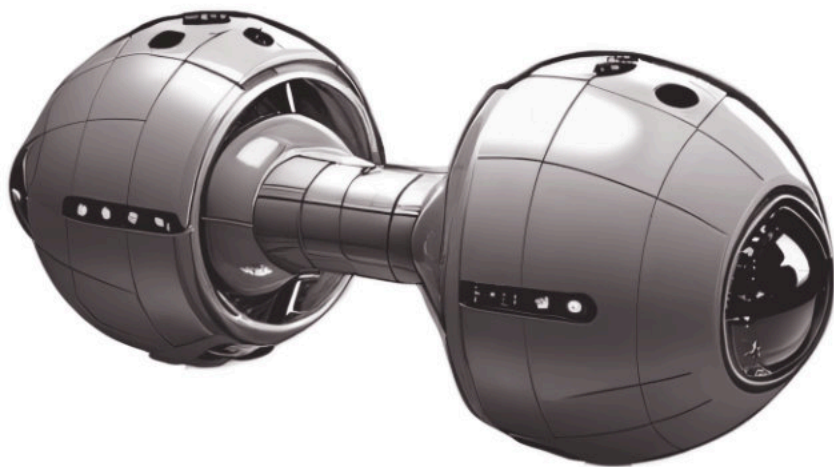


EINSTEIN'S ZOO

ANDREW K. BERGER

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Andrew K. Berger

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Dedication

*For Leslie, my long-suffering wife, who told me you should write a book,
you're good enough.*

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How could all that meat, needing so much food and water and oxygen, and with bowel movements so enormous, expect to survive a trip of any distance whatsoever through the limitless void of outer space?

Kurt Vonnegut, *Hocus Pocus*

CHAPTER 1

Growing Up Astronaut

THERE WAS NO single moment when Rosie Voss suddenly realized her parents were lying her entire life. It was a slow process of discovery over many years. They told her she was on a space ark called Galileo, two and a half light years from their home planet called Earth. She and her shipmates were the only remaining survivors of their species known as *Homo sapiens*. Her ancestors escaped a parched and dying planet nearly three hundred years before to seek a new home somewhere far away. She was the tenth generation of these brave voyagers carrying on a proud tradition of survival against all odds. She would sustain the mission by marrying another *Homo sapiens* named Zed Zander and giving birth to the eleventh generation of space explorers. Rosie had come to question practically everything her parents told her growing up—especially that last bit about arranged matrimony.

Not everything was a lie. For as long as she could remember, Rosie had lived within the miserable confines of the massive ship. Galileo's mission was nothing short of breathtaking—save the entire species from extinction by carrying her human cargo trillions of miles through deep space to its final destination, a distant planet dubbed *Earth Two* circling a neighboring star in the Milky Way Galaxy.

By many orders of magnitude, Galileo was the largest vessel ever built—the undisputed heavy weight champion of human engineering. She was divided into twin spheres, thirty years in the making—two massive, rotating wheels, each over one mile in circumference, joined by a central axle. Rosie's half was broken into roughly four sections, comprising command and navigation, engineering and mechanical, education and recreation, and domestic living. It housed the scientists, engineers, navigators, mission commanders, and most importantly, the nuclear reactors. Everything was pragmatic steel and glass, right down to how the people thought and acted—logical, analytical, and practical. The mission computer, named Halifax

after its chief architect, was god. They studied things like art, music, culture, and religion from a purely historical point of view. Emotion was to be avoided and pitied. Rosie's side was known as the Tech Sphere.

Tech was the only world Rosie had ever known. Some of her fondest memories were from the ship's preschool area. Rosie used to play there with her younger brother, Bruno, before she got old enough to start level one schooling. She especially liked the bumper spheres and playing hologram tag. She met Zed and her best friend, Zoey Freeman, in the bouncy room — just like it sounds, a throwback to kids' carnivals of days gone by.

One day, Zed pushed her down and gave her a bloody nose. Zoey scolded Zed and picked Rosie up. "Go away, Zero Zed, or I'm going to tell on you." She put her arm around her new friend. "Are you okay?" She took Rosie by the hand, led her outside to a quiet corner on stable ground, and got a teacher to help stop the bleeding. Zoey stayed by her side until school let out and walked her back to her quarters. From then on, the two were inseparable, sharing birthdays, sleepovers, play dates — what little that passed for normal kid stuff on Tech.

Throughout their schooling levels, Rosie and her brother took to the few physical activities Galileo afforded. Rosie loved the climbing walls in the Rec Dome, while Bruno excelled at in-line skating. Galileo's architects anticipated such needs, and both spheres had a walking, running, and skating track circling the outer edge, over a mile around.

Occasionally, Rosie had the chance to compete with kids her age. She was often disappointed when her parents, Pippa and Yuri, were too busy to come watch. Her saving grace was Yuri's mother, Gramma Jani. While her parents were busy courting their first love, Galileo, Gramma Jani was always there to cheer on her grandchildren. "I wish Mom and Dad could've seen me," Rosie said to Gramma Jani one time after winning a climbing ribbon.

Gramma Jani gave the child her wrinkled grin and a great big hug. "They'd be here if they could."

Rosie wrapped her arms around her grandma and looked up with a smile. "Why are grown-ups always so busy?"

"We're not all busy," Gramma Jani said. "I'm here."

As she grew older, Rosie became aware that her father suffered from slowly debilitating heart disease. Rosie spent many hours playing cards —

and worrying—with her ailing father in the infirmary. “Are you going to die?” Rosie asked her father one day, visiting after a mild attack.

“We’re all going to die,” Yuri said, bluntly.

Rosie gave her dad a frown. She was used to his matter-of-fact ways. “I don’t mean someday. I mean now, before I grow up.”

“Don’t you worry,” Yuri said. “I’ll bounce back. I always do.”

Growing up on a space ship was far from an ordinary childhood, yet Rosie shared normal bedtime rituals with her parents like any child. Pippa and Yuri took turns tucking their tot into bed at night, reading from classic children’s books, and rubbing her back. Sometimes, they told her stories that were anything but normal, accounts of a poor doomed Earth from long ago. One night in particular stuck out in Rosie’s mind. Her mother tucked her under the sheets that night. “Never forget,” Pippa said, “we’re the lucky ones. Our great ancestors escaped Earth before it got too hot.”

Rosie gazed up at her mother with trusting eyes. “Why did they let Earth die?”

“No one wanted Earth to die. It just happened. The air got hot and dry, and the plants and animals died. There was no food or fresh water left.”

“Tell me again about how our people escaped.”

“The really smart ones like us, the scientists, they saw it coming for over a hundred years. They knew their machines were making the air too hot. They tried to warn everyone, but people liked their machines too much. Even the scientists couldn’t stop using them, so they finally realized they had to leave. They found another planet like Earth circling a nearby star. They called it Earth Two, and it’s blue and green like Earth used to be.”

Rosie smiled. “It’s a Goldilocks planet, right Momma?”

“Right, a planet has to be not too hot and not too cold for people to live there. That’s why they built this giant spaceship.”

“Galileo!” Rosie cheered.

“That’s right, our home, Galileo. They made a ship that could travel very far away to get to Earth Two. They knew it would take a long, long time. No one could get there in their own lifetime. They built this ship so their great, great grandchildren could get there someday. We’re like the early explorers you learned about in level one. We have a responsibility to everyone who lived before us and everyone who will live after us to keep our people alive.”

"The Homo sapiens," Rosie added.

"The Homo sapiens. As far as we know, we're the smartest creatures who ever lived in the whole Universe."

Rosie frowned. "But we did one dumb thing. We killed the Earth."

"That was pretty dumb, but we're going to make up for it. We've learned from our mistakes, like the way we run this ship, in complete balance."

"Stasis!" Rosie said, brightly.

"You're sure learning a lot of important things in school."

"They showed us movies about how Earth used to be. There were forests, rivers, lakes, clouds, rain, and snow. There were all kinds of animals, and there were farms growing all the food you could eat. But the people didn't live in stasis."

"That's why we're the lucky ones," Pippa said.

"Someday we're going to make Earth Two into paradise. My great, great grandchildren will run and play in the grass, swim in clean lakes, and climb real mountains, not the fake kind in the Rec Dome."

"Won't that be great?" Pippa said. "That's why we must do everything we can to keep Galileo in stasis, to complete our journey. Nine generations in all came before you."

"Halifax put you in charge because you were smartest, right Momma?"

"I don't claim to be the smartest, but Halifax said I was the best pick for the job and that was that. We have to do what the computer says. Someday, it will decide what you're supposed to do, and who you're supposed to marry, and when you're supposed to have your own kids."

"I hope it's not Zed. He was mean to me again at school. Why are boys mean to girls?"

"Sometimes it's their way of showing they like you."

"Zed's a bully. I hope he doesn't like me. I'm never going to marry Zed. Was Daddy ever mean to you when you were kids?"

"That was a long time ago. Your father and I get along fine. He has his job and I have mine. It's not important whether we're happy or not. Halifax knows the right thing to do, and I'd say it did a pretty good job putting me and your dad together because we got you and Bruno."

"How will Halifax decide who I should marry?"

"Halifax will make the best match for you based on your genes. Did they tell you about genes in school yet?"

"They're like rules. They tell you whether you're going to be a boy or a girl, how tall you will be, and what color your hair and eyes will be."

"That's right," Pippa said. "That's why Halifax knows which people to put together to make the healthiest children. Enough questions for one night. It's time for me to button you up so you can get some sleep."

"Okay, Momma, but remember to leave a light glow."

"I always do. Now promise me, no more wandering around at night."

"I'm sorry, Momma. I won't wander again, I promise."

The wandering occurred the day before. Rosie awoke in the middle of the night, hoping to crawl into her parents' bed. She found her mother was missing. She left her father snoring fiercely and searched the living quarters, the common area, even her brother's room, and discovered her mother was absent entirely from the family cabin. She wandered off into the ship's empty corridors, anxious. All was quiet and lonely. The overhead lights were dimmed. During the day, the passages were bathed in stark, full-spectrum lighting, brimming with busy adults and activity. It was creepy in the deserted dark. She had no idea why her mother wasn't in bed. She didn't know where to look. She headed in the more familiar direction, toward the school and dining area. The hard tile floor was cold to her bare feet.

She snuck past some kitchen workers doing early breakfast prep. Looking in her former preschool, she recalled younger, more playful years. Rosie entered the bouncy room and jumped around a few minutes for old time's sake. Then she remembered she was supposed to be searching for her mother. She went toward the classrooms but was distracted by the play area for the lower-level school kids. Standing idle and irresistible, the empty bumper spheres beckoned. She climbed inside her favorite pink bubble and started running around. It wasn't as much fun with no one to ram. Once again, she recalled she was on a mission. She looked for her mother in the empty dining hall and started to panic. *Where could she be?* Someone on kitchen duty spotted her. "What do you think you're doing here?"

Rosie was startled. "I'm sorry. I was...I was hungry."

"You know we don't eat until mealtime," the worker said, annoyed. "Better get back to your cabin."

Chastened, Rosie scurried back into the hallway for the living quarters.

Her mind conjured the rest of the ship, where the adults busied themselves with their duties. She dreaded the idea of going there alone and in the dark. She crept past the other family cabins, resolving to brave the path to the control room where her mother worked. The rest of the ship was way less familiar. The Command Center lay past her father's domain of navigation and engineering. At her age, she had only ventured there escorted by her parents. She slipped past the portal to one of the mighty spokes leading to the engine room. The familiar yet dreadful hum of the ship's power plant moaned ominously in the dark. She spied a cleaning crew midway down the corridor, but thankfully went unnoticed. Finally, she saw her mother's work place.

She was surprised to see the door ajar and light coming through the crack. The Command Center door was always shut. *Always*. She was told she could never go inside. *Never*. For years, she wondered what went on in there and what it looked like inside. She heard her mother's voice. She tiptoed up to the crack and heard her talking to someone. It wasn't another person in the room. The other voice sounded crackling, like the ship's intercom, but that wasn't the weird part. People talked on the intercom to other parts of the ship all the time. It was what her mother and the voice were saying to each other that was so unusual. "What's going on up there?" the crackling voice said. "Your systems report is way overdue."

"Everything's fine," her mother said. "I've had my hands full lately. Yuri hasn't been feeling well, and they can't seem to get a handle on it."

"Nothing serious I hope," the crackling voice said.

"I don't know. He's been in and out of medical the past few days. Look, I'll get you my reports as soon as I can, okay? Galileo out."

"Okay, take care up there," the crackling voice said. "Houston out."

Rosie pushed the door open, and her mother jumped from her chair, swept the child up in her arms, and rushed out, slamming the door behind them. Her mother was frantic. "What are you doing in here? How many times have I told you to never come in my office? What did you hear? Did you hear me on coms?"

Rosie had never heard her mother like that. "I'm sorry, Momma. I couldn't find you. I didn't hear anything. I was looking for you and the door was open. I didn't mean to hurt you." She began to cry.

Pippa walked her daughter back to their living quarters to tuck her

into bed. "You didn't hurt me. I'm sorry. I may have overreacted, but we have rules for a very good reason. Someday you'll understand."

As Rosie grew older and started to come into her own sexuality, she began to realize having two children to sustain the mission was a nonstarter. She watched in dismay as many people her age were paired with a match by Halifax, planning to get married and have children. Rosie knew she was a lesbian, had known for many years. Apparently, so did Zed. Once in level seven, when Rosie was twelve years old, Zed called her a queer. She knew what it meant, but how did he know? It was the worst insult for a girl under the circumstances. Her parents had always instilled that her most critical role in life was to produce two children, preferably one boy and one girl, to maintain the population for the long journey ahead. "Why are you so mean?" Rosie complained.

"Don't be such a crybaby," Zed said.

She turned to Zoey for comfort but didn't tell her the name Zed called her. At level seven, she was only beginning to grasp her inner nature and felt embarrassed. "He's a jerk," Zoey said. "Don't let him get to you."

It wasn't like anyone could go anywhere. No one was going to move to a new town or go off to school far away. They were stuck with each other like it or not. Over time, Rosie and Zed both matured and set aside childish spats for the good of the mission. By level twelve in school, they got along fine. Zed didn't turn out to be a total zero. He outgrew his childhood scowl and developed rather rakish good looks.

She still had no interest in getting married or having children, especially with him, when Halifax made its decree. When her parents told Rosie that she had been assigned to Zed, she immediately began doing everything in her power to avoid him. She was always too busy to get together. Shortly after the blessed pronouncement, Rosie told Zed flat out it was never going to happen. Much to her relief, Zed said he wasn't happy either about the situation with computer match making. As it turned out, Zed had his eyes on Zoey.

Everyone was struck by Zoey Freeman. It was more than her stunning looks and radiant spirit. It was the quiet confidence and good humor she brought to an impossible situation.

Rosie despaired. She thought her predicament was hopeless. She knew same sex couples on the Tech side, but never met anyone her age who was

out. She felt stuck with a horrible fate. Given all the pressure to reproduce, she was afraid to tell her parents the truth. All that changed when she became a trustee and met the love of her life.

Between the two massive spheres making up Galileo, the only common ground was the axle stemming from the center of each wheel. Each of the spheres rotated endlessly providing centrifugal gravitation. The axle was the one place where there was weightlessness. Twice a day, trustees from Tech walked down the corridor wearing awkward magnetic boots to deliver containers with tools, medical supplies, and replacement machine parts—whatever the other sphere needed—to a massive bubble in the middle.

At first, it was nothing more than a job to Rosie. She would gather whatever the other side ordered into a series of delivery capsules and trudge through the axle. She would return with several more specialized, refrigerated capsules to resupply Tech with food. At the end of the day, the trustees would meet in the middle to exchange the empties. She was on the job for several weeks before a new trustee appeared and changed the rest of her life.

When trustees met in the middle, it was supposed to be all business. They weren't supposed to talk. The new trustee put an end to that. As Rosie learned more about life on the other side of the ship from her new friend, she began to solve the riddle she had struggled with ever since *The Conversation*. Before becoming a trustee, Rosie never let on to her parents that she suspected they were lying to her about their mission. Like a detective, she continued gathering evidence, building her case over the years. She knew what she overheard as a child through the crack of the Command Center door didn't match what her parents told her in bedtime stories.

It took over ten years of schooling, and then meeting her new friend, before she finally put it all together. The questions would not go away. Who was her mother talking to? What did he mean by *up there*? Where was *Houston*? Her parents had always taught her the ship was all alone, isolated in deep space. She was too young to figure it out as a young child, but as she learned more about science and technology, and especially radio waves, she figured out the ship couldn't possibly be very far from Earth. Houston was the place where space exploration first began. Someone else was out there—someone her mom was in communication with, someone her mom reported to, someone close enough to be reached by radio.

Gradually, through the years, she came to realize almost everything she had been taught was a diabolical lie.

She just couldn't figure out why.

CHAPTER 2

In the Beginning...Was a General and His Dream

THE GALILEO PROJECT was a Hail Mary pass from the start. Earth was warming at an alarming rate. It was time to get off. The country's space program had lost popular support after squandering the nation's college fund on countless missions to Mars, only to prove humans were born on the right planet after all. It took decades of shuttling back and forth with every sort of gizmo and gadget to learn there was no taming the red planet. Turns out it's too far from the good old Sun—too cold and dead to be anything other than cold and dead. They would have had as much luck trying to terraform the moon with no atmosphere at all.

As a result, NASA set its sights on other stars. They needed to find another Earth-like planet to discover, conquer, and wreck as only *Homo sapiens* can. If they were smart enough, the world's geniuses might have set their sights on trying to fix the one planet everyone knew was already Earth-like, but where's the fun in that? If you find out your walls have been invaded by termites, why call an exterminator when you can build a whole new house? That was the mentality of the country. The people were bored by the same old global warming song.

They wanted some jazz.

Despite the heat and drought, the truth was people could adapt to almost anything. The planet was probably centuries from becoming an over-cooked turkey dinner. The notion people were destined to inhabit other planets in the Milky Way galaxy, much less the Universe at large, was the biggest fish tale ever told—like a tadpole born on a beach in southern California dreaming of a life someday in the Arabian Sea. When they “discovered” Earth Two, a planet minding its own business in the distant reaches of the galaxy with no clue a virulent horde of polluting bums was coming to “explore,” Congress was unanimous that the United States had to get there first. It was a new space race. What the country needed was something to get excited about again in space. Moreover, we couldn't

possibly allow China or Russia to win. The American people agreed. When they announced the discovery of Earth Two, the country was like a five-year-old on Christmas morning. *When are we going to get there?* The scientists couldn't draw up plans fast enough.

The military industrial complex rolled up its sleeves, tore up the nation's bed sheets, boiled some water, and Galileo was born. It was a painfully slow delivery. Building the massive outer frame alone would consume ten long years, during which time the country basically forgot about it. Everyone was too busy whining about the heat they endured walking from their air-conditioned cars to their air-conditioned office buildings and homes. Nevertheless, trillions were invested already, and no one was willing to cut their losses. Some people spent those same years inside bio domes in Antarctica trying to figure out how to live in self-contained artificial ecosystems. When you are on a spaceship several light years from home, you don't get to run to the local grocery or hardware store for more milk or duct tape. The hard reality of how difficult the trip would be was not lost on the scientists, engineers, and astronauts who were asked to make it happen.

It did come as a surprise to the public at large. Most people figured once they found Earth Two, it would take a year or two to build a ship, and off they would go. The problem was all those years of science fiction. After people stopped believing the Earth was flat and the stars were pretty night lights, they began to imagine life beyond our world. When technology really blossomed in the Twentieth Century, people dreamed up fantasy space operas where explorers in spaceships traveled faster than the speed of light between the stars and planets, as if it were nothing more than an airline flight from Chicago to Houston. This was the thinking the scientists, engineers, and astronauts needed to overcome. Their fearless leader was not immune.

The head of the mission was General Garrison Lee Gurley, perhaps the most underqualified and inappropriate member of the entire enterprise. General Gurley was in charge because he happened to be one of Galileo's biggest boosters. A dead ringer for the late Slim Pickens, he grew up in Houston and had his eyes on the stars ever since he was a wide-eyed whipper-snapper. He cut his teeth as an air force pilot in the country's endless wars with the Middle East. His exploits in the sky eventually rewarded him

as the country's youngest one star general. When Garry hung up his wings and returned to Houston wondering what to do with the rest of his life, he set his sights on the shambles that the beloved space program of his childhood had become. However, an aeronautical engineer or astrophysicist he was not.

The project was headquartered at the sprawling Johnson Space Center in Houston. General Gurley conducted meetings in a twelfth-floor boardroom with spectacular views of Clear Lake and beyond to Galveston Bay. Some of the early planning meetings of the Galileo team were spent bringing the good general up to speed. At their very first meeting, Savita Gupta, the chief engineer for the project, broke the news about how far away Earth Two was and their best estimates of how long it would take to get there. A diminutive woman with a towering intellect, Savita graduated top of her class in aeronautical engineering before joining NASA. She fought for every inch of advancement in her career, both as a perceived foreigner and a woman in a historically male-dominated field.

General Gurley was clearly out of his depth. "What do you mean it could take centuries of flying to get to Earth Two? I mean, we're going to build a proper spaceship, right? We're not planning on flying there in an old prop plane. Can't we get there at warp speed? I might be an old cow poke, and I mean no disrespect, but are you sure you're the right man for this job, little lady? You're not from around these parts, are you?"

"General," Savita said with a sparkle in her eye, "with all due respect, I'm used to being underestimated because of how I look. My family immigrated to the states when I was three years old. I'm not only a citizen, but as American as apple pie. I can assure you there's no such thing as warp speed. That's stuff from the movies. We're talking about building a massive spaceship. There's no way it will travel at anything but a small fraction of the speed of light."

The good general was undeterred. "Okay, then, how about a short cut, one of them worm holes I've been hearing so much about? Why not shoot for one of those, and it'll spit Galileo out the other side."

Savita sighed. "General, again with all due respect, worm holes are theoretical constructs. We're trying to deal with reality here, how we can actually get our species to travel hundreds of years through space to another planet."

General Gurley shrugged his shoulders and threw up his hands. "If it's going to take that long, no one will care. After the ship leaves Earth, people will forget about it after a few years. How do we keep funding this thing once it leaves the solar system?"

Savita checked her eye rolls and remained calm. "By that time, we'll have spent the lion's share of the costs. They'll be on their own."

The geniuses laid out plans for a massive, self-sustaining ecosystem that could support generations of people, along with the necessary food, water, and equipment to make such a long-term journey through space. It would take years to build the infrastructure in space. They would run sustainability studies on Earth in the meantime to make sure the ship could be absolutely self-sufficient. When the ship was finally ready to be populated, they would remain in Earth's orbit for any number of more years until they were sure they reached stasis. The general sat and listened in silence until he came up with what he thought an important question. "How are we going to know when they're ready to go?"

"When they stop calling down to Earth to fix problems," Savita said.

"Let me see if I've got this straight. The people who join the ship to go to Earth Two aren't the same ones who get to live there?" The general looked around the room as the eggheads nodded. "Then who's going to be fool enough to sign up for this whole shebang?"

"You'd be surprised, General," Savita said. "We have literally thousands of applicants for every aspect of this mission."

The general shook his head for a moment, and then his eyes widened. "Hold the phone now. What about this cyber-sleep I've been hearing about? Why can't you put everyone in suspended animation, and then the people who leave Earth will be the same people who get to live on Earth Two? Besides, you could skip this fuss over self-sustained ecosystems and what not. Hell, when I fly across country, I like to take a flight at night so I can sleep through the whole thing, wake up fresh as a daisy in the morning, and skip the turbulence to boot." He sat back in his chair and folded his arms across his chest.

Savita momentarily lost her composure and indulged in a single eye roll. "Sorry to say, General, the whole notion of suspended animation is another one of those science fiction fantasies. We're dealing with the nuts and bolts of reality."

The planning meetings went on like that for a while. Eventually, General Gurley learned to slump back in his chair and let the smart people run the show. Every night he went home to complain to Martha, his steadfast wife of twenty years. "Sometimes I wonder why I bother showing up. They shoot down all my ideas, treat me like some dumb old hay seed."

"They should thank their lucky stars that they have you on their side," Martha consoled.

"Darn tootin'," Garry said. "That ship wouldn't have got past the planning stage without me rustling up the money."

The massive ship was built in space and supplied with everything imaginable. It wasn't only a United States effort. Galileo boasted contributions from over a dozen other countries. It truly became an international endeavor dependent on the thousands of rocket launches that were required to bring the behemoth to life. Consider the task at hand. Most people couldn't make a trip to the local grocery store without coming home to realize they forgot at least one or two items, even basic things like bread and milk. Galileo was expected to travel untold trillions of miles from Earth and sustain two thousand people for hundreds of years. Try planning that kind of party.

They had to deal with the harsh reality that once they left orbit, the gargantuan and yet finite number of atoms on board, comprising every facet of the ship down to the lowliest rivet, was all they would ever have. Everything had to be renewable and recyclable in the extreme. In essence, the planet Earth faced the same challenge on its journey around the Sun, on a much larger scale. Except for the occasional asteroid, Earth's resources and every atom that would ever exist were etched in stone. Despite everything their planet had to offer, the people of Earth kept running out of fresh water, not to mention food and energy. Galileo needed its own artificial water cycle and carbon cycle. Every last drop of water, every speck of carbon, hydrogen, and oxygen, along with every other element from the periodic table, needed to be accounted for, right on down to the explorers' urine and feces.

Despite these considerable logistical problems, Galileo slowly came to life in orbit until it was finally time to think about populating her for the journey. People from every walk of life were recruited to begin living on Galileo in orbit to work out the kinks. During a routine planning session

Einstein's Zoo

for this next phase of the project, a member of the team suggested, basically as an afterthought, that they should think about the long-term psychological implications of a multi-century space journey. They should get a psychologist on the team to consult about how people, and children in particular, would take to life in space. Everyone agreed it seemed like a sound idea.

They couldn't have picked a worse candidate.

CHAPTER 3

A Simple Counselor with a Very Bad Idea

THE TEAM TAPPED Sigmund Krautzman as Director of Psychological Operations for the Galileo project. If anyone could give old Garry a run for his money as the most underqualified and inappropriate member of the mission, it was Sig. He was the only child of two clinical psychiatrists and born with serious mental baggage, not the least of which was being named after his parents' hero.

From an early age, Sig knew the last thing he wanted was to become a doctor and follow in his parents' footsteps. He didn't have his sights set on the stars either. A slight man with unassuming looks and Clark Kent glasses, Sig's ambitions ran no higher than becoming a bank teller, not that there's anything wrong with that. He was an embarrassment to his high-powered parents, who rarely spoke of their child to colleagues and left him basically to raise himself. They didn't particularly care what he did with his life, but his parents insisted he should at least get a college degree, so Sig attended the local community college. His grades were simply not good enough to even get into a state university.

Amongst his rudimentary math and English classes, Sig took an introduction to psychology course, and somehow his breeding kicked in. He discovered he liked the idea of messing around in other people's heads and decided he wanted to become a therapist. Psychiatry and medical school were far beyond the reach of his stunted fingers, but with a little sweat and elbow grease, he could manage to get a license as a counselor along with his associate's degree in psychology. Neither required any real heavy lifting in math or science, which couldn't survive in the swamp of Sig's meager brain.

