he would’ve had us digging bunkers.” Grandpa shrugged. “But going to the stars says something that digging a hole in the ground doesn’t. It says you’ve got hope for the future that goes beyond mere survival. Maybe it’s because he was a science fiction writer that he saw things that way, but . . . well, at any rate, he was ahead of the curve.”

“But the human race isn’t going to get wiped out,” Robert said. Then added, with just a touch of uncertainty: “Is it?”

Grandpa didn’t say anything for a moment. Instead, he gazed down the hill. It was a lovely afternoon; blue sky, no clouds, warm breeze, fresh leaves on the trees. Hard to believe anything bad could ever happen to a world as perfect as this.

“Probably not,” he said at last. “We survived the global climate change of the last century, what with droughts and superstorms and coastal flooding and all that. The world lost a billion and a half people, but it took decades for the population to drop. Humans are adaptive creatures, and pretty resilient when push comes to shove.” He picked up a small log we’d just cut and idly began to strip off the bark. “This is different. Even if they manage to evacuate everyone from the coastal areas before the tsunamis come in, Na’s going to vaporize a lot of seawater when it hits the ocean. That’s going to cloud the upper atmosphere and in turn cause a climatic chain reaction.” He looked up at the sky. “We may not have another day like this for a very long time. And not everyone has a greenhouse out back.”

“But *Comstock* might still succeed, right?”

Grandpa and I shared a look. We understood the physics of the situation better than most people, my partner included, so we knew what a crapshoot the asteroid-deflection mission really was. “Sure . . . sure, it’s got a chance,” Grandpa said, then he dropped the log and bent down to pick up the chainsaw. “Well, c’mon . . . this wood isn’t going to cut itself.”

We spent a couple more hours on the firewood, then Grandpa and Robert went back to the house and took the truck to Joni and Brett’s house to start loading the shingles they were giving us. We’d soon be repaying the favor by helping them bale hay for their horses. There was a lot of high grass growing in the mountain meadows abutting her property and ours, so the seven horses she owned would have enough to eat. They would be useful if and when there was no longer enough sunlight to adequately recharge the solar panels of our cars and the truck. And although no one spoke of it, we all knew that, if things got bad enough that we couldn’t feed either them or ourselves, Joni’s beloved horses might have to serve another purpose as well.

I finished stacking the wood we’d just cut, then went back up to the house. I was about to go inside and start work on dinner when I heard a vehicle coming up the road. It was still out of sight around a bend and behind the trees, so at first I believed it was Grandpa’s truck—which was a little odd; it takes time to load several pallets of shingles—then it came into view and I saw that it was a big black sports van.

No one we knew drove anything like that, so I raised my wristphone and called Mom. “We’ve got company,” I said when she answered. This was something we always did, giving her a chance to hide if she wanted to. My mother never liked unexpected visitors.

“All right,” she replied. “Tell me when they’re gone.”

By then, I could see that it had tinted windows and light-blue all-state plates. I walked down the front path to the end of the driveway and waited until it came to a stop. The driver’s side door opened and a young guy in an Air Force uniform got out. “Can I help you?” I asked.

He seemed to hesitate, as if uncertain who I was. “Are you Chandraleska Skinner?”

An odd question. It was rare that people mistook me for my mother. We bore a certain similarity, but you could only mix us up if you hadn't seen her in quite a while, and most people hadn't. "No . . . I'm her daughter, Dhani."

He said nothing, but instead went to the back of the van, slid open the rear door, and spoke to whoever was seated in back. I couldn't hear what he said. A couple of moments passed, then two people climbed out. One was a heavy-set woman with ginger hair who wore a pantsuit that, like the van and its driver, looked government-issue. The other was a middle-aged man with white hair, thin and slightly stooped. He came out last, and for a long time he simply stared at me, as if waiting for me to say something.

"Dhani," he said at last. "You've grown up."

If he hadn't spoken, it might have taken me a couple of minutes to recognize him as my father.

