The Universe

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Chapter 1

Loud were the klaxons and bright red were the lights. A middle-aged man stood and stared with mouth agape through the window of his car at the lonely, inconspicuous, yet huge building in the center of Texas. The dark, early-morning sky offered nothing to comfort the man. Even from his distant vantage point, he could see the commotion. He got from his car and ran to lend aid to whatever catastrophe was going on within the building. His feet pounded the parking lot; his gaze passed the black of the asphalt and the yellow lines streaked beneath his shoes. The colossal, squat, gray rectangle of a building grew even larger.

Within, a ring-shaped underground tunnel fifty-four miles in circumference was ablaze with dazzling spheres of light. Each globe danced and slung around the tunnel. In a matter of seconds, they grew and shrank and whirled. An extravagant display of color shone off the hard concrete. A hundred engineers clambered from the controls near the center of the tunnel to the entrance. Their haggard, tired faces were splashed with bizarre shadows from the flashing lights. Their feet rumbled. Their bodies ached. Their hundreds of hours of work were quaking around them, behaving in ways they could not have dared to dream.

The man from the parking lot reached the entrance and tumbled into the reception area. Dashing through an unfinished corridor and tumbling through a passage, he came to an office overflowing with papers. There was a box near the desk on the floor. The pages that soared through the area were dated recently. The man grabbed one page with that day's date— October 1, 1993— and studied it. His face grew sad. A second later, with the klaxon still blaring and the lights flashing across the pearl white pages, the man had filled the box with the pages, turned on his heel, and began his dash for the exit. His hope to rescue his friends was dashed.

On his return trek, he nearly ran into a colleague. He grabbed the man's arm and pulled him toward the exit. The second man swung with the inertia of the first man's dash. The first man's silhouette appeared in the red light. A light flashed to show his face. It was thin. His hair was mostly brown with a dash of. His silhouette was thin and spry. His voice was slight, gentle, and somewhat high. He spoke to the second man, "I've got it. Let's go! There's no rescuing the others."

"Understood! Let's go," agreed the second man. He was younger, but he was just as tired as the first man.

The globes of light had made their way out of the tunnel and were circling the reception area. They were now the size of a man's head. Within their fantastic colors were bright white centers which shimmered. The coloring surrounding the bulb refracted the light giving a liquid appearance to the bizarre plasma.

A third man skidded along the smooth, concrete floor. He instantly collided with one of the dancing spheres and screamed. His tremendous shout echoed and melted into the sounds of the

sirens as his body turned black. His bones appeared through his flesh as the flesh melted into an exuberant display of blue and green flame. The two other men looked at each other briefly. The older man tightened his grip around the box.

They finished their dash through the corridor. The ground was quaking beneath their feet. They heard the distant screams of men and women. A few light fixtures, which hadn't been installed yet, fell to the ground. Startled and scared, the men tore through the reception area, out the exit, and into the dark, open air. They ran, again, across the parking lot. The sirens quieted were dulled behind them by the distance. The sky was a purple blue. Sunrise was coming.

"Give me mine and I'll let you keep yours," said the young man to his elder.

"Sounds good to me. Then, let's get the hell out of here before they ask questions," sighed the older man.

Both men were out of breath. The older man leaned against his late-eighties sedan. He twisted and put the box of papers on the hood. The young man leaned forward over the box, putting the weight of his tired body on the car.

"Hurry," began the long-haired man once again while the young man greedily rifled through the box, pulling out reams of paper covered with data. His elbow pinned the papers to the hood of the car as he pulled out more.

Suddenly, the ground heaved again.

"We have ten seconds left, at most. Let's go!" shouted the older man. He pushed the younger man away from his car. He grabbed the box and shoved it in the back seat of his car. He jumped lightly over the hood, popped open the door, and started the engine in seemingly one fluid gesture.

The other man regained his footing and had begun another sprint when the ground shook one last time beneath him. He stumbled and hit the ground with a splattering thud. His hands and chest took the brunt of the impact. He hugged the papers to his chest. Behind him, a new, fluid sound exploded and he saw his shadow on the dark pavement surrounded by a green light. The thunderous clamor continued for fifteen full seconds, violently murdering the quiet still of the early morning. The oscillations of the ground quickened. The flare of light gained in brilliance and shifted to blue in its hue.

Then, there came the darkness: then, it was silent.

The man turned to stand and realized with horror that he had no feet. The shock wave of the boson-induced explosion must have stopped just before his knees. Though mortified, he could gain some happiness that his face was facing away from the building. He heaved a sob. The stumps of his legs were not bleeding. He imagined them ablaze in a garish flame and sobbed again.

He looked in his hands. Crumpled and dirty, his papers remained intact and legible. His trauma-stricken face contorted into a sad smile.

He heard the sound of distant sirens. He couldn't escape, but he might preserve the precious pages in his wounded arms. He had, after all, barely escaped death to retrieve them from the very first dissonance anomaly ever witnessed by humankind.

Hoisting himself on his arms, he scuttled toward his car. Reaching with superhuman effort, his hand reached the handle of the driver's side door. With a clicking sound, the cool plastic handle had been pulled far enough to allow entry to the vehicle. Falling back to the ground, the legless man gathered his papers and hastily pulled open the door. He shoved his papers beneath the seat, fell backward once more, and slammed the door.

The police sirens grew louder. The man painstakingly pulled his body back to where he had originally fallen. He twisted on the spot and placed his head on the ground approximately where it had originally fallen. He stretched his arms before him on the cool pavement. He heard the intensity

of the sirens finally cease in its rising. He heard the opening of car doors, the vague shuffling of feet and fabric.

"What the hell happened here?" came one female voice.

Then, the remains of the man's body lost consciousness.

Meanwhile, a car sped away from the gray building into the night. Two eyes peered into the rear-view mirror and saw the bright, green-blue explosion. The quaking earth caused massive sinkholes in a huge ring around the now vacant building. Fortunately, the road was spared and the car passed swiftly as the sun finally breached the horizon far to the car's right. The driver smiled and slowed his car.

After six miles, the car turned left.

In a lonely cul-de-sac, there stood a single house. It was old, sparse, and white. The big city seemed oddly far from here. Huge houses which lined other similar cul-de-sacs in the region were absent. The car slid into the driveway north of the house. He entered, encumbered with his box, through his living room and switched on the news. He gingerly placed the box on a table in the kitchen and dashed to the basement. In the dark, he grabbed the wood handle of a shovel and returned to the kitchen. Dropping the shovel in the kitchen, he ran up the living room stairs to his bedroom.

After casting off the clothes he intended to wear to work, he threw on jeans and a flannel shirt. His bedroom was sparse. The entire second story of his home had bare, wooden floors. The walls were white and clean. Light entered the hallway through several open doors, casting strange shadows. Standing in the strange, luminous hallway of his home, the man peered down the stairs, and listened to the television.

His slim face smiled. The television said nothing about the incident. The young announcer's face was full of concern as she spoke of reports of an airplane crash somewhere south of the Dallas-Fort Worth area. *It's a cute cover story*, he thought, dashing down the stairs, crossing to the kitchen, grabbing the shovel and carrying it outside into the back yard.

Surrounded by trees, his yard was spacious. Housing developments had not yet bothered him, but that time was not distant. A few yards from the house there stood a shallow well.

Within the circumference of the well, he dug and dug. The sun came over the trees. The hard ground reluctantly gave way to his shovel. Weary from running and tired of digging, his progress was slow. The sun passed overhead and the man was in a deep pit. Each additional digging movement with the shovel required much effort to extract the dirt from the vertical tunnel.

As evening began, the cylinder was thirty feet deep. The shovel was dulled and near useless. Extracting the dirt from the tunnel required more effort than digging another foot. The circumference provided a few inches of clearance for the man's shoulders. His muscles burned. His face was drenched in sweat. He leaned on the handle of his shovel and sighed. He had only scarcely begun his work. Carefully extracting himself from his pit, he dusted himself and slowly shambled to his car.

His next destination was a local hardware store. He ordered as many cinder blocks as his sad car could reluctantly carry. Encumbered and slow, he made his way home and worked deep beneath the ground through the weekend, stopping for nothing but occasional food and water breaks. There was no water to be gained from this well. The Sunday afternoon sun saw the man's serene face sleeping.

A thousand miles away in the nation's capital, a room full of people scratched their heads. The room was vast and square with windows providing light from one side of the room. The doors in the back of the room swung open and a man dashed around the tables to the front of the room.

He was tall and his gray hair was thin. He dropped his briefcase on the table and hurriedly pulled out papers to throw on the hard wood of the tabletop. He looked at each face which stared at him expectantly.

"Gentlemen," he began, "I think you've all been briefed. There was an incident a few hours ago on our hadron collider in Texas. I'll admit I don't know what a 'hadron' is or why they should collide, but the incident cost the lives of eighty-six people."

Most of the twenty men nodded. The rest looked astounded.

A large man, one of the astounded, raised his hand, "Mister Ewing..."

The lector raised his hand to interrupt him, "I'll take questions later. For now, we have eighty-six casualties and no bodies to show for them. The press didn't know the collider project had even started. Hell, most Americans thought the base was still under construction. There is also a report from the local police of a single survivor and massive damage to the underground portions of the facility."

Even the men who previously nodded were now shocked.

The lector resumed again, "Now, we can keep this quiet. The survivor has been very handsomely rewarded for keeping this silence and very well compensated for any medical troubles. I think we can keep this under a tight wrap, if you all cooperate."

The same heavy man raised his hand. This time, Ewing acknowledged his question with a nod.

"I must have been sleeping or something... why was this project kept under wraps?"

"There were some theorists who said this sort of disaster— or worse— would happen when we fired up the collider. Our idea was to quietly switch on the project and, after nothing happened, let the public know that everything started without incident."

"And now we've got our crisis... what's the plan?"

"Here's the plan... but it's going to take a few weeks, a rash act of congress, and a little bit of money... and the money has to come up front. We have absolutely no time if this is going to work."

Within a week, news of whatever disaster had occurred south of Dallas was completely forgotten. No airplane wreckage was ever found, and nobody mourned the loss of a loved one. Most of the people who died in the strange explosion on the early morning of that bizarre Friday had no loved ones or, the man thought, they were very justly compensated and, presumably, threatened into silence. By this time, a well behind a small home in DeSoto, Texas was now much more than a well, and a well-dressed man in his forties was passing through the sunshine of Fort Worth in search of a job.

Two weeks later, a decree from Congress canceled the Superconducting Super Collider project in Waxahachie. Twelve billion dollars had been spent on the largest hadron collider ever imagined. According to reports, the project ran astronomically over their budget and had very little to show. Only fourteen of the proposed fifty-one miles of tunnel were officially laid.

In truth, their reason for being over-budget was the massive cost of cleaning the facility, hiding evidence, and paying families for their silence.

Chapter 2

Loud was the klaxon and red were the numerals. The silence within the house was pierced with the buzz. It was silenced by a pale white hand covered in tufts of fine, red hair. A great, bearded face rose from a pillow and rolled out of bed.

"Cath!" he whispered loudly. Another body moved. "C'mon, babe. Rise and shine."

Down in a small kitchen, the warm, yellow electric lights shown on the clean, brown counter tops and wooden cabinets. Sounds of pattering meant a rainy morning.

The red-haired man, balding but bearded, was the first to crash into the kitchen with his groggy, eyes half-open. He wore brown slacks and a blue dress shirt. He knocked on a coffee machine that was filled the prior night. He sat down at the kitchen table with his head in his hands and stared at the coffee machine as it slowly filled the pot with coffee.

Upstairs, his wife was rummaging. Moments later she arrived.

"Coffee's on," he announced.

She looked at his dazed countenance, at the coffee machine, and back at him. She pulled a hand lovingly through his thinning red hair, and he smiled. She smiled, too, but he couldn't see it. She maneuvered through the cramped kitchen to the stove.

Moments later, a half-dozen scrambled eggs were hissing in a pan and some bacon was cooking on a skillet. The man's coffee was finishing. He broke his meditation to pour the coffee into two mugs— a large, deep blue one covered in two hundred ten zeroes and ones that translated to "Worlds Greatest Computer Programmer" in seven-bit ASCII, and a slightly-smaller one of black and white with a large, friendly-looking golden retriever painted on the front.

The woman, Catherine, moved the eggs to two plates. The man, Christopher, drank the coffee from his dog-emblazoned mug. He spoke first, "Are you excited for work?"

"You're drinking from my mug again..." she began.

"I want you to have the bigger mug," he replied.

She smirked and rolled her eyes. "Just as excited as ever. Harriet Lydale's coming in with her Afghan hounds. They ought to take those dogs away from her."

He nodded. He drank deeply from his cup as she served him the eggs and bacon.

"What about you? You look deeper in thought than usual."

"Well..." Christopher began, "It's Thad."

"Your hero?" she queried as she sat and began her meal.

"Yeah. It was four yesterday afternoon when I was logging out for the night. Just for the hell of it, I rebased my code... y'know... so I'd see all the stuff other people had submitted during the day. I merged everything correctly, but I got a few build errors."

"Uh-oh" she said emphatically. He saw the familiar look in her eyes. She spoke of dogs and cats while he spoke in riddles and jargon.

He paused for a moment, then continued, "I checked the code causing the problems— they were from Thad. I think it's the first time he's ever broken the build."

They spoke of their work and current events over their breakfast.

"Green-River Killer confessed two days ago," she said idly, "somewhere up north, Washington state, he killed forty-eight people."

"He's a real hero," Christopher bantered sarcastically, "a wonder he doesn't get a medal."

They smiled and talked as newlyweds often do. The clean house hadn't yet succumbed to either of their yearnings for clutter.

Ultimately, their discussion drifted. At last, when some remnant of the autumn sun had snuck through the fog and rain to cast a few rays above the roof of the neighboring houses, the time had come for their lugubrious journey to work.

A brown car carried Christopher through the lifting fog to his workplace. Despite coffee, he stumbled through the bland corridors. The serpentine maze of cubicle walls had a straight path blazed through its center. Another corner passed and another set of cubicles whizzed past the tired man's eyes.

"Friday," he muttered aloud as he passed some other haggard–looking compatriots.

Yet another corner passed. The dizzying off-white walls were punctured with a window overlooking the parking lot. Stairs strained Christopher's shins. After the first flight came another, then another. Light blue carpet calmed his already tired eyes. A spinning array of bland colors tunneled his way to his miniature cubicle.

He slumped in his chair and turned on the computer weighing his desk. It was a monster. His cubicle had little room left after his computer was inserted. As it loaded, Christopher swiveled in his chair and observed the sad beings roaming around the workspace. He stood and peered over the walls of the cubicles. Many were vacant. He saw the coffee machine and felt for his pocket. *Friday: that's a good reason for extra coffee this morning*, he reasoned.

As he was on his way toward the warmth, he saw the lead developer crossing a nearby hallway. He carried a large, orange, shoulder-mounted, air-powered launcher for foam projectiles. The man walked coolly with the blue and orange device thrown over his shoulder, nearly scraping the ceiling with its cartoonishly colossal length. He strode into Christopher's workspace, and Christopher had just enough time to dive back into his cubicle.

This isn't for me, his thoughts began, but then, *Maybe I didn't merge the files correctly. Maybe it was me who broke the build.* The moment of truth approached.

To break the build is a faux-pas for any programmer. Since the dozen people of the software development team rely on a central version of their project, it is imperative that this version actually work. Copies of the code are downloaded to each of the worker's computers, where it is expanded and edited. Writing new code is simple. It gets simply added to the existing code at the end of the day. When multiple people edit the same file or even the same line of a file, problems can occur. At midnight, automated testing would happen on the program. If bad code had been submitted, the entire program could not be tested. Additionally, actual human testing would be delayed. The program would have to be fixed before the team could actually begin their day's work. Breaking the build affected a lot of people, yet this had happened the previous night before Christopher left the building. Apparently it would be either he or Thaddeus Poel who would receive credit for this blunder.

The seconds dragged. *I might have the money to spring for donuts later*, he thought. The process

for paying for a broken build occurs in three parts. First, humiliation in front of your development team; second, the team will jeer for the rest of the day, or week; and third, there would be coffee or donuts (or worse, if the blunder is exceptionally heinous) at the offender's expense. It was in the project documentation.

In the distance, he heard a loud pneumatic puff. He jumped to his feet. The rest of the occupants did the same. Thaddeus looked embarrassed as he was pummeled by a dozen foam rockets. A few people whooped, but it was uncharacteristically quiet. Christopher remembered an instance a few months prior. It was a warm, beautiful summer and his mind had wandered. The next day, the entire floor was peering over his cubicle jeering as he was pummeled by foam rockets. This was different. Even the most mean-spirited workers here had respect for Thaddeus.

Christopher involuntarily contorted his face into a sympathetic expression. His eyes met Thad's. Chris was surprised to see the faint lines of a smile forming. Magnanimously, he took to his feet. Like an angel, the old man looked at the project's lead developer and said, "Ah! Dave! I knew this was coming. It's already fixed and uploaded."

David nodded, "Good stuff!" he leaned to pick up some of the projectiles. "You still owe us donuts."

David's eyes squinted at Poel's pristine desk. It contained a book on ancient Greece. More specifically, it contained a book on ancient Greek language. He shrugged. He turned to the eyes which peered over their cubicle walls and announced loudly, "Donuts!"

Everybody cheered. Donuts were easy. On a Friday afternoon, only a half-dozen people worked on each segment of each floor. Christopher's core team had the only people working this Friday. This wasn't law. They were generally like-minded and preferred working on Fridays than having ten-hour workdays for four days a week. Fridays are quiet. Quiet is good. Christopher got the most work done those afternoons since nothing could impede him. With the smaller group meant fewer donuts would be required. Nobody wanted to see Thaddeus suffer.

Christopher loaded his software. As Thaddeus had promised, everything worked. He stood from his chair and finally retrieved his desired coffee. Later, he sat at his computer, pulling his beard and stared at the screen.

Dave leaned over the cubicle wall, "What's wrong?"

"Just these algorithms," Christopher started, "Why aren't we using the functions provided by the runtime engine?"

"It's Poel's work. I asked him to do it, and he developed those functions," at the word functions, Christopher rolled his eyes, "because they're more efficient than the runtime engine's versions."

"I don't think you'd be able to notice. Anyway, we won't be able to test it like the folks at Sunburst who made the runtime engine."

"It's an acceptable risk. I trust Poel," he said, flexing the metaphorical muscle of his job title. "Besides, it gives us an edge over our competitors."

At this point, Christopher knew he wouldn't win. David jumped at the chance to nail this conversation, "Anyway, just don't touch it. It's beautiful the way that it is."

As Dave turned to leave, Chris took one last shot, "Remember: our programs have *methods* because object-oriented programming is the future."

Dave rolled his eyes and chanted an expression that he had recited many, many times, "Xocom is the future."

"Precisely," Christopher said with finality. Dave chuckled and let his verbal opponent have the last word this time. *You get more flies with honey than vinegar*, he thought to himself.

A few yards away in a meeting area between cubicles, Christopher heard the hushed tones of

a small meeting of his teammates. As he worked, intermittently, he would be distracted by their raucous conversation. Standing and peering over the dismal, monotonous structures devoted to creating a nebulous piece of software, he saw Fred Metzger arguing with Peter Nackley. Another office familiar, Peter Hogue, was refereeing their argument.

"Not this again," Christopher said, sitting back down and hammering thoughtlessly at his part of the project.

Around noon, Christopher stood and stretched. He made his way hurriedly through the maze of corridors and across the seas of cubicles. He dashed to the parking lot, into his car, and away to the fast food restaurant across the street. Two cheeseburgers and a diet soda later came with him to his cubicle. A few seconds after he sat down, a spectacled face peered over the wall at him.

"I hate to bother you, Chris," Hogue began, "but— that smells excellent, by the way— Metzger and Nackley desire your input."

Chris stood quickly, and shouted with a false, dramatic mock-anger, "Not today, guys!"

"Joins us, Mehring!" came Nackley's deep voice, "A debate to help you enjoy your meal!"

"I don't want divinity or indigestion," he started, stuffing his mouth with French fries, "I want gluttony and French fri..." The rest of his sentence was incomprehensible as his mouth was inundated with salty, fried potatoes.

Hogue shook his down-turned head, but Nackley and Metzger laughed.

Mehring sat down again at his tiny desk and thoroughly enjoyed his meal. He sat back and read a comic on his computer screen as he ate. A few minutes later, the laughter returned. Sighing, he knew he should probably shirk his responsibilities like the rest of the group, so he stood and walked around the ramparts of servitude and joined them at a table in the middle of the office.

Surrounded by the high walls of cubicles, Nackley with his dark skin and short-cut hair was drinking a cup of soda. He paused in his fervent, angry discussion with Metzger to turn and smile at Mehring.

"You decided to join us!" he beamed.

"With the ruckus you guys are making, I had little choice."

Metzger was short and fat, a direct opposite to tall, thin Nackley. His face lit when he saw Mehring.

"Another impartial person... this is great!"

"So you can drag me into another one of your theological wars?" Mehring asked, uncomfortably ruffling his rather shaggy hair.

Metzger's sensitive emotional balance seemed tipped toward geniality, "You guessed it! Look, if there is a god, he wants us to enjoy his creation to its fullest, right?"

Mehring rolled his eyes, pulled a chair from beneath the small faux-wood and metal table, and plopped into it. He raised an eyebrow as though to psychically cause some input from the fourth, and still silent, member of the discussion.

Peter Hogue was a scholar. How he landed at Xocom thoroughly perplexed Mehring. He dressed in jackets and turtle-necked shirts. He, like most people in their group with exception of Mehring, wore glasses and knew the finer details of mathematics, English, and geek culture. His black beard was very close-trimmed and much less impressive than Mehring's. He, next to Thaddeus Poel, was one of the happier pieces of Mehring's employment. These other two people, though, were a constant source of frustrations. Their radically different ideologies were what kept them together, but, at times, it threw a wrench into the office's machinery of balance.

Mehring thought for a moment, "I don't think God wants us to have a reason to commit your kind of acts of debauchery..."

Even Hogue laughed, “He saw through your cunning rouse. We need somebody new here who doesn’t know you so well. Then you’ll get away with your self-serving threads of logic...”

“Self-serving?” questioned Metzger, with obvious mock-disgust, “Me? Self-serving? No! I care only for the well-being of all. Think, when I make love to a beautiful woman...”

There was no intended pause here, but the three other men knew that this event had never occurred. Nackley repressed a chuckle.

“...it is for the mutual benefit of both of us. Anyway, we should make the most of our time on Earth. Embrace life! If we ’succumb’ to the ’evils’ of gluttony,” these words were emphasized with heavy sarcasm, “we increase our happiness. When we take care of ourselves, we take care of others! It’s Maslow’s hierarchy of needs!”

All eyes were on Nackley, whose eyes were somewhere in the light fixtures. A moment later, large, brown and angry, his eyes were leveled on Metzger.

“Oh! Here it comes,” added Mehring with a grin.

“God wants you to give until it hurts. It’s only from selfless acts that the kingdom of heaven will rise. The more you help yourself, the more you’ll *want* to help yourself. You’ll get even fatter and more complacent as you wander down your path.”

“Oooooh,” intoned everyone. Hogue finished, “I think he’s won this one.”

“Come on, then,” said Metzger, he round, bespectacled face grinning in provocation, “You add something of value.”

Hogue toyed with the lapel of his jacket, fixed his glasses. “I wish I had an opinion. There’s middle ground. After all, we are all sinners, and God must expect some complacency from his followers. He created us imperfect images of himself, after all.”

Nackley rolled his eyes again. “If you guys don’t know the doctrine, you can’t justly speak in good faith.”

Mehring jumped in, “Hogue is speaking in good faith; he’s, perhaps, not speaking with as much liturgical wisdom as you possess.”

“Haven’t you guys learned,” Nackley began knowing he was going to be cut short, “blessed are the poor in spirit–”

The rest finished, “for theirs is the kingdom of heaven.”

Metzger laughed, “We’ve heard your beatitudes. What’s to say that this isn’t that kingdom?”

Nackley looked over his shoulder, at the high rows of cubicle walls, up to the gray, drop-in ceiling, and the silver, mirrored, inset lighting fixtures before responding, “This sure as hell ain’t heaven.”

They all laughed: Nackley more than any. Faint sounds of movement came from over one of the cubicle walls and everyone became quiet.

“I hope we weren’t too loud,” Nackley said, peering over his shoulder.

Rising from the cubicle wall was a gray head, a lined forehead, and deep green eyes. Then, there came the straight nose and warm smile of Thaddeus Poel. He said in a gentle manner, “I couldn’t help but hearing the twelve-thirty sermon.”

Hogue and Mehring, the two who took the field of computer science seriously, gazed at the older man. Mehring intoned, “Join us!”

Poel made his way briskly around the corridor formed by adjoining cubicles and stood near the small table. There was room for only four chairs. He leaned against the metal of the cubicle, causing it to creak.

“You guys have it all wrong.”

Nackley was surprised. He had always figured someone as quiet and kind-hearted as Poel to be a member of some religion: a God-fearing man, at the least. Metzger took this as a sign that he was right, and smirked.

"The universe is entirely deterministic. Each set of events from the very beginning of the most recent big bang can be traced to events prior to it. We are all the result of a quickly-expanding singularity that, over eons, slowed to create stars. We are made from the same atoms that began the universe."

"Sounds like some Carl Sagan," Mehring started, eliciting a nod from Poel.

Peter Nackley frowned, "Atheist?"

"In the beginning, man believed God to be in the clouds. We built balloons and airships, and didn't find God in the sky. So, we moved God into space. Then came sputnik and voyager. We couldn't find any evidence of God living in space. So, we keep pushing him farther and farther away. He's somewhere, pulling on strings..."

Nackley threw up his arms, "No, he isn't."

"...or, after death, he'll judge you and doesn't take a care to things on Earth," Poel acquiesced, "Nonetheless, the idea that God can do anything in our universe is false. So, we'll let God live outside of the universe."

Nackley was suddenly unsure where this was going.

"So, I'll grant you your God, but he can't live here. Call me agnostic."

As they discussed this, Poel ran back, as though by ritual, to his cubicle and pressed a few buttons on his keyboard.

At the same time, Dave's slicked-back hair appeared over the cubicle walls. No one noticed as he slipped toward their covert meeting place.

"Hey, guys!" he said, as though he were the cat who caught the mouse, "Is everyone taking an extended lunch?"

"Rebasing," the five men said in precise unison. Beaten, Dave took a step backward, turned and began his retreat. He pointed over his shoulder at Poel and turned for a moment, "I still expect donuts in the next hour or two."

Poel nodded and gave a small bow. Dave disappeared again. All five of the men knew that on a lazy Friday afternoon, Dave was getting as much accomplished as they were.

A few moments later, the discussion began again as though it were uninterrupted with Poel, "So, nothing is ever truly random. While we don't completely understand everything, there has been a single, branching, sequence of events on the micro-microscopic scale that influences everything that's happened since."

They all nodded slowly. This was making sense. "What about random events?" Metzger tossed at Poel.

Poel smiled, "Give me a random event..."

"Well, let's say I roll some dice."

Mehring agreed, "That's a uniformly-distributed random event."

Poel laughed, "Yes, it is. We all know the roll is caused by the force of the hand upon it, and its bounce on a table. It rolls, but it's governed by the same forces of physics as anything else. Theoretically, if you could control your hands and start with your dice in a precise position in your hand, you could roll a value that you want."

Everyone looked dubious.

"Okay. I'll relent. You wouldn't roll the value perfectly every time because humans aren't that capable of motor function, but you'd at least buck your 'uniform random' distribution."

For Nackley and Metzger, this was probably their first glimpse at the concept of determinism. They were assets to the team in designing and testing components, but they lacked fundamental training in the theory behind computer science. They could churn code when they were needed, though.

Metzger threw in, "If there is no God, then there's no reason for your precious beatitudes."

"Poel didn't say anything counting out eternal damnation..." Nackley returned.

"He certainly reduced the chances of hell even existing."

"Oh, have some faith."

Poel disappeared for a few minutes to fetch some donuts. As he left, it signaled the end of their informal discussion. Tracing the pale blue carpet with purple speckles, Mehring returned to his lonely cubicle outpost. He fiddled with the computer and updated his files— "rebased" the project— and started again. At the same time, Nackley and Metzger continued with more ribald and less appropriate discussion in the absence of others. In the distance, Mehring heard "No, you zealot! It's not like that!" The voice was Metzger's.

He typed and the big, boxy screen filled with particolored text. New code was timestamped 1068226351. He copied the number into a conversion utility to resolve the human-readable date. It was today— truly new code: more algorithmic jumble from Poel. It came from Friday, November 7, 2003 at 11:30 and 31 seconds. Only hours old, the code danced in the red-haired man's head. He pulled a legal pad out of his desk drawer and began tracing the bytes that the code sorted. It was a hashing algorithm. New values were entered and the algorithm generated a key and entered the whole mess in a lookup database.

Mehring counted the steps required by the code and did some basic efficiency tests on paper. It was pretty good... it averaged in polynomial time, while the runtime engine promised "linearithmic" time. It was a portmanteau of "linear" and "logarithmic", and mathematically written $n * log(n)$, where n is the number of items going in the table.

As he did his algorithmic analysis, Dave walked past him, peered at his work, smiled, and continued on his way. Mehring, through the creaking of the metal floor, knew the presence of the lead developer and did his best to ignore it. That worked for the best.

Moments later, he heard Dave's voice rising above Metzger and Nackley. "Maybe God himself should help you with those unit tests!" The shouting fell to below Metzger's range of hearing. He smiled inwardly.

Hours passed, and the faint sun began beaming in the westward windows. Obstructed by cubicles and filtered by the clouds, it threw shadows across the office. Closing time was coming. Mehring looked at the clock mounted on the wall behind his cubicle. He caught the shadow of Dave leaving early for the day. Almost immediately afterward, his chair pushed out and his feet rose to his desktop beside the bulky cathode ray tube monitor. A gray shape came from his right.

"Hey, Chris," came a warm voice.

"Thaddeus! To what do I owe this honor?"

Poel smiled. His glasses and the gray of his beard and hair caught some muted sunlight and glistened for a moment. "It's not an honor. I've got a favor to ask of you."

Mehring replied lamely, "You picked the good donuts. Name it."

"I'm going away this weekend. It's sort of a weird trip and I want you to poke into my house and make sure everything's okay while I'm gone. I've got some sensitive stuff running... I know you know your way around a UNIX machine..."

"I'd be happy to check it. What is it running?"

"I'm not starting one of your operating system battles..."

Mehring laughed and Poel raised his eyebrows, "I'm serious." There was a pause, "AIX."

Mehring nodded. "I was afraid you'd say Solaris or something. I can deal with that!"

Poel had an address written on one side of an index card and a long string of numbers and letters on the other. He handed it to Mehring, who read it and started putting it in his wallet.

"Root?" Mehring asked.

The gray-haired man nodded and echoed a literary quote, "Keep it secret; keep it safe. I'm leaving now. Check on it tonight?"

Poel left for the day, and peering around, Nackley and Metzger had seemed to disappear as well. Mehring was alone, so he stood and turned off his machine. He gathered his things, threw on his jacket and made his way to his car and began his drive home.

As his car cruised along the Lyndon B. Johnson freeway southeast of Dallas, he glanced to the evening sky. Low, distant trees whirled past his left and right and a few, lonely telephone poles pierced the sky. He glanced at a green sign for Dowdy Ferry Road and in the sky just above it; he caught the image of a falling star.

But it wasn't a falling star. It was flying upward with a golden flash. Other motorists apparently didn't notice it— a tiny speck of light flying up into the scattered, thinning clouds and sunset.

He pulled his car into the concrete area in front of his house. Inside, his wife hid away a bag of chocolate chips and dashed to the door to greet him. Beaming, she hugged the work-weary, red-haired man.

"Coffee, sweetie?" she asked.

"No, I'm still jittery from all the coffee at work. I might have had a few donuts, too," he confessed smiling.

"When Thad broke the build?"

He nodded. She shook her head.

"Oh! I'm supposed to go to his house tonight. He gave me an assignment to babysit his computer set-up. It must be pretty important."

She was standing in front of the small stove, preparing spaghetti. She looked over her shoulder with a caricature of impressiveness, down-turning her mouth and widening her eyes. To Chris, even with her unusual expression, she was the pinnacle of radiance.

He mused as she finished preparing dinner. It was written in a book that he had skimmed in his wanderings that for a couple to be successful there must be an ugly member and a beautiful member. The ugly member will do whatever it takes to please the beautiful member, and the beautiful member will appreciate and reciprocate the devotion. She was the beautiful member. Her hair was a dusky blond, and her face was very expressive. Her eyes were a gray-blue and her mouth was small. She had a cute way of carrying herself, and a walk that matched. She was humble, though, and it was the humility that attracted Chris.

They had a long dinner. They talked and laughed.

"So, why did you make dinner," he asked.

"I got off at noon," she replied.

"Lucky girl! I had to sit through another theological debate."

"I got to play with a Great Dane," she said with a bragging tone. She worked at an animal shelter. Her face turned to a serious one, "If he doesn't find a home, can we keep him?"

"Well..."

"We both make enough money. This house was a bargain. I've always wanted a Great Dane. You should meet him. His name is 'Duke', but we can fix that."

Chris smiled at her supplicating face. She was, for that instant, the perfect imitation of a small child begging their parent. Chris nodded.

"I just hope we'll have enough room," Chris said assessing the tiny house.

"We'll be alright. They are generally docile, and Duke is an old dog, so he has mellowed. He's not a puppy anymore."

Chris was overtaken with a wave of sadness. He imagined a carefree pup realizing the futility of his life, the lack of a purpose or chance for anything other than being the companion of a human, and the disqualification of the exploring and adventuring that he dreamt in his puppy-hood. He imagined this realization causing the pup to mellow and grow sodden and demure— powerless but not resentful. He imagined the dog accepting his quiet, sheltered life, but not being overly happy that there is no hope for any true adventure.

Chris' thoughts equated this resolution with his own life. He had a small but beautiful house, a loving and beautiful wife, and a steady income of money that was handsome, but not inwardly satisfying. His life made him content, but it was certainly not an adventure. As a child, he dreamed of flying a biplane that he constructed. He imagined everyone looking up at his airplane and waving at him. He dreamt of seeing the moons of Jupiter and screaming through the crab nebula in a super-jet. At the end of his brief reverie, he felt demure.

"If nobody claims him," he concluded, "we can take the dog."

He kissed his wife goodbye after some television and talking.

He went back to the care, tiredly. The night wind whipped through his hair and beard. His brown jacket kept out the chill. He gave one last wave to his wife before driving toward the address on the back of the index card from his wallet.

He approached the house and parked. It was the lone house in a cul-de-sac. There was a lonely mailbox in front of the white house. He looked at the card, then back at the house. The two-story house loomed ominously on a hill-top surrounded by trees. *All I need is some lightning and bats*, he thought.

He approached the front door and realized that he wasn't given a key. He had not thought to ask for a key. He noticed a mat on the cold concrete step. He smiled a little, shrugged, took a step to the left and lifted the corner of the mat. There was the top of a shining, silver key. The bottom was thickly wrapped in paper. He stood, replaced the worn rubber mat and unfolded the key from its paper envelopment. On the paper was careful writing.

It read: "In the house is a ladder. The computer system is under the well in the back yard. It's a secret, and you'll soon know why. I might be gone for longer than just the weekend. If you can't make it to check on the computers, make sure *someone* does. —TP".

Mehring put the paper in his pocket, nervously ran a hand through his hair, and slid the key into the sturdy, bronze lock. The old, wooden door opened soundlessly, much to the man's relief. The interior of the house was black as pitch with some blue light filtering in through a far window. The switch was near the door.

The modest living room came to life. The ladder was plainly visible, even from the door. A narrow staircase was to the right of the entrance. Since it was dark and foreboding, Mehring stayed in the light of the living room. The house had a magical feel. It smelled faintly of spice, but nothing else. The walls had no decoration. The furnishings were sparse. In front of the small, brown couch to the left of the room was a small, wooden coffee table on which was a laptop computer. There was a television across a path of floor from the coffee table.

Mehring absorbed the scene and nodded. For someone like Poel, this is exactly what he suspected.

Walking through the living room, the next room was a kitchen. It was an unusual juxtaposition, but not entirely surprising.

Something was flashing behind him. He looked over his shoulder. It was a switch— an electronic box that allowed computers to communicate with each other. Just looking, Mehring could see a wire tracing from the laptop to the switch. Since the laptop was not active, it couldn't be causing activity in the switch. Obviously the other computer was still "under the well". So Mehring resumed his short walk into the kitchen. Propped against the counter was the shining aluminum extension ladder.

The kitchen was even smaller than his own. Cabinets lined one side, a refrigerator terminated the front of it, and a door opened the back of it. The fourth wall was empty whiteness except for a calendar. Looking at the calendar, he noticed a lunar eclipse scheduled for the ninth.

He unlocked and opened the narrow door and walked down a short stone set of three stairs. The well looked inconspicuous. Removing the wooden cover, he saw water at the bottom. His doubts about the entire mission redoubled. He entered the house again, leaving the ladder behind him. Retaking the kitchen, he found a lever beside the stove labeled "sump pump". He looked at the enigmatic lever quizzically. His sump pump at home required no lever. There was a second piece of paper folded in the lever.

As he reached for it, he saw something in the back yard. It darted past his view, black and shadowy in the dark of the night. He turned to the door and looked into the darkness. There was a figure standing, blacker than the night examining the well. Noticing the ladder, and looking toward the door, the figure turned away from Mehring and dashed into the woods. His walk was strange, even with its rapidity. The being shambled quickly out of sight.

Mehring trembled. Though the event took only a few seconds, it was long enough to realize that whatever was out in the night was real. He stared for a few minutes, staring into the darkness.

He slowly became aware of the papery material he was absentmindedly clutching in his right hand. Remembering the note, he opened it. "Pull the lever to 'on' before descending the well. Turn it back to 'off' when you're finished. Destroy these notes."

This was enigmatic.

Mehring regained his composure. He resolutely opened the door, stepped back into the cold night. The ground was damp from short rain that had happened earlier that day. It sunk almost imperceptibly beneath his feet. He grabbed the ladder which was propped against the wall. He peered into the well, and, as he had hoped, the water at the bottom was gone. He saw a light. Hurriedly, in fear of the shambling shadow, he held the top of the extension ladder in his hands and swung the bottom into the pit. Noisily, the bottom extended a full thirty feet so that the feet of the ladder were on the floor of the well and the top was still in Mehring's outstretched hands.

He peered around him into the woods surrounding the house. His jacket was dirty from leaning over the dirty stone of the well. He was afraid he had drawn a lot attention from the ruckus he had made.

Standing upright, he rubbed the dust from his jacket. Spinning in a full circle, he saw nothing looking back at him from the thin woods.

Carefully, he stood on the long ladder, reached and grabbed the wooden well-cover. As he entered, he replaced the cover above him and began his descent into the well. The cylinder was narrow, and his back scraped the stonework behind him. The ladder was nearly vertical, causing Mehring to wonder about how steady it was on the floor beneath him. The tightness of the man and the ladder in the well prevented any possible backward motion of the ladder.

His foot hit something hard as he blindly descended the ladder. The ground was solid and

smooth concrete. It was slightly sloped. Mehring peered up into the cylinder from which he had just escaped. The rough stonework was completed with cinder block, and from his vantage point, the dark wood of its cover was merely blackness.

The concrete floor was met with walls of concrete block painted white with a gray trim. The room was a long, narrow rectangle punctured in the center by the well. There was a large, green pump and an emergency electrical generator to one side of the ladder. Wires came in through a hole in the ceiling connecting the pumping equipment and the generator, a circuit breaker behind the generator, and an incandescent light-socket near the well's cylindrical opening. The wires ran through a conduit to a doorway.

Toward the door he walked, up the gentle slope away from the drain. Through the doorway he peered, and into a square room with an impressive computing cluster in the middle. The room was about a hundred feet by a hundred feet. It was an impressive display of covert underground engineering. Wooden beams were planted into the floor to help support the concrete ceiling. There were breaks in the beams at their midpoint— undoubtedly, there was trouble lowering an eight-foot beam down the cramped well and positioning it in its final place, so the beams were cut in half and reassembled in the subterranean cavern.

The computing cluster was at least two dozen computers in various states of repair mounted to modular metal shelving that reached the ceiling. Lighting sockets were mounted to the ceiling in a large circle around the entire configuration. The shelving was separated into four parts with a narrow path connecting them. Wires jumped the path at the top of the shelves to form a peculiar archway. At the far end of this unusual underground chamber was a wooden desk. Presumably, like everything else, it had been assembled in this room. On it were two monitors and a keyboard. It was the terminal to access this cluster. Atop each of the metal shelving units was a familiar blinking box— networking switches. Bright blue wires connected them and the computers together, and a single wire left with the electrical conduit into the first chamber.

This was the machine that he was to protect. This was The Universe.

The keyboard at the terminal was labeled *Universe*, and some chunky books that were bound by hand seemed to reflect the machine's identity. There was another doorway beside the terminal. It was opposite the doorway from the mechanical room. It was also farther uphill.

Mehring tugged at his beard as he looked at the terminal. He considered leaving the third room unexplored and simply beginning his work, but his thirst for exploration temporarily seized his curiosity toward computing equipment. Peering through the doorway, he saw a library. In this room, the last room because it contained no other doorways, there were wooden modular shelves lining the walls. They were packed with books about history, navigation, science, math, and loads of physics. Many books were homemade and written by Poel himself. In the library was also a small, wooden chair. Presumably, this chair was shared by the library and the computer terminal.

He ran his fingers over the covers of some of the books. Several were merely pages stuffed in binders while others were officially-published store-bought textbooks. Perplexed, he dragged the wooden chair into the computer room and placed it behind the desk supporting the terminal.

There were two clicks as Mehring pressed the power button for each of the monitors. Each made a *bwaum* sound and clicked. Text appeared on both of them. The left was status text that constantly and unreadably passed the screen. The right contained a prompt reading, "Universe login".

Mehring typed in "root" and pressed enter. When prompted for the password, he typed the lengthy string on the back of the index card. He ran some diagnostics and found all of the hard-drives of the machines were running at maximum capacity. These machines were generating massive

amounts of data that were constantly being swapped over the network wires with each other.

His next act as the administrator of the machine was to stop all the status text pelting the other terminal screen. Each line of text was a wasted computing process and network action. He then continued to prod around the contents of the machines and calculated their relation with each other. All of the data on the machines were stored in databases. Other file structure was practically absent.

Mehring pondered what all of this was. He finally read the last line of text displayed on the secondary monitor. It was a simulation of some sort. It had coordinates and rendering percentages on it. This was a simulation of some sort, and judging from the temporary filenames it was generating, it calculated pictures of the simulation as well.

It was time to visit the library.

Chapter 3

If our universe began with a big bang, then our universe began with a finite number of particles expanding from each other. Given that each interaction between these tiny, sub-microscopic pieces of matter operates on known and predictable principles, and given the previous state of these particles, a machine could precisely predict their future motions. This seems simple, and, in fact, it is. Most physics students can plot and predict, with a fair degree of certainty, the paths of two colliding billiard-balls, but these particles become more difficult to understand as their size decreases. Their behavior becomes erratic and nearly impossible to compute.

This is as much as Mehring learned in his first half-hour within the library. Noticing the time and the little amount of work he had accomplished, he rose. He crossed the library, he computer room, and the mechanical room. He climbed the ladder, opened the lid of the well and made his way into the house. Instinctively, he peered into the dense brush separating the trees of the woods. Nothing stirred.

Inside, the telephone was mounted near the calendar on the blank wall of the kitchen. He picked it up and dialed his home phone number.

Three rings later he heard a click and the soft voice of his wife.

"Hello?"

"Hey, doll! I probably won't be home tonight..."

"Everything alright?"

"Yeah. There's just a lot more to this computer system than I thought. He's got a whole server-farm mounted in a *glorious* array."

He could practically hear her eyes roll, "Okay, babe, but don't stay awake too long playing with your toys."

"I will."

"I know."

"I'll see you first thing in the morning; I promise."

She sighed and accepted that she was going to be alone that evening. They said their "I love you"s and went their own ways.

He went back down the well and resumed his studies.

You could group infinitesimal particles into larger ones, as humans had already done. However, when scientists use these larger particles, it is because they do not know of the smaller ones which compromise them. By subdividing and splitting, examining practical evidence from a particle collider, and some guesswork, the smallest particle, still unnamed, had been discovered. Furthermore, it jumped and danced between dimensions. Poel's data suggested more than ten spatial dimensions, and, correspondence between Poel and Gene Ray suggested three temporal dimensions.

The average number of particles configured for our universe and our visible dimensions was ten to the power of ninety-four minus a few. The very number was precise. To avoid writing the entire quantity in its entirety, it was factored. The numbers made Mehring's head reel at the size. So many super-particles existed in the universe, and, for each one, its location, speed, and direction could be calculated with exact precision. Furthermore, they could be stacked together into objects and these properties could be manipulated *en masse* to reduce the amount of system resources required to handle the calculations. Given the probabilistic nature of the particles, many calculations were required, but the outcome was worth it: for each element of this system, each element of the elements, and each element of those down to the most infinitesimal of infinitesimals could be, when required, calculated, plotted, moved, collided, pushed or pulled from a neighboring dimension, and placed as a component into the larger systems that moved the world, and this could be done with adequate precision so that after nearly thirteen and three-quarters billion years, the machine would still be synchronized with the universe around it.

For a certain event, only a much, much smaller number of these quanta were required for an accurate simulation; however, a valid representation of the universe at its proper time.

What Poel had done, then, was to build a simulation on his cluster of the entire universe that he could bring to any point in time by restarting the simulation. It took a few hours to get a desired time frame, but, once there, the entirety of the universe was available for exploration. The computer simulation was driven by a command-line: a text-based program. The user typed a query and the computer began chugging and processing what the situation looked like and sounded like at a given time. Additionally, by incrementing the universe at the proper rate and taking virtual photos of it, animations could be made.

Mehring's reading continued ceaselessly through many volumes.

Photographs of the universe were taken by specifying spatial coordinates. To provide an analogue to the physical world, the means was actually called "photography". A camera was placed and its various properties were set. Then, it would capture photons traveling through the air much the way an actual camera would. Then, it would encode them and write them to a physical medium. Flash-based memory was expensive, but it was suitable for the purpose since it could be used many times, and was relatively small and quite capacious considering the alternatives. Also, the project had taken considerable funding to build, so having expensive external storage was only a small surprise.

Mehring raised his eyes from his reading for a moment. He peered through the doorway into the computer room. There, spread over the shelves, that mountain of computing parts held a gigantic, three-dimensional, interactive snapshot of the entire universe at the present time.

So many of its workings were still a mystery, but the concept of its existence is not. Recursion explained it. It happens in nature just as it happens in man's synthetic world. Place a mirror before a man and behind him, and he can see, given the proper conditions, many, many copies of himself. He sees himself standing in a mirror through a mirror, repeatedly. Thus the universe created man, who created a simulacrum of the universe itself, so that the universe could see itself in all its complexities, huge-sweeping infinitesimals, and bizarre irregularities. We were the hands. Carl Sagan said that we were the means for the universe to understand itself. Mehring stood in front of proof of this.

Mehring twisted his brows. There was still something missing.

The machine knew that it was correct by the hall-of-mirrors effect. If the universe generated a universe in which it, itself, existed, then it was finished. It began calibration with a small number of particles, incremented time nearly fourteen billion years, and checked the proper spatial coordinates

to see if it found itself. If it did not, which was most often the case, it would increment the number of particles, and the big bang would occur again. This approach was revised when the universe was several orders of magnitude too large and still did not contain itself.

The revisions added other possible configurations for these particles before the bang. Realizing that the tiniest of floating-point error would send the entire simulation into meaninglessness, many measures were taken to remove the error and check for other, sub-optimal initial positions of the quanta in the universe's "starting position".

Placing the gigantic binder back on the shelf, he peered at other volumes in Poel's collection. As he removed another book on the query language used by the universe, something fell from the book back onto the wooden, modular shelving. It was shiny and a glint of color caught his eye. It was an optical disc— a CD-ROM. It was dated from a few months prior, August, 2003, and it had a long string of text written on it. The text was made by a fine-tipped marker. The tiny text contained a few sets of very precise coordinates. Mehring assumed it was data mined from a query on the universe.

Mehring contemplated putting the disc into some part of the universe, mounting it and watching it on the terminal screen. Seeing the hard-drive status lights on all of the machines flashing, he assumed this might disrupt the state of the machines, or at least slow down whatever process they were currently running. Instead, he returned up the ladder again, and dashed into the house.

It was now after midnight. He grabbed the laptop that was sitting on the coffee table in the living room. He dashed back through the kitchen and into the well. After he pushed the power button and waited for it to load, he was happy to discover that no security was present. It asked for no identification or password. Mehring smiled at the bit of luck, and realized that it was probably done intentionally.

Loading the optical disc into the computer revealed video data. The only file was heavily compressed. The first few seconds of video showed the query text printed in plain white type on a black background. It was the same as the text printed on the front of the disc. When the screen changed, it was just blackness, but some numbers remained at the bottom of the screen.

Rather suddenly, waves appeared. The sky was black but full of stars. There was no moon casting light on the water, but waves were discernible through the subtle reflections of the stars. Despite the compression, the details were clear. The numbers at the bottom began to change. The camera position moved. The water became farther from view. It became inky blackness. Suddenly, a gigantic black object obstructed the view. The black was cut through with yellow circles of glass. Then the top became white steel. The camera moved back from the immense object, and it resolved into a ship. A smooth, black hull with white superstructure and four orange-red funnels lit up at night.

Mehring leaned forward as he easily recognized it as the RMS Titanic.

A time stamp appeared on the screen. It was a long negative number which Mehring presumed to be the time until the Unix epoch at January 1, 1970 measured in seconds. The numbers changed again as the camera moved toward a large, three-tiered piece of white ice barely visible in the dark by the sky.

The little speakers of the laptop were filled with a horrible screeching sound, surprising Mehring as the gargantuan ship slid by the iceberg, causing subtle shock waves of vibration to shudder the ship, barely perceptible from within the superstructure. Late at night, the bright chandeliers in the first-class dining room shuddered.

There were then photos of recognizable people. The captain, the builder, and some others of the crew were shown candidly, likewise some of the more famous passengers. Mehring, familiar by

the recent film, recognized Edward Smith, Thomas Andrews, Jack Phillips, and J. Bruce Ismay as well as the Strauses, Astors, Molly Brown, and a handful of others.

To see these ghosts in living color on the computer screen as they were was incredible. This wasn't a film or a re-enactment; it was the people, themselves, as they were on a dark night in the middle of April, 1912.

Next, the camera raced through the ship, presumably demonstrating the camera interpolation methods that Poel invented. It whizzed from the front of the ship, through the A-deck promenade, down the back, under the cargo crane on the aft well deck, and over the stern. Seeing the reality of the scene made Mehring shudder.

Then, the screen was filled with screaming and shouting. A few gunshots rang through the night air and the music of the seven-member band. The camera panned back slowly to reveal the ridiculous list of the ship's keel. Dramatically, the band ceased playing, the lights went dark, and the ship broke and sank leaving a thousand people freezing in the middle of the Atlantic Ocean.

Then, the screen went black. The file was finished playing. The entire experience took only a half of an hour, but Mehring was awestruck by the power of the machine.

Looking again at the cluster, he realized that all the processes must have been virtualized. It was more than a cluster; it allowed too much parallel processing. He considered, perhaps, the term "supercomputer".

Going back into the library, he rummaged through the books. He took each off the shelf and examined it quickly for evidence of an embedded optical disc. Before long, he had a small pile of them. So, he snatched the laptop and ejected the Titanic disc. The next disc he loaded was similarly labeled with a long string of numbers. It was another Universe query.

Loading the second disc the same as the first, he saw people standing in a field with a tall mast in it. People were very well-dressed and there was a wind blowing over them. Once again, numbers danced across the bottom of the screen to show the virtual camera's location.

Mehring noticed in the manual for the Universe there was a caveat about cameras and microphones. While it would be simple to find a standard camera, duplicate it, and place it as a physical object in the simulated world, doing so would create a huge problem with causality. As each event in the universe is entirely dependent on those that came before it and those that are concurrent with it, a camera appearing in the sky over a field of people— real, or simulated— would destroy the delicate synchronization of Universe and universe.

The sky was a grayish blue threatening rain, and the mast's bland, gray form made a triangular sculpture stretching from the green grass. Lined with wooden buildings and spattered with dozens of waiting people, the field was a puzzle to Mehring. Very shortly into the video, he saw a gigantic silver object appear at the top of the screen. It coasted into the center of the field slowly. It was a gigantic silver tube. It was a zeppelin.

He heard someone speaking into a microphone say, "It's practically standing still now. They've dropped the ropes out of the nose of the ship."

The camera moved in Mehring's dramatic but gaudy signature way. It traveled along a precise, mathematically-designed path swinging in a broad arc around the colossal vehicle. Gigantic letters six feet tall read, "Hindenburg".

Having seen the famous newsreel footage, Mehring braced for the worst. This, however, wasn't the familiar newsreel footage, although in detail it matched perfectly. The camera angles chosen were close to the familiar film. Mehring watched the entire back of the airship suddenly catch fire. Hundreds of feet in the air the bright orange flames leapt. A matter of seconds saw the entire metal structure rear into the air and crash into the ground sending people running and screaming. The

bright orange cast a frightful glow through the clouds into Lakehurst, New Jersey.

The camera slowly panned toward the smoldering metal alloy structure. The twisted grid of metal comprised all that was left of the mammoth, beautiful airship.

The screen went black. The file was of a much higher quality and shorter in length. Once again, the single video was the only file on the disc.

Mehring stretched and yawned. It was nearly one hour past midnight. He was very intent, however, to get the most satisfaction out of his time with the machine, so he rifled through the rows of books. He knew his target was one he had spotted previously. Frustrated that he failed to remember where it was, he picked through the shelves at random with a frightening urgency. Suddenly, he found it. The cover looked different than he'd remembered— but he had only seen it once when he originally entered the room. It was a pocket-sized book: a reference to the query language used by the universe.

With book in hand, he dragged his chair back to its place behind the Universe's terminal screens. He looked at the book. Then, he typed *uni* at the command line, and the prompt changed to an innocent-looking right bracket. It was unusual for a terminal prompt, but it was an unusual program. Next, he turned on latitude-longitude mode which allowed easy viewing of Earth rather than exploring the galaxy and guessed at the approximate coordinates of his house. He pressed the enter key and the opposite screen lit. Starting at the top and scanning down, he saw an image of concrete. Nothing filled the screen but boring, bland concrete, and it was lit by the sun. Either he was very far from his intended target, or the universe was set to some time in the past or future.

This is to be expected, he thought. He had no idea of exact coordinates, just fuzzy memories from school. He tried again, but gave the camera some altitude. An aerial photo would help him orient himself. Another execution: a few seconds later, the opposite screen had a picture. His guess for the latitude and longitude was around 32.75 north by 97.3 west.

He was close! From the altitude of ten thousand feet, he recognized the eastern sections of Fort Worth to the left of the screen with its dozens of roads stretching eastward to meet with Dallas. Encouraged, he attempted another few queries slowly decreasing the western longitude and the northern latitude. A few minutes passed and he was virtually flying over his house.

The time stamp read 1068225318. Mehring pulled a pen from his pocket and found a piece of scrap paper in the library. Doing the math quickly, he revealed that the universe was calibrated to that same Friday, November seventh at eleven o'clock in the morning.

Thirsty to try more queries, he advanced the time to ten o'clock. After entering the command to advance time, the entire cluster became warm. Fans whirred noisily. There was a tremendous network surge. Lights blinked on all of the machines and network switches. It grew perceptibly warmer. Thirty seconds passed and the terminal was still unresponsive.

He looked back at his query. It was two lines, nearly one hundred sixty characters. Reviewing the arcane query language, he decided that it was well-formed. Scratching his beard and looking between the monitor and his handbook, Mehring was beginning to feel the frustration that comes with fatigue. He rubbed his eyes and looked around at the gigantic computing cluster. When his eyes returned to the monitor, the right-bracket reappeared. The cursor was a few spaces to the right from Mehring's vain attempts to check for a response.

It also printed a status message. It had taken forty seconds to update the local universe— the Earth— to the requested time.

It took several minutes, but he managed to put the virtual camera in his house and find a viewing angle to see his wife. She was, at ten o'clock, as beautiful as ever. She was in the kitchen, which struck him as odd. A new command entered his query vocabulary. He rendered a brief video

of what his wife was doing. The titanic supercomputer churned once more and their fans rose to new levels. Once again, the terminal lost its responsiveness.

This, however, passed much more quickly than changing the time in the simulated universe. A mere fifteen seconds produced a few full minutes of video. Mehring noticed that the video was written automatically to flash-based storage. He pondered the sensitive nature of the state of the hard drives. His worries faded as he watched a video of his wife at ten o'clock in the evening preparing something in his kitchen. Craning closer to the screen, he saw flour and eggs. He saw a bag that contained what looked like chocolate chips and a big, brown rectangle. He panned the camera. A twelve-second render of the simulated universe revealed a slab of chocolate. His wife was making him brownies!

He ran his fingers through his fuzzy, curly red mane.

This fantastic device must be protected, but, then, how was it constructed in the first place? Mehring knew Poel for years at Xocom. When he was a lowly underling, Poel was one of the few who understood computer science and discrete mathematics in the same way as Mehring. Now, eight years later, Mehring wondered why a man like Poel worked at a place like Xocom. *More research is needed*, he concluded.

He shook the sleep from his work-weary head and winked at the still image of his wife on the monitor.

Picking through more of Poel's verbose writings, he found the key. It was a photocopy of a ten-year-old data sheet. Looking at the heading, he saw "Superconducting Super Collider".

The page contained, among a dazzling amount of data, a few coordinates which would be ripe for entry into the Universe. It took two full minutes to roll the Universe back ten years. Hearing the amount of processing and knowing the nature of computers, Mehring was very worried about a loss of precision in dealing with so many calculations. He mentally made a note to research how Poel had overcome this.

The secondary monitor was full of a picture— a large, bland, gray building somewhere south of Mehring's present location. He saw the cars of a skeleton crew and then he saw a man carrying a box and a second man. They exchanged papers. The first man got into his car and sped out onto the road. The first man made a dash and then a huge, greenish ball of light broke the dawning sky. The terminal lacked speakers, but he was sure the sound was deafening.

Unlike an actual camera, the virtual universe failed to play by optical rules. There was no distortion or blinding glare because there was no physical lens. The simulated reality of the Universe was the clearest picture anyone would have of that grave October Friday.

The seeds of the Universe were planted by the events leading up to the explosion.

More rendering, new angles, and some careful reading finally made Mehring realize that the failure-notorious particle-collider project in Waxahachie was, at some point, in full operation secretly beneath the sandy Texan ground generating massive amounts of data. At some point, things went terribly wrong. He was unable to tell from the video, but Poel's notes revealed some interesting nomenclature. The interdimensional dance of microparticles was the center of a chain reaction. The result was a causality-resolution collapse. Within a gigantic ring-shaped tunnel, particles were spun and collided with each other. On a sub-microscopic scale, huge bloating was occurring in the number of leptons, gluons, and bosons for each of the particles humming around this race-course. Eventually, they became bloated orbs of energy which violated basic laws of causality and physics, floating through concrete and scaring the hell out of the people working around them.

Since nature has a way of fixing things on its own, and since our three spatial dimensions were locally pregnant with these massive super-atoms, these balls of light, only one thing could happen:

the forces that allowed them into this dimension, pulled to its limit, would snap. Adding to the dangerous situation, these alien bulbs were pouring with radioactivity. At the end, they were pulled together by their interdimensional gravity; they released a huge amount of energy— the catastrophic explosion of gamma waves— and then returned to their otherworldly places.

The explosion of radiating, vibrating, intensely-hot particles shot sub-microscopic holes through everything. For the building, this was nothing. For the soft tissues of the people, it was worse than fatal. All within the blast radius were practically reduced to atoms.

Mehring was deeply depressed. This was much worse than the disasters aboard the RMS Titanic and the Hindenburg. These people were the unknown dying their unceremonious subterranean deaths. Poel had been there. Poel's friend had lost both of his legs. This was the disaster of Mehring's age, and no one knew the truth.

With these images of nightmares still floating in his head, Mehring lay on the cold concrete and took a nap.

Sometimes, during dreams, humans make sense of the vast array of sensory stimuli of which they were subjected. This was the case for Mehring. As he was isolated, cooped, voluntarily imprisoned in this underground chamber asleep, his brain soared. His mind's ear was still quite active during sleep. Abstracting and doing some extrapolation of its own.

"What could be all the implications of this?" was his main thought, drifting into sleep on the gray floor.

He saw a red line-drawing of glowing circles connected by broad arcs with arrowheads. The curved arrows were labeled, and the circles had letters in them. He recognized it as a mathematical graph with its edges and nodes. As the dream-seconds passed, it expanded and grew. The labels along the edges were of a defined set that he saw elsewhere. One of the circular nodes had a second, concentric within it. As this inner circle took shape, the node turned from the deep crimson to a brighter, more glowing yellow-green.

The red nodes and edges raced toward the horizon. He saw the mammoth graph from crazy, dizzying angles. He felt worry about its complexity. He recognized it as an undergraduate's view of a nondeterministic finite state machine: a freshman's automaton. Each node had jumbles of lines exiting from it. A lone node far away from the amber-green node had a large arrow pointing at it. It was the starting arrow.

It took no effort to find any number of paths to get from the starting node to the end node.

Suddenly, as Mehring was consciously twisting and manipulating the graph to formally generate a set of paths from the beginning to the end, arrows began to disappear. The nodes remained the same, but there was only one path leaving each. Multiple paths to get from start to end were possible, but the automaton represented by the graph was *deterministic*. One could trace a path forward or backward based on the list of arrows connecting the start and end without a list of the circles that the arrows connected.

His view changed to one of his office. In dreams, our experiences change just as we change the patterns of our thought. It is quick but without surprise.

His view of the interior of his workplace, and he saw his thoughts spread out symbolically overlaid on the office floor. He stood in a corridor, and following one path lead back to his desk. Another path went toward Dave Prolov's office. Each path had different symbols on it in some bizarre script. There was a circle beneath him from which many arrows left. He stumbled around the corridor. A thick, red, perfect circle was painted on the floor beneath the coffee machine with paint of glittering, shining red.

There was determinism. For each choice, only one arrow existed leaving his current circle. Most

importantly, there was choice.

His choices, though, were determinisms of their own.

In the unlikely event that he had enough coffee, he would not choose the path to the coffee machine. In the equally unlikely event that he wanted to see the lead developer, he would choose the path toward the lead developer's office. This was much more than probability, as there was no randomness to it. If he had failed to eat, he would invariably choose the path to the snack vending machine. There would be reasons why he would fail to eat. He could predict these occasions and have enough spare change in preparation.

Suddenly, with different colors, the floor became littered with arrows and circles surrounding familiar faces. Suddenly, Nackley and Metzger were there in a polite discussion. Poel was craning his head out of a nearby doorway. A multitude of lines poured into the doorway, and another multitude exited. In a kaleidoscope of colors, new arrows connected the paths of the others. Everything was related. Everyone did not operate their own finite automaton of choices. They were all related. There was only one machine.

His choices were not his own. He was chemically programmed to decide toward food and comforts. He was rationally programmed to control these in moderation. He was the product of his environment and the brain within his head. His brain was the product of his parent's genes, and his parent's environment. Likewise, every human on the planet was plagued by the same functions of determination.

This wasn't limited to people. Plants, animals, rocks, clouds, bodies of water, the solar system, and the universe were bound by laws of determinism. Human neurons were certainly not exempt.

Mehring's next experience, still in the office corridor, was being pulled along his usual route to his desk. He liked the route because it passed a large window which enabled him to see the sun. This like of the sun was instilled when he was a child and, in his grandmother's house, he remembered playing on a table in front of a window. In the morning, the sun would shine into the room, flooding it with bright yellow light.

The corridor was a precise simulacrum of its real-life counterpart with a few exceptions. As he passed the window, the view was different. He saw the view of a street, the same view he saw as a child from his grandmother's window. The walls of the office were a brighter gray, almost white, and an ocean of champagne-colored light poured through the window. The causal connection in his mind was now clear.

He imagined the question of "free will". A mammoth point among religions and philosophers, were people in charge of their own destiny. He suddenly decided against it. We are symbols in an automaton. We are robots. We coast down our paths. The realization of this is a member in the equation, though. We cannot escape. Since a decision is a function, the realization of the universe's mechanizations is merely a member of that function. It is one of our stimuli, and however heavily we weigh this stimulus is dependent on our values. Our values are a function of our environment and those of our parents. We are trapped.

Mehring's imagination was resolute, though. Placing a smaller weight on this stimulus would allow someone to pull through their life without being chained to causality and bonded to cause-and-effect relations.

What, then, is the purpose of life?, Mehring's dream-self asked.

He remembered Poel. Poel was standing with a thirty year old Carl Sagan in his dream. Sagan spoke, "We are a means for the universe to understand itself."

Chapter 4

Out in the vastness of interstellar space, a shimmering golden vessel floated. It drifted along, seemingly without propulsion toward some distant star. The vessel was of an Earthly design. It was slightly longer than two hundred feet. Its hull was of a strikingly beautiful shape: a long cigar compressed horizontally with parts removed from the bottom to give it a graceful set of curves and an odd pan-handle shape on the stern. A short tower was placed on top of the hull toward the aft of the center. A set of wires connected the stem to the tower, and followed from the back of the tower to the stern. A pair of motionless propellers jutted from the back. It was a German World War One era U-boat covered in glittering bronze.

In its original service, it was built to withstand the crushing pressures of the depths of the ocean. Now it was refitted to handle the explosive lack of pressure of interstellar space.

Stunningly long and fast, the missile-like ship plunged through space at an incredible speed. There was a single man floating aboard: Thaddeus Poel.

From 1913 to 1914 in the northern German town of Kiel, the SM U-38 was constructed for the war effort. It was commissioned at the end of 1914, and saw a successful service. She famously sank the *SS Persia* against the rules of war at the time, failing to allow passengers to evacuate the ship prior to attack. By the end of the Great War, she had sunk one hundred thirty-eight ships. According to history, after the war, she was surrendered to France and was scrapped in Brest in 1919.

Interestingly, at the time, a wealthy survivor of the attack on the *SS Persia* secretly bought the U-boat from the scrapyards.

Toward the end of the twentieth century, Poel was deeply rooted in two different projects: one was filling in the hole in his back-yard with computing equipment, and the other was building a space-ship. Both of these projects were fantastically expensive and secret in nature.

His job at Xocom had afforded him a furnished house, and some basic consumer-grade computers. Fortunately, most of the pieces required to form them into a massively-parallel supercomputer were available cheaply from most electronics distributors. It took a great deal of expertise to engineer all of the parts into a beautiful computational orchestration. Many, many hours were spent in the underground room. Running wires and soldering components were done, and sometimes done in vain. Frustration only validated itself after several years of hard, hard work. By 2001, he had built the Universe. Six months later, after hundreds of thousands of trials with various starting conditions, it was calibrated and synchronized with the physical universe and rightly self-aware.

The space-ship, his other project, required the Universe as a prerequisite. Poel was a theoretical physicist and a largely theoretical computer scientist. He had no concept of what sort of power would be required or what powers were available for interstellar travel.

Building a ship from scratch would be prohibitively difficult, but he had an acre of land behind his house and enough area to build something and keep it covered. However, around the late nineties, when the Universe was still in its infancy, the owner of the U-38 died. The ship was in a terrible state of disrepair and unwanted. A friend of Poel's sent him a message about the U-38 being for sale as a mere curiosity.

Two weeks later, Poel was in France. His pidgin French bought him the ship for a few hundred American dollars. She had holes on the side of her hull, and there was enough rust damage to make her worthless to any collector. Many of the French at the estate auction laughed at Poel's purchase. Resolute Poel took such opinions in stride. The cost of shipping the gigantic derelict was nearly equal to the price of the vessel itself.

He only needed to make it space-worthy, however. It was not to be a museum piece. As such, he gutted the inside of most of its non-structural material and, through very crude methods, managed to patch her hulls with the melted, flattened, and hammered innards of the ship. His resourcefulness had reached his limit, though, as there was no way that, while it might have been fit for sea, she wasn't ready for outer space.

So the project rested while he finished the Universe. Covered by a gigantic tarpaulin, the watertight steel wreck of a formerly beautiful ship sat, barely protected from the hot Texan sunshine.

When the Universe was complete, Poel looked for cheap materials. Copper mines were famously exploitable in China, so Poel ordered bulk bronze from China using pidgin Chinese and a lot of luck. He paid for it using money he had won in a "lucky streak" playing the local lottery. His winnings were respectable, but not enough to put him on the local news. He was still an unknown who had won a few thousand dollars and spent a considerable sum on raw bronze and some machinery to melt it and apply it to the rough hull of his ship.

Over the next year, he scoured the depths of the Universe. He made improvements to his query language so that he could search for materials. He first attempted to view his future self and see if he had succeeded in building a space-ship and then copy whatever plans his future-self used. Unfortunately, he was unable to do so. His queries returned failure. Since he wrote the error-handling algorithm, he could see precisely where it failed: causality resolution. The machine attempted to parse causes and effects for each action in the universe, and, since it was self-aware, Poel inadvertently triggered an infinite recursion: he looked at himself trying to look at himself. A stack overflow— the phenomenon that happens at the time the list of unresolved function calls exceeds the amount that can be handled by the machinery— stopped the query and Poel would have to figure his way through this conundrum without cheating.

A week of searching for masses of synthetic materials moving between celestial bodies resulted in a positive hit. This proved two things to Poel: firstly, humans were not the only intelligent species in this Universe; secondly, as he had suspected, Einstein's theories regarding superluminal travel were false. Remarkably, the machinery of the ship was not entirely alien to Poel. It was related to machinery he saw when working at the Superconducting Super Collider.

By early 2003, Poel had secured some machinery from his former employer and installed it in his ship. The site of the particle collider (now called the "Desertron" by locals) was vacant and poorly secured. The locks hadn't even been changed. Other parts required for this new propulsion mechanism were acquired from a local machinist. Being this close to success, Poel sacrificed any amount of money to get his machine completed.

By November, he had conducted a handful of tests in his backyard, floating a few feet off of the ground in his new, golden space-ship.

Friday the seventh saw his departure from our planet, and Saturday morning as Mehring was

waking from his slumber on the concrete floor of Poel's house, Poel himself was ninety five billion miles— one hundred forty light minutes— distant. Now outside of the heliosphere, he was ready to take full speed.

Mehring's entire body was sore from sleeping on the concrete floor. He rose and stumbled toward the cylinder exit. He shambled up the ladder and back into the house, closing the well behind him, but leaving the ladder in its place.

He picked up the phone and dialed his wife.

"Hello?"

"Hey, Honey. Looks like I won't be coming home for a while."

He could hear his wife sigh into the telephone.

"Poel's been working on something fantastic. I can't really describe it over the telephone, but trust me, it's really amazing."

"You boys and your computers..." she said mockingly.

He smiled, "I love you so much. I'm glad you understand. But, really, it's like if you found a living dinosaur or something."

He heard her groan at his patronizing comment. He added, "...with whom you could play fetch."

"I love you, too, you big kid," she exclaimed, laughing.

After Mehring hung up the receiver, he had a brief inner turmoil, but, resolutely placed several more telephone calls.

Within an hour, early on Saturday morning, Hogue, Nackley, Metzger, and Mehring all sat in Poel's small living room.

"This had better be good, Chris," came Nackley's smooth, low voice. His dark complexion was eerie in the morning shadows.

The other two men looked similarly tired, but excited. In all the years at Xocom, they had never been in Poel's house and never received a call to meet that wasn't work-related. So, most of them had Styrofoam cups of coffee in their hands. Mehring looked longingly at them, but inwardly shrugged. What he had to say was more important than the warm comforts of a caffeinated beverage.

"Poel's been working on something that needs our protection. Apparently, somehow, over the last five years, he's constructed a parallel computing cluster..."

At these words, the other three men's eyes lit with fiery excitement.

"It's a model of the entire universe. The machinery itself is collectively known as *the Universe*."

Nackley was still the only one willing to speak, "So, you brought us here to look at planets?"

"Look at whatever you like, really. In the machine, we're standing here right now talking. It is very, very detailed."

Nackley raised an eyebrow. Metzger spoke next with a slight southern drawl.

"Can this tell us the future?"

"I haven't actually tried. It can tell you the past with perfect precision, so I'm reasonably certain the future will work the same way."

Hogue asked, "What programming language are we talking?"

Mehring smiled. It was just like Hogue to ask this sort of question. "Since it's computationally intense and massively parallel, it's C with some assembly: very low-level; not portable, but fast."

Hogue continued, "So, he's figured out the grand unifying theory of everything?"

Hogue finally made Poel's accomplishment finally sound impressive. The thought, simply stated, rang through Mehring's mind. A mental dawn arrived. "Yes. That's exactly what he's done."

"All the secrets of the universe are ours?" Nackley asked.

"In short, yes."

There was a pregnant silence.

Hogue raised his eyes from his reverie, "Why have you elected to tell us this?"

"Thaddeus gave me instructions yesterday to check on the machine and see if anything goes wrong. Yesterday, I saw somebody lurking around the place where the machine is hidden. I think we're not the first people to learn about the Universe's true potential. I can't trust the police. They wouldn't understand, and if we explained to them the significance of it, they'd make a big deal about it, and we would have betrayed Thaddeus. I don't know how long he's going to be gone, but I know I can trust you guys."

"Can we see it?" Metzger asked.

A few short seconds later, they stood around the well, peering around the tree-enclosed area. In the light, there was a large patch of grass that was dry and dead-looking, apparently due to a lack of sun and water.

Metzger had some difficulty getting down the ladder, but, soon enough, all four men stood looking at the computing array. Mehring left the well uncovered.

"I'll admit," Metzger said, "I thought you were just trying to trick us into getting into a well, but this," he gestured at the mountain of electronics and modular metal shelving, "this is impressive."

Mehring announced quickly, "There's a pocket guide to the query language there by the keyboard if you want to play with the Universe software. The executable name for the universe client is you-enn-eye. Otherwise, it's an AIX 4.3.3 operating system, so all your standard POSIX commands will work for exploring the thing. I'm going to go and get some coffee. Don't break anything."

Like children with a brand new toy, Nackley and Metzger fought for the terminal. Nackley, being the slightly more technical of the two, won. Hogue walked through the cluster itself, examining some of the archaic metal boxes that hummed and blinked.

As Mehring left them alone, he overheard Metzger asking Hogue the command to check total hard drive space. He smiled as he reached the top of the well and covered it. He knew it was safe if there were three people tinkering with it. Hogue, at least, would keep things in order.

In the cul-de-sac, Mehring was surprised to see the four vehicles parked. This would undoubtedly bring some attention to the lonely house. Then, he realized it would probably further reduce the chance of interference. Whoever was stalking the house the previous night would be frightened by the thought of a party of people being present. A light rain was falling.

Through the foggy, gray morning, he drove to his favorite coffee distributor and purchased a steaming hot, large cup of coffee with cream. He was also hungry, so he stopped by a fast-food restaurant and purchased a breakfast sandwich and an additional cup of coffee. By the time he had returned to Poel's house, the sandwich was gone, and so was the first cup of coffee.

The second cup in one hand, he carefully descended the ladder once more to rejoin his friends.

Hogue was behind the keys now.

"Did you see this?" Hogue asked.

"See what?" came this response from Mehring conveying mock-annoyance.

"There's no floating-point rounding error!"

"How's this possible?"

Computers have always been known to be very stupid despite their incredible speed. Mehring hated when people would say things like that, but it was generally true. It could do fantastic things with integers very, very quickly, within certain parameters. In fact, given a high-level programming language that would dynamically allocate more memory, very, very huge integer operations could be carried out quickly. However, decimals were another story. Some systems contrived ways of

dynamically allocating space before and after a decimal point, but, in truth, these systems weren't often used due to their complexity. If these operations are merely left for the microprocessor to handle, decimals that were very precise would have their tails truncated. It was like front-end estimation. The same happened to very large numbers.

"Well," Hogue began, "He does dynamic memory allocation for calculations allowing lots of memory to be used for each one. The numbers are dumped back into a database when he's finished with them. It's simple enough, but it goes one step further: since there's so much data in the universe, he strings together indices for huge amounts of recurring data."

It made sense Mehring. Nackley and Metzger both had a partial understanding. They tried to reason it verbally to make their understanding solid.

"So," began Metzger, "to get rid of floating-point precision errors, he lets the computer use as much memory as it wants to work everything out."

"Yes," said Hogue. Mehring nodded.

"And then, because there's so much of this stuff, it will..." his statement trailed into silence.

Mehring picked up the slack, this time. "Because there's so much numerical data, there's a lot of repeating data. So, instead of using numbers, he uses non-numerical data... letters... to represent long strings of repeating numbers in various places."

Mehring looked to Hogue to verify his assumption, and Hogue nodded.

"As a result, the entire universe," Mehring continued, "can be procedurally reduced until it fits in a really-fast, really-spacious computing array."

The four men stared at each other for a moment.

Mehring asked, "So, did you guys actually look at anything while I was gone, or just messed with the infrastructure?"

Hogue looked at Metzger and then back at Mehring, "We did enough to see that the universe works."

Metzger looked uncomfortable, as though he discovered something he didn't want to know. Then, as though to push his troubles on someone else, he said, "But, if nothing else, an entirely cause-and-effect-driven universe disproves the whole notion of God."

Nackley looked offended. Mehring was about to say something, but Hogue looked interested in the debate. He remained silent.

"God's in the mix somewhere," came his booming voice, "and, anyway, I don't see the query modifying hook to search spiritual realms."

Metzger was a hedonist which revolted Mehring, but he was strongly secular, which made him tolerable. Hogue was religious, too, almost as much as Nackley. However, he was logical and shared many interests with Mehring, which made him tolerable. Nackley, behind Poel and Hogue, had a decent understanding of mathematics and computer science which made him tolerable.

"Look, I've got proof that Godzilla was filmed in a studio in Tokyo, right?"

Mehring was suddenly reminded: Nackley was a fan of movies with giant monsters, which made in even more tolerable.

"Yes," Metzger conceded.

"Show me proof of where God was fabricated."

Metzger looked at the Universe, "I could."

Inside Mehring, a longing was growing. He missed his wife.

"So," Metzger began, "should we make this public?"

"What?" said Mehring, suddenly, "That would betray Poel."

"We don't know how long he's going to be gone, and think of all the good that people could gain from this."

Hogue said, "I'm with Mehring on this. Besides, if we keep this to ourselves, we might *not* ruin the world by letting it into the government's hands."

Metzger thought of law enforcement. "Oooh. You're right."

"No," said Nackley, "You were right before. Think, if humans had the ability to search God's universe, we'd have so much knowledge in our hands. We could really appreciate the things around us. Information like this should be free."

"Free to be misused by the government, you mean," Metzger retaliated. "I don't have the most wholesome of habits outside of the office, and I'd rather if the government and folks didn't look down on me about it."

"So, you'd be forced to live a virtuous life? That's so regrettable. Laws could be upheld by concerned citizens. We wouldn't even need a government if we all know who was obeying the laws and who wasn't."

Metzger and Mehring both grimaced.

"Look, Pete," Mehring interjected, "I appreciate your sentiment, but that would imply humans would spend their entire days watching their neighbors on the Universe: if not all of humanity, then just a certain few, and we already have a name for that certain few: the police."

Nackley returned fire, "Why do you guys value freedom and privacy so much?"

There was a long pause as the other three men looked at each other and then back at Nackley who was standing with his hands in the pockets of his jeans. He was wearing a red tee-shirt with a Japanese movie poster on the front. He was also wearing a huge grin. His point had hit a nerve.

Hogue broke the silence, "You're assuming we like privacy because we have things to hide. My life is open to my friends: You fellows can ask me anything. I don't want the government to try to blackmail me or say that something I am doing is wrong. I also don't want them to sell the information to advertisers. I also don't want any one government to have some power over the others. If you think that governments are just like people, with their own needs for privacy, you're right."

"No!" said Nackley. "The government has nothing to hide from its people."

"Sure it does. It's got financial data on every member of its population. Not to mention defense stuff," Metzger said. "Anyway, since the subject came up, I don't want anybody seeing my expenses, either."

"Nobody cares how much you spend on beer and loose women," Nackley said.

Mehring suppressed a smile. "I'll admit," he said, "I'm kind of curious."

They all shared a laugh, and then a bit of a silence.

"So, what now?" asked Metzger.

As they spoke, they had been gathering around the terminal screens.

"I was thinking of a bit more exploration," said Hogue. "There are still a lot of things that I want to know about this thing."

He started typing a query, reading the thin guide. The fans spun faster. For Mehring, this was becoming routine, but the others had not seen this yet. Noticing the worried looks of his friends, he said "It's okay. It does this any time it changes the time dramatically. Where are you going, anyway?"

Hogue smiled. A few seconds passed before the computers became quiet again. It was warmer in the room. As the query was completing and the image rendering, Mehring strode back across the room, up the ladder and opened the lid a small amount to let the chilly November morning air

into the crypt-like structure. He saw that the sky was still gray, but rain was not falling. The cool air made the rooms more comfortable.

When he returned, he saw a still image on the screen. It was a younger Hogue walking across a stage in a cap and gown, receiving his degree. It could have easily been a professional photographer's shot.

"How'd you do that?" Mehring asked.

"Two things: a date-time to time stamp translator..."

At these words, Mehring planted his face in his palm. He should have known that Poel, of all people, would write a program to simplify translating things into Unix time.

"...and the neat-o search function."

The program had an interactive query building utility built into it. Mehring had missed it, probably because he was tired.

"This puts a new spin on things, Chris," said Nackley. "He made the queries and things easy to make and easy to use. He probably intended the general public to use it."

Metzger shot a confused glance at Nackley, "That's why he used AIX, right? Because everybody understands how to use it."

"Because everybody knows how to use a web browser and AIX can be set up as a web server. You dump the query builder stuff to a web page and let people interactively build queries and run them. Dump the output of the query— whatever comes up on that monitor there— back out to your HTTP server and let the folks at home see the universe. It could be beautiful."

"That would require some adjustments in the universe to pipe it into the Internet," said Mehring skeptically. "With the way it's configured right now, I don't want to mess with it. Even if we did something risky like that, we don't know how much load something like this could handle. Two users entering a query at once might send this thing into meltdown. Besides, I'd venture a guess that there is no web server installed."

He looked expectantly at Hogue, who *Ctrl-Z*ed the client program into the background and searched for a file "httpd". His search revealed nothing.

"You would be right, Chris," said Hogue.

"Thanks, Pete," Mehring replied, clapping his hand on Hogue's shoulder. "Looks like Thaddeus wanted this quiet. Since it's still his machine, we should probably just use it ourselves and keep it quiet."

"I think this is bigger than Thaddeus or any of us," said Nackley, his voice rising slightly.

Hogue sat back in his chair and leaned against the wall. As Nackley spoke, he entered in more queries and the room became noisy once more. Nackley scowled at Mehring and looked around the computing array. He looked at it impressively.

"This is the ultimate proof of human achievement and of human mastery over the universe."

Metzger rolled his eyes. Hogue finished playing with the computer and fixed the collar on his polo shirt.

"So, I think this is a tool," Metzger said, "but it sure isn't anything all high and mighty as that!"

"Even as a tool, nobody can use it down here. We've got a lot of work ahead of us."

Mehring looked at Nackley, "We have a duty to protect the machine, but it's not ours to dissect or pillage. People have died for this technology to be available."

Nackley could not comprehend the idea of lives being lost for the construction of this machine. He twisted his head and glared at Mehring. "What?"

"There was a disaster at the Desertron in the nineties. It was actually fully functional. Doing some testing with SMPs," and here Nackley's gaze increased in confusion, "I mean, testing with sub-microscopic particles, and something went wrong. According to a video I watched, almost two hundred people died. According to Thad's notes, a guy named Ewing led a congressional committee to cover the whole thing up."

"All the more reason," Nackley breathed, "to blow this thing sky-high. Everybody should know."

Mehring's face was turning as red as his beard. "You don't get it. This machine isn't ours."

"This machine," Nackley argued, "should belong to everyone."

"But since it doesn't, it isn't our call to make."

Hogue coughed. Mehring looked slightly relieved for the interruption. "Pete?"

Peter Hogue pushed his glasses higher onto the bridge of his nose and furrowed his eyebrows. "We might be in a bit of trouble. I'm having trouble finding Jesus on this thing."

Nackley, already angry, turned livid. His reddening face was beginning to match his bright-red shirt. Metzger intervened, "So what? There's a thousand explanations for that. We might have the date or the time wrong, lots of details might have gotten screwed up between then and now."

Nackley pushed his hands over his face. He took a few steps toward the mechanical room with the well's cylindrical hole in the ceiling. Here, the air was slightly cooler and he could take a moment detached from the thousand possible implications of such a machine.

Now, it would seem, Nackley had an entire religion to validate.

"So a few historical notes were messed up," Nackley began, "It's like Fred said."

Metzger smiled. It wasn't often Nackley would accept his mercy in an argument.

"The importance of Christ is more important than his simple existence. Anyway, he's got to be in there somewhere. The real important thing is that his message got across. He's our purpose in the universe... in the *real* universe."

Hogue shrugged. He had returned to churning in the Universe.

Metzger ventured, "See, though? This is a question of getting all the information we've ever wanted. It doesn't matter who believes us or anything. We can know vast truths."

Looking defeated, Nackley replied, "What difference does it make?"

"Ah, I found him," Hogue said at last. "I can confirm a lot of gospel truths."

Nackley smiled. This deviation from his crusade to bring the machine into public awareness was welcomed.

"Even if it didn't, though, I would still have my faith."

"We know," said Mehring, reassuringly, "You already proved that." He attempted a good-natured smile. Nackley did not reply. Mehring rolled his eyes. He was leaning against one of the concrete walls. He peered over at Hogue, "Anything else you can tell us?"

"Ask and you shall receive."

"What about proving the ascension?" asked Mehring.

Nackley said adamantly, "No. Don't do that."

Hogue stopped typing.

Nackley continued, "Some things are best left as matters of faith."

The other three looked at each other. This was a sign, in their minds, of Nackley's own doubts. Hogue shrugged. "What, then?"

Metzger's head was full of things he wanted to see, but they weren't suitable for company. Mehring saw the huge potential and the limitless ability for others to use the machine, but lacked the creativity to construct a meaningful suggestion.

Hogue announced, “There are mountains of physics papers that could be written from data gathered here.”

Nackley, who had turned to face the mechanical room, turned back suddenly. His face had returned to its original dark color. He had a warm smile on his cool face.

“I had a fit of whimsy. Can I see a dinosaur?”

Hogue smiled and started typing. The machine roared once more. Metzger nodded appreciatively. Mehring tried with the others to squeeze between the desk and the wall. Hogue pushed the desk slowly back to allow room for the quartet of larger-than-average men to look at the first rendering by the Universe of a dinosaur. A few seconds later, an animation was rendered of a pteranodon whizzing across the monitor.

They cheered Hogue’s success. Next, a more artistic rendering: they flew over the plains of tropical Utah. An Apatosaurus herd lumbered along the lush, green landscape. The four men watched in deep amaze at the dozens of dinosaurs walking across the monitor. While they watched, Hogue was already setting coordinates for the next rendering. More angles of the herd as they arched their necks, raised their tails, and drank from a large pond.

“Oh!” shouted Metzger excitedly, “Is there life on other planets?”

Hogue thought for a moment and began running a different type of query. He looked through the manual. Mehring pointed over his shoulder at some text on one of the pages. Together, they formed the next query. It returned text. It was a search for organic compounds.

The first hit blipped on the screen.

“There’s life!” Hogue shouted excitedly, raising his arms in victory.

Mehring clapped his shoulders. Nackley smiled appreciatively. Even Metzger seemed impressed.

The first rendering was of a handful of long, translucent blue sacks. They moved slightly and had long, vibrating tentacle-like flagella. The scale was tiny. The beings were recognizably microbial.

“Either your god has planted the seeds of life elsewhere, or abiogenesis is possible. We’ve got life on a planet about fifty-seven light years away on a planet circling the secondary star of a binary system[1],” Hogue stated.

Mehring smiled, “This is pretty exciting. Adjust the query for higher masses. I want to see if there’s anything bigger.”

Hogue did. He also returned the Universe’s time to present.

“Wait,” said Metzger. “You just changed time periods. Millions of years just passed, but it takes the machine seconds to go just a couple of years. What gives?”

Hogue put the client in the background once more and poked through a database of sets of numbers in a gigantic hierarchy. Rubbing his eyes, he returned to a prompt and checked the total storage capacity of the entire machine. He was astounded.

“Apparently, to make double-sure of any drift or asynchrony between the real and simulated universes, he makes snapshots every few millennia,” Hogue analyzed.

“Cuts down on seek-times, too,” Mehring mused.

As the centuries flashed before Hogue’s eyes, he ventured, “We could compile an encyclopedia from this. We have all human knowledge in our hands. Here! Here’s a bigger alien.”

Alien it was. All four men pressed their faces around the monitor. A colorful, almost gaudy looking being stood in the screen. It was a deep green bulb standing on five legs. The sky was a sweeping veil of pinkish gray behind the shape. The being was male and his radial symmetry astounded the viewers. Changing angles revealed five slots on the top of his bulb. As the bulb was the analogue to a human head, these slots were the analogue to the sensory organs of the human

[1] 83 Leonis

head. Video revealed these slits expanding for the increase of whatever atmosphere that remote planet had.

"We're about sixty light-years away on a planet... damn, I wish this thing labeled the planets for me... It's a big yellow star[2], and the planet has a hugely eccentric orbit. This guy probably isn't very intelligent."

Mehring saw the data on the screen as well. Hogue had panned the camera into space to watch the revolution of the planet. The next few renders were of various parts of the planet. It was a gigantic planet full of bizarre vegetation. The deep green creature with pentamerism appeared the most populous species of animal. They scurried about the planet on their five very flexible appendages.

"Wow," came Nackley, "God's creatures are more immense and diverse than we could have ever known."

"The universe reveals more orders of complexity," Mehring agreed.

Metzger was growing bored, however. "This has been cool, but it's Saturday and I'd like to go back home."

He stretched. His squat frame had been on its feet for an hour.

"Remember, though, don't tell anybody about the machine," said Mehring. "It's still my responsibility."

"Don't tell him that," said Nackley. "He can tell whoever he wants to tell."

"Great. And then we get a riot, the machine gets destroyed and that's the end of that," came Mehring, heatedly.

Hogue rolled his eyes and tried disappearing into the corner behind the terminal.

All four men paused as there was a scraping sound. It was the sound of stone on wood.

"What the hell was that," Nackley whispered. He moved from his squatted position behind the terminal to his previous location between the computer room and the mechanical room. He crept into the room and glanced up into the well. There was nothing. The lid was partially open, the exact same way that he had left it. "Must have just been the wind."

He rejoined the three, and Metzger nodded at him, "If I want to take this public, I will." He saw Mehring's face turn sad. He looked betrayed. Metzger was trapped between Mehring and Nackley. "Chris, it's not that I want to take it public, but if the need arises, I can't say that something this important should be the property of only four people."

Mehring corrected, "Five people. Thaddeus built it."

"Five people," Metzger conceded.

Nackley nodded. "Let's go. This place is starting to give me the creeps, anyway."

Metzger struggled to remove himself from the hole at the top of the well. Nackley, tall and limber, stood next to him. Nackley replaced the cover on the well and looked at his compatriot.

"What now?" asked Metzger.

"Just go home and forget this nonsense. We can deal with this on Monday at work, if we have to. Besides, we can talk to Thaddeus about it when he comes back."

They took a few steps toward their cars when a shadowy figure approached them. From the woods he came, enshrouded by the gray fog of the morning.

"Gentlemen, you have worries and doubts about the Universe," he spoke. He walked strangely and wore strange black clothing. It was thickly padded to make him seem larger than he really was. This impeded his movement. His face was forty years old, and hair was prematurely gray. "I

[2]Pi Mensae

cannot blame you. The religious and the hedonists alike can find much use and much comfort in the Universe, but it is not the only machine of its kind."

The two men looked at this new-comer in amaze.

"Who are you?" asked Metzger, though Nackley was about to ask as well.

"I am a friend of a friend," he said, nodding at Nackley.

"Which friend?" said Nackley in a slow, unsure tone.

"I do believe you know Stanley Collier."

Nackley nodded. "Oh! So you're friends with Stan. That explains a lot." He smiled and seemed much more at ease around this strange figure. Noticing Metzger's fright, he added, "Stan's friends with all sorts of people, but they're all nice. He's one of your types, Fred, but worse. He only cares about himself. One day, I'll teach both you guys some religion."

He smiled mirthfully and clapped the shadow-man's shoulder. "What's your name, friend?"

"Nicholaus Benelli. I am forever at your service," said the strange man, shaking Nackley's hand and then Metzger's. "If you gentlemen would like to come with me, there is much you have to discover."

Nackley looked at his watch. "A friend of Stan's is a friend of mine. Fred, come on, you'll like him."

Metzger looked at his watch. "Yeah. This Saturday's a bust anyway. Let's go."

They got into their cars. Benelli rode with Nackley and Metzger followed. They started from the lonely, strange cul-de-sac with the single white house. Minutes later, both cars were driving south toward Waxahachie. Later still, they were in the quiet, tiny, remote town of Forreston. On a remote corner of the little town there stood a decrepit building. The two cars parked on the street and the three men walked toward the dilapidated building.

The house had a veranda, but the roof over it was beginning to buckle. The walkway was covered in wet leaves while the yard was full of trash. Metzger walked slowly, unsure of the surroundings. Nackley and Benelli seemed at ease amid the mess. Puddles from the morning's rainfall filled large gashes in the leaf-hidden concrete path.

"Yup. Stan never did take good care of his stuff," Nackley joked.

Meanwhile, Mehring and Hogue were left alone with the universe. A few more queries later, they had witnessed the enormity of the big bang, saw gigantic solar flares and crazy solar storms. They saw the hypnotic patterns of pulsars and the formation of Earth. They saw the far future and the death of the sun. The entire Earth roasted before their eyes, though all life had died millennia in advance.

Before them, on a computer monitor in an underground room, they saw all the truly fantastic mysteries of the universe.

"I want to see what I look like in twenty years," said Mehring.

Hogue punched in the code quickly and a face appeared.

"Yes! The beard is still there!" He smiled at the kindly face on the monitor, and it smiled back. He did not recognize the background, but was hesitant to learn too many details. "You're getting quick with that, Pete. You should let me have a turn with the controls."

Mehring was expecting a denial, but Hogue, with a genial smile stood and offered Mehring the seat. Hogue stood as tall as he could, stretching his knees and calves. "I've been sitting too long, anyway."

The machine had the capability to search for named objects and assign them procedurally-generated reference numbers. These numbers were based off of a hashing algorithm using the very

properties of the object. It took Mehring a while to get the hang of it, but he eventually found himself as Hogue had before him.

"Not too hard once you get the hang of it," he announced with a bit of pride. "Let me look you up..."

Hogue crouched in front of the computer, ready to see himself in twenty years. An error appeared on the screen. The identified object could not be found. Hogue was watching Mehring type the query carefully. The problem existed within the Universe rather than the query.

"Never mind!" Hogue said, rather hastily. "I don't want to know."

Mehring nodded. "Yeah, I don't like this game anymore."

Hogue, slouched to see the monitors, stood upright. "This begs an important question, though. Do we have a destiny?"

Mehring scratched his thinning red hair. He stretched his legs beneath the desk. "I'm not sure what you mean."

"Well, if the machine says I die in twenty years, does that mean it's definitely going to happen? Do we have control over our lives?"

Mehring continued looking uncomfortable. He paused, rewording some ideas in his head. He finally spoke, "We still have 'free will', Pete. I mean, just because everything down to the vibrations of our atoms can be predicted, they are still ours."

Hogue furrowed his eyebrows and leaned on the concrete wall. "But, when we choose something, even if we make a hard choice, the Universe already knows what we're going to say."

"The Universe is self-aware. It knows that it is a stimulus to your actions itself. For some people, it would be crushing to know that the entire physical universe can be put in terms of cause and effect, while others would probably shrug and continue their lives. This becomes a part of the environment, and human actions are a product of environment and genetics."

"...and genetics is a product of the environment. So, in essence, Chris, we are environment."

"*Environment* is such a funny word," Mehring mused. "We are all part of a gigantic system."

Hogue slowly shook his head. "Where's morality? What's the reason to do good deeds?"

"Utilitarianism? There's hope people will want to act righteously just to keep the peace." There was a pause. "Also, people do things for the reward of thanks or because it makes them feel like better people."

"But you know as well as I do: this information will breed defeatism. 'Who gives a crap?', they'd ask. 'Everything is fixed.' Not that I can blame folks for seeing the world like this, but I don't think I could handle such a world."

"That's not everybody, and perhaps people wouldn't believe it anyway."

"They'd believe it when they saw their own face smiling back at them, or if they weren't in the system in twenty years."

This blow really hit home. Mehring's face fell and his whole body gained slack. He lowered his head. His friend just learned that he was going to inevitably die in less than twenty years.

He attempted solace saying, "Twenty years is a long time." He regretted it almost as quickly as he said it.

"It's *less than* twenty years. It could be tomorrow, for all I know. The only certainty is that twenty years from now, I won't be an element of the universe. I imagine the wife is going to love that."

Hogue had been married for about three years. They were devoid of children. Now, Hogue was turning some questions in his mind. Should he have children? He might not even live to see them graduate from high school. Further still, he might not live to see them born.

"You should have never searched for me in the future."

"I'm really sorry. Really, really sorry." Mehring's head was lowered. He loved Hogue in some capacity, and here he had wronged his friend. Feeling miserable, he took a deep breath and looked fixedly at the monitor. He cleared the screen and stared blankly for a few seconds. Suddenly, he felt a clap on his shoulder.

"Don't feel bad," Hogue said, "It was curiosity. I'll get over it. Since we have this miracle at our disposal, we should use it some more."

Chapter 5

An hour passed and Hogue and Mehring still stooped before the bright monitor watching the Universe in awe. Their travels through the inner workings of the vast and amazing computer system were very few: disappointing, but mercifully few. Hogue had begun typing again and Mehring looked up at the nearest, bare light bulb until his eyes hurt.

"I wonder what Fred and Pete are up to," he mused.

"I could check for you," Hogue smiled mischievously.

"No! Do what you were doing. Finish the Roswell research. We can look them up later."

Mehring and Hogue both started when they heard a faint knocking at the top of the well. Since Hogue still controlled the Universe, Mehring ran to the ladder and peered up to the top. Metzger's round face offered a weary smile. The haziness of the morning had slightly released its grip on the sky, but that would be short-lived.

"What's going on?" Mehring called up the well.

"I'm coming back down," Metzger said. He had been gone for an hour. It was almost noon, though under the tumbling clouds, one might have assumed differently. As Metzger reached the bottom of the ladder, he spoke, "There's some strange things going on. Pete's met up with some strange people. Something tells me we're in trouble."

Hogue finally looked up from behind the terminal far across the room. Mehring and Metzger could barely see him through the mess of computer parts separating them. "What kind of trouble?"

"Well, there's been this weird thing going on behind the scenes for years." Metzger's emotions were fairly easily upset, and whatever he had experienced prior to this meeting had tipped the balance. "Pete's got a friend, Stan Collier, who became friends with this other weirdo. They're talking robots fixing Earth and all sorts of crazy things."

The other two men looked at each other. Hogue's black balding, sparsely-bearded head was craning from behind the pale white of the casing for the gigantic cathode ray tube. His glassy eyes were wide in surprise, but seemed to convey a sense of calm. He did not believe Metzger.

Mehring would have to take this one. "Robots, huh?"

"You can look it up on the Universe if you want. Supposedly, there are these planets where these robots are being made. Pete says it's going to be the soldiers of God to remove the heathens who've brought destruction to our world and something about the stewards of Earth dropping the ball." Overtly exasperated and more than a little out of breath, Metzger leaned against the wall separating the mechanical room and the main lab. When he regained his breath, he said, "So, it's a little hard to believe, but I don't think the Universe is the only machine of its kind."

Innumerable parsecs and many dimensions separated the two trios of men.

So loud were the engines and a huge arc of orange was the bow-shock as the gigantic metal ring spun, tumbled, and crashed through interdimensional space. Three tall, heavy, silver men stood on the bridge of the whirling behemoth. Behind them sat three humans. Smooth and round like a pie plate with second plate fitted atop and a hole trimmed neatly through the entire contraption, the first Engine shattered all of the physical laws hitherto declared.

Hogue and Mehring spent a long while searching the universe for the extrasolar human trio, returning nothing. The Universe lacked the abilities to search other dimensions, only to simulate their effects on the human dimensions. Hot was the wind coming from the fast-moving fans of the computers, and crazed was their search for truth. Where were Nackley and his two new compatriots?

That story began ten years previous, as Benelli rifled through the scarce remains of the data recovered from the disaster is Waxahachie. Like Poel, he had access to data on universal determinism: data on cause and effect in a micro-microscopic environment. Multidimensional causality cascaded like enlightenment through Benelli's form, and he lacked resources to act on the information.

He, alone in a tiny apartment, considered the possibilities of fixing the Earth. He ranted at the walls, shaking his fists. He imagined himself speaking before gargantuan masses crowded in public squares. Standing in the dim, cramped confines of his living room, he saw new worlds stretching before him. So, the Monday following the disaster, Benelli telephoned his former employer.

The settlement happened out of court a week later. Granted inordinate amounts of money for his continued silence and given money for prosthesis, Benelli began his new endeavor: freeing the Earth from itself.

Benelli was a short man. Though young, his creased face and gray hair betrayed him. The disaster had taken a terrible toll, physically. Prosthetic feet terminated his legs. Terrible, screaming nightmares filled his nights. Human curiosity had tortured him, and his purification of the Earth would resolve his thirst for justice. His clothes he began to stuff with extra insulation to protect his joints. A new phobia aroused his desire to keep his body protected.

Given a nearly limitless amount of money aroused his imagination. His head swirled with ideas. He paid visits to Poel's home and observed without being seen the progress Poel had made. It was from this activity that he learned about a computer simulation. Computers were the answer: the only things on Earth capable of handling a fantastic number of calculations. As the years passed, he learned of Poel's ambitions for space travel. This sparked more enthusiasm within Benelli. His ranting and ravings at his furniture grew more intense.

"He will be going to space!" he shouted one day. "Why should he go to space? Does he see something there that I do not? When the Engine is complete, I will kill his ambitions as he left me to die that fateful day!"

His sense of melodrama further ran away with him. Shaking his fists, spittle gathered in the corners of his mouth. His blue eyes grew bloodshot. The veins in his forehead bulged.

"I'll go to space! God willing, there'll be intelligent beings to join on the crusade against the corruption! The crusade! Ignorance!" He paused and gathered his thoughts. Once more, in his head, he approached the millions who crowded and clamored to visit his oration. "We will have the future! The future for the few who deserve the future! Down with indolence! Down with laziness! Imagine a future free from the vices of humanity! We must purify ourselves so that we may purify others. There will be a new future for America; there will be a new future for the world!"

There was cheering and rejoicing. He saw new and different flags waving.

To make this come true, though, he had some work to do.

Spying on Poel taught him much about how to build a space ship. Their means of propulsion were the same: disturbing interdimensional balances and riding the resulting wave on a conductive

surface. The interdimensional forces produced by the engines of these machines are huge: enough to bear these gigantic machines at incredible speeds across astronomically significant distances.

Unlike Poel, Benelli simply purchased his supplies. Receiving enough government money, his purchases included a grand stock of new computers, metal parts, and enough land to build his dream. The land was located near Sevier Road west of a town called Milford: south of Waxahachie and north of Hillsboro.

Simply enough, over years, his first machine took shape: the gigantic iron torus with wood insulation. The entire craft was a hundred yards in diameter and stood thirty feet tall.

A month before Poel's first testing was Benelli's test flight.

The green field was secluded on all sides by a high, concrete wall. A brown metal door allowed entry. There was sunshine across the small plain. The large, green object occupied most of the area. The quiet, lonely Texan sun shone down on the summer day. Faint distortions of the index of refraction of light played over the top of the craft.

Benelli was alone in the contained area with the fruit of his labor.

Since he was alone, he stood tall and took the opportunity to address the millions. With a sweeping gesture, he spoke, "If Thaddeus Poel can fly off into space, so can I! I shall fly to the farthest dimension, and this craft shall carry me. Today, I take the first steps. The ship will fly alone and return in a few seconds."

He smiled proudly and looked at his watch. It was synchronized with the machine, which was scheduled for its test flight at the striking of the noon hour. The digits on his watch marched toward Benelli's goal. Years of hard work excited his very frame. Elated was his face, and shaking were his hands. His fingers tightened into fists as his arms quivered with excitement. Beneath his insulation, his body was drenched with sweat.

The moment came, and nothing obvious happened.

Then it came: a clanking sound erupted from within the torus. Slowly, very slowly, the entire torus rose from the ground. All was going as planned. Then, as it was only a few feet from the ground, it began to rotate around its vertical axis. The smooth surface had joints every dozen feet forming rings that passed the center of his vision every few seconds.

There was a slight whirring noise and the rotation was causing a slight breeze to push Benelli's hair from his ecstatic face. He stood watching in triumph as his machine— the Engine— spun before him. His eyes reflected the slowly-turning spectacle. Then the reflection and the machine causing it were gone.

In the wake was a deafening howl which sounded like a vibrating steel sheet dragged across gigantic, sharp rocks, but much lower in pitch and louder. A blue-green electric torus of lightning danced at where the echoing sound issued. A mere second later, and the sparkling electrical echo of the torus was gone, and the sound echoed in the distance before fading to silence.

"Behold!" he shouted to himself. "Success!"

He wondered what obstacles his machine would experience in interdimensional space. Smaller tests had already been conducted and the ship itself had enough intelligence that it would not "shift" or crash into anything solid.

The longest minute ever experienced by Benelli passed around him. A bird called from above. He imagined the millions of possible reasons for an unsafe return. The machine could have drifted, and then it would never return sensing too dense an object in its intended landing area. Worse yet, the threshold for density could be too high for Earth's atmosphere or something harmless like grass could prevent the return shift. He could have failed to calculate the Earth's movement. Then, his craft would return somewhere far away, if it returned at all. His head was reeling. The intensity of

all this thought made the poor man feel faint. The point where his shin joined his prosthetic ankle was becoming sore. His face began sweating worse than his hands.

The world twisted sideways through his eyes. The distant wall, the green of the grass and the blue of the sky: three horizontal stripes twisted to the vertical while fading to darkness as Benelli's body, lacking the necessary blood to maintain such rigidity, sank into a heap on the grass.

Before the darkness became absolute, though, he heard a very sharp, brain-piercing metallic scream. It reverberated, echoed, and rattled. A very heavy, dimension-puncturing thud terminated the screeching and the electrical sparks danced once more. Their bright colors faded to nothing on the hull of the ship as it settled down on the grass. Benelli was out cold.

He awoke less than an hour later from the sounds of banging. He heard the Texan drawl of a man shouting. His ears were still pained from the crazy, unforeseen amount of noise. The sun still stood unobscured in the sky.

"Is everything all right in there?" he heard. Benelli, his shins blistering, painfully stood on the feet at the end of his legs. He refused to call them his own.

He regained his composure as another trio of thuds came from the back of the door.

"Everything's alright!" he called back, walking toward the door.

"You sure? I think the folks in Austin heard that!"

Benelli frowned. He was hoping this would be easily kept a secret, but the amount of energy required to cause the dimensional jump was alarming. He rubbed his head. Standing near the door, he spoke, "Yeah. I guess so."

He opened the door the smallest amount and peered out with a single eye. There was a man standing outside the wall. He was tall with blond hair. A local farmer with a tee-shirt and jeans smiled. *He's going to say 'Howdy'*, Benelli thought.

"Howdy!" came the high voice of the young adult. "I heard a couple of really loud noises. Is everything okay?"

Here is where Benelli wanted to tell the boy to go elsewhere. He wanted this to be secret, but his overwhelming sense of accomplishment tarnished his resolution. Instead, he said, "I was building something. Did you want to take a look?"

"Sure!" said the happier young man. "My name's Stan Collier."

"Nicholaus Benelli. Nice to meet you." They shook hands and Benelli introduced the man to the machine. Collier seemed impressed.

They conducted more trials of the machine. To the gray-haired man's surprise, the younger man had quite a capacity for understanding.

"How does it know if it's going to run into anything when it's shifting?" Collier asked.

"It's got a sophisticated computerized version of the universe on board. Everything that exists in real life is also physically simulated in the computer." He saw Collier looking confused. "Don't worry. I built it, and I have trouble fathoming it."

They both laughed and stood aboard the machine. Collier asked, "Why's it called 'The Engine'?"

"This machine is competing in a sort of race against something called 'The Universe'. I think the name says what it does. Despite a lot of research, I still lack much knowledge about the non-technical proceedings of my opponent. His computer is named after the universe itself, but the ship he builds is separate. I don't even know the name of his ship, come to think of it." He realized he was speaking to a human, and retracted his ramblings back to the scope of the question. "I think 'Engine' is much less pretentious than some of the things invented by my competitor."

Collier smiled and nodded his head. "It makes sense. I like it."

Days later, with a triumphant crash, the first Engine vessel left Earth and started speeding toward a far-distant planet. Collier, with his mechanical knowledge and Benelli, the confounding old but young man, took a single metal man toward their far distant goal.

The inside of the Engine was sparse and gray. A metal floor and ceiling had been placed inside the torus. A few segments had been assigned as the bridge. The walls were rounded and concaved outward making walking the deck an unusual experience. There were thick rectangular windows set in each segment. The truncated circle of a walkway was also pierced at the top by fluorescent lighting running in a rough approximation of the circle around the center of the top of the inside of the torus and heating ducts at the edges of the floor.

"So, we took off into another dimension," said Collier, "I don't understand anything more than three obvious ones."

Benelli looked a little disheartened. Even such pedestrian literature as Edwin A. Abbott's *Flatland* thoroughly explained concepts leading up to a fourth spatial dimension. Unfortunately, their immeasurable distance to Earth prohibited Benelli from handing Collier a book. He sat on a stool on the bridge of the ship and Collier did the same. They fastened leather belts around their legs that extended from the edge of the stool.

"Let me say this the old fashioned way: Imagine a point in space. It has no dimensions. A single dimension is the extrusion of that point in a single dimension." Unfortunately for Benelli, while Collier was mechanically minded, his ability to abstract the meaning of the word "extrude" out of its context was limited. "I mean, if you take a point, and you stretch it in any one direction, you get a line, right?"

Benelli was happy that Collier finally nodded, but unhappy of the substitution. Extrusion was a measurably different word conveying a different idea that a simple "stretch", but he would accept the matter as it stood.

"If the line were painted through with many stripes and you could be put into that line, you'd only be able to see a dot: the color in front of you. Does that make sense?"

"So, that's two dimensional? I'd see a circle."

"That's because this is an imperfect analogue. In our world, we don't have any infinitely thin lines. Remember, a point has no dimension and we extruded it, so the line has a length, but no other dimension."

"So, it's one dimensional, and when I look on it, I see... a zero-dimensional figure?"

"Yes! You 'see' the point. Now, if you stretch the line in the direction perpendicular to it, you'd get a rectangle or square. If the square were comprised of other two-dimensional figures drawn 'into' it, and you were inside it as well, you would see only lines, yes?"

Collier nodded. "Everything seen on two-dimensional plane is seen as a one-dimensional object."

"One more step: let's say our quadrilateral is a square and we stretched it into a cube. Now we've got height, width, and depth. Three dimensions. If you were inside the cube with other three dimensional shapes, they would appear as two dimensional. Yes?"

"No! Man, we live in a three dimensional world." He poked at the air in front of him, where he projected the imaginary cube inside his head. "I see three dimensions." Moving his hands forward and backward, he said, "Depth", up and down, "height," and lastly side to side, "and length."

"Let me answer that with a thought experiment. You agree that a painting or a photograph is a two dimensional, right?"

"Alright."

Benelli smiled. His explanation was about to alter this poor, naive boy's thinking. "Let's do a thought experiment: if you were blindfolded and then stood in front of a large, properly back-lit

picture of a cityscape taken from about six feet off a city sidewalk, and then unblinded, would you not, even if just for a moment, be fooled by the picture? Would it not look like you were in the city?"

Collier sat dumbfounded. "So we only see in two dimensions."

"Yes. Depth perception is merely a function of a distance distorting the true measurements of other dimensions. If I had a drafting textbook, I could prove it to you."

Collier nodded. "I understand. It makes sense; I just hadn't thought of it like that."

"So, then, what if our universe had more than just the three dimensions we inhabited? What if we could assign other, unknown dimensions to be our own lengths, widths, and depths? Also," now Benelli had become excited once more, "what if things worked a little differently in these different dimensions? What if we went ten feet in our new configuration of dimensions, and then shift back, and saw that we'd moved a hundred feet?"

To Benelli, this single man represented the millions he formerly addressed; only it was so much better. There was only one man, but this man looked at him with such enthusiasm and spirit. He was curious at the fantastic new things Benelli offered him. His life on a farm in Texas seemed fairly insignificant to conquering the mysteries of the entire universe.

"Woah. So, the other dimensions would have to have different... shapes or something." Collier guessed.

"Exactly!" Benelli shouted. His shout echoed off the bare steel of the hull. Realizing his paroxysm and feeling slightly embarrassed, he spoke more quietly. "I've scrounged around the universe to find huge sources of raw materials to build more of those." He pointed at the silver man. "He's going to build himself some friends."

There were other things on board the first Engine ship including long posts and various building materials. Collier figured they were part of the building mission.

As their mission continued, they continued sitting on the bridge. The bridge area's floor was slightly closer to the ceiling. There were steps down from the bridge to the remaining area of the ship. There were a dozen large monitors at the curved front of the ship. These bright, metal-encased cathode ray tubes showed their relative position to stars and planets in these alternate dimensions.

The computer at the heart of the torus was built on the same principles as the Universe. It was a baby in comparison, though. It did compute local areas of the deterministic universe in much the same way its big brother did, though it focused more on dimensionality than dealing with cause-and-effect. The end result was a machine that was suitable for calculating tiny amounts of matter that entered or left a space over vast periods of time. It was an excellent navigational device, but it lacked the sight and scope of the Universe.

This, though, mattered little to Benelli as his torus landed on the gigantic silver sphere twice the size of Earth. As it landed, the men inside felt tightly pressed to their seats. Their bodies became intolerably heavy. The body that they had landed on was a gigantic bulb of iron ore revolving around a brown dwarf.

"This is bizarre," said Collier looking at the monitors. "What kind of planet is that?"

"It used to be a star. It's an iron star. Over vast, innumerable quantities of time pass, cold fusion causes nuclei to decay into an isotope of iron. In these dimensions, protons don't decay. Freeman Dyson, I don't know if you've heard of him, theorized about the existence of one of these celestial bodies, but here we are parked on one."

There was an airlock directly opposite the torus from the bridge. Thick metal bulkheads separated the compartment from the rest of the ship. The area could be evacuated of air. It served as sort of an elevator between the pressurized ship and the pressureless space. The silver man entered

the dark airlock and, with a hiss, the air was released from the room. There was the whirring of an electric motor as the cargo hatch opened. The silver light reflected from the planet's surface filled the room through the open hatchway. A faint point in the sky was the brown dwarf— its light had a slight orange tint.

The metal man had a broad stripe of solar panels crossed his head from the front to the back, a huge battery was contained in his torso along with a dozen servo motors and a few paper or wood insulated areas forming primitive electromagnetic relays which were capable of performing basic logical functions and the actions programmed onto a thin wooden plank which ran along the bolt-upright iron backbone. Discrete electronic components were fashioned with the most basic components, allowing these machines to build themselves on this inhabitable, extra-dimensional world.

The metal man looked into the dim orange light of the dying star: the faint dot in the black, star-studded sky. His shadow was cast on the back of the airlock wall. With fluid motion, he raised his right leg. Leaning forward to keep balance, he placed it in front of his body. Again, he lifted his left leg and placed it in front of his right. Such were the first heavy steps of the mechanical man. In this way, he stepped down the ramp formed by the opened door of the airlock. With a *clank* he set foot on the planetary surface. Tight in the grasp of his spring-loaded fingers was a thick rope. As he reached the surface, the rope was taut and the building materials attached to the other end of the rope began to shift toward the exit hatch. With superhuman strength, the mechanical man pulled the great bundle of wood, cloth, and metal onto the star's ancient, frozen, metal surface.

"How does that robot work?" asked Collier.

"He's programmed. He's got a list of basic functions that he can perform like twisting his arms or rotating his head." As Benelli spoke, the monitor in the bridge displayed the view of the star-planet through the eyes of the robot which rambled around assembling a hut from the wood, metal, and canvas. "The basic actions are put into lists which comprise basic functions like walking or grabbing something. These basic functions are put into lists and executed at various times based on stimuli. He's got a little camera on him and some relay equipment. Here, on this cold star and two others like it, he'll be able to build brethren."

"So, he's going to build other robots like himself?"

"He's going to build much. Brethren, who will be simpler than himself, tools, many more of these ships— this star is plentiful in resources. Besides the obvious iron, there are fantastic mineral deposits that were formed from space debris that were pulled into this star as it cooled— even rubbery materials and insulators that seem to be plant-based substances, and, more astounding yet, natural gas wells are buried beneath the ground."

"And two others like it?"

"Yes. It's not alone in the universe."

Collier nodded and watched the mechanical man shamble across the metal surface of the iron sun. The enormous mass of the planet weighed down the machine. The silver on silver of man on planet eventually, on the monitor, became a blended blur of shining light. There was a loud electric whine as the torus exploded into their home dimension and rocketed toward Earth. The spin of the ship caused the men to be pulled slightly toward the outer walls.

Their next such excursion was with Nackley months later in November the day after Mehring discovered the Universe.

"Other dimensions," Metzger pondered aloud.

Hogue shrugged. "This machine shows a huge increase of mass in our dimensions will be coming in the none-too-distant future."

Mehring sighed. “We’ve got the most technologically supreme... thing... ever created. We should be able to do something about it.”

“I’m working on it,” muttered Hogue nonplussed. “Why don’t you check the library?”

Hogue’s repeated searches for Nackley continued returning null for searches for Nackley, so he had stopped trying. He typed queries of his own curiosity into the machine.

In truth, there was a loud, heavy, resounding scraping sound as the torus began its journey to the planet-suns of Ore— the name decided by Benelli. Now, Nackley sat strapped to a stool on the bridge with Collier and Benelli. This time, on the bridge, there were three pressure suits also on the bridge with three tanks of compressed air.

“So, we’re in another dimension!” he exclaimed. “This is exciting!”

Collier smiled and nodded at his old friend. He looked curiously at Benelli. “But why invite me?”

Benelli smiled with a good nature. “Simple! I have plans for a whole, new revision of Earth. We, Stan and I, are building something. He’s lent some help in the recent weeks toward the project. I need more minds to help me from going crazy with these ideas.”

Nackley looked a little confused and more than a little scared.

“No! I’m no harm to anyone. That’s not what I mean. But, the Earth needs us. It needs an army of people to liberate them from their toils... the meaninglessness they suffer. Given more free time, given work that they choose and volunteer to do, and given a crime-free world, people will thrive!” Nackley, in Benelli’s eyes, metamorphosed into a million people cheering. “Without the burden of their daily activities, humans will be able to create culture.”

Nackley’s eyes drifted to see the patterns pass the view of the monitors on the bridge: fantastic shapes of untold worlds screamed past the display. His eyes returned to Benelli.

“But we’re still chained down. If we can find a work-force of automated people and if we had an army to control criminals and do the labor for the world, we’d be free from it. We’d be free from societal obligations, government oppression, hunger, slavery, vice,” this word made Nackley pay more attention, “class warfare, and poverty.”

“Somebody’s going to have to take care of these machines,” Nackley observed.

“Pete, they take care of each other, and, anyway, I’m sure we can find volunteers. If not, we can make it compulsory. Everybody has to spend one year serving mankind’s...” he faltered. He knew he would offend Nackley saying ’savior’ or anything of the sort. He resumed, “...latest hero.”

Nackley looked impressed. “And humans who currently hold power?”

“They’ll abdicate!”

“That easily?”

“I’ve got a huge sea of metal men. They won’t oppose.”

Nackley began to look skeptical. He looked to Collier who was reading one of the monitors. “What do you think, Stan?”

“You’re religious, too, right? It’s fantastic. People can’t see God through the toil of their daily life. They read the gospel, but they don’t live it. If we’re breaking away from all our social norms, maybe when things settle back toward normal, that ’normal’ will have God in it.”

“We are,” began Benelli momentously, “starting all human society anew. This time, as a species, we can come together and choose a shape for our society that pleases everyone. I see no other way to do that then with your religion.”

“Can your computer, here, see the future like the Universe can?”

Benelli looked surprised. “The Universe can clearly see the future? With what kind of resolution?”

The concept of resolution was beyond Collier's grasp, so he glanced blankly at Nackley.

"Pretty clear. It looks at the entire universe in its past and present on the sub-atomic level. There are a lot of exceptions for the future, though, because of laws of causation and all that."

"Yes, of course," said Benelli. "The Engine, here, isn't as precise. I can't tell you the outcome, for instance, of our societal revolution, but no revolution is for sure, right?"

Nackley nodded.

The three men began to feel heavy in their seats. No longer did they need their belts. Nackley was the first to remove his. There was a faint feeling of falling as the ship neared the surface of the former star. Slowly, gently the planet approached and vertical was the landing: Nackley's first planet-fall.

He moved sluggishly and attempted to stand. This time, the other two men rose, too. Slowly, they walked toward the gentle curve of the front of the ship. Beside the monitors they grabbed three white space-suits and sluggishly put them on and, with each other's aid, zipped them and activated their breathing apparatus. Tiny microphones in the helmets of each suit allowed communication. The suits were bulky, clumsy, and heavy. With the added strain of additional gravity, the suits were almost unbearable. The mission would have to be short.

Nackley looked at the other two men through the thick glass of the front of his suit. They looked wide, squat. The crumpled, thick, canvas, plastic, and metal suits with large, heavy metal and glass helmets had not improved much since the original space suits of the nineteen sixties. Nackley wondered where in the hell Benelli got them.

Facing the air-lock at the far end of the ship, they marched down the left stairs and continued around the starboard circumference of the ship. It was a long march through the cargo areas, power plant, and engine area. At the diametrically opposite end, they plodded into the dim airlock. Slowly, the pressure was released and the men, despite their suits, felt a strange change in air pressure. Their bodies felt as though they would burst. The colon in each man bulged uncomfortably. Their eyes boggled and their ears felt as though they would pop.

Despite all this, the hatch opened and they were greeted by the silent masters of the planet. Huge circles of silver men surrounded the men and their craft. Nackley, who was unaware of their programming, was internally convinced that they were curious about them and their voyage.

Each being on the planet was originally created from the first. The second generation was created by the first dozen. Each generation was created by members of the previous one. Now, these stood a sea of hundreds of these beings surrounding the ship.

The three men slowly walked onto the shining gray surface of the planet. The ground was hard— dented and riddled with divots. As the men stood in the faint light of the distant sun directly overhead, they noticed they were in a huge, perfectly bowl-shaped crater. The beings had not moved far to build their brethren. Miles across stretched the crater and a hundred feet deep it dug. There were deep cylindrical holes only a few feet in diameter. They were placed every approximately fifty feet in an arbitrary distribution.

As the men walked and inspected, they saw a distant building. Nackley was in awe. His foot came down terrifyingly close to the openings of one of these wells.

"What the hell is that?"

The other two men, standing ahead of Nackley turned to face him. "They're mining for insulators and things. This satellite is bountiful in all resources, but it's thickly coated in iron. For everything else, they must dig."

The circle of beings moved and returned to work, recalculating their new environmental impediments. Nackley stared at them, observing them, contemplating their potential, and becoming

more and more astonished by their independent movements and complexities. Each robot excluding the first was built from this rough, planetary iron. Their heads had dents and divots lining their mineral-built solar stripe. Each had a personality in the way of minor deviations in the lengths of their arms and legs, in the shapes of their torsos, different colors of solar stripes, and the shapes and sizes of their hands and feet.

"They're amazing," he said.

Collier was staring into a pit, watching one of the iron workers mining non-metal materials.

"How come they have to mine materials? If this used to be a star, shouldn't the iron be beneath everything else?"

"You assume everything cooled at once. This star was a dynamic furnace. Entire planets probably crashed into it as it cooled, burying themselves within it as it cooled. You'll notice it's several orders of magnitude too small to be a traditional star..." Collier, once again, failed to understand the concept of an order of magnitude, but vaguely hobbled along in Benelli's train of thought. "...it must have had a violent history. It's been spinning alone for millennia upon millennia."

The three men, carefully walking toward a common goal, paused to consider the eons, the immense planetary history of the former star, and the bizarre landscape surrounding them. In the distance was their destination: a building. It was a factory of some sort.

"These are some smart robots."

"Everything's been carefully programmed into memory stripes. It's like DNA for entire generations of these beings."

Nackley looked at Benelli. If this man were capable of all this, then the awe inspired by omnipotent God became a little smaller.

The trio of men shambled through the vacuum burdened by the intense gravity to a large building. Benelli and Collier recognized it at once as the materials brought by the first mechanical man. Nackley, however, was surprised to see such a well-built, gigantic structure standing proudly. Dozens of mechanical men entered and left the building in long lines, each delivering supplies that they had mined and created.

The building began from the planet's surface with iron walls sloping up into the steel walls carried by the first mechanical man of Ore. The walls were slightly rounded at the corners. At first glance, it looked as though the structure grew forth from the ground beneath it. It had no windows, but many doorways carved into the sides. There was a spire on the roof adorning the radiant metallic monument to robot-kind.

As the three humans, the vast minority of the population, entered the building, they saw tables containing parts of all shapes and sizes forming squares. Within the squares were work areas where a handful of robots assembled the parts from the surrounding tables. The inside ceiling in the factory was much taller than was needed. It stretched thirty feet over the men's heads supported by dazzling arched latticework giving the impression to the men that this was a cathedral.

Benelli noticed the other two men gawking upward and answered, "This place can be seen from great distances. It's a point of reference for their navigation."

Looking around, Benelli took the lead. He pointed to each of the robots passing through the main floor and explained the purposes of all the parts they carried, how they were made, and their destination.

The hundreds of robots astounded Collier and Nackley. The sheer magnitude of the swirling gray sea of men sent their heads reeling.

After a few minutes, the men started their walk back to the first Engine ship. One of the robots approached as Benelli beckoned it.

This was everyone's chance to see in detail the handiwork of the robots in generating their brothers. The robot plodded to the suited man and stopped. It stood bolt upright and stock still. Benelli inside his suit beamed a brilliant smile.

The machine had a number stamped on his right shoulder. He was 480. His head had a broad blue-tinted stripe. His face had gigantic eyes that were also slightly blue-tinted. They emitted a faint light. The metal of the faceplate was formed in such a way that a pointed nose protruded. There was no mouth. The sides of the head were ornamented with ears, though these machines could not hear. It stood slightly taller than Benelli, but tall Collier and Nackley both looked evenly at the machine's eyes. The head was supported by a sturdy silver cylinder to the open torso. While the pieces of the face joined to make a solid head, the torso, arms, and legs were all formed with only stripes of metal to cover the innards.

Benelli communicated with a hand signal. 480 bowed and turned. His posterior was formed much the same way. The back of his cranial cavity was solid with the blue stripe. Unlike some of the other robots, though, the stripe continued down most of his back. There were many metal pins connecting the solid backs of the legs to the center, load-bearing core.

Benelli pushed down on the robot's right shoulder near the name-plate and the being turned around again. He tilted his head to the opposite site slightly. It looked much like a curious animal twisting its head trying to gain understanding of its master. Benelli nodded at it. The helmet of the suit dipped and rose. The robot, 480, turned and returned to his labor.

Benelli spoke, "I think we're done here. Let's return."

As they walked, Nackley started a question, "How come they're all different?"

"Part of it is imprecise formation of the raw material. That causes some serious variability in the shapes and sizes of the parts. Each piece of the body is constructed in proportion to the length of its spine. It cuts down on the need for precision machining. That's why their 'skin' isn't smooth. Also, slightly random variations are tolerated. If the variation causes a measurable increase in performance without costing a disproportionate amount of resources, then a percentage of new robots will have that variation."

"So, it's like evolution," muttered the Collier, his blond hair matting with sweat, even though his body was shivering from the cold.

"There are parallels," said Benelli with an obvious edge of pride in his voice.

Then men made their way across the bottom of the gigantic bowl in the ground toward the entrance of the ship. Nackley turned his head to take one last look at the bizarre planet. As he did, he saw one of the robots carrying a long pipe with a long handle. The robot twisted it so the pipe was level with the ground and handle butted against his shoulder. The orange light of the pale brown dwarf sun played along the tube revealing a red sheen from the top. Though the glimpse took only was only a single second, Nackley was sure the robot carried some sort of rifle.

Chapter 6

Metzger was asleep in the corner of the library. It was only noon, though it was always noon in the brightly-lit dungeon beneath Poel's yard in Texas. Mehring listened to the snoring as he attempted to read Poel's verbose writings. Glancing at his watch, he saw five minutes separated the present time from noon.

Glancing at Metzger and then back at the book, he tugged his beard in frustration. He felt a neurosis. He felt crazy. Suddenly, he stood and closed the book in his hands: a heavy, hard-backed book that Poel had evidently purchased from a vanity printing press.

He strode into the computer room and gazed at the terminal screens. To his surprise, he saw lepton field equations and Hogue scribbling notes on a piece of paper. He expected extra-dimensional research, but found atomic basics. Perplexed but not entirely surprised, he addressed Hogue.

"Hey, I was thinking, just because Nackley and folks left this dimension doesn't mean we should be overly worried about it. Robot army? I think maybe Stan got a little wound up about nothing."

Hogue looked up from his work surprised. He cleared the screen of the equations and twisted his head. "It sounded pretty important," he said simply.

Mehring rubbed his eyes. "I want to go home. I miss my Cath, and there's absolutely nothing about exploring other dimensions on the Universe. It's useless. If they're plotting something, we won't know until later," Mehring said, assuming Hogue had gained all the possible knowledge that he could without causing a paradox.

Hogue, though, returned, "I can tell you that a huge mass left our dimension some time about six months ago, and returned lighter. They're probably going to retrieve whatever it was they dropped off."

Mehring nodded. "Probably so. Either way, we're safe. I'm going home for a bit. If you guys leave, take the ladder, close the opening and flip the switch in the kitchen. It turns this place back into a well."

Hogue nodded and grunted from behind the terminal, "No problem."

Mehring climbed the ladder and went back to his car. The sky was still gray.

He arrived home and unlocked the door to his kitchen. Entering, his wife smiled, "Hey, Honey! How was the night with the toys?"

"Pretty cool... pretty cool. Thaddeus has a pretty nice set-up. How's it been going with you?"

"Oh. Pretty good." She twisted her head and smiled a gorgeous smile up at him. Her long hair was draped over her shoulders, and she wore a powder-blue shirt that matched the soft glow of the gray sky reflected in her cerulean eyes. "I made you cookies!"

She spoke with such enthusiasm that Mehring, who already knew this, was still surprised. He gave her a tight hug and kissed her passionately. "You're the best!" he exclaimed.

They both smiled happily at each other. He shook his head. "You didn't have to do that, though."

"I wanted to."

They sat down and started eating the cookies from a jar. Mehring smiled, "So, tell me about yesterday," he said.

She stared across the table at him. "Chris, it was pretty awful. I had to hang out with Joanne, and you know how she can be."

"Pretty pushy, huh?" Chris asked.

At the same time, Benelli, Collier and Nackley were undressing from their pressure suits. A hundred yards away in the air-lock, a small army of robots marched up the plain, onto the outturned cargo area door and into the ship. The first Engine vessel was testing her cargo capacity. Twenty robots fit comfortably inside with some crates and room to spare.

"She wouldn't let me do anything," Catherine Mehring began, "All day, I heard about her stupid latest boyfriend and all the exploits they've had."

Mehring suppressed a laugh. "That good, eh?"

"I do not want to know what goes on in their bedroom. Then, we had to do her laundry. The girl's a mess. She hadn't done her laundry in a month," she ate another cookie, "and she probably wouldn't have done any if I weren't there."

The hammering of metal feet was audible from the bridge. When the sonorous clamor finally ended, the doors of the airlock were closed. The three humans sat heavily on their stools. Their faces covered in sweat, their bodies trembling and shivering, they finally breathed and relaxed on their stools. The ship, with the added weight of the mechanical crew and the immense gravity of the iron star, shuddered as it lifted. The men, under the downward pressure of the rising ship, felt even heavier. Just before it became intolerable, it stopped for a moment.

"Hang on tight!" shouted Benelli excitedly.

Cathy Mehring was shouting, "Then she made me pay for lunch! I tried to tell her I didn't have the money for that, but she wouldn't listen. We ended up stopping at the Shakers. She got a burger and I got fries and a shake."

Chris Mehring nodded with a small smile.

"Then, do you know what happened?" He shook his head indicating the negative amusedly, and she continued, "We had to watch that inane computer-generated fish movie... where the father and his son get split up and they have to find each other."

The husband nodded. She continued, "Yeah. Well, the story was predictable and the characters were, as you like to say, wholly forgettable."

The husband admitted, he did say the same regarding movies.

Meanwhile, the torus began speeding through space. Safely away from the planet, the tremendous screeching crash signaled to the men that they had breached the interdimensional barrier. Everything in the ship rumbled and vibrated. This was the first time the ship had crossed a barrier while in motion. In the cargo bay, the robot squadron held each other and braced against the turbulent dimensional crossing. The ship spun and whizzed, securing many of the robots to the outer wall of the hull. The metal of the hull vibrated, wailing and droning the metallic sound through the ship. On the bridge, the human crew was turning green.

Good-natured Collier joked loudly at Benelli, "This is the last time I let you drive the school bus."

Nackley smiled. The diversion prevented him thinking about the discomfort his stomach was suffering. He shouted to Benelli, "It reminds me of a time I took a trip with a church group up

to Colorado by bus. The stupid church bus didn't have any suspension. We tried singing gospel songs... but, with all the bumping, they sounded like bad remixes."

The three men laughed as the ship fully returned to their home space. Everything grew quiet once more.

The husband and wife looked longingly at each other. "I guess it wasn't too bad, but it was expensive and I didn't feel like spending money. Oh! We did stop by the shelter, though."

Mehring finished another cookie and perked his attention. She often stopped by her place of employment, even when she was not scheduled. "Find anybody interesting there?" he questioned.

She smiled, "Duke was still there. He lay his head on my lap for a while. I think Jo was bored, but I didn't care. She eventually found somebody to play with. He was a beagle, I think, named Snoopy."

"How original," he commented. He stood and put some water in the tea kettle and put it on the stove. As the gas from the stove turned to flame, he spoke again to his wife. "What's the status on Duke?"

"You know I still want him. We'd have to change his name, though."

He nodded, brushing his beard absentmindedly. "How long do we have to make a decision?"

She shrugged. "I talked to Pureza." She always spoke positively of Pureza.

In the calm of the space vessel, the three men unbelted themselves from their seats and floated gracefully around the bridge. They peered through the thick rectangular glass window beside the monitors. They had entered their dimension somewhere beyond the solar system and the sun, as Benelli pointed, was a tiny point in the myriad of stars adorning the heavens. The pointing finger moved as the stars whirled around the ship.

Before long, two recognizable gray spheres hurtled past the window as the men watched. They were Pluto and his moon Charon. Then more distant stars passed. A huge brown ball passed so closely that the brown stripes filled the entire viewport. This was Jupiter. As they passed, they felt their bodies being sucked toward the window. They were pressed against the wall as they transgressed the sphere of influence for Jupiter's mighty gravitational pull.

As they onward hurtled toward Earth, they struggled back to their seats and belted themselves to their stools.

"Well, Pureza said that he won't be put down for a few weeks. I think that gives us a little time to dog-proof the house and figure out our financial situation."

"Finances... How much is this going to cost, anyway?"

"Everything, adoption fees, making sure he's caught up on his shots... I'd guess around..." then, she spoke quickly, "five hundred dollars."

The kettle began to whistle. Mehring smiled at his wife, the cutest woman he'd ever met. He shook his head as he stretched his arm and turned off the burner.

A few feet over the bizarre rocky surface of a far-away planet, a golden ship hung. The air was still and the ground was a pale gray. The ship landed and the light from the sun cast reflections of the bright metal onto the ground. Optical caustics caused the yellow reflection to scatter bright lines onto the smooth alien ground. It was as though a clear drinking glass were placed before the bright sun of a restaurant window and its magical refraction were cast onto the table.

The atmosphere was breathable by humans without any sustaining side-effects, and here lived intelligent life. The tower of the submarine doubled as an air-lock, out of which popped the face of Thaddeus Poel.

The landscape was sparse: exceedingly sparse. The ground was perfectly flat for as far as his eyes could see. Everything was a uniform gray lit by the immense gray-white clouds. Poel started

walking, and he discovered that every quarter-mile contained some trench dug into the planet's surface.

These trenches were perfectly dug, as far as optical precision can be trusted. They had right angles to the surface and right angles to the other walls of the trench. Each had lights of varying colors inset into the walls around the perimeter a foot above the floor. The light, while truly made from some material available on the planet, appeared neon. The trenches were about ten feet deep and a hundred feet in length. They were only slightly shorter in width than length.

As he walked, one was larger and had stairs leading into it. There was a congregation of intelligent beings sitting on the rim. These beings were vaguely hominid but much larger. They stood around twenty feet tall and lived and slept inside the trenches. Their faces were human-seeming and hairless. One could determine the sex of one of these aliens by their face much as humans can. They wore long, loose-fitting white clothing. Poel smiled and bowed before them. They looked curious. They spoke to each other in a language whose origins sounded Greek.

Hovering over the Earth, the doughnut-shaped ship gently rotated. Benelli proudly announced, "Here we are: safe and sound, back home. I'm going to ensure the condition of our passengers."

Since the machine was hovering with the north pole of the Earth pointing through the center of the ship, and since the ship was much closer to the Earth than the moon and most satellites, there was enough gravity to safely walk without floating off the floor.

Nackley, who had seen the Universe, questioned Benelli before he left, "Can I play with your computer system?"

Benelli nodded. "Sure."

Christopher Mehring poured himself and his wife a cup of tea. He walked into the living room and produced his latest bank statement. They both pondered over the paper looking at the bottom number. They considered their creditors and the total cost of ownership. Financial responsibility prevented them from bearing children yet.

"Perhaps Duke—," he began before being interrupted.

"That name has got to change."

"Anyway, before we finish this, I'd like to meet him. Oh! Did you want to take a field trip to Poel's house? I can show you the toy."

She smiled, grabbed another cookie, shoved it in her mouth, and said gleefully, "Sure! Let's go!"

Twelve minutes later, the husband and wife left exited the vehicle and walked through the lonely white house. As they entered the back yard, Mehring noticed the well was still open, and the ladder was still in place. He gestured to it and his wife kindly obliged after offering a quizzical glaze.

She sauntered through the dreamlike white, incandescent glow. Things moved slowly. The hall of the mechanical room passed before her eyes: the gray of the concrete and cinder block walls, the gray of the floor, the golden grate over the drain flashed before her, merely visual noise to the metal behemoth in the second room. It whirred, the fans on their highest speed calculating some immense infinity within the universe. She stood at the doorway and simply stared. It was beautiful in its own way: the cobbled assemblage of shelving, computers, wires, and ingenuity. It was a masterpiece she could not understand, but in her lack of understanding, she was deeply impressed.

The couple walked the outside of the machine. Metzger was at the controls, but he was far too distracted to see their approach. Mehring peered over Metzger's shoulder.

The monitor was entirely devoted to a woman showering.

"Checking up on the neighbors?– How's the research treating you?" Mehring asked pointedly.

Metzger scrambled to change the view monitor.

"He-hey, Chris. I didn't hear you come down... Pete just left a few minutes ago and I decided I'd see just how precise this thing is. Man, you'd be impressed." He, then, noticed Mehring's wife. "Howdy, MrsMehring!"

"Hi!" she said genially, hiding behind her husband.

"I think I should probably go see to a couple of things," Metzger announced uncomfortably before squeezing out of his chair and hurriedly marching toward the exit. Mehring watched him angrily.

For the next hour, Mehring showed his wife the wonders of the universe: pulsars and quasars, nebulae and beautiful crystalline planets, horned beasts and docile alien beings all dazzled before them. He showed her the distant past and future of the Earth and its inhabitants.

Cathy Mehring leaned her gentle cheek on her husband's shoulder. Her eyes were aglow with an awed tranquility. Waiting for the next wonder to appear, she looked at the gigantic array of computing hardware that made this possible. She thought, *humans have finally conquered the universe.*

Interrupting her musing, Hogue returned. He strode to the desk.

"I left something behind, previously." He reached to take a paper that had been lost among the clutter by Mehring's elbow. Mehring raised his arm and glanced at the paper: it was the beginnings of a journal article. He saw the abstract. *The Nature and Properties of the Fields Generated By Leptons* was the beginning of the title.

Mehring said, "So, you plan to benefit by using the Universe?"

Hogue looked guilty. His face drew sad. Suddenly, ashamed of his greed, he said, "I was going to wait until the machine went public. Then, I could give it a proper citation..."

Mehring was disappointed.

Chapter 7

Collier hovered over Nackley's shoulder. The deterministic universe stretched before his palms. The commands were more intuitive than with the Universe. Rather than a client-server architecture, there were a handful of stand-alone programs that manipulated the state of the machine, which was stored in files rather than a database.

Collier watched as Nackley increased the resolution of the world and took virtual photographs. *He must have really spied on old Thaddeus to make the same kinds of programs*, he mused. The format was different, but the basic functionality was there. The resolution of the Engine, though, was broad in comparison to the Universe. Floating point error was introduced in many places, yielding inaccuracies if used incorrectly.

Inaccuracies notwithstanding, Nackley changed the parameters using decimals rather than the default integer values. He got close to being able to see the real world. Benelli watched from a distance before leaving to inspect the robots. Unseen by the other two men, he seemed surprised by the capability of his own progeny.

Nackley showed Collier that the machine could extrapolate current data to push the simulation into the future, revealing individual objects in stunning detail. Though, the Engine failed to impress Nackley in quite the same way as the Universe. The more he typed, the more short-cuts he saw. Probabilities were crudely inserted. Numbers were truncated, rounded, and polluted. Still, for purposes of navigation, this was good. He had, after all, not seen the computer yet. It was hidden somewhere in the torus.

Collier, a man who enjoyed gambling holidays, instantly saw use in these forays into the Engine.

Suddenly, he questioned Nackley, "Can I have a turn for a few minutes?"

Nackley shrugged. "Go ahead," he said, turning. "What's keeping Benelli?"

The question was more to himself than Collier. He gingerly walked toward the stairs leading down from the bridge, though he took a different route around the port side of the torus. Here, he found what he was sought: a gigantic machine. It was much larger than the Universe and lined the ceiling and walls of the cylindrical hull leaving a human-sized hallway for Nackley to explore. *The idea is for easy reproduction*, thought Nackley.

Collier, meanwhile, saw himself on the monitor. It was a month in the future, when he had planned vacation to Las Vegas. Nervously, he brushed back his blond hair and rubbed his hands on his denim pants. He carried a crumpled yellow notebook in one pocket constantly. In the monitor, he saw himself looking at the notebook before placing a bet at a blackjack table. Instinctively, with eyes fixed on the monitor, he groped in his pocket for the same notebook.

He swiveled the camera around the table and found the dealer's hand. The monitor flickered as the machine strained to continue the simulation. He wrote the simulation time and dealer's hand

on the notebook. Hearing Benelli mounting the stairs about fifty feet behind him, he returned to the command line, changed the virtual camera's location to somewhere over the north pole.

Benelli asked, "Where's Pete?"

"He went looking for you, I think."

"I'll wait here, he'll return."

"How's the cargo?"

"They are still in perfect condition, despite the bumpy ride."

Nackley reached the far end of the ship. He entered the airlock where the iron human forms stood. Some turned as he approached while others merely stared at the stars through the small, rectangular window in the door. The real human, light on his feet, examined these metal beings carefully. Their hollow parts revealed labyrinthine electronic complexities where each complexity was the handiwork of another machine.

If the idea of space travel failed to impress upon Nackley, and the idea of extra-dimensional travel seemed like a trickery of the senses, then this, at least, rang true. He saw these beings. He touched their cold, metal skeletons and shells. Their genderless, heartless crystalline eyes beamed, and their electric nerve centers whirred with each minute motion. This was real truth. Many of them carried the metal and crystal pipes resembling weapons. Nackley touched one, dragging his dark fingers along the bright opalescence of this unearthly craftsmanship.

He thought to himself as he finished the circle, walking back to the bridge. Just as man was made of imperfect Earth materials, these beings were made of Ore materials. Just as we are made in God's image, these beings are made in a human's image. Just as we do God's will, so these beings do the will of man.

He ran up the half-dozen stairs to the bridge to see the other two men talking genially.

"Hey, man," he said to Benelli. "Nick, why do these things have guns?"

Benelli's gaze turned serious.

Metzger, meanwhile, had returned to the Universe. After Mehring and his wife had their fill of wonders, he decided to have another visit. He unabashedly bade the virtual camera to enter homes of many of the females he knew or had known. A huge grin crossed his face to see a woman and her family sharing the intimacies of domestic life. An even broader grin crossed his broad face to see a woman enjoying the intimacies of cleanliness.

For inspiration, he viewed the entire Earth from space. *I could visit any place on this globe*, he thought. Idly, he played with the command line, shifting the camera and making it whirl around the Earth. His ultimate destination was a town in Sweden, the stereotypical land of blond-haired women.

The computer churned as it rendered his animation. The camera buzzed north across the Atlantic. It turned green for a flash in the middle of the animation before it whirled across the North Sea, tumbled over the lights of Gothenburg, Jönköping, and Nyköping before the twinkling vastness of Stockholm finally dotted the display.

Something scared Metzger, though: the green flash. He replayed the animation at five frames per second. The flash-based memory *click-clock*ed somewhere in the supercomputer. Slowly, over the middle of the Atlantic ocean, he saw it again. It was a green blotch. It had marks on its surface, so it was a real, physical object and not a compression artifact of the animation.

He got the coordinates and re-rendered from a better view. He saw a gigantic, green metal torus. Remembering his brief interlude with Nackley at the home of Steve Collier, he dashed out of the well to the phone.

Mehring and his wife were enjoying the quiet of the evening. He sat on the couch and she lay in his arms when the phone rang.

"Sorry, babe. It's going to be one of those weekends." he said to his wife. He lumbered into the brownness of his kitchen and picked up the receiver. He spoke with aggravation, "Hello!"

Mehring nodded and said nothing else until he hung the telephone receiver.

He looked at his wife, then back at the phone. He held the phone to his ear once again and dialed Hogue's number.

"Hey, Pete. Something's come up. Let's get to the well."

There was a small pause. "Right. Meet you there. Bye!"

Mehring kissed his wife's forehead. "I've got to go, babe."

She smiled sadly. "Come home soon?"

"I'll try!"

He departed, and she pouted.

Mehring met Hogue outside of the well. Hogue entered first.

Metzger was waiting at the bottom. "Hey, guys. I was doing some stuff with the Universe, and there's something you guys have to see."

In the time that it took for Mehring and Hogue to go to Poel's house, he had assembled as much data as he could produce regarding the mysterious torus and its contents.

The three men, hunched in front of the monitor, saw an animation: the camera flew through space at the gigantic, looming torus. It was lit from beneath from the seemingly-glowing Earth beneath it and from the side by the sun. With this illumination, it looked very sinister. Closer crept the camera until it drove through the hull. Swinging around the central circumference of the gray, roughly circular hall, they saw the elevated bridge. Passing through, they saw the heating equipment, and finally the airlock. The ten robots stood nearly motionless. Their shining silver was dimly contrasted against the gray walls of the airlock. The only light came from the miniscule windows. It glinted off the bright eyes and stripes of the stunning robots.

"They're beautiful," breathed Mehring, finally breaking the silence.

"Yeah," said Metzger. He tapped the monitor. "I called you guys because they are armed. I don't know what kind of gun that is, but I really don't want to find out. I found it on my way north across the ocean. It seems to be heading toward us."

Metzger sped the simulation into the future, and the invading vessel landed in a farmer's field just north of Dallas.

"So, what are we going to do?" Metzger asked breathlessly. "This is bad. A militia of armed machines is coming *here*."

The two other men looked at each other. There was silence.

Hogue said, "We can't divulge that we have an omniscient computer system."

Metzger said, "The hell we can't..."

Mehring intervened, "We might not have to do that, anyway. Let's not start this argument again."

Hogue was turning red.

"Look," said Mehring, "so far you've both been using the machine for your own ends... let me call the shots."

"Don't you dare take the moral high-ground," sputtered Metzger. "I called you here!"

"Well, then, let me think for a goddamn minute!" Mehring shouted. The color in his face matched his hair and beard. He breathed hard. A few more seconds passed before he said, "Look, we just have to call up a couple of people at Argosy University... their astronomy department. We

say we've spotted something in the sky and want them to confirm it. If we sound alarmed enough, it might work. I mean, hell, this thing should be sending up red flags all over the United States."

"Then what? Tell them that we somehow automagically traced its trajectory?" Metzger asked.

"We won't have to do anything like that. We'll let them work all that out. We'll just tell them that we saw a weird object— they probably have already— that seems to be getting closer with each observation."

"I wonder why they're delaying," mused Hogue.

"We could find out," said Mehring, "but it'd be a lot of work."

"Let's just be thankful they are," said Metzger. "Let's go make that call."

Aboard the ship, the three crew-members yawned. They were recovering from the crazy strains placed upon their bodies by the phenomenal trip through space.

"Have we landed, yet?" asked Nackley.

"Negative," said Benelli. "We're letting our guests charge in the sunlight. Up here, it's more efficient. There's no atmosphere."

Benelli stood from his stool and stretched his legs. His padded clothing looked strange in space since the insulation wasn't being pulled as strongly by gravity. He paced across the bridge.

"Well, how much longer?" asked Nackley.

"An hour or so."

Nackley unfastened his belt and stood also. He walked to the nearest set of steps, though, and sat. He leaned against the wall and closed his eyes. Collier watched Nackley and followed suit. He napped on the opposite staircase. Benelli looked amusedly at the scene before sitting again and typing commands into the command console.

As he checked the robots' diagnostics, Mehring stood in Poel's kitchen in the midst of a long telephone call with a professor at Argosy University. It took the man no time to realize that there was, in fact, a gigantic metallic mass floating above the Earth that as not there previously. They, too, had discovered that it had moved.

"But we cannot, under any circumstance, assume that it's coming directly toward Dallas," said the astrology instructor, a young-sounding man. "We also lack the proper resources. Have you tried calling a larger institution?"

Mehring replied honestly, "Yours was the first university that jumped into my head."

There was a pause. The man on the phone was thinking of something to say when yelling was heard in the background.

On the phone, the young voice said, "Hey! You're right. It's moving toward us."

At the same time, the first Engine vessel was screaming through the atmosphere, rocketing toward Texas. Insane was the velocity and terrifying was the strain put on the ship and its contents. The two sleeping men were weightlessly floating from the steps when they awakened. Surprise belted them and shook them awake.

Benelli was laughing at them with good nature and genuine mirth.

Soon, they were laughing, too. They whooped and shouted, enjoying the giddy sensation of free-fall.

Outside, the hull of the ship became flaming-hot as it scraped through the atmosphere and immense quantities of friction attempted to slow its passage. Moments of whirling, hurtling and whizzing caused the ship's mighty hull to creak and groan. The delighted crew inside gave it no mind. Finally, the time came and the ship began to slow.

The men were forced to the floor as the ship struggled against gravity's mad desire to crash them into the desert floor north of the sprawling city. The three men tensed as their bodies were

tightly pressed into the floor. In the cargo area, the metal men were also braced against the floor on their hands and knees as the result of an automatic stabilization procedure.

The men were giddy with excitement as their weight slowly returned to normal. The craft was coasting to a stop above a brown dirt plain in Melissa, Texas.

Mehring was shouting into the phone's receiver. Fear, desperation, and panic emboldened each word, "There's going to be a lot of trouble when the occupants of that ship set foot on the Earth!"

He heard a click in his ear when the professor closed the line. The three men knew what was going to happen, and they were afraid.

The three men in Melissa walked the circumference of the ship through the heating and sanitation area. They approached the army and Nackley looked at the weapons.

"They *all* have guns?"

"You expected a bloodless revolution?" Benelli responded questioningly. His gaze Nackley and some condescension furrowed his brow.

Nackley took another step toward a robot and kicked something metal on the floor.

Peering down, he saw countless little cylinders. They were approximately one inch in diameter and four inches long. They were the color of brass. Nackley bent and took one. They had translucent crystalline plugs on one end with metal protruding the center of the crystal. In short, it looked much like a large, barrel-style battery. There were crates that Nackley overlooked during boarding. One had fallen open during their intense landing.

"What's this?" Nackley asked accusingly.

"It's ammunition," Benelli answered flatly.

"Damn it, man! There's enough here to mow down a small army!"

"I told you before: if we want to interrupt the status quo, if we want to bring peace, and if we want the world to listen, then we need to take the appropriate measures."

Nackley looked to Collier and shouted, "And you're okay with this?"

Collier nodded. "Hell, this is the most exciting thing that's ever happened. I've got a purpose, man."

"This is crazy."

Benelli opened the cargo doors. "If you want to go, then go! I'm not going to stop you if you're too weak to support the cause."

Nackley hesitated. Collier looked nonplussed. Benelli seemed disappointed. However, the way toward Christendom dismissed notions of violence even if the violence brought an end to social injustice. Peter Nackley judged no one. His duty was to spread his word without violence. Benelli, outwardly, was a peace-maker. These guns were merely insurance, a means of protection for the otherworldly bringers of change.

"This revolution will only be violent if they shoot first!" Benelli said, regarding the hesitation.

Nackley's resolve wavered.

Collier added, "Having another human for our cause would look good. Not to mention, when everything's done, you'd be in a position to spread your message... the doctrine."

Nackley looked at the men. The words were pleasing. He'd known Stanley Collier for a long time. Now he stood beside an ominous stranger. The two men looked imploringly at the third.

Nackley's feet began to shuffle. He backed toward the exit, and then turned and ran. He shouted over his shoulder, "You're going about it the wrong way!"

Nackley hit the soft Earth outside and instinctively turned out of the sight of the machine's door. He was afraid that the robot militia would fire their alien weapons at him. He was a coward. He fled, and he did as fast as his feet could carry him over the hard, brown dirt.

His head whirled. The gray late afternoon sky hung heavily over him. Over his shoulder, near the center of the field was the bizarre space-craft with the cargo door open.

To his right, tall leafless trees raked the tumbling sky. Before him, a state highway cut the field into a triangle. He had sprinted fifty yards toward the highway, and he was already becoming fatigued. No one was firing. He reached the edge of the highway and stopped running. His legs were sore. *I had one hell of a work-out today*, he thought.

Grunting, panting, and sweating, he waved at the cars that passed until one slowed and pulled to the side of the road. He fell into the passenger seat of the car, not minding the driver. He rolled down the window. The air was chilly but not cold, and it served to dry his face.

"Who are you running from," came the driver. "Just what is that thing?"

"Man, I don't know," he lied. "I didn't like the look of it. I swear it just came from the sky, and I heard people shouting inside, so I just ran."

He looked at the driver, finally.

Poel, on the distant planet, had finally begun communicating with the giant residents. He had landed on a residential area of their planet: the gigantic plain with inset trenches was home to the community. Poel listened to their stories and attempted to learn as much as he could quickly. They were, unsurprisingly, related to humans. In their creation story, they spoke of their originator, Gog, and his travels to that planet by a being Poel understood as an ancient Greek god.

These gods, as Poel theorized, were capable of trans-dimensional travel, like Benelli. They had grown bored with Earth and planted seeds of life elsewhere before vanishing to places beyond our dimensions. Poel's discoveries multiplied from listening to the bizarre, stilted Greek-like speech of the giants, as his original research had been based on the Universe alone.

He had begun, finally, to supplicate them for help.

Meanwhile, Nackley's driver smiled contentedly. He was an old man in a black shirt. For a moment, the passenger thought he had met Benelli again. After the shock diminished, he noticed the driver's collar: he was a priest.

"Where are you going, friend?" asked the priest.

"Anywhere in or near Dallas: the farther south, the better."

The old man looked at his watch. "It's Saturday afternoon, and I've got no place to be. Where are you headed?"

"DeSoto," Nackley started, "I've gotta tell my friends about that thing."

The old man smiled. Nackley noticed the car was going awfully fast, and the driver was looking peculiarly nervous.

"You alright, father?"

"I'm fine. You're not going to believe this, but I would swear that I saw that thing back there land from the sky." He looked at Nackley to gauge his reaction. He leaned a little toward the passenger to get a better look. Nackley, concerned but not surprised, noticed and met the man's gaze. The priest continued, "It came racing out of the sky like a shooting star..."

Nackley vividly remembered that part. He almost smiled, but this would have sent the wrong message to the priest.

"I could've sworn it was going to crash. As I came up there, I saw you a-running. Lucky thing I stopped, huh?"

Nackley nodded. The old man continued, "So, what were you doing back there, anyhow?"

Nackley moved in his seat uncomfortably. Whatever he said next was going to be a lie. He hoped the man would prompt him, but the driver continued driving, actively listening for Nackley's response.

He took a deep breath. “Well, father, I was visiting some friends in Melissa when ran went out for a little walk. I was in the field when I saw something in the sky ahead of me. It looked like it was coming right for me. It got pretty close to the ground and it separated me from my car, so I made a run for the road.”

The priest nodded. *He bought it!*, Nackley thought. He would much rather not explain how he was in the ship as it crashed toward Earth and explain that a difference in opinion was the only thing that stopped him from being a member of the party on the dirty plain.

“You poor man...” said the priest, trailing off.

Meanwhile, Mehring was yelling at the police to dispatch officers to the scene of the landing. He had invented a story, too. In that year, tensions were still ripe after the terrorist attacks on New York City, so Mehring muttered every “terrifying” word he could remember.

“There was a suspicious package in the field,” he explained. “It could have white powder or explosives in it. It had wires coming from it and...” he trailed. Realizing whatever he would say next would sound like a fabrication, he lowered his voice. Intending to sound scared, he added, “It had some sort of weird words written on the side. It might’ve been Arabic for all I know.”

The man at the police dispatch was obviously annoyed. He finally dispatched a few officers to the scene described by Mehring. “They’re on their way, sir. Please, relax. We’ll take care of things.”

Mehring looked at his friends after terminating the call. Metzger’s hands dug into his pockets. He gave a sidelong glance at Hogue.

“Now what?”

“I have a feeling the fight’s going to come to us,” began Hogue.

As though sharing a thought, Mehring said, “Yes! We must defend the Universe at any cost.”

“Perhaps we should have called the police here,” mused Metzger.

“Perhaps,” admitted Hogue, arching his eyebrows.

They sat in Poel’s living room. Hogue boiled some water for coffee.

In the office for police dispatches, the same man who spoke to Mehring rubbed his eyes after sending a pair of police cars to the scene. He had jet-black hair slicked over his head where it was beginning to thin. His deep green eyes examined his drab desk and the smooth black telephone. As he stared at it, it rang again.

He spoke the standard greeting.

From the phone, he heard a young man’s voice. “I’m the secretary to Mister Ewing. We need an emergency dispatch to a place called Melissa. There’s a field off of Sam Rayburn Highway where an unauthorized aircraft has landed. Send as many men as you can spare.”

The dispatcher became suddenly worried and mentioned the previous call to the federal agent on the other end of the telephone connection. “There’s probably going to be a lot of that,” explained the secretary to Mister Ewing, “It made quite a spectacle when it landed.”

“He didn’t say it was a plane— he said he saw a box of anthrax or a bomb or something,” sputtered the bewildered man.

“He didn’t want to sound crazy. Send officers. This may be an emergency situation.”

“They’re already on the way.”

“Then I have nothing more to say to you.”

The phone clicked in the green-eyed man’s ear. He felt abused as his big eyes drooped. He would be curious about the incident.

Three police cars were already approaching the first Engine vessel.

Benelli gestured to the metal men, and they followed him. The three men marched toward the police. Benelli took broad steps with a genial smile playing across his face. The metal men carried their rifles over their shoulders. The twenty robots carried rifles over their shoulders. Their feet struck the ground with immense weight. Heavy and leaning, these imperfect metal beings struck fear into the hearts of the police officers with each step.

Finally, with thirty feet separating the police from the squadrons of robots lead by Benelli and tailed by Collier, the army stopped. Collier waved happily at the police officers.

The police officers were confounded. The three men raised their weapons at the metal men.

"What are they?" shouted one of the police. He was a young man with dark hair, a smug grin, and a face-defiling pair of reflective sunglasses.

"They are friends. They come to relieve you of your pain and suffering. They'll grant humanity a new era of peace, a new eon for flourishing culture, and millennia of human understanding."

"I don't want any prophet-talk. Tell me what the hell they're carrying."

"They are weapons in case you try to stop us," shouted Collier.

Benelli smiled.

"We come peacefully," Benelli added, "but we will use force if we must."

Before the policeman could respond, three huge vans roared northward on the highway and screeched to a halt. Men jumped out of the vehicle when it was still moving. Soon, twenty armed and armored members of the local bomb squad joined the three standard police officers. Their guns were raised.

The leader was a gigantic man in every way. He fed himself very well, and he was born with an unusually tall frame. He had long, sturdy arms and legs. In his arms he carried a rifle which he pointed at Benelli.

"And who the hell are you guys?" shouted Collier. "We bring you some of the best news humanity has ever heard, and this is the welcome you give us?"

The huge beast of a man shouted, "We are here to protect the people from those things."

Benelli, sourly, replied, "These things are just my tools. They are here to do no harm to you guys." His tone changed. The sour became sweet. "When we're finished here, you guys will be at home enjoying personal time."

"You take one more step, and we'll send you and your toys straight to hell," cried the behemoth of a man.

The police officer with the sunglasses winced as the man shouted past him. He found himself raising his pistol to Benelli.

Benelli, rebellious, extended his leg defiantly. The leader of the bomb squad shouldered his gun. The rest of the police force did the same. The squad members wore black while the regular police wore blue. The effect was a dark stripe of men with raised weapons separating the highway from Benelli. Behind Benelli, a long stripe of silver marked the robots in mid-step. Behind them, relaxed, stood Collier who felt protected by the line of metal men.

Benelli's weight shifted toward his outstretched foot. Inches it came from the ground. Then, it splashed into a puddle of mud as his arm gestured to the robots behind him.

At the same instant, the tall man cried into the gray skies, "Fire!"

A maelstrom of metal poured from the automatic weapons of the thirty-three dark men of justice with a terrible, echoing reverberation.

Benelli felt a sharp pain in his left shoulder. He was being forced to the ground. The sound of a metal ricocheting metal sounded like rain to Benelli as he tumbled earthbound.

The horizon of trees to his side turned vertical. The rattling discharge of guns continued. The metal of the shoving, life-saving robot lay beside him. Collier crouched behind one of the robots directly in front of him.

Suddenly, Benelli's hand rose. His arm stuck vertically from the field. In his laying position, he waved his hand and clenched it into a fist. At once, the robotic minions shouldered their weapons.

The robot that had shoved Benelli to safety sprung back to its feet. Benelli, from safely under the rays of bullets bade his army to return fire.

From the beginning of the guns' discharge to the return fire of the robots was scarcely five seconds.

When the robots fired back, the scene dazzled the bomb squad, the police officers, and Collier. Benelli, still facing the police in the mud did not see the glowing muzzles of the iron and crystal rifles pour beams of pure energy into the officers across the plain. The sound of crashing thunder bowled toward the police as the ground lit with the bright glow. Before Benelli in the mud could truly notice the details of the scene, the red light was extinguished.

Benelli stumbled to his feet. Collier rubbed his hands nervously.

"Holy shit, man!" he shouted to Benelli.

For a single moment, Benelli was afraid of losing Collier after the first combat.

Instead Collier shouted, "That was excellent! Humans won't have a choice but to surrender."

Benelli was wiping the brown from his black clothing. He nodded at Collier. They walked closer to the line of dead men. They were charred and black with the terrible smell of burnt skin pushing to the heavens with black smoke that emanated from gaping, black fissures in their skin. They were wrecks, the shells of humans. Their guns were toys in comparison to the laser rifles of the robot militia.

Benelli, angry at all humans for the aspersions he suffered. He had raged silently at the millions in his head. His Engine, when the two humans were asleep on the bridge before this rebellion began, had told him of victory. These thirty men were the first to fall in his black revenge.

His prosthetic feet, the souvenir of government negligence, carried him back to his torus. He had something important to finish now that he had tested his army.

"Come," he told Collier, "Let's destroy the Universe."

Collier shrugged. He remembered talking on the bridge of the ship. He knew that Benelli referred to a single, convoluted, powerful machine.

The metal army opened the backs to their guns. The yellow metal batteries fell to the ground with dull thuds. Some splashed into puddles of mud from the day's earlier rainfall.

Each cylinder contained many slices of traditional dry-cell batteries separated by a honeycomb piece of insulant. When fired, the weapon crushed the insulant and made contact between each of the wafer-thin battery segments. They formed a series whose total voltage was the sum of the charges of each component. Since each individual wafer was thin, they carried very little charge, only enough for a millisecond of firepower. It was enough, though, to power the laser built within the barrel of the weapon. The crystal stripe that lined the top of each rifle was mirrored inside the barrel. Light from the laser tunneled through the hall of mirrors further magnifying the power.

Lastly, using feats of alien chemistry, a wad of napalm-like glue was placed on the outward-facing edge of each cartridge. It rode the beam of light and furnished a searing, fiery explosion when it made contact with the laser beam's target.

This terrible weapon bought the end to thirty officers in two volleys by only twenty robots.

The two men and their robotic legion returned to the first Engine vessