

ASTEROIDS

Bridge to Nowhere

Prologue

Space. Our solar system. The sun that wakes us each morning and eight planets locked in orbit around that glowing orb. All spinning and moving together for billions of years through,

Space. Pluto, Haumea, Sedna and one trillion other objects large and small composed of rock, metal, and ice orbit in Kuiper belt rotating in the same direction as the eight planets all moving together through,

Space. The heliosphere, a tear-shaped bubble of solar wind that envelopes the total mass of our inner and outer solar system as it moves through,

Space. This bubble of planets, moons, comets, and asteroids travels at the speed of five hundred thousand miles per hour in an orbit around our Milky Way galaxy. A single transit taking over two hundred million years.

This orchestrated masterpiece of objects has moved and rotated in observable, predictable patterns for untold millennia, until one day when a young scientist saw something he didn't quite understand. He observed something unpredictable. He checked again and as he adjusted his glasses; he spotted an old newspaper article lying on his desk:

Scientists have claimed that a giant meteorite, that exploded in the Earth's atmosphere, may have triggered the extinction of ice age animals such as woolly mammoths.

Researchers found evidence that a large meteorite broke apart in the atmosphere around 12,800 years ago; around the time when mammoths died out. By studying deposits at eighteen archaeological sites around the world, these researchers found tiny spheres of carbon they say are characteristic of multiple impacts and midair explosions from meteorite fragments. They concluded that the spheres were formed by the melting of sediment at temperatures of over 2,200 degrees Celsius, caused by the heat and shock waves created by an "extraterrestrial object" passing through the atmosphere. Their study, which is published in the journal Proceedings of the National Academy of Sciences, estimates that ten million tons of these "spherules" were thrown over an area of more than nineteen million square miles by meteorite fragmentation.

Besides large animals dying out around the time of the impact, scientists also claim that there is evidence for major human cultural changes. Professor Kenneth Tankersley, an anthropologist and geologist at the University of Cincinnati, who took part in the study, said the changes appeared to have happened "within a lifetime."

"This likely caused climate change and forced this scenario. You can move, downsize, or you can go extinct. Humans at the time were just as resourceful and intelligent as we are today. With mammoth off

the dinner table, humans were forced to adapt, which they did to great success. It's a reminder of how fragile we are. Imagine an explosion that happened today that went across four continents.

"The human species would go on. But it would be different. It would be a game changer."

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The young scientist was well aware that asteroids have impacted Earth many times throughout history, sometimes with catastrophic consequences, but what he observed was not a single asteroid. His jaw clenched. *Panic is not an appropriate response*, he rebuked himself. He adjusted his black-rimmed glasses again and straightened the collar of his white button-down shirt. He must verify his observation. If confirmed, he had bad news for planet Earth. Who could he tell? How does one prepare for the end of the world?

Part One—The Bliss Protocol

Chapter 1: Frog Giggin’

Near Future: Briarcliffe Acres—Myrtle Beach, South Carolina USA

Early Sunday Morning

Sander lies in his bed listening in the dark. Silence. His parents are asleep. He looks to his younger brother’s bed across the room. Heavy breathing. *Good, the little brat’s asleep.* Sander checks the time: 1:00 a.m. He needs to get moving. His best friend, Brody, will be down the street.

Sander slides out of bed and pulls on the clothes he’d tossed to the floor earlier. The boy’s bedroom features a window at a height of five feet. Sander removed the window screen a few months earlier and hid it behind the bushes in the backyard.

Sander also moved his old toy box to rest beneath the window, creating a perfect step. Now the window is waist height; easy for him to get out. It’s a six-foot jump from the window to the grass. It’s a perfect way to sneak out of the house.

He has snuck out many weekend nights to meet up with Brody and other friends to hang out or go frog giggin’ in the South Carolina wetlands. After slipping on his shoes, he steps up on the wooden toy box and slides the window open.

“Where are you going?” The voice of his younger brother, Colton, breaks the night’s silence. The sound startles Sander. He’s snuck out and back many times without waking Colton.

“Shush. You’ll wake up Mom and Dad,” Sander says in a hushed tone.

“Going out for a date with your boyfriend, Brody?” asks Colton.

Sander responds to Colton’s comment by stepping from the toy box to his brother’s bed then dropping to his knees, straddling his brother’s body. He lowers his fist to the center of Colton’s chest. “One punch, brat. One hard punch, right here, and your heart will stop beating. You’ll be dead. Good riddance!” Sander presses his knuckled fist hard into Colton’s chest, knowing it’s painful.

Colton thrusts his hips, attempting to buck his brother off, causing the headboard of the bed to knock against the wall with a loud *thunk*. Both boys freeze. They listen for parents awakened by the noise. Colton whispers, “Let me go with you.”

Sander grinds his fist into Colton’s chest once more for good measure, before rising and stepping back to the toy box. “Find your own friends, wimp. We don’t want you tagging along,” argues Sander.

“I won’t bother you guys. Come on. Dad said I should get out of the house more,” Colton pleads.

“Yeah, he said you should make your own friends, not hang out with mine,” Sander replies, as he slides the window open wide enough to scramble through.

“I’ll tell Mom you’ve been sneaking out.”

“You tell Mom and I’ll kill you, you friggin’ little brat. God, why couldn’t I have been an only child?”

“Let me go with you and I won’t tell.”

“All right. Shit! Don’t make any noise and stay away from me.”

Colton throws back his blankets to reveal he’s dressed and ready for adventure. The boys then crawl out the window and jump to the grass.

Sander’s friend Brody waits down the street. Brody is a fifteen-year-old boy, tall and thin with unruly dark hair and a face full of acne.

Brody spots the boys approaching. “Hey, Sander. I almost gave up on ya. What? You brought the little Colt? I thought he’s afraid of the dark.”

“He begged me to bring him along.”

“Hey, Colt. Better watch out, the swamp monster might get you!”

“Yeah, let’s feed him to the swamp monster, or dump him into the pond and frog gig him,” exclaims Sander as the three boys walk along the street heading toward the wetlands of scattered ponds and tall grass.

“Ah, knock it off, guys,” Colton replies. “I’m not afraid. In the wetlands, it’s the coyotes you need to worry about. Didn’t you hear on the news? They found two teenagers in the wetlands last week. Their bodies all chewed up by coyotes. It was a bloody mess.”

“Coyotes! We’ve never seen coyotes out here, have we Sander?” Brody asks.

“Nah, Colton’s making it up. I don’t think we have coyotes on the Carolina coast,” Sander says.

The boys walk along a dirt trail that winds through tall grass, leading into the wetlands. “If you listen, you might hear a coyote howl in the distance,” Colton whispers in his creepiest voice.

“Shut up, Colton! You won’t scare us,” Sander says, as he picks up his pace to walk abreast of Brody. Colton walks behind the older boys, then pulls his shirt over his mouth and lets out a soft howl, trying to make it sound like the howl is coming from a distance.

“Colton, knock it off. I know that was you. I should have tied you to your bed and gagged you, so you can’t squeal to Mom.” Then Sander hears another howl. He’s startled and stops for a moment to listen.

Brody tries to keep his composure, but when Sander looks at him, he can’t contain himself and breaks into a giggle. Colton howls again. Sander smiles, then makes a loud exaggerated howl. The boys walk through the wetlands howling in the night.

After several howls, the boys walk through the thicket of trees that ring their favorite frog gigging pond where the sound of croaking frogs replaces the sound of howling boys. Brody goes to a nearby tree to retrieve the frog gigging sticks he and Sander had prepared earlier. They’d cut long thin branches, stripped them of leaves, and sharpened one end to make six-foot-long spears. Brody hands a spear to Sander. “We only have two spears, so you have to watch our deadly attacks,” Sander says to Colton as he holds his spear like a warrior.

Colton doesn’t look disappointed.

“Don’t worry. If I get tired, I’ll let you use my spear,” says Brody.

Sander walks through the tall grass to the edge of the pond, holding his spear at the ready. He listens and looks for nearby frogs, then jabs his spear into the weeds at the pond’s edge, making a sound. “Hi-ya!” He extracts the spear from the weeds. No frog.

Brody tiptoes along the edge of the pond, looking for a good spot to mount his attack. He steps closer to the edge. Water seeps into his shoes. He sees a frog, raises his spear, and

thrusts. The frog jumps just in time to miss certain skewering. “Damn it! I missed,” cries Brody. Sander and Brody search for their next quarry.

Colton quickly loses interest in the frog-spearing expedition. He studies the sky. It’s a clear moonless night allowing the stars to shine brighter. He can make out some constellations he learned about at scout camp. As he gazes at the stars, a bright light appears in the eastern sky over the Atlantic. Growing bigger and brighter, the light moves fast toward the shore, heading directly over wetlands.

“Hey, guys, look at the sky,” Colton yells. “It’s a shooting star.”

Brody and Sander look up, spears in hand. The object becomes blindingly bright before it explodes in the sky. The boys cover their eyes, shielding them from the sudden brightness. They see the explosion first. The sound comes later.

Brody jumps and hollers, “Wow, did you see that? It blew up!”

“Dang, that was awesome! Maybe it’s an alien spaceship crashing to Earth,” exclaims Sander.

Seconds after the explosion, a strange *sphit, sphit, sphit* sound races past the boys, sending ripples across the calm pond, tearing leaves off trees, and causing some branches to fall. The boys stand quiet and still. A dog barks in the distance.

Twenty seconds after the explosion, a tremendous hot wind knocks the boys over. The wind passes and all is calm. Sander attempts to stand. He gets up on one knee.

Colton, laying in the mud, looks to his brother and sees several blood spots staining Sander’s shirt. “You’re bleeding.”

Sander looks at his shirt and notices the blood spots. “I don’t feel anything.” Sander looks at Colton. Colton has several spots of blood on his shirt, and they’re growing larger.

“You’re the one bleeding, don’t blame me.” Sander looks over to Brody, who’s lying in the mud. He isn’t moving.

Colton struggles to move. He tries to get out of the muddy patch he fell in, but he can’t move his body. He whimpers, “I’m telling Mom.” Those are Colton’s last words. He lies quiet and still at the muddy edge of the pond. The blood spots on his shirt swell, growing into one big blood stain.

Sander feels warm blood run over his night-chilled skin. The blood is his. He tries again to stand. With great effort, he gets to his feet and stumbles over to Brody. In the dim light, he can see Brody’s face. There’s a black hole where his friend’s nose was. Brody is dead.

Sander turns and takes a few steps up the trail then slumps to his knees before toppling over onto his side. He lies in the muddy trail breathing in halting gasps. He doesn’t move or cry out. Sander’s eyes are open. He observes the wetland grass and watches a small bug climb up a stalk. “Damn, I left the bedroom window open.” He exhales. Sander is dead.

CTBTO Monitoring Station

The Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) has a network of forty-

five infrasound stations designed to track atomic blasts across the planet. The strange thing is, beginning in the year 2000, they intercepted strange sounds that were not atmospheric atomic blasts. Through the year 2030, the infrasound system had catalogued one hundred eighty-six major explosions on Earth. A-bombs didn't cause any of the explosions. They were all the result of asteroid strikes.

The CTBTO dug into the reports. The asteroid events ranged in energy from one to six hundred kilotons. By comparison, the bomb that destroyed the Japanese city of Hiroshima was a fifteen-kiloton device. Fortunately, most of these space rocks disintegrated high in the atmosphere and caused few problems on the ground. Some events people will have heard about, such as the twenty-meter-wide object that ripped across the sky above the Russian city of Chelyabinsk in 2013 or the forty-meter-wide asteroid that lit up the skies over Buffalo, New York on a winter day in 2024. But many of the asteroid strikes on Earth went unseen and unreported because they occurred over oceans.

The CTBTO has monitored atmospheric asteroid impacts since 2013. What they don't know is another government agency is also monitoring the feed. And that agency does more than listen.

Early Sunday morning, the CTBTO detected an atmospheric asteroid explosion over the South Carolina wetlands.

A remote monitoring station managed by an obscure government agency also detects the explosion. Because the impact is over a populated region, a surveillance satellite outfitted with cameras and infrared imaging scans the impact area to determine if there is any damage.

A young woman sits in a dark room. Her young face glows from the light of several screens arrayed before her as she views the satellite footage in real time. She wears a blue tunic, and she wears her long hair pulled back. She is professional and stoic as she surveys the impact site. Three heat signatures appear on a screen. She presses an icon and reports. "We have three down at North thirty-three degrees, forty-seven minutes, eleven point three nine seconds by West seventy-eight degrees, forty-four minutes, fifty-nine seconds."

There is silence for a moment, then a monotone voice replies, "Confirmed. Dispatching."

Before Daylight—Wetlands near Myrtle Beach, SC

Fog lingers lazily over the silent wetland pond. A team of four men dressed in flat-gray, digitally generated camouflaged suits work efficiently and nearly invisibly in the predawn light.

The four men do not work to eradicate the scene. The dead are dead. No one can change that, but they can control the perception of the cause of death. Brody's body is already stiffening. Rigor mortis is setting in. All the easier to stand him up. One man squats down and struggles to keep Brody standing while another man positions a shotgun in the dead boy's hands, pointing the barrel at his face.

The team's leader, a tall, muscular man with a bald head, receives a call on his VUE lens. He views a stout, Caucasian man wearing a white business shirt and thick black-framed glasses. The chubby man speaks. "Kobalt, is the site under control?"

The team leader, dressed in the same gray camouflage as his team, wears no markings to indicate rank or military affiliation, yet his physique and the way he moves conveys that he is military or ex-military. He speaks, with a deep raspy tone. "We're almost finished."

The shotgun blasts. A mist composed of pulverized blood, brain and bone fills the air. The kneeling man holding Brody allows the teenage body to jolt backward. Brody's body falls stiffly in the grassy mud. The frogs are silent, watching.

The white man displayed in the VUE lens speaks. "The gun shots will be reported to the police. Local news will report an accidental shooting followed by suicide. A late-night teenage adventure gone wrong. Another episode of an illegal gun used by juveniles."

Kobalt nods. With hand gestures, he directs his men to sweep the ground to cover their footprints. He looks in his VUE lens to continue his report. "Understood, sir. That's what local law enforcement will find when they arrive to investigate the scene."

The white man with the black frame glasses gives an approving nod. "Tragic for the families. What happened is out of our control. We can only control the perception."

Kobalt and his team move through the grass of the wetlands, sweeping the trail of their boot prints while leaving the imprints of the boys' shoes, leading the way for investigators to discover the gory scene.

Kobalt speaks softly but with a force picked up through the microphone of his VUE lens. "We can't keep this up. My team is exhausted. The frequency of the events is increasing. We've been chasing these things around the globe. How long do you think can we keep going like this?"

The man in the VUE replies, "Kobalt, the time is near. We have controlled the news and information to keep the masses peaceful. We have worked ceaselessly to keep them unaware of what's coming, and we have been supremely successful. Even the highest levels of government around the world are oblivious to what's about to happen. It's almost time. Once you have secured the scene, bring your men and join us in the city."

After the sun rose on the wetlands that morning, police investigators and the coroner came to the desired conclusion. There is no news about the threat of asteroids impacting Earth killing teenage boys.

Later that morning, the portly man dressed in the white button-down shirt and black rim glasses watches a video stream from the Myrtle Beach news. He watches a young female reporter recount the story:

A sonic boom woke residents of Myrtle Beach early this morning. There are reports of shattered nerves and broken windows, but no injuries. Authorities attribute the event to supersonic aircraft flying out of nearby Shaw Air Force Base. The Air Force has not responded to inquiries. In other news, local police report that three boys were found dead this morning. Authorities believe the boys were playing with an old, outlawed shotgun they found in the wetlands. Police are calling this a terrible accident. They believe one boy fired a shot striking his two friends. The boy with the gun then took his own life. It's a sad day for our community. We send our condolences to the boys' families.

The report moves on to an interview with the chief of police, who warns citizens not to pick up or use illegal firearms.

The news is controlled.

Control. This is the objective of the man who observes. He watches the screens displayed in his VUE, satisfied with the outcome of this event.

Chapter 2: Class Dismissed

Monday Afternoon

Assistant Professor Rick Munday checks his e-mail for the fourth time since lunch. The National Science Foundation will announce grant funding awards this week. Six months earlier Rick had submitted a grant proposal entitled *Disturbance Beyond the Kuiper Belt: Potential Risks to Planet Earth*. Rick hopes for news of his grant approval.

His office is a jumbled mess. Stacks of books and science journals clutter the floor. Rick has plastered the walls with drawings of planets, charts, and a map of the pockmarked dark side of the moon. A diagram of the solar system covers one wall. It's marked with notes in various colors. The diagram displays the solar system with the asteroid belt hovering between the orbits of Mars and Jupiter. He has scribbled notes along the edges of the map marking the Kuiper belt, an area that lies beyond the acknowledged eight planets of our solar system.

In recent years, funds for space science have all but dried up. Although the government has slashed budgets, there's still funding out there for the odd project or study that gains attention of the right people. Rick hopes his proposal will get the attention it deserves.

His office door, blocked by a stack of science journals, opens just enough to allow the head of a thin, scraggly bearded teaching assistant to poke through. "Professor Heinrich won't be in today. He wants you to take the three-p.m. lecture."

"OK," says Munday, still looking at his computer screen as if he expects news of his grant to appear.

"The professor said stick with the syllabus and the assigned subject matter, or you will never give a lecture at this institution again! His words, not mine. I like your lectures, fascinating shit." The door closes.

"Oh yeah, thanks," Munday says to the closed office door.

Rick touches his Smart-Band to call his wife. "Hey, hon, the three-p.m. lecture just got dumped on me. I'll be home later than expected."

"Doesn't that professor ever teach a class?" asks his wife, Courtney.

"He must be at some luncheon cozying up to alumni donors. I don't mind, the department needs funding and the lectures give me a chance to hash out my theories. It's different when you hear yourself say things out loud," says Rick.

"You'll still make it to the picnic dinner, won't you?" asks Courtney.

"Wouldn't miss it."

"Uncle Rob called. He's coming with us."

"Great. He needs to get out of that old house more often. I feel bad. I haven't visited him for months."

Rick Munday loves his wife and family. It's the type of love rarely seen between a husband and wife. He focuses on his family, doing his best to make it to every dinner, soccer practice and baseball game. While he's succeeded in family life, his career has suffered.

Assistant Professor of Astrophysics, Dr. Rick Munday struggles to get papers published and grants funded. Without grants Rick lives on a meager assistant professor's salary. Grant

approval would mean more money for himself and the funds to hire a team of astrophysicists to conduct research and publish the results, which leads to additional funding. Providing for his family has been a challenge.

Rick checks his Smart-Band: 2:30 p.m. He'd better get going or he'll be late for the lecture. If he's late, Dr. Heinrich will be mad. Rick checks the department's cloud server and locates the lecture presentation and notes. He puts a copy in his personal folder. Seconds later, his band beeps, acknowledging the file transfer.

The lecture notes and slides for *The Evolving Universe*, a class designed for freshmen students covering basic astronomy. They are the same notes and slides Dr. Heinrich has used for the past decade, with few changes even though science has advanced. It's one of the many things that frustrates Rick about working for Dr. Heinrich.

Rick pulls his computer monitor out of its cradle, rolls up the flexible monitor, and pushes it into a fabric tube on the side of his backpack. He pulls the office door open enough to slide out and walks to the auditorium.

A second monitor in Rick's office runs a screen saver displaying the old arcade game, Asteroids. A black screen fills with odd-shaped blocks representing asteroids floating around the screen. The asteroids crash into one another, breaking into smaller rocks. A small triangular spaceship appears on the screen beeping, shooting, and blowing up asteroids, making space for the little spaceship to survive.

The TV volume is loud, competing with the noise of the construction project in the kitchen. The reality series, *Doomsday Daredevils*, is playing. This episode features a man in Nebraska building a personal submarine because he is sure God told him to do so. The host of the show asks the Nebraska fellow why God told him to build a submarine, and the man says he doesn't know. He's just supposed to do it. The interviewer asks, "Did God say it's because of climate change? Does he expect melting polar ice caps to raise sea levels enough to put the state of Nebraska in the middle of a new ocean?" The man says God doesn't need to give a reason. The man continues to work on his oddly shaped submarine.

"Crackpot," an old man yells at the TV, waving a power drill in the air. "Everyone knows the Arctic ice cap is floating on the ocean, so if it melts, big deal. Did your glass of Coke overflow when the ice melted? They'll put any idiot on TV these days." The old man grabs a wrench and tightens a bolt.

He barely hears the phone ring over the sound of the TV. The phone doesn't ring much unless it's a political party calling under the premise of a survey but is soliciting donations, telemarketers selling home fuel cell generators or, on a rare occasion, a call from his nephew, Rick.

The old man picks up the phone. "I don't vote. I don't donate money, and I already have a fuel cell generator. So, you better state your case pronto or I'll hang up faster than you can say, there's life on Mars."

"There's life on Mars. Beat you," says the voice on the other side of the call.

"Ricky-boy, is that you?"

"Yes, it's me Uncle Rob. Turn down the TV. I only have time for a quick call."

“Oh, hold on.” Uncle Rob reaches for the remote to mute the TV. The doomsday show is now featuring a man building a Gatling gun. “Idiot!”

“What?” asks Rick.

“Not you, Ricky-boy. The other idiot on the TV.”

“Courtney said you’ll join us for the picnic dinner.”

“She said you’re going to Mount Wilson. I haven’t been up there in years.”

“I’m glad you’re coming. I’ve loved it up there, ever since you first took me.”

“There’s a new meteor shower. It’s supposed to be a good one. Looks like it will be a clear night for viewing the skies.” Uncle Rob puts down the wrench, pausing for a moment. “And hey, Ricky-boy, there’s something I’d like to discuss with you about the—” Rick cuts him off.

“Sure, OK. We’ll be at your place early this evening. I’m about to give a lecture. See you in a few hours.”

“Oh, giving a lecture, are you? When I taught at the community college, I didn’t cut those kids any slack just because it was a community college.”

“Uncle Rob, Sorry. I’ve got to go.”

Uncle Rob starts a familiar rant, not realizing the call has already ended. “It’s not my fault the establishment at those institutions wouldn’t accept my new ideas. Rick? Ricky-boy? You there? Uh, must have lost the signal.” Rob says as he shakes the phone, then the TV once again captures his attention.

The doomsday builder with the Gatling gun is test firing. His targets are four mannequins in a various state of undress, propped against a four-by-eight-foot slab of plywood. The Gatling gun rips the dummies apart; arms and legs flying in the air, cutting the plywood in half with a torrent of bullets. Uncle Rob picks up his wrench and shakes it at the TV. “Idiot.”

Rob is a tall, grumpy, potbellied seventy-year-old who wears thick glasses and has a healthy shock of unkempt white hair, giving him the look of a mad scientist. In a way, he is a mad scientist. He’s been mad for forty years. Mad because as a young researcher at Penn State, a younger misunderstood Robert Munday was shunned for pushing new ideas in astrophysics. His department head had refused to publish his research.

Rob had criticized the institution. They had implied that one succeeds only if you promote the ideas ascribed by the scientific establishment. If you don’t agree to take their line of thought, you get pushed out. In the academic world, if you don’t have support from your department head and you don’t publish, you perish.

Rob had fought the system for a few years, but the realities of life and the need to make a living won out. He soon found himself teaching astronomy and physics at Pasadena City College.

Rick stands behind a podium on a stage at the front of the auditorium. Many freshmen classes meet in large auditoriums, where hundreds of students at a time are indoctrinated into the collegiate mindset.

Rick brings his hand close to his mouth and speaks, “Cloud, broadcast, The Evolving Universe, lecture three.” The projector then beams a presentation entitled *The Evolving Universe (Ay 1), Lecture Three* on the screen behind Rick. Students stream in, filling the seats.

There's a type of brainwashing conducted in the halls of higher learning; professors tell students they will have better opportunities and will benefit from the knowledge imparted to them; they are the elite of society. It happens even in classes as mundane as, *The Evolving Universe*. Heinrich has scripts, such as these, written into the lecture notes that Rick reviews on the presenter's screen built into the podium. "What bullshit," he says to himself as he scrolls through the slides.

Students are entering the lecture hall. Four young female students and one male student take seats in the front row.

Three o'clock. Rick steps in front of the podium. Although in his mid-thirties Rick is still handsome. He is tall and fit with a runner's build and a healthy head of dirty blond hair. Rick looks out at the auditorium. Two of the young women in the front row smile at him. Another tilts her head looking up at Rick running her hand through her hair. The male student grins, staring up at Rick adoringly. He starts the lecture even though students are still finding their seats.

"I'm Assistant Professor Munday. Today is lecture three. I hope to impart to you the knowledge and wisdom learned over the millennia by men who invested their lives studying the great beyond. Through study of our solar system, our galaxy, and the universe, we hope to learn how and why we exist. Because you are attending this university, you have the privilege to learn what others never will. Your career may not end up being in astronomy or astrophysics, like mine, but you will gain knowledge most people will never be exposed to, you will..." Rick pauses, scanning the lecture notes. Half under his breath he utters, "OK, enough bullshit. Let's get to the lecture." Rick's comment is met with hoots, howls, and whistles from the students.

"Lecture Three," Rick says, as he swipes his hand over the presenter's screen. The projector beams an image of our solar system. "In previous lectures, we learned the solar system comprises the sun, with eight planets in orbit around the sun. You should know the planet names from your lecture notes. The orbits of the planets are elliptical, like stretched out circles, in a nearly flat disc, called the ecliptic plane. However, there are more objects in our solar system than the sun and these eight planets."

Rick swipes his hand to load the next slide. "In this slide, we see the asteroid belt lies in the area or space—ha, ha—between Mars and Jupiter," Rick read.

He almost laughs out loud. The bad jokes, even the "ha, ha" are in the lecture notes. Rick's patience is wearing thin.

Trying his best to be a good assistant professor, Rick continues reading the lecture notes. "Beyond Neptune there is an area, or disc of asteroids, called the Kuiper Belt. Some of these objects are in strange, unstable orbits and can get bumped out of orbit; thus, the Kuiper Belt is believed to be the source of comets." Rick stops. He looks out at the students. The ones who aren't reading on their VUEs or sleeping look bored.

Rick claps his hands. No reaction from the students. Rick hates seeing bored students. How can they learn anything if they're bored or sleeping?

Rick jumps ahead in the lecture swiping to a new slide in the presentation. It displays an animation of the solar system in motion on the large screen behind him.

"Hey, class! Hey, wake up... Look up here!" Many students shift in their seats. "Watch the animation behind me. Does this look correct? Hold up your hand if you believe this is how our solar system is moving in space," Rick says, putting additional emphasis on the word *space*.

A few hands shoot up. Slowly, hands rise. One young lady lifts her hand only halfway up. Maybe she's hoping to be only half wrong.

"All right, most of you believe what we are seeing is correct. What else should I expect? This is what they taught you to believe. You can put your hands down. And young lady—yes, you on the right—you can put it all the way down. I will give fifty extra credit points to anyone who can tell me what's wrong with this animation."

Rick pauses, looking out at the students. He shades his eyes from the stage lights, so he can see the dark upper rows of the auditorium. "No one? No brave soul? Nobody with an original thought?" He waits a moment longer, but none of the students move. "It's not a trick. You won't lose fifty points if your answer is wrong. Anyone?" No hands are raised, not even halfway.

Rick lifts his hand to a few inches from his mouth. The band's display illuminates. Rick speaks. "Cloud, broadcast heliocentric model." The projector beams a new animation that shows the solar system not sitting still in space with the planets rotating around the sun, but the sun and planets, the entire solar system, moving through space with the planets rotating in their imperfect orbits around and behind the sun, with the heliosphere at the leading edge looking like a force field for the solar system as it moves through space.

"Wow! Whoa, cool!" The student's express excitement.

Rick's energy soars. It's always more interesting to teach when students are engaged or at least awake. Now, he has their attention. Maybe he can teach them something. Screw the lecture notes.

"The solar system is not just a bundle of spinning planets sitting at some stationary place in the Milky Way galaxy. No, not at all. Our solar system is moving through space at a speed of four hundred eighty-six thousand miles per hour traveling in an orbit around the center of the Milky Way galaxy, our home galaxy. Even though we are ripping through space at almost five hundred thousand miles per hour, it takes our solar system over two hundred thirty million years to complete a galactic orbit. The last time the sun was at this exact spot in its galactic orbit, dinosaurs ruled the Earth. I don't want to scare any of you, but for that same fifty extra credit points, does anyone know what wiped out the dinosaurs?"

"Hands? Any hands? Come on." Rick tries to encourage participation. The young lady who lifted her hand halfway up earlier fully extends her arm. "Yes, young lady on my right," Rick points into the auditorium.

The young student shouts, "A huge asteroid hit Earth. Dust clouds blocked the sun, and the dinosaurs died off. They became extinct."

"Ding, ding, ding. Fifty bonus points for the young lady in the fourth row. Excellent yes, that is the prevailing theory. I believe it could have been more than one huge asteroid. It might have been several."

The animation continues playing on the large screen showing the solar system on its path around the center of the Milky Way.

"Unfortunately, your text-books are based on science twenty to thirty years old. Things have been tough for the advancement of science because of the wars and budget cuts. The government has shut down most of the space observatories for lack of funds. However, just a few years ago we had access to amazing telescopes and space probes. We have discovered many things about our universe that haven't made it into your textbooks. But I guess I'd better

get back to the lecture as written or you'll all flunk the test!" A young man in the second row raises his hand. "Question from the front. Shoot."

"If our solar system is in the same area when the dinosaurs went extinct, couldn't the same thing happen to us?" asks the student.

Rick raises his arm to shade his eyes, so he can see the young. Rick's band illuminates. "That is one of the *worst-case scenarios* that experts have kicked around. But the dinosaurs lived for over 160 million years and existed until 65 million years ago, so we aren't in the bombardment location."

Rick's Smart-Band displays *Worst-Case Scenarios*. The animation on the auditorium's large screen changes without Rick noticing.

"OK, let's get back to the subject or Dr. Heinrich will cause my extinction." Rick again reads from the lecture notes. "The largest objects in the asteroid belt are Ceres and Vesta." The students are all paying rapt attention. Their eyes are glued to the screen. Rick believes he's making an impact.

The first scenario shows volcanoes erupting all over the planet, in Hawaii, South America, Indonesia, Iceland, and Italy causing horrific destruction as they blast volcanic ash high into the atmosphere. Then the massive caldera, that is Yellowstone National Park explodes in a super-eruption hurling millions of pounds of ash into the upper atmosphere, blotting out the sun and causing a volcanic winter. Earth temperatures plunge, killing off most plant, animal, and human life.

The next scenario shows the solar system on its orbit around the galaxy encountering a dense cloud. Hidden in the cloud is an area crowded with asteroids and enormous ice balls. The solar system gets bombarded by asteroids and comets. The planets look like they are in a pinball machine, being hit repeatedly by space rocks. A series of asteroids impact the surface of Mars causing some boys to shout "Whoa" or "Yes," excited to see Mars' demise. Rocks pummel the Earth and moon with a multitude of bombardments. Asteroids crush the moon to bits and Earth breaks into large fiery chunks spinning through space.

The final scenario entitled; *Likely Someday* displays a not-too-distant yet massive star collapsing into a supernova, sending an intense gamma-ray burst at Earth. Earth roasts as if it were inside a microwave oven. The atmosphere slowly burns away. There is a worldwide drought. Crops fail. Animals die. The screen displays starving children eating handfuls of maggots from the carcass of a dead cow.

Girls in the front row gag. The boy acts like he's about to vomit and runs out of the auditorium and the girls chase after him. Other students take this as an excuse to leave class and move for the exits. Rick turns to look at the screen behind him, as Earth's oceans boil. The video cuts to emaciated animals dying on barren cracked dirt. "Oh shit. Cloud stop broadcasting," Rick shouts to his band. "Stop, stop, stop!"

He turns to the students leaving the auditorium. "Come back! Nothing will happen!" Then he says to himself, "Well, there is a low probability," then louder, "But not likely!"

Rick tries once more to stop the students "Class isn't over," he yells, as he packs his things and the last students leave the auditorium. He mumbles to himself, "This will not go over well with Dr. Heinrich."

The teaching assistant who notified Rick of the lecture walks up to the podium. "Like I said, I love your lectures. So cool." The teaching assistant goes out a side door.

Rick looks out on an empty auditorium. "I'm gonna need that grant."

Chapter 3: Uncle Rob

Rick enters the kitchen of his rented Pasadena bungalow as his wife, Courtney, loads food packets into a picnic cooler. "This looks great. We'll have a feast tonight."

"You're home early. I thought you had the 3:00 p.m. lecture."

"They got out early. I guess you could say I sent them out screaming."

"Well, I hope they were screaming with joy," Courtney says.

"You could say they are happy to be alive."

Courtney holds up a piece of mail. "This came today. The lease is up next month, and the rent is increasing."

"They're raising the rent, again? I'm counting on getting that grant. Don't worry. We'll have extra money coming in and Dr. Heinrich won't complain about funding."

"We could use some good news for a change."

"Let's put the worries of this meager planet aside. We have a picnic tonight. Don't we have two kids? Where might they be found?"

"Hiding in their rooms. They do that a lot, nowadays," says Courtney.

Rick sallies down the hallway to the kids' rooms, opens their doors, and announces, "Come out, children. I am here to save you! We are about to explore the outdoors, eat food, view space and the worlds beyond. Escape ye from these cells you call rooms. Go forth and see the world!"

Rick checks the rooms of his twelve-year-old twins. They are both using VUE lens. Ethan, his son, is unmoved as he plays a game, while his daughter Alyssa lies on her bed video messaging with friends. She talks as she touches points in midair interacting with objects in a virtual environment where her friends are meeting. She is oblivious to her father and his antics. "Your outfit is the best, Charnel. It's so cute," Alyssa says.

Rick walks into Alyssa's room. He sneaks up behind her and removes her VUE lens. Alyssa looks up with annoyance at her father. "Hey, I'm with my friends," she says, grabbing for the lens.

"Hello, little girl, it's your father. Look, you might recognize me." Rick says.

Alyssa ignores her father. "I can't wait to see you at the fashion show," Alyssa calls out to the lens, hoping her friends can hear.

"Let's go, Alyssa. We have a family night planned, so move it." Rick walks backward holding out the VUE lens, encouraging his daughter to follow.

Alyssa grabs the lens and puts it on. "Sorry Charnel, I've got to go. Maybe my dad will drive me to the fashion show. I'd love to see you on the catwalk," she says, then removes the VUE with a sneer before walking out of the room to join her mother in the kitchen.

"One down; one to go," Rick says to himself as he walks into Ethan's room. Ethan stands in the middle of his bedroom, wearing his VUE lens and moving his hands in jabbing motions.

Rick stands at Ethan's side and swipes his hand in an upward motion in front of the lens. The wrap around glass of the VUE changes from black to transparent.

"Hey, Dad I can't see," Ethan shouts.

"Looks like you can see me just fine." The sound of a gunshot and a thump come through the VUE's audio. "Oops, you're dead! Sorry kiddo, time to go."

"Oh man, you're gonna get my whole platoon killed."

"Looks like you're good at that game," says Rick.

"I'd be better if we had a glide pad. I can't move the way I'm supposed to without one. Christopher and Allie have a glide pad. If we had one, you could use it too, Dad."

Rick pulls the VUE from Ethan's face. "Well, we can't afford that right now. Maybe, if I get my grant approved, we can enhance your game play around Christmas time. But there's more to life than VUE games. We are going to Uncle Rob's and having a picnic dinner up at Mount Wilson. There's a big meteor shower tonight. It's supposed to be brilliant, so let's get moving."

"Meteor shower! Cool. That's only kind of shower I like!" exclaims Ethan. He grabs his Orion StarBlast telescope and follows his dad out of the room.

When the AutoCar arrives, Courtney and Alyssa load it with the food cooler and blankets. Rick grabs his—well, the university's—Celestron CGE Pro HD 1600 computerized and motorized telescope. Rick had borrowed the telescope from the department a few months earlier. He figures he'll keep on borrowing it until someone else asks for it.

Rick sits in the driver's seat and touches the start button. His band syncs with the AutoCar. Rick speaks, "Uncle Rob's house." The AutoCar scans Rick's contacts, displays the mapped route, and starts driving.

Rick's parents died in a traffic accident when he was thirteen. After the funeral, Rick went to live with Uncle Rob. Life with Rob was active. He enrolled Rick in an endless list of activities, from swimming and karate to Boy Scouts and flying lessons. It was Rob who inspired and cultivated Rick's passion to study the universe. A passion they share.

Over the years, Rick and Uncle Rob grew close. Other than Courtney and the kids, Rob is Rick's only family. He lives nearby, in Altadena, in the foothills of Eaton Canyon. It isn't a long drive. When Rick sees the old house, he wonders why he hasn't been to visit.

Junk clutters the long driveway. Rick engages the AutoCar's manual steering to navigate the narrow path. A huge fiberglass tank lies on one side of the drive. Farther up the drive is a metal tank with a big hole cut on one side. Rusted pipes cemented in dried mud line the edge of the drive. Next to the house is a tall metal garage with large sliding doors, and next to that is an old cement mixer and bags of cement. Some bags are open, spilling cement powder onto the grass. Alongside the house boxes marked INSULATING FOAM MIX litter the ground.

Rick stops the car at the front of the house, and the kids jump out. Courtney yells, "Be careful and don't touch anything," as she surveys the deteriorating condition of the old house.

Rick and Courtney walk to the front door. "The old place could use some paint," Rick comments.

"Just paint?" Courtney asks. Courtney then spots the kids climbing on a rusted-out machine. "Get away from that... that thing. Come inside the house."

The TV blares with the sound of a news stream: *The Four Wars continue, with Russia and China announcing an agreement to strengthen their alliance, as China advances on Chad and Russia strengthens its hold on New Persia. In the United States, President Anderson announces further cuts to NASA, the FDA, and other non-essential departments, allowing additional funding to support our allies. In other news...*

Rob sits at the kitchen table futzing with an electronic gadget. As Rick enters the house, he calls out, "Rob!"

The kids sprint past Rick and Courtney to greet their great-uncle with hugs. Rob hugs the kids. He looks for the TV remote, finding it under a stack of papers, and points it at the big TV.

"Let me turn this thing down. I didn't hear you come in. I don't watch it. Just like the noise; keeps my brain awake. Ha-ha!" Rob mutes the volume, then gives Courtney a big hug, followed by a hug for Rick.

Rick looks around the room. The living room and kitchen look like a workshop. "Looks like you've been keeping yourself busy. Sorry, we haven't made it over for a while," Rick says as he surveys the unorganized clutter.

"You know me. I love to tinker. I always have this project, or that, going on. It would be better if I finished one before starting the next," Rob says as he walks around the room, moving parts and boxes to make space.

Courtney grabs Rick's arm, pulling him close. "Honey. You know I love Rob. But I think he's gone off the edge with all the junk he's bought for his projects. It was bad enough when he bought that old cave a few years back. Don't you worry about him here, all alone?"

"I know. I should check on him more often. I'll talk with him," Rick says.

Ethan spots a diagram tacked to the kitchen wall. Pointing at the drawing, he asks, "Uncle Rob, is this your cave fort? It looks like a long submarine."

"It's my cave fort, if you want to call it that. I call it Munday's Hideaway, or I hope it will be someday. When, or if, the shit hits the fan we'll need a safe place to ride out the shit storm, kiddo." The kids giggle at the use of a four-letter word used twice in a single sentence.

Rob catches himself. "Oops, kids in the room, excuse my French. How old are you two, now, anyway?" Rob asks.

"We're twelve!" shouts Alyssa.

"Almost twelve and a half," adds Ethan.

"Oh, I bet you learned all those bad words already. Sixth grade camp, right?" asks Uncle Rob.

"Yup." The kids reply in unison.

"But we don't say them out loud," Alyssa whispers to her great-uncle.

"At least not when they're around," Ethan says, motioning toward his parents.

Rick checks the diagram on the wall and discovers it isn't a single drawing, but several pages of blueprints and schematics detailing an extensive build-out of the cave fort.

"Rob, this is amazing. Are you planning to do all this in the mine?" asks Rick, as he studies the drawings. "You have a galley with a pantry, sleeping quarters, a main gallery with a large living room, and what's this? A water filtration system on a lower level? There's a lower level?"

"Planning, just planning." Rob looks over his shoulder and smiles at Courtney.

"I guess we should call it Munday's Folly instead of Munday's Hideaway." Rob turns to Rick and lowers his voice so only Rick can hear. "However, it's designed to support a family completely self-sustained for several years. If we ever need it, that is."

Rick flips through pages of drawings. "Look here, I missed the garden and the farm."

Ethan laughs in astonishment. "A farm, in a cave?"

Uncle Rob replies with a smile and a wink.

"If we lived in there, can we have bacon and eggs, Uncle Rob? Can we?"

"You betcha. We'll have pigs and chickens in the farm, so you can have bacon and eggs every morning if you like, boy-o."

"I think we have a picnic planned, don't we?" asks Courtney.

"Yes, we do! Let's get moving," Rick replies.

"Ethan, would you grab my telescope there by the door on your way out," asks Rob.

As they walk across the cluttered yard to the AutoCar, Rick chats with Rob. "I'm sorry I haven't visited for a while, or I would have—"

"You would have what? Stopped me? I know you, and Courtney don't approve. That's why I didn't tell you about my work on the mine. But, wait and see. We'll put it to good use, someday."

"Wait, you mean you're really building out the mine?"

"Oh damn. I shouldn't oughta said anything, but yes, it's almost finished, Ricky Boy. Keep it between us for now, will ya?"

"But, Rob, those plans. The designs. It must cost a fortune. How can you pay for it all?"

Rob nods at the old house. "I mortgaged it to the hilt, that's how!" He slaps Rick on the back with a hearty laugh. "Either the world goes to crap and the Hideaway comes in real handy, or I die broke with an amazing house built under a mountain of solid granite."

Rick is beside himself. He loves his uncle and would hate to stifle the dream that keeps him alive. But Courtney could be right. Maybe it's time for old Rob to move into a place where he won't be alone. He decides to not tell his wife anything for now.

Chapter 4: Flying Blind

Monday Evening

Curtis Ross sits slouched at his desk. His hefty size makes the large executive chair look small. His desk is twelve feet long and runs along the wall of what was once the dining room of his house.

Mounted on the wall above the desk is a wireless, 8K thin-screen monitor, twelve feet wide by seven feet high and two millimeters thick. The flexible monitor is paper thin. The screen displays several windows. One window displays an image of the solar system, another the asteroid belt. A third one shows a list of all known asteroids, while others display e-mail, YouTube streams and a video chat room. On the wall behind Curtis is another wall-sized thin-screen streaming multiple news channels with the audio muted.

Curtis chews on a piece of pizza and sips cola from a Giant Gulp cup while video chatting with his boyhood friend, Jin Goldberg, and Jin's girlfriend, Becky.

Jin is a Korean, Jewish blend with light brown skin and curly black hair. The multi-cultural mix of genes created a very intelligent, handsome, young man with a stout build. "You got another one logged and verified by the MPC?" asks Jin.

Curtis sits proudly, pulling his t-shirt, emblazoned with the words, *I need my Space*, to cover his exposed belly fat, then brushes at his unruly bangs covering his eyes. "It's in process. They need to verify it's actually a new find and compute the orbit before entering it into the database. They will include it in a future newsletter and post it on the MPC website if all goes well," Curtis explains.

"Cool, Curtman. You'll have another asteroid find on the list of discoverers. You're a real space explorer documented for the rest of history," Jin says.

"Wait. Jin, the MP what?" asks Becky.

"The MPC—or more precisely, the Minor Planet Center—is the only place in the world responsible for keeping track of all minor planets, comets, and asteroids in our solar system. Anybody who spots and tracks an object can report it to the MPC to help build the database of what's out there. Curtis found a new, never discovered asteroid, and the MPC will publish his find. It's his fourth asteroid discovery."

"That is really cool," Becky says, picking up on Jin's enthusiasm. "So, do you get to name it?"

Curtis sucks hard on his straw, siphoning the cold soda into his gullet. "I get first dibs on picking a name, but they have to approve it."

"Will you name it after yourself?" asks Becky.

"Nah, I'll probably continue on the theme of the first three," Curtis says.

"What did you name the first three?"

Curtis plays with the straw of his Gulp cup. "Gintoki, Natsu, and Luffy. For this one, I'm thinking either Yusuke or Goku. I can't decide. I'd only name one after me if it smashes into a planet, or something."

"I wouldn't know if those are names of Japanese emperors or sushi dishes," Becky replies.

“They’re names of Anime characters. Anime, you know, Japanese comic books.” Jin states, slyly.

Curtis sets his Gulp cup on the desk. “Jin knows they’re called Manga, not comic books. He’s just trying to start a fight. I don’t think I need to worry about naming the asteroid for a while. I’m still waiting for the MPC to publish an asteroid I discovered last year. The government cut their staff by fifty percent so it’s taking forever.”

“Yeah, they went from an entire team of six people, down to three. Can you imagine? There are millions of asteroids out there, any of which, if it hit Earth could wipe out a town or erase a huge city. Not to mention an impact could cause a five-year impact winter or worse. Talk about global cooling! Our government, in their wisdom, gave the responsibility to six whole people and then cut it to three! NASA and the MPC have mapped only twenty thousand of the potentially hazardous asteroids. They’re tracking the largest Near-Earth Objects, or NEOs. The Earth destroyers. The ones larger than a kilometer across. That’s an asteroid three thousand two hundred eighty feet wide,” Jin explains.

“The dinosaur killers,” says Curtis. He makes an explosive sound, picks up a plastic toy dog from his desk, and throws it in the air while making a louder explosive noise. “Ka-boom! That dinosaur doggie is toast.” The plastic toy dog flies across the room to a bookshelf, knocking over a display of Anime characters.

Becky looks concerned. “What about the other million asteroids? Who’s searching for them? Isn’t NASA or somebody trying to discover the orbits of all those, those rocks that could smash into us?”

Curtis stuffs a piece of mega-meat pizza into his mouth. Chewing and talking with a full mouth, “You’re looking at ‘em, sweetheart. These days it’s us and others like us who are doing most of the searching. NASA ran several programs after the turn of the century. They found and tracked over seven hundred thousand asteroids. That was until NASA got their budget whacked to support the Four Wars. It will be some backyard astronomer, or a high school astronomy club that spots the big one. I just hope we detect it early enough to give NASA and the government time to find a solution. NASA discovered many of the asteroid near misses just days before they flew by, and sometimes not until days after. Complete surprises. Most of these asteroids are dark and too small to reflect much light, so they’re tough to spot and track until they’re close.”

Jin adds to Curtis’s explanation. “The real problem is that less than 10 percent of asteroids ranging from five hundred to a thousand feet in diameter have been identified and tracked, and only one percent of asteroids two hundred feet in diameter are being tracked. These aren’t dinosaur killers but, if one lands in your backyard, you and the neighbors in the next town will have a crappy day. So, it’s up to us to find these asteroids and track their orbits. People need to know what’s out there and what might come at us so we can help protect mankind.”

“We are Space Guard!” Curtis proclaims.

“You can’t use that name,” says Jin. “It’s overused, and we can’t guard anything. How about Sky Snoopers?”

“That’s dumb. You were never good at coming up with names,” counters Curtis.

“How about Comet Chasers or Sky Scanners?” Becky suggests.

“Becky, leave this to us professionals,” says Curtis, waving his Giant Gulp cup.

A new video window opens in the chat room. “Speaking of professionals, glad I can be of service.”

“Marcus. How’s it going, man?” asks Curtis. Marcus looks like the stereotypical Aussie with uncombed blond hair, tanned skin, and a broad smile.

“Great mate. How you going? And who is this beauty we have in the room tonight? Not speaking of you, mate. Sorry.”

“This is Jin’s new—wait, correction—first ever girlfriend, Becky. Say hi, Becky. This is Marcus. He’s from Australia.”

Becky gives a slow wave. “Hi.”

Curtis views Becky’s image. She looks like a tomboy clothed in a denim shirt with no jewelry or make-up. She wears her long, dark hair pulled back with her face hiding behind large framed glasses.

“Now I understand why Jin’s been getting in shape. All the jogging and push-ups. Guess we can’t call you ‘Box’ any longer.”

Jin’s face turns red. “Curtis, you know how I feel about that name. Why would you? Shit! Nice friend.”

Curtis looks at the angry image of his lifelong friend but says nothing.

Becky looks confused. “Why would they call you ‘Box’?”

“It’s a mean childhood nickname. Never mind. I’ll tell you later.”

“Guess that’s a touchy subject. Nice to meet ya, Becky. Moving on with the business of the day. Curtis, did you get that scan from Pan-Starrs for me?” asks Marcus.

“No, I can’t get any time on the scope. It’s off-line,” says Curtis.

“How about Klet?”

“Nope, shut down. Budget cuts,” says Curtis.

“Siding Springs?”

“Restricted hours.”

Marcus goes down the list of resources from memory, hoping to find an active scope they can log into for some viewing time.

“How about Catalina Sky Survey?” suggests Jin.

“Come on. You know it’s been down for months.”

“How about Neat or Space Watch?” asks Marcus, checking off the last two on the list in his head.

“Both down. Every telescope that has allowed public access for the past decade is down for repairs or shut down because of budget cuts. I heard they defunded the Department of Astronomy for Public Access. It’s as if someone shut down our eyes on the sky on purpose. I don’t get it.”

“We’re flying blind. Earth orbiting the sun. The solar system orbiting the Milky Way, and we can’t even watch where we’re going. It’s scary!” Jin exclaims.

“It’s not as if you’re driving this planet through the solar system, Jin. The Earth and solar system have been orbiting the galaxy for billions of years just fine without our help,” says Becky.

Becky’s comment makes Curtis irate. He slams down his Giant Gulp cup. “Sure, Earth has been just fine. No problems at all, at least during humans’ short-term memory. What about the meteor crater in Arizona? That crater is three quarters of a mile in diameter. Oh, and how about the Vredefort crater in South Africa? The original crater was two hundred miles across. We should not forget the Sudbury crater in Ontario, now called the Sudbury basin. It’s thirty-

nine miles wide, nineteen miles long, and nine miles deep! It happened two billion years ago, but it was a big one! Then there is the Chicxulub crater in the Yucatan. The crater is 110 miles in diameter and twelve miles deep. That one hit us sixty-six million years ago; The dinosaur killer. 1908 in Tunguska, Russia, there was an aerial meteor explosion. It destroyed everything eight hundred miles from the center of the blast. Lucky for mankind, it was all forest. Imagine if the meteor stayed aloft for a few seconds longer and exploded over London or Paris. It would have annihilated those cities. Ever look at the moon? Looks like it took a few thousand hits, doesn't it? It's been a long time since Earth has had a major hit. But what if our time is up?" Curtis ends his tirade, picks up his Giant Gulp with authority, and sucks hard on the straw.

"OK, Curtis. You made your point. Take it easy on her. She's still learning." Jin scolds.

"Wow look at Curtis get overheated," says Marcus.

"It's OK. Curtis made some good points. So, Earth isn't exactly safe. But you said they shut all the telescopes down, so what do we do?" asks Becky.

"It's simple. We do what astronomers have always done. Break out our personal telescopes find the highest spot we can and search the skies. We don't need government or university funded telescopes. They are bigger, but we can still discover asteroids. Curtis discovered four already. You never know it could be an amateur astronomer like you, me, or Curtis who makes the next big discovery."

"That sounds great, Jin. Can I go with you guys? It would be great to meet Curtis in the real, if you don't mind," says Becky.

"Ah, I think I'm gonna be busy whenever you meet up," says Curtis.

"Becky, Curtis lives in Henderson, Nevada near Las Vegas where we grew up and Marcus lives in Perth. Curtis and his dad got me interested in science and astronomy. Lifelong buds isn't that right, Curtis?" Jin explains.

"Yup, lifelong." Curtis sucks on the Giant Gulp straw, but he's drained the cup, and it makes a loud gurgling sound.

"Becky, I'll message you. We'll set a time. I'll take you to my favorite viewing site," Jin says.

"OK, you lovebirds have fun. Let me know if you spot anything," says Curtis.

"Guess this is my cue to sign off. I'll chat you up later, Curtis," Marcus says as his stream goes dark.

"Bye." Becky drops her side of the stream.

"Later, Curtman." Jin says as screen goes dark.

Curtis, in his comfy oversized chair flicks a finger in the air and the entire wall-sized thin screen changes to the startup icon of his Celestron GXE 8K Super Star Tracker. The fourteen-inch telescope mounted on the rooftop patio of the house is controllable from his desk.

"Going outside is so overrated."