* * *

xii

At the same moment, relativistically speaking, that I was looking at my father for the first time in fourteen years and trying to figure out what to say to him, *Galactique* was trying to bridge a communications gap of its own.

The spider-bots had only needed a few days to repair the laser array; it was just a matter of taking a little extra cable from the ship's spare-parts supply and splicing it into the main bus. Once power was restored to the lasers, the array was redeployed to the outer hull, where a quick test confirmed that the system was back on line.

Now came the hard part: locating Earth's position so that communications could be restored. *Galactique's* planet of origin, along with its sun and all its neighboring worlds, had vanished into the cone of darkness that lay behind the ship; the Doppler effect caused by the ship's .5c velocity had rendered them invisible. To further complicate matters, no navigation updates from Juniper Ridge had been received during the blackout. So the ship had to rely entirely upon itself to determine Earth's location and send a laser pulse in that precise direction—a feat roughly equivalent to a sharpshooter with a high-power rifle trying to hit a sparrow sitting on a tree branch ten miles away while wearing a blindfold.

Fortunately, *Galactique's* quantum AI had something our hypothetical sharpshooter didn't have: detailed star maps, a superb sense of direction based upon the ship's current position and estimated trajectory, internal chronometers accurate to the nanosecond and, most important of all, the ability to predict where Earth and the Moon would be located, not just then but also in the future. This involved a very difficult set of parallel calculations in four dimensions. It may have even taken as long as two or three minutes.

Then it fired off a message and waited for a reply.

* * *

xiii

It hardly needs to be said that I wasn't the only one who was stunned by Dad's return. When my mother walked into the living room to find her husband, whom she'd all but given up for dead, sitting there along with me and the two people who'd brought him back to Juniper Ridge, she didn't do anything but stare at him with wide, unblinking eyes. Her mouth opened, shut, opened again; I could tell that she

was having trouble breathing, let alone find anything to say. She swayed back and forth on her feet, and for a moment I was afraid that her legs would give out from under her. As I rose from the couch, though, so did my father, from the armchair that had been his usual place many years ago.

“Chani . . . I’m home.” Stepping toward her, he started to raise his hands. “Honey . . . I’m so, so sorry. I . . .”

“Don’t.” Her left hand shot up, palm open and facing outward. “Just—” she looked away, her hand trembling “—don’t. I don’t want . . .”

“Mom?” I headed for her. “Mom, are you okay?” Stupid question. Of course she wasn’t okay.

“No . . . no . . .” Looking away from both Dad and me, she wheeled about and staggered away. My mother never had a drink for as long as I knew her, but just then she looked just the way Dad did those nights when he came home late from the Kick Inn. “Just . . . everyone, just leave me alone.”

Then she was gone, stumbling back through the door from which she’d just emerged, heading back to the observatory where she’d been until I’d made the awful mistake of asking her to come over to the house without telling her who was waiting for her. I wasn’t trying to be mean, nor was it as if I’d meant to say, *Surprise! Look who’s home!* It was simply that I’d had no idea how to tell her that Dad had suddenly reappeared, and decided that maybe it was best if she saw this for herself. Which only goes to prove that you can be intelligent and still be pretty stupid.

I turned to Dad. He was still standing there, face as white as his hair had become, hands still raised to embrace his wife. He looked at me and said, “Dhani, I didn’t . . . I don’t . . .”

“Shut up.” I’ve never hit anyone in my life, but in that moment all I wanted to do was deck him. Somehow, I managed to control myself. “Sit down,” I said, and pointed to his chair. “Now talk . . . no, wait.” I took a second to use my wristphone to call Grandpa. “Come home at once,” I said when he answered. “Dad’s come back.” I didn’t wait for a reply, but simply clicked off. “Okay . . . start talking.”

“Perhaps it would better if I explained,” said the woman who’d shown up with my father. She and the Air Force officer were sitting on the other side of the room. “I’m Cassandra O’Neill, and this is Captain Philip Jensen, and we’re . . .”

“No. Him first, then you.” I didn’t even look at them; my attention was solely upon my father. “Go.”

Dad dropped his hands and let out his breath, then he slowly lowered himself into his chair. “Dhanishta, I don’t know where to begin, but . . .” He shook his head. “All right, I’ll try.”

Fourteen years ago, he and the woman he’d met in town—it took a while for him to even speak her name, Sally Metcalfe—had taken off for what he originally thought would be no more than a few weeks, maybe a few months at most. Their destination was Denver, her hometown, where she’d told him that she still had friends, family, a job, and something like a future.

But first, they decided to have a little adventure. After abandoning his car in Boston, they’d boarded the transtube and used it to weave their way across the country, getting off the maglev every now and then to sample the night life in the places where they landed. In this way they’d drifted from bar to bar, motel to motel, eating in crappy restaurants, nursing hangovers, doing all the things two people did when they were on a long binge and running away from whatever it was they had left behind.

It may or may not have been fun, because Dad had little memory of that time. Blackouts were part of the ride, I guess. The next time he was able to think clearly at all, it was when he woke up to find himself in a jail cell in Denver, with no recollection

tion of how he'd gotten there. Sally was gone, and somewhere along the line his belongings had vanished as well. He never saw her again.

The biggest shock, though, was discovering that seven months had passed since the day he'd walked out of my life and my mother's.

Dad had been picked up by the Denver cops after he was found on the sidewalk outside a downtown wino bar. Someone had taken his wallet and what little money he had left, so being charged with vagrancy and public drunkenness was only the least of his problems. He was homeless, and just to put the icing on the cake, he began to suffer the d.t.'s within hours of waking up in jail.

"Being taken to the hospital was probably the best thing that could have happened to me," Dad said. "After I got out and had my day in court, the judge realized that I needed treatment more than jail time. So I was sent to a substance abuse center and . . ."

"You're still not telling me where you've been for the last fourteen years." I didn't mean to be cold, but I was becoming impatient with him. "Not to mention why you've picked this time to come back."

"Maybe I can answer those questions," Grandpa said.

He and Robert had come into the living room so quietly that I hadn't noticed either of them. Dad looked around as he spoke. "Hi, Papa," he said quietly. "Good to see you again."

"You're looking better, son. Staying off the bottle, I hope?"

"Clean and sober for thirteen years."

"Glad to hear it. And the new job's working out?"

"Well, it's not so new anymore." Dad smiled just a little. "I've been there about . . ."

"Wait a minute!" I stared first at Dad, then Grandpa. "Am I getting this straight? You knew where he's been all this time?"

Grandpa slowly let out his breath. There were no vacant chairs left in the room, so he leaned against a wall, folding his arms across his chest. "Robert, do you think you could make some coffee, please? Thanks." Robert nodded and left the room, and Grandpa went on. "I heard from your father shortly after he went into treatment. He wanted to come back, but I didn't want to have a repeat of what had happened here."

"Which is probably what *would* have happened," Dad said. "If I'd returned, it would've been only a matter of time before I became a barfly again." He couldn't look at me as he said this. "I'm sorry, Dhani, but I'd hurt you and your mother enough already, so I took your grandfather's advice and stayed away."

"I didn't let either you or your mother know," Grandpa said, speaking to me, "because you were both in a lot of pain and it would take a long time for the wounds to heal. So I quietly kept in touch with him while he rebuilt his life, and when he was ready to leave the halfway house . . ."

"I was there for two and half years. It took me a long time to get over drinking." Dad paused, looking down at the floor again. "And when I did, I just couldn't face either of you again. Not after what I'd done."

"So we decided that it was probably just as well if he made a clean break of it, started over again out west." Grandpa was looking embarrassed as well. Perhaps he'd never expected this day to come. "I called Win and Martha Crosby and asked them if they could find your dad a job in California, and they managed to get him a staff position at UC Davis."

My mouth fell open. "I almost transferred there!"

"I know." My father slowly nodded. "I was hoping that, once you did, I might be able to reconnect with you, get you back into my life again. But . . ."

"I met Robert and stayed here."

"So I figured that perhaps it was just as well and kept my distance." Again, he

sighed. “Dhani, you don’t know . . . you can’t know . . . how hard it’s been. Even after I got straight, there hasn’t been a day that I don’t regret everything I’d done to you and your mother. But I was so afraid that, if I came back, I’d wind up in the Kick Inn again.”

“Okay, so you stayed in California. Good for you.” I wasn’t ready to forgive him, but at least I understood his long absence a little better. Perhaps he was right. As hard as his departure had been for Mom, returning home only to start drinking again would have killed her. “But that doesn’t explain why you’ve picked this time to come home.” I glanced over at O’Neill and Jensen. “Who are these people, anyway?”

“I’d like to know that myself,” Grandpa said.

“This is where I come in.” Cassandra O’Neill cleared her throat. “Dr. Skinner, Ms. Skinner, Phil and I are with DARPA . . . perhaps you’ve heard of us?” I nodded and she went on. “We belong to the special task force assigned to finding a way of deflecting Na before it hits Earth, and it’s because Matt got in touch with us that we’ve come out here.”

Jensen spoke up. “Dr. Skinner neglected to mention what Matt has been doing in California the last decade or so. He’s been working with the Crosbys on applied high-energy research, contributing his knowledge of the Galactique Project to their efforts to use microwave propulsion systems like the one the Arkwright Foundation built to send *Galactique* to Eos as an alternate propulsion system for other deep-space vessels.”

“Specifically, to the outer Solar System,” Dad said. “There’s been proposals to extract helium-3 from the upper atmospheres of Jupiter and Saturn, but nuclear propulsion takes too long to get there. Beamsails like the one the foundation built for *Galactique* could be the answer . . . we kinda leap-frogged over that when we built our ship.”

“There’s another application as well,” O’Neill said. “It’s something of a long shot, but Win Crosby has calculated that it may be possible to use the foundation beamsat to deflect Na.”

Grandpa let out a low whistle. “I’ll be damned. Why the hell didn’t I think of that?”

I didn’t say so, but I knew the reason. He’d had too many other things on his mind, like fretting over *Galactique*’s loss of telemetry and taking care of Mom, to think much about a microwave satellite he’d shut down the day I was born. “Does that thing even work?” I asked. “It’s been out of service for years.”

“We sent a crew out there just last week to examine it,” Jensen said. “It needs some repair work, but otherwise it’s still in operational condition. However, it can’t be reactivated or maneuvered except from here because . . .”

“We’re the only ones who have the operating system,” Grandpa said.

“Right. And that’s why I’ve come back.” Dad looked straight at me as he said this. “Once we get the beamsat up and running again, we might be able to use it to push Na just enough to nudge it from its current trajectory.” He shrugged. “I mean, it was built to boost a three-hundred foot starship up to half the speed of light, so it should be able to shove a big, dumb rock just a few hundred feet. That’s all it would take, really.”

“We may be able to do that, yes.” Grandpa slowly nodded as he looked away from us. “I think the three of us know enough about the beamsat to get it to do what needs to be done . . . isn’t that right, Chandi?”

I looked in the direction he was gazing. Unobserved by any of us, my mother had come back into the house. I had no idea how long she’d been standing there or how much she’d heard; she said nothing, but instead stared at Dad with dark and haunted eyes. My father turned to gaze at her and she visibly flinched when their eyes met, but she didn’t flee as I expected her to.

“It’s possible,” she said, so quietly that it was almost a whisper.

This was as close to a happy family reunion as we got. The knowledge that, for every minute we wasted, Na traveled another 450 miles, meant that Grandpa, Mom, and I didn't have time to reconcile our feelings toward Dad. Robert had barely returned to the living room with coffee before O'Neill and Jensen hustled us over to the dome so they could inspect the MC. One look at the antique computers Grandpa had been pampering for years because the foundation no longer had the money for regular upgrades, and O'Neill was on her phone. Late that evening, an Air Force gyro touched down on the lawn outside the house, bearing state-of-the-art computers and the best technicians the Pentagon had to offer.

From that moment, Juniper Ridge and the Galactique Project fell under military jurisdiction. No one was allowed to leave the premises, and all outside phone calls or email messages were screened. Jensen would have placed soldiers at a roadblock leading to the observatory if Grandpa hadn't pointed out that doing so would have attracted the attention we didn't want. Except for Joni, people seldom visited the observatory, but everyone in Crofton would have known something was going on if they'd seen military people swarming in. He reluctantly agreed that the low-key approach was probably the best, and that's how we handled it. I went down the road and asked Joni and Brett to stay away for a few days; I didn't tell them why, and they didn't ask too many uncomfortable questions.

Along with Jensen and O'Neill, my father was installed in the cottage, which had gone largely unused since the Crosbys had moved out years ago. I don't think they saw much of the place, though. Along with Grandpa, they spent most of their time in the MC, working around the clock to help the technicians replace the old computers with the new ones and make sure the data and operating systems were successfully transferred from one to another. In the meantime, another group of technicians worked on the dish upstairs, restoring it to full operating condition. They napped in their chairs and gobbled down the sandwiches and soup Robert and I carried over from the house, and if there hadn't been a restroom in the observatory I think they would've been urinating in the bushes.

At first, Mom kept her distance. She went up to her room and hid there for the first day, emerging only to go downstairs for a quick meal. But her memory of the beamsat operating systems was sharper than my grandfather's, so it was only a matter of time before Grandpa came over to the house, went upstairs to her room, closed the door behind him, and had a long talk with her. When he came out, Mom was with him. She'd put on a fresh change of clothes and pulled her hair back, and she didn't say a word to Robert and me as she followed my grandfather over to the dome.

Robert waited until they were gone, then turned to me. "If she tries to murder your dad, do you think the Air Force guys will stop her?"

"They'd better," I murmured. "I won't."

When I went over to the MC a couple of hours later, though, I found Mom and Dad seated side by side at the master console, reading information to each other as they made their way through a complex checklist. They weren't exactly holding hands, but for a moment it almost seemed as if my father had never left. Then Dad's elbow accidentally touched hers and she immediately recoiled, and I knew that her forgiveness wasn't likely to come any time soon.

By late that afternoon, the MC was back online, this time with new computers and an operating system capable of handling the new info that had been uploaded from a NASA database. The irony couldn't have been thicker. NASA had become little more than an office building in Washington, D.C., and the Arkwright Foundation had once

been the target of a congressional investigation, but now the fate of the world rested upon a neglected federal agency and an impoverished nonprofit organization. It would have been sweet if Rep. Dulle was still around to see this, but a heart attack had killed him a few years after his constituents voted him out of office.

While this was going on, a space construction team had been working on the beamsat itself, replacing the photovoltaic panels punctured by micrometeor impacts and upgrading the focusing elements. They finished their work just a few hours after the Juniper Hill group finished theirs, and once they'd moved away, Mom and Grandpa ran a test to make sure that the beamsat was once again capable of projecting a high-power microwave beam by aiming it at a small NEO that was passing Earth at a harmless distance of about three million miles. The beam was invisible, of course, but the satellite's instruments registered it nonetheless; a few minutes after it fired, space telescopes detected a tiny dust plume rising from the asteroid's surface.

The beamsat worked, but no one was ready to break out the champagne quite yet. Hitting a little NEO was one thing. Hitting Na, and having it do any good, was another. However, my father pointed out something that Win Crosby's group had determined might be in our favor. Since Na was a class-C asteroid, it was very likely that deep beneath its crust lay primordial deposits of gaseous hydrogen, oxygen, carbon, perhaps even water ice. If the beam could penetrate the surrounding rock to heat these volatiles, it was theoretically possible that they might vent outward through the crust, therefore forming jets that would help disturb Na's trajectory.

No one knew for sure whether this would be the case. But *Comstock* was still several days away from reaching Na, and this made *Galactique's* beamsat our best hope, if not our last. So my parents, Grandpa, and Cassandra O'Neill turned the beamsat so that it was aimed at the asteroid, locked onto its position, and made sure that it was being precisely tracked. . . .

And then they fired the beam, and everyone on Juniper Ridge began holding their breath.

* * *

xv

You know the rest of the story. Or at least you may think you do, if you were alive at the time and remember hearing the news. But you weren't there on Juniper Ridge, so you don't. Here's what I saw:

For the next six days, the sat tracked Na as it fell toward Earth, its microwave beam continuously pressing the rock while toasting its surface. *Comstock* followed it from a safe distance, its crew carefully keeping out of the beam's path while constantly monitoring Na's position, watchful for any significant changes in trajectory or surface appearance. And meanwhile, back home . . .

Back home, we did what we'd always done. We waited. This time, though, it was for a different reason. For the first time, *Galactique* was all but forgotten. The fate of our little lost starship was the furthest thing from our minds.

None of us slept well during those days. We took shifts in the MC, but more often than not there were two or three people in the MC. There was a certain fascination with the screen displaying Na's position. It never seemed to change, but we watched it constantly, hoping for the moment the asteroid would deviate from the dotted line of its projected course. Sometimes there were periods when Mom and Dad would both be there. At first, they said little to each other, but as the hours became days and the days stretched into a week, they gradually began to talk a little more.

Early one evening after dinner, I stepped out of the house for a little fresh air. The

Sun was just beginning to go down, and the crickets and tree frogs were commencing their nocturnal symphony. I'd only strolled as far as the driveway, though, when voices came to me from the side of the yard. Looking around, I saw my mother and father sitting together on a bench beneath a maple tree overlooking the hillside. What they were talking about, I didn't know, but the conversation was relaxed, not angry . . . and then, unexpectedly, I heard something I thought I'd never hear again.

I heard my mother laugh.

I didn't say anything, but instead quietly turned around and walked back into the house. Next morning, though, I had my own conversation with Dad. I won't bore you with the details, but we had a long talk that cleared the air about a lot of things, and when it was over I put my arms around him and gave him a long hug, and there were tears on both of our faces when we finally stepped apart.

We were a family again.

Late that afternoon, Jensen rushed into the house where everyone else was beginning to gather for dinner. He'd just received word that *Comstock* had spotted a large gaseous plume jetting from Na's surface, on the side of the asteroid facing them and perpendicular to Earth. Everyone dropped what they were doing and rushed back to the observatory, where we crowded around the console and studied the real-time images from the mining ship. Although the pictures were remote and fuzzy, nonetheless something that looked like a geyser was streaming outward from Na. *Comstock's* mass spectrometer identified it as water vapor with traces of carbon; apparently the beam had found a subsurface ice deposit and, over the course of the last several days, heated it to the point where it finally burst through the surface as a steam jet.

And then, even as we watched in awe, Na began to move from its projected course.

Here's what everyone knows: combined with the steady pressure of the beam itself, the jet caused Na to slip the necessary few degrees from its fatal trajectory until, three weeks later, it sailed harmlessly past Earth. It came close, all right—130,000 miles, a little less than half the distance to the Moon—but just far enough away that it wasn't captured by our gravity well and pulled in. Observatories and backyard astronomers in the Pacific caught telescopic pictures of a bright spot of light that slid across the predawn sky far above the ocean, but within less than a minute Na was gone.

But Dad stayed.

* * *

xvi

And so did Robert and I.

There was no reason for us to remain together on Juniper Ridge, really. Grandpa was getting up in years, but now that my father had returned, he and my mother could continue monitoring the instruments in hopes that *Galactique* might one day resume contact. Yet I didn't want to leave my parents alone while they were still mending their relationship, and since the Galactique Project was now receiving generous funding from DARPA, I didn't necessarily have to go back to teaching.

So Robert and I sold our house in Leverett and moved to Crofton, where we took up residence in the cottage. I took a new job with the state as an online tutor, and we built a studio for Robert where he could continue sculpting—he moved from holos to old-fashioned ceramic pottery, and became pretty good at that—and time passed as it always did in the Berkshires: slowly and gracefully, the seasons marking the accumulating years.

There had once been a time when all I'd wanted to do was leave this place. But if Na had taught me one thing, it was the same lesson others had learned. Our lives

are short, our friends and family are precious, and sometimes it's okay to stay in one place if that's where you find your life's true purpose. Mine was on Juniper Ridge. I understood that now, and I no longer minded.

My son Julian was born a couple of years later. Again, a midwife delivered him at home . . . indeed, the very same one who'd helped Mom bring me into the world thirty-one years earlier. Mom, Robert, and Joni were with me, and Joni had to catch Robert when he nearly fainted, but this time, no one went down to the Kick Inn and got drunk.

In fact, never again did I see my father take a drink of anything stronger than coffee or iced tea. He has remained sober ever since then. And not long after he and Mom started sleeping in the same bed again, my mother surprised us all by saying, ever so casually one Saturday morning over breakfast, that she'd like to go into Pittsfield and do a little shopping. It was the first time she'd been off the mountain in many years, and from what I could tell, she enjoyed every minute of her return to the world.

Grandpa remained with us long enough to see Julian take his first steps, then late one afternoon he took a nap and rejoined Grandpa. His grave is on the hillside not far from the observatory, and every once in a while I'll go down there, freshen up the roses on his stone, and have a little talk with him.

And we finally heard from *Galactique* again.

I'd just come home from driving Julian and Joni's daughter Kate to middle school—from the day my son was born, I was determined that he'd grow up with other kids, even if Robert and I had to take him every day ourselves—when Robert rushed out of the studio and grabbed me in his arms. He was still whirling me around and laughing his head off when Mom came out of the observatory. She was smiling as she told me the news: she'd just received a message from *Galactique*, informing us that there had been a minor accident with the communications laser but that it was fixed and the ship was still on course for 667C-e.

I only wished that Grandpa could have been there, yet he'd died still believing that *Galactique's* silence was only temporary and we'd eventually hear from it again. Faith is a great thing. The trick is keeping it.

Dad sent a brief message acknowledging the signal, yet we knew that it wouldn't be received until the ship had reached its destination. Indeed, that was the last transmission from Juniper Ridge; there was no point in any further communiqués from us.

Yet *Galactique* continued to send us regular updates of its condition. Over the next twenty years or so, we received word of what it was doing as it closed in on Eos. A couple of months after Mom passed away, Dad and I were in the MC when we learned that *Galactique* had reached Gliese 667C and the AI was guiding the ship for a close fly-by of the star so that its sail could capture the red dwarf's solar wind and thus commence the braking maneuver in preparation for orbital rendezvous with Eos. Julian was on his honeymoon, but he was happy to hear the news.

Dad left us again ten months later, this time for a place where no one could follow. Robert and I were now alone on Juniper Ridge, although Julian and his wife Clarice would occasionally come to visit us. I'd just read a letter from him, telling me that I'd soon become a grandmother, when Robert walked into the room. He was carrying a printout, and from the grin on his face I knew at once it was the message from *Galactique* I'd been expecting.

"It made it, didn't it?" I asked.

"Uh-huh. Right on schedule. And there's this, too."

He handed the printout to me. It was short:

SANJAY HAS WOKEN UP, AND HE SAYS HELLO.

Robert rested his hands on the back of my chair and leaned over my shoulder. "Who is Sanjay?" he asked.

"Someone my father told me about," I replied, "a long time ago."