Sig set up shop, hung out his shingle, and happened to wind up counseling a local astronaut who came home from one of those long-term Mars missions with PTSD. That astronaut also happened to be a former colonel in the U.S. Air Force stationed in Houston who was a key cog in the Galileo machine. Sig's colonel told the team what great results he got from his time

with his counselor—that he was basically an expert on the effects of space travel on the human psyche. Of course, Sig was no doctor or expert in anything, but his practice wasn't exactly blasting off either. He was sitting around in his office one day, hopelessly fiddling with a Rubik's cube, when he got the call from NASA proposing a multi-year consulting contract. He was on board no questions asked.

The team might have discovered they dropped a one hundred twenty-five-pound stone in their training pool if they hadn't been blinded by Sig's big idea. His hare-brained scheme somehow made sense to the rocket scientists and dreamers. It struck them as important and profound, so there was no doubt Sig had the right stuff for the job. Sig hung up the phone and told the news to Billie Jo, his office assistant and wife of five years. A genuine, down-to-earth Texas cowgirl, she couldn't believe her ears. "They want you to do what? Don't they know what a dummy you are?"

"Thanks for your support," Sig said. "Maybe they need an outsider, someone with a fresh perspective. What makes you think I'm not exactly the right man for the position?"

"Oh, excuse me," Billie Jo said, "I misspoke. You're a regular Einstein, that's what you are."

"Obviously, I impressed the colonel, or he wouldn't have recommended me." Actually, the only reason the colonel found his way through Sig's shop door was because the colonel's barber was Sig's neighbor on the same strip mall, along with a tattoo parlor. The colonel was telling his barber about how shook up he was by the whole Mars fiasco. The barber suggested maybe he should talk to someone. The rest, as they say, is history.

"Oh, my stars and garters, would you listen to yourself? This thing's gone to your tiny little brain already. I pray for those poor, brave astronauts going off on this amazing journey with nothing but little old you in their corner."

Sig sat down at his first meeting, and Savita Gupta brought him up to speed. He was amazed at the effort it had taken to get the ship ready to populate. They were recruiting people to live there, yet only now were they wondering how a long space journey might affect them mentally. That's when he had his big idea. Sig realized this wasn't about the first generation of people living in orbit to kick Galileo's tires before takeoff. He thought about the future generations.

What would it be like to be born on such a ship hundreds of years in the future, to be told your entire world is nothing but the confines of a spaceship, and your entire reason to be alive is to produce one more generation of people to live on another planet? Sig sat at the table for the better part of the first day without saying anything, listening as the scientists, engineers, and astronauts reported what they accomplished and what they had left to do. General Gurley watched the new arrival the whole time, wondering why he was there. Finally, the general cleared his throat. "Dr. Kautzman, what do you think about our little project?"

"Actually, sir, it's Krautzman with an R," Sig said. "But you can call me Sig."

"Okay, Sig," General Gurley said with obvious disdain, "why do you think you're here?"

"To consult about the long-term effects of space travel," Sig said, confidently.

The general twisted his eyebrows. "And what qualifies you for that, if you don't mind my asking?"

Sig spoke with confident, unearned authority. "I've counseled astronauts in the past, sir. I know how hard it can be to go away from Earth."

"I'll vouch for that," Sig's colonel piped in. "After my final mission to Mars, Sig helped me through a real rough patch."

"Is that so?" The general gave the colonel a skeptical look and turned to Sig. "Why don't you tell us what's going to happen to our people once they leave on this big old journey."

"I've been sitting here listening to you most of the day, and I have to tell you, it's not the mental health of the people who first sign up I'm concerned about. They know what they're getting into. What about their children, and their children's children? What about a child born on Galileo hundreds of years from now, to be told they're nothing more than a cog in a machine designed so someone else might have a life someday?"

"What have you concluded?" General Gurley asked.

"I propose you study the question while you work out the kinks for who knows how many more years."

Savita perched up in her chair. "I'm intrigued, doctor. How do you propose we study the question?"

"You don't have to call me doctor," Sig said. "I'm a licensed therapist."

Savita looked at him askance. "Okay, Sig, what are you suggesting?"

"Actually, we can study it in more than one way. Galileo is broken into two massive spheres. You have the Command Center, the engines, and machinery on the one side, and you have the agriculture on the other. While these people start working out the kinks, they can start having children as well. Raise these children as if they *were* hundreds of years from Earth. See how they feel about it. You can try two different approaches. Tell the Agro Sphere children they are great space explorers having come from a beautiful planet called Earth, looking to find other planets to explore. But tell the Tech Sphere children Earth is dead and they are the last great hope for humanity."

Now Savita frowned. "Why should we tell children Earth is dead?"

"First, at the rate we're going, Earth probably will be dead in five hundred years, so it won't be a lie. Second, I'm not sure how the Agro Sphere children will take it when they hear about Earth. They might wish they could go back. Maybe it would be better for the psyche to be told Galileo is all there is. No turning back. At least you have this opportunity before Galileo leaves forever to find out how the children react, to learn which is the better approach."

The team ate it up. The mad experiment was a hit. Despite his lack of any real credentials, they awarded Sig a multi-year contract and more money than he had ever seen. He immediately became central to the recruiting process. To qualify for Galileo now meant not only having the right stuff as a scientist, engineer, ecologist, botanist, etc. It also meant being willing to have children and lie to them from birth about who and where they were. Surprisingly, the whole scheme made perfect sense to the applicants, and there was no shortage of eager volunteers. Some of the recruits secretly figured they were signing up for a few years in space, and the ship would never actually leave orbit. Others couldn't wait to leave and never come back.

Sig's own high-powered parents, who couldn't believe NASA hired their son, told him it wouldn't work. Children weren't that naïve. Parents weren't that clever. For her part, Billie Jo was aghast. "What the hell kind of experiment do you call this? You're going to have folks giving birth to precious babies up there and tell them Earth is dead? What monster would do that to their own child?"

“You’d be surprised,” Sig said. “They can hardly wait to leave Earth.”

“Then I pity any poor child born on that space monstrosity. It’s nothing but a zoo you’re building up there—a sick, twisted zoo.”

“With any luck, that zoo will pay our bills for the rest of our lives.”

“I pray God forgives you,” Billie Jo said.

CHAPTER 4

Life on the Wild Side

JULES ENGEL ALSO spent her entire life on Galileo, but her rearing was completely different. Jules grew up in a world of song, dance, art, and storytelling. Her sphere was home to the food supply, hydroponic farms and vast aquariums, even chickens and goats. Everything was vines, bogs, and peat moss down to the ship's outer core. Everyone had a job related in some way to supporting the agricultural mission of Galileo. People thought and acted according to their wills and conscience. Jules was raised to always follow her heart wherever that might lead.

She enjoyed not only her parents and classmates, but also an entire extended family, which included members of every faith or religion. They observed one another's traditions, holidays, cuisine, and music. No one had to be right or wrong. Practically everyone played a musical instrument. Jules loved to dance, play the flute, and write drama and poetry in praise of Gaia, Mother Earth. They made music together, put on shows for each other, and held massive ecumenical festivals, especially around harvest times. Jules' father, Noah, was one of the leaders, and naturally his name was an irresistible source of Biblical reference and good humor. "Any sight of land yet, Noah?" That sort of thing.

Everyone was free to do and become whatever they wanted within their realm, but with two hard and fast limits. No one could have more than two children, in the interests of stasis, and no one could go to the other side. Jules' parents ran a loose ship. If it feels good do it was the order of the day. Their sacred duty was to make everyone as happy as possible and to honor the dignity of all human cultures. It was a giant, floating, Summer of Love commune.

Tech didn't care what went on over there as long as they kept their population in check and the food chain in balance. Jules' side was known as the Agro Sphere. The two sides of Galileo existed with an obvious symbiosis. Tech sustained the journey, keeping the motors running and navigation

on course. Ag sustained the people, keeping everyone fed. Neither could survive without the other.

Jules wasn't raised to believe she and her fellow voyagers were the last survivors of an endangered species called *Homo sapiens*, or that everyone on the former Earth was dead. She was taught Galileo was a bold expedition of intrepid space explorers. She wasn't told some mission computer was going to play matchmaker either. Jules' mother, Tashi, told her someday she would know she was in love when she got a squishy feeling in her tummy. Over the years, Jules grew alarmed she never got any funny feeling with anyone else in the Agro Sphere. She knew she was supposed to meet a boy, get married, and have children someday, for the good of the mission and for stasis in the population. Some of her friends were falling for someone and thinking about marriage. She was not without admirers, but no one who interested her.

At least not the boys.

As she matured, Jules began to have a sinking feeling in her stomach, not the welcome one her mother told her about. She realized she was different from other girls, and what she wanted was to *be* with other girls. She knew this might be a problem for the mission. She learned about homosexuality in school and that there was absolutely nothing wrong with it—it was part of nature. Some adults on Ag were in same-sex relationships, including her Uncle Dhiman. The problem was Jules didn't know any girls her own age like her in Ag. She thought she was alone—the only lesbian still looking for love. She was afraid to confide in her parents. What would they think? Would they reject her?

Before she met Rosie, Jules once confided in Uncle Dhiman, the one person she knew would be sympathetic. He was alone meditating in his humble yurt. His husband, Uncle Ash, was out milking goats. He heard his niece coming through the door flap and rose from his pillow on the floor. He welcomed his favorite niece with his infectious smile and open arms and enveloped her in his ample robe. He knew immediately there was something on her mind. "Jules, you look so blue. What's troubling you, young one?"

Jules gave her uncle a long hug. "I don't know what to do, Uncle D. Why does there have to be so much pressure to be in a relationship? What am I going to do if I never meet anyone like me?"

"She's out there," Dhiman said. "Trust me, you'll find her someday. It takes time for some souls to discover their true selves."

"What if she's on the other side?" Jules complained.

"All will be well," Dhiman said.

Then Jules met Rosie on her first day as trustee. In an instant, she knew everything would be fine. Jules jumped at her parents' offer to become a trustee. During her years of fretting over not finding a partner, Jules became curious about Tech. She wondered if she was born on the wrong side. What if her perfect match was on the other side? She knew the strict rules against fraternization, but she couldn't stop being curious. She wanted to enter the axle if only for a glimpse of Tech. Maybe she would meet someone and learn what it was like over there. She had no idea what was in store.

She would never forget the first time she saw Rosie. Jules moved slowly through the axle corridor, looking around in wonder. Her loose black hair and flowery robe began floating for the first time in the weightless environment. About half way to the center exchange, their eyes met. She paused for a moment and stared. This unknown girl, with close-cropped auburn hair and wearing a practical jumpsuit, locked eyes onto Jules and kept moving closer. There was something about Rosie. No one ever looked at Jules so intensely before. Jules blinked back to the task at hand and started moving again, slowly, but she kept looking, intently. They met at the exchange. "Finally, some new blood around here," the girl said. She offered her hand to the new trustee. "It's nice to meet you. My name's Rosetta."

Jules reached out and shook her new friend's hand. "I'm Jules. Glad to meet you. It's my first day, but you know that. How does this work?"

"I take over your train and you take over mine. That's about it. Later on, they'll let you know when to come and pick up the empty capsules. But I have to warn you, it's not as much fun as it looks."

Jules smiled. She couldn't believe the words her new friend used. It was exactly like a story her mother told her many times tucking her into bed at night.

"Tell me again how you and Daddy met," Jules would say.

"You're a little quiz bug, aren't you?" Tashi said, tickling Jules on the tummy. "How many times do I have to tell you the same stories?"

"Tell me again, one more time, please," Jules pleaded.

"There I was minding my own business, milking the goats of all things. I certainly wasn't dressed up or looking my best. I'd known your daddy since we were kids. I didn't have the slightest notion he might be interested in me. He'd practically never said two words to me before. But he walked right on up to me and said, Tashi, can I milk the goats with you?"

Jules broke out in hysterical laughter at that point, as she always did. "And you said, 'Be my guest, but I have to warn you, it's not as much fun as it looks.'"

"Honestly, Jules, I don't know why you think that's so funny."

Now, here she was hearing those exact same words — *it's not as much fun as it looks*. It was a sign. She knew she met her match. She got that funny feeling in her tummy. She didn't know what to do. Jules' mind reeled. How could she make a relationship out of meeting in the axle twice a day? How could she figure out if this new girl might be interested in her? Even if they liked each other, how could they ever get around the rules? Jules fretted. She finally got that squishy feeling, and it might be for nothing. She wanted to say something. She didn't want to go back as if nothing happened. She took a chance. *"Catch you later then, Rosie,"* Jules said with a wink.

Her new friend looked at her and grinned. *"Rosie, huh? I like it. No one's ever called me that. To tell you the truth, I've never liked my name. To me, Rosetta sounds stuck up. I think I'll go by Rosie from now on if you don't mind. Later yourself, Jules."*

Each took over the other's train and started walking back toward their spheres, but ever so slowly. Then about half way back, Jules stopped and looked back at Rosie. Her new friend stopped and glanced back at Jules. In that instant, she knew they were going to be together, but she didn't know how yet. She couldn't wait for their next meeting. Jules emerged from the axle elated, noticeably so. Her mother found her daydreaming. *"You're looking pleased with yourself. Trustee duty agrees with you."*

"You have no idea," Jules said. She almost told her mother how Rosie gave her those squishy feelings but thought better of it.

"How was the Tech trustee?" Tashi asked.

"About what you'd expect," Jules said, downplaying the meeting. *"Some colorless wonk."*

After returning from her first delivery, Jules worried about the next exchange at the end of the day. She feared someone other than Rosie might

make the delivery. The moment she entered the axle she was thrilled. She saw Rosie across the span and clanked her way down the corridor as briskly as she could in her magnoboots to the exchange area. They met in the bubble at the center. While waiting for the return exchange, Jules had been dreaming up flirty things she might say to her new love interest. Nervously, she tried out a few lines. "We have to stop meeting like this. People will talk. I'm sure you can't stop thinking about me." She flipped her hands and batted her eyelids. "What can I say? Men want me, and women want to be me."

Rosie gave Jules a doubtful frown. "Is that right?"

"Not really," Jules said all nonchalant. "I say stuff like that sometimes. I don't know why. I start babbling when I'm nervous."

Rosie's frown turned to a satisfied smirk. "So, I make you nervous."

Jules now gave the doubtful frown. "Don't go getting a big head on me on our second date. You may not know it yet, but I put a spell on you... *because you're mine.*"

"What makes you think this is a date? For that matter, what makes you think I'm under your spell?"

"Babbling again, sorry," Jules said. "It's a line from this dumb old song. You realize this thing we're doing could turn downright scandalous."

Rosie flashed a sly grin. "Do tell. What exactly is this thing we're doing?"

"You know, talking," Jules said. "Didn't they tell you we're supposed to be all business in here? They might shoot both of us out an air lock if they find out what we're up to."

It was Rosie's turn to flirt. "I wouldn't worry. Nobody cares what we do in here. I've had dozens of lovers in here. Torrid affairs. They all ended badly. No one could measure up to you, Jules. It's like everything I've done in life was a prelude to you."

Jules started to blush. "Is everyone on your side this romantic? I always heard you were a bunch of robots."

"Don't believe everything you hear," Rosie said. "Want to see something wild? Take off your boots."

"My boots?" Jules said, surprised.

Rosie leaned down, scratched away the straps on her boots, and floated up into the center bubble. "Loosen up those old Velcro straps and let nature take its course."

Jules watched her new friend with surprise and honest to goodness

delight. "Oh no you didn't." Jules stripped away her boots and the two of them floated around, giggling like school girls. Jules was only weightless one other time in her life when she was four years old, during an accidental stall in the rotation of the two spheres. She pretty much forgot about it, but now recalled the hilarious sight of all the goats floating in Ag, bleating in panic. "You do this all the time?"

"Not really," Rosie said. "Never had anyone to share it with."

Jules smiled and summoned Rosie with her index finger. The girls flapped their arms and swam closer together. Jules pulled Rosie against her and gave her a kiss. Rosie smiled and kissed her back. "Promise me, Rosie. Don't share this with anyone else. This is ours forever."

A single tear rolled down Rosie's cheek. "I wish we didn't have to leave."

"Everything will be okay. I promise you we're only getting started." Jules feigned a slight but distinctive Humphrey Bogart accent. "*This looks like the beginning of a beautiful friendship.*"

"Wait. You know *Casablanca*?" Rosie asked, surprised. "It's my Gramma Jani's favorite."

"They show it sometimes on movie nights at Ag," Jules said.

Rosie gave an exaggerated frown. "You have movie nights? I'm jealous. No one ever gets together on Tech."

"Looks like we both have a lot to learn."

They swam around giddily in the bubble a while longer before deciding they better swim back into their magnoboots and finish their trustee work. They hugged goodbye with all their might.

After the second "date," Jules desperately wanted to share her good news with someone. She dared not tell any adults, not even her uncles, Dhiman and Ash. She confided in her best friend, Ty Germaine. Jules and Ty grew up together in neighboring huts. He was the brother Jules never had. They always walked to school together and loved to mess around with the goats. They also played on the same soccer and softball teams. Ty was himself fluid as to sexuality, so Jules knew he would understand. "Ty, I think I'm in love. Her name's Rosie. She's the trustee from Tech."

"Forbidden love," Ty cooed, all dimples and grin framed by a bird's nest of golden locks. "Sounds dangerous. It must be thrilling."

"It is," Jules said. "But it goes beyond breaking the rules. She's the one."

CHAPTER 5

The First Generation Embarks

BEFORE ALL THAT forbidden teenage love could bloom, the grown-ups had to spend all those years building a ship. Pippa Jones became a rising star on the Galileo design team after earning her degree in aeronautical engineering. The project was all they talked about in school. It was a miracle to get her job given the intense competition, but Pippa was always a cut above the rest. She was driven, focused, and ambitious. After graduating first in her class, she was personally recruited by Savita Gupta. Although the outer frame was nearly completed when she joined the team, there was no end to the work left to do. Pippa was determined to take the ride herself when the time came. She knew the project was interested in couples. This was no idle trip around the solar system for space tourists. The project needed fertile parents ready to spawn generation upon generation of space explorers. She was on the lookout for a partner, and so much the better if he already worked for the program.

Pippa met Yuri Voss at the local commissary after her first year on the job. They shared a table and some chit chat one day and came to realize they were both single and interested in boarding Galileo. Yuri was a plain looking, newly minted astronaut from the Air Force. He told her he had always dreamed of living on Mars until that quagmire was canceled, so Galileo was a dream come true.

Theirs was never going to be a union of animal passion. Pippa was all business. When she was a little girl, she loved science and wanted a serious career. She never dreamed of getting married. She never had a boyfriend in school, not that she was unattractive. She always had her nose in a book and simply projected an unmistakable vibe that said *stay away*. Yuri was the first man she ever kissed. She thought it was stupid. She didn't understand why people wanted to slobber over each other and spread disease.

Yuri wasn't any better. Pippa recognized he was painfully shy and

awkward around women, which perfectly suited her purpose. The mutual lack of passion probably benefited the relationship for the long term. Neither of them would be missing out on something better. In essence, their union was a business arrangement, though they did test their plumbing a few times to make sure everything worked. A couple months after they met, they learned they were expecting a girl and took it as a sign. The program was interested in couples and pregnancy was not a problem. Rosie could be born on Galileo, which was perfect for the purposes of Sig's experiment. The happy couple tied the knot at a civil ceremony attended only by Pippa's parents, who lived nearby. Yuri's family could not be bothered.

Soon after their union, Pippa and Yuri found themselves in Sig's office being screened as candidates to join the ship. Being the after thought it was, Sig's entire division fit neatly into a modest basement space in General Gurley's headquarter building, no bigger than his former strip mall psych shop. Sig's first charge was finding people with the right stuff, both for the mission in space and for participating in his great experiment. The project certainly couldn't afford to take anyone with less than a pure lust for the Kool-Aid they were peddling. Pippa and Yuri made an appointment and walked together over to Sig's office from one of the operations buildings where the real project work was done. He had been screening applicants for less than a month.

Sig personally greeted them at the door. He had no assistants yet. After exchanging pleasantries, Sig got right down to business. "Are you prepared to raise your child on a spaceship with no hope of a normal life on Earth?"

Pippa and Yuri knew full well why they were required to talk to Sig, but they viewed it as a waste of time for a couple like them. "We're well aware what we're signing up for, Dr. Krautzman," Pippa said.

"Please, everyone calls me Sig. No one calls me Dr. Krautzman."

"Okay, Sig," Yuri said, not bothering to hide his contempt. "Don't worry about Pippa and me. We're all in on this thing. We got married just to get on board. If you ask me, that's total commitment."

Sig looked honestly surprised. "You're not in love?"

Pippa rolled her eyes. "Is that important?"

"I don't know," Sig said. "You're married and have a little bundle of joy on the way. Don't you think it would be nice if you loved each other?"

"Yuri and I have an understanding. We're totally committed to Galileo and therefore totally committed to each other."

"Do you ever fight?" Sig asked.

"Who has time to fight?" Yuri said. "We work on the project eighty hours a week. Look, I'm telling you, there's nothing to worry about with Pippa and me. You couldn't find two better candidates. We'll raise our little girl to be the same as us, pure dedication and determination."

"How do you know you won't feel differently when your baby is born?" Sig pressed. "How do you know you won't wish she could have a normal life on Earth?"

"Have you seen what's happening to our planet lately?" Pippa asked. "No one can expect a normal life here in the future."

"You realize we're asking you to lie to her from birth. You'll be living on the Tech Sphere with the other scientists and engineers. The children must be told Earth is dead and you've been traveling for hundreds of years. We need to find out what that realization might do to a child. It's not clear, you see."

"We know exactly what's expected of us," Yuri said. "It's no different than if she really was born on a ship trillions of miles and hundreds of years from Earth. Those future children will have to learn to deal with it. Our baby girl is no exception. Galileo is the only world she'll ever know. We expect her to live with it."

"Frankly," Pippa added, "we're confident if it's the only world she's ever known she won't feel any sense of loss. We're the only ones who'll know what she could have had."

"Maybe you'll feel guilty knowing what she's missing," Sig suggested.

"That's our problem, doc," Yuri said. "As long as she doesn't know what she's missing, everything will be fine."

"But she'll be able to see imagery of Earth in her upbringing. Galileo will have a complete digital history of where she came from," Sig said.

"All the more reason to tell her it's dead," Pippa said. "She won't have any reason to long for home."

"But you'll know it's not dead," Sig said. "Forgive me if I continue to push, but this is my job. I can't let anyone through with the slightest misgivings."

"Trust us, Sig," Pippa said. "Yuri and I have talked long and hard

about this. We know what we're getting into, and we're prepared for the consequences. We're both passionate about space, have been all our lives. We firmly believe people must leave Earth if our species is to survive in the long run. Now's the time. It's not getting any cooler out there. No one is going to have a future if we don't make it to Earth Two someday."

"All right," Sig said, standing to wrap things up. "That's what I needed to hear. I know you're being groomed for leadership positions in Tech. I realize my services aren't really needed with you. I'd say you two are as ready for this adventure as anyone I've met. I wish you the best."

Two months later, Pippa and Yuri found themselves riding a space shuttle preparing to dock with Galileo. Pippa impressed the team so much she was named one of several mission commanders on the ship. Yuri was in charge of navigation, although his main job for an indefinite number of years would be dodging other satellites and space junk. They said goodbye to everyone they knew, although they could still keep in touch by video. Their terrestrial acquaintances understood why they were leaving. Neither of them was very close with anyone. Yuri had a couple of brothers he rarely saw. His parents were too busy playing golf in Florida to notice their son was leaving forever. Pippa's parents were another story. She was their only child, and Rosie would be their first grandchild. They were never going to hold her.

Pippa drove to her family home in nearby Katy to break the news. Her father, Ralph Jones, was a perfect specimen of Texas manhood, as well as a retired oil executive, which was a perennial sore spot during Thanksgiving dinners. Her mother, Irene, from whom Pippa got her smarts, was a part-time math teacher and full-time peacemaker in the family. They last saw their daughter at the marriage ceremony. They had been looking forward to being grandparents. News of Pippa's plan to leave the solar system was a shock, to say the least. They knew their daughter worked on the ground side of Galileo, but they never dreamed she would take off someday. "I don't like this one goddamned bit," Ralph snarled, after Pippa broke the news. "It's not right, you hear me? It's not right. Think about your poor mother. She'll never see her only grandchild."

Pippa had come prepared for an argument with her father. "I'm sorry, but some things are more important. At least I can show you video of the baby when she's born, and right on until she's twelve months old. After that, we have to raise her so Galileo is the only world she knows."

"That's a load of crap," Ralph snapped.

Pippa could see her mother was already fighting back tears. "Let's try not to fight," Irene said. She turned to her husband. "What if we never see her again?" She turned to her daughter. "You can't be serious. Are you really going to leave us forever?"

"This whole space lust has been a complete waste of time from the get-go," Ralph said, with the conviction he felt entitled to with age. "It's what I've always said. Look what happened with Mars. People were made for planet Earth, period. We don't belong anywhere else. It's a fool's errand. Your mother and I let you follow your dreams and play astronaut, but we never thought you'd actually leave us someday and deprive us of our only grandchild."

Pippa was accustomed to her father denigrating Galileo and her career and was always prepared to fight back. "We have to sacrifice if the human race has any chance of surviving. Look at the world you and your parents and every generation for the last two hundred years has left us. What life will my baby have if I stay on Earth? One where it's not safe to go outside. Galileo has its own electromagnetic shield to protect us from radiation. That's more than you can say for this broken-down old planet."

"This *broken-down old planet* has been plenty good to us, believe me. Sure, we've made mistakes, but I don't see why we can't try fixing it rather than giving up—that is if you and your genius friends would put half as much energy into solving our problems as you do into turning tail to run."

Pippa closed her eyes and shook her head. "I don't know what you want me to say. It's not up to me. I'm one person. I'm doing what's right for the good of humanity."

"How about doing what's right for your own family?" Ralph asked. Tears began rolling down Irene's face. "Look what you've done to your mother."

Pippa reached for her mother's arm. "I'm sorry, Mom. I really am, but we have to face the hard truth one day. We're all going to die—you, me, and this baby. People will live on. I can't live my life by what will make you guys happy for your remaining years. I have to think about the future."

"Aren't you some superior being then?" Ralph mocked. "I guess only stupid old people care about what's happening in their own little lives."

"If more people cared about future generations, Earth wouldn't be in this mess. Maybe if people stopped getting drunk on oil and high on coal for the last few hundred years, the planet wouldn't be turning into Venus."

"Oil put you through school, don't forget it," Ralph said.

"How could I?" Pippa asked. "Maybe that's what drove me to Galileo, to atone for the sins of my own family."

"You climate change fanatics are all the same," Ralph said.

"I could say the same for you deniers," Pippa said. "I've seen the weather report for tomorrow and the day after tomorrow, and it's hot followed by hotter. Excuse me if I want to give a better chance to my descendants someday."

"You've got it figured out," Ralph said, "but let me tell you something. I know what will happen if our people do manage to get to Earth Two. You know what's going to happen? They'll wreck the joint like they did here. You know how I know? Human nature, plain and simple. People only care about themselves. Earth Two will be no different. There will be limited resources, and it'll be every man for himself. Mark my words."

Pippa bowed her head and sadly sighed. "That's a pretty bleak view of humanity. If that's true, we should all give up and kill ourselves. We're nothing but a plague on the Universe. But you know what? I'm betting you're wrong. Galileo will have the very best of us on board. We'll raise our children to respect each other and the environment. We'll learn to live in balance if we hope to see a new world. Greed and selfishness will be a thing of the past. The people who land someday on Earth Two will be the best of humanity — people who value sharing and caring for each other above everything else. We won't make it otherwise."

"All right, all right," Ralph said, defeated. "I know when I'm beat. No one wants to listen to a cranky old man. I've said my piece. You've made up your mind and you're leaving. I get it. Nothing I say will change that. I hope you know what you're doing. I hope we can keep in touch, and you'll let us know how our granddaughter's doing."

The goodbye went pretty much as expected. They shared a stilted last meal with a lot more tears and silence. Although Pippa was sad to leave under the circumstances, she couldn't wait to get away. She knew she would see them now and then by video, but it was no substitute for human touch. She shared a long final hug with her mother before getting in her car and driving away from her childhood home for the last time. As she hit the freeway, she finally let herself cry.

CHAPTER 6

Galileo Goes Green

IN ADDITION TO being Jules' mom, Tashi Zhao was one of the logistical masterminds behind the intricate, self-sustaining ecosystem that was Ag. When she was a child, her family emigrated from Thailand and made their fortune with a chain of restaurants. Growing up in the San Francisco Bay Area, she never showed the slightest inclination to abandon her planet for some grand scheme to save the human race. She was the quintessential green freak, committed to the cause of adapting her state to a permanent and paralyzing drought. Tashi went off to school to study ecology and botany. After graduation, she found her way to a biodome commune in Arizona, where she hoped to figure out how to save California. Instead, she ended up pioneering the sustainability techniques that would become essential for Galileo's marathon quest. Happily, a few weeks after arriving, the Universe decided to reunite her with her childhood sweetheart.

Tashi had not seen Noah Engel since high school, though she kept in touch during college. She first met him when they were kids attending a boutique elementary school in Silicon Valley. They were partners in an ecology lab and minor celebrities in the orchestra, where Tashi was first chair violin. They were drawn to each other's outsider mentality and mystique, and they presented a striking picture together with Tashi's slight frame next to Noah's imposing physique.

Tashi couldn't resist Noah's worldly pedigree. He could play any instrument. His musical talent came as some surprise to his parents, who were tech entrepreneurs in the Bay Area and paid little attention to music. They adopted Noah from the Dominican Republic when he was a one-year-old orphan and didn't know his father had been a local Bachata music sensation. He had gone off to college on the east coast to earn a degree in environmental studies. The biodome reignited their spark, and they married during their second year in the desert. After two years of impressive breakthroughs

in Arizona, NASA took notice and romanced the couple to Antarctica, where the Galileo project intended to model a self-reliant ecosystem capable of surviving hundreds of years in space.

From Antarctica, it would be one small step to Galileo itself.

The facility Tashi spent the next two years designing and building with Noah was intended to be a replica of the Agro Sphere NASA had been constructing in space for nearly ten years. It was certainly no greenhouse. Like Galileo, it had no windows. It had to be a one hundred percent artificial environment, able to survive in the harshest environment, hence Antarctica.

Having first enticed them to the bottom of the planet, General Gurley and Savita Gupta personally made the arduous journey to McMurdo Station to woo the couple away from Earth entirely. Crossing the Southern Ocean, it might have dawned on the two seasick cheerleaders they could have set up a satellite link. However, they wanted to see what the wonder couple could do firsthand and give a personal touch to their recruitment, which seemed so crucial to the success of the mission.

Tashi had no idea her work had made such a splash with the higher mucky-mucks, much less that the intrepid duo was coming. She was shocked to see the general on her doorstep. She gave her guests a brief tour of the facility. The general was duly impressed. "I want you to know what a bang-up job you've done down here. Don't think it has gone unnoticed. I hardly believe my peepers. If I didn't know better, I'd swear I was in the Bahamas."

"That's kind of you to say, General," Tashi said. "The credit really goes to Noah. We can't believe you guys are actually here."

"Don't listen to her," Noah said. "I couldn't do any of this without Tashi. What brings you all this way?"

Savita didn't waste any time getting right down to business. "You guys are vital to this mission. We want you to head up our operations in space."

Tashi and Noah both dropped their jaws. "Come again?" Tashi asked, shocked.

Savita was armed with arguments specifically tailored for the pair of bleeding hearts. "We think you'd be perfect to get the Agro Sphere up and running. Look what you've done to this place. The general's right, it's like the tropics here in the middle of freaking Antarctica. It's an incredible achievement."

Speechless, Tashi flashed a look of surprise and desperation at Noah. He shook his head in disbelief and turned to their brazen employers. "Let me see if I've got this straight. You want us to go into space? Forever? Leave Earth forever?"

"Your country needs you," the general said.

Tashi came to her senses. "You've got to be kidding. When we signed on, it was supposed to be for no more than two years. We've done more with this place than we ever imagined. That said, we're ready to take what we've learned back to California. Someone else can worry about outer space. Our people need us here on Earth."

Savita was not taking no for an answer. "Like the general said, your country needs you more. We're looking at the big picture here. If our species doesn't want to go extinct someday, we need to get off this rock."

"We know why you're doing it, and we were glad to help," Noah said. "But frankly, we're not ready to give up on Earth yet. We think this planet still has a fighting chance despite the mess we've made. We want to be a part of the solution. How can we do that if we leave?"

"But this is your country asking, son," General Gurley said. "As Uncle Sam says, I want you."

"I don't know if Uncle Sam has noticed or not," Tashi said, "but I'm pregnant."

"It's all the more reason to go," Savita said. "We need couples willing to raise their families in space. This is going to be a multi-generational mission. Your descendants will someday start a new world on Earth Two."

"Listen to the lady," General Gurley said. "What if our ancestors hundreds of years ago never set off for new worlds? Where would we be?"

Tashi scoffed at the general's utterly tone-deaf plea. "I'd be living in Thailand, and Noah would be in the Dominican, that's where."

"Maybe that's a bad example. You know what I mean," the general said.

Savita deployed the heavy artillery. "Obviously, this comes as a shock. All we ask is you think it over. It's the adventure of a lifetime. You would build a new society from scratch on Ag. How many people get this opportunity? The ecological breakthroughs you made here can be studied by others. It's not as if you two can single-handedly save the entire state of California. On Galileo, you'd have free reign. You would set the stage for generations to come—the culture, the values, and the way of life. You'd be true pioneers."

Tashi did think it over and discuss it with Noah. They discovered Savita's words hit the mark in both of them. Maybe it was the flattery, or maybe it was because both had moved so far from where they were born. The hippy lefty in the core of their beings liked the idea of starting a new society, a utopia. They signed on, but they still had to go through Sig. Everyone had to go through Sig. They wrapped up their project in Antarctica and found themselves in Sig's humble office the following month at the Johnson Space Center.

Tashi arrived with Noah at Sig's office for their screening, which at that point was a mere formality like Pippa and Yuri's. He now had a receptionist, and the couple had to wait fifteen minutes in his outer office before seeing the dubious headshrinker. Tashi found the whole idea of being screened for the mission ridiculous after being begged to join. Sig ushered them into his office. "I understand you two want to blast off into space. I realize it's very sexy, but it's my job to make sure you know what you're getting into."

"Our heads are square on our shoulders, Dr. Krautzman," Noah said.

"Please, everyone calls me Sig. No one calls me Dr. Krautzman."

Tashi spun her head in disdain. "Okay, Sig. We're one big happy family here, aren't we? You know we've been part of the Galileo project for two years now."

"Yes, I hear you built quite a paradise down under. The wife and I are thinking of taking our vacation there."

"We know why we're here, Sig," Noah said. "Let's cut to the chase. You need to make sure no one backs out on this down the road. We get it. We expect nothing less from you. You're finding the people we'll be in charge of ultimately, so we want you to succeed as much as anybody. Our lives depend on it. There's nothing to worry about with Tashi and me."

"How can you be sure?" Sig asked.

"We're back from two years of self-imposed isolation in Antarctica," Noah said. "I'd say that shows commitment."

"There's a hell of a difference between living somewhere else on Earth for a couple years and leaving the planet, your family, your friends, and everything you've ever known for the rest of your lives, don't you think?"

Tashi put her hand to her mouth in mock astonishment. "Gosh, Noah, did you hear what he said? We'd be leaving the planet, our families, our friends, and everything we've ever known for the rest of our lives. Did you

think of that? We must be insane. We should have our heads examined." She turned to Sig and said flatly. "What do you charge for psychoanalysis?"

"Don't mind her," Noah said. "My wife's a kidder, always has been. It's why I love her."

"How about your little bundle of joy?" Sig asked. "Are you sure you can deprive your child of setting foot on Earth for a single day of their life?"

Tashi feigned surprise. "What are you saying, Sig? I packed on a few extra pounds while I was away, but I don't look that bad, do I?"

"Once again, Sig, excuse my wife. We are indeed expecting, and we already know it's a girl. We're going to name her Jules."

"Jules, how lovely," Sig said. "Have you thought how hard this decision might be on poor little Jules someday? She'll hear of the beautiful, blue green planet you left before she was born, and she'll blame you for never getting to take a breath of fresh air."

"Is this what you say to all the candidates?" Tashi asked. "What are you trying to do, scare everyone away?"

"In a sense, yes," Sig said. "This mission isn't for everyone. There's no backing out once you're up there."

"Did you hear that, Noah?" Tashi gushed. "There's no backing out. Are you sure we're doing right by our little girl?"

"Enough already, babe," Noah said. "Don't scare away the good doctor. Trust us, Sig, we've thought this through from every angle. We're planning to build an ideal society up there. In some ways it may be better than life on Earth."

"But what will you do if Jules comes to you one day crying and begging you take her back to Earth? What if she tells you she hates you for depriving her of a natural life, of making her a prisoner on a stupid ship? It could get downright claustrophobic."

Tashi donned a look of horror. "Claustrophobia? I never thought of that. What are you getting us into, Noah? I can take a lot of things, but not that. Isn't it fatal? What about space madness? Remember what happened to Jack Nicholson in *The Shining*?"

"We'll take our chances with the claustrophobia and madness," Noah said.

"Your wife's a real stitch," Sig said. "You're a lucky man. You should hear my wife, Billie Jo, sometime. Always riding my ass."

"I'm sorry to hear that," Tashi said. "But all kidding aside, I think we're done here. You know full well General Gurley and Savita Gupta begged us to sign on. There's no way you'll disqualify us. We're running this show. You're doing a fine job, Sig. If anyone can weed out the weaklings, it's you. We'll worry about what to tell little Jules someday, and you make sure you don't let anyone slip through the cracks who isn't one hundred percent solid. I'll bet you get a lot of cranks trying to sign up for the wrong reasons."

Sig nodded quickly. "Oh my, yes, people trying to run away from dead end jobs, meaningless lives, and rotten relationships. I've seen everything. I'm not interested in people running away from something. I'm looking for those looking forward to something—the dreamers and explorers. If anyone can create a perfect world up there, it's you and Noah."

Noah and Tashi "passed" Sig's test. There was nothing left but to tie up the rest of their earthly affairs and prepare for launch. Fortunately, neither managed to accumulate much in the way of typical human baggage—no real estate, no furniture, no knickknacks, and no pets to find a home. Their vagabond lifestyle after college served them well. Like Pippa and Yuri, they both had family to bid farewell. Noah's parents took him from his island and culture and always figured he would leave again someday.

Tashi's parents, siblings, and extended family were another matter. Family ties were paramount in her culture. Her parents would never even get to see Jules, one of their precious grandchildren. While they agreed to let Tashi going off to college, they always secretly hoped she would come back someday to join the family enterprise. Tashi was never interested in the culinary business. It was one thing for a family to leave their homeland in pursuit of more opportunity, but none of them could have dreamed Tashi would end up leaving the planet entirely.

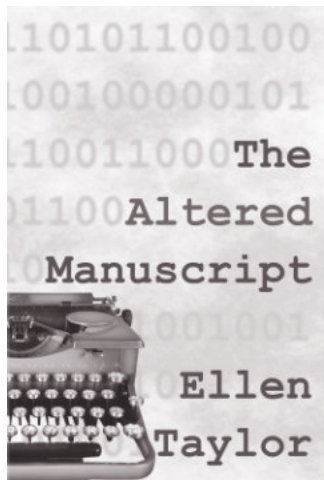
Tashi grieved through a series of tearful goodbyes. She nearly changed her mind more than once. She and Noah spent many long hours on the verge of dropping out. They decided to stay on for the same reasons Pippa told her father. The future of their species might hang in the balance. Ultimately, their devotion to each other outweighed all other considerations. Everyone recognized the most important person in the lives of Noah and Tashi was each other.

And baby makes three.

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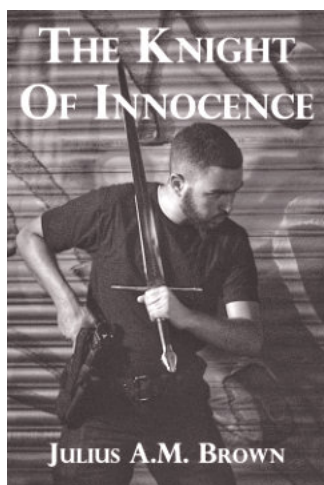
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The Altered Manuscript

Ellen Taylor

The accidental discovery of the narration device completely changed entertainment and proved too dangerous to use without strict laws in place. Junior understood the reason behind these laws, which is why Bree does not know she's a character in a story. When a rogue narrator hacks into the system and begins creating chaos in Junior's story, does Junior continue to follow the laws to keep herself safe, or does she risk it all to protect the characters she loves?



The Knight of Innocence

Julius Brown

Young people are being killed by the dozens. The police are baffled by the dismembered bodies and missing persons reports. With Baltimore about to become a playground for demons, the communities turn to the one man in the city sworn to defend them. Armed with a magical sword, a desert eagle—because he can't hit a target—and a network of friends better suited for the job, can Michael Franklin White prevent a wizard from opening a portal to Hell in his city?



Time Starts Now

Michael Walsh

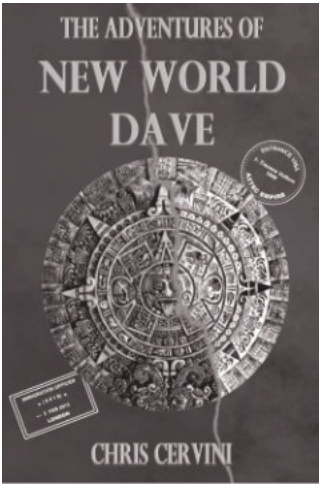
Professor Cal Sutherland’s research on time travel elicits only snide remarks from fellow philosophers and rejection notices from journals. Even Cal would admit that time travelers probably aren’t real—until he encounters one inside his neighbor’s burning house. Cal soon learns that, while the past cannot be changed, there is much a time traveler can do in the past. Unfortunately for Cal, this includes the possibility of dying there...



A Third Kind

J. C. Campbell

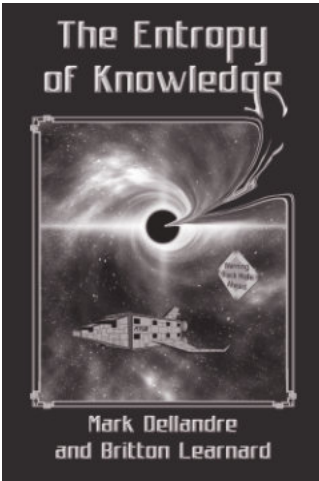
He was to have been an immortal undead, to have power and strength like he’d never known in mortal life. The Vampyrs lied. When he awoke he was something else, a creature so foul they abandoned him to die alone in a crypt. When the local ruling Vampyr clan realizes what is living in their midst, they come in force to destroy Kaleb and wipe every last trace of his existence from the face of the earth.



The Adventures of New World Dave

Chris Cervini

In the spring of 1519, Hernán Cortés arrived at the shores of Mexico to conquer the Aztec Empire and claim its gold for the glory of Spain. That's what the history books tell us. But sometimes, right in the middle of the history we know, somebody goes and does something to change one important detail, and the world is never the same...



The Entropy of Knowledge

Mark Dellandre and Britton Learnard

We've all had moments when we felt like we were surrounded by idiots...

Babylon Briggs feels that pain every day because his town, his planet, even his galaxy, is jam-packed with the most thick-headed simpletons imaginable. So when his home world is invaded by a group of equally clueless conquerors, it's up to Babylon to save the day. The only question:

Is he smart enough?

"Sometimes I get the feeling we're not that far away from Earth. I feel like everyone on this ship is hiding something. Doesn't it seem strange there aren't any windows on Galileo? What's out there they don't want us to see? It's like we're trapped inside some bizarre experiment – like some sort of space zoo."

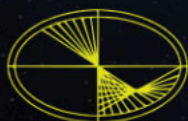
Earth has been left for dead. In the wreckage of global warming, scientists have scrambled to design Galileo, a space ark sustaining generations of humans across trillions of miles of travel in hopes to someday colonize the planet coined as Earth Two. Or at least that's the story those born onboard have been told.

Rosie Voss and Jules Engel are star-crossed eighteen-year-olds from two isolated sides of the ship. They were never supposed to meet, let alone fall in love. A chance encounter leads them to uncover the inconsistencies with the histories their respective sides have been told, as well as their true purpose on Galileo: to serve as unbeknownst subjects in an experimental study of children growing up in captivity.

Confronted with the lies they've been brought up on, Rosie and Jules set out to reveal the truth Galileo hides and form a plan to rebel, even if it means risking their families and their lives trying.



About the Author: Andrew K. Berger is a public defender in Detroit Lakes, Minnesota. He studied English at the University of Iowa and law at Hamline University in St. Paul. After the last of his three children flew the coop, he discovered some unwritten manuscripts lurking inside his head demanding to be unleashed. *Einstein's Zoo* is his first published novel.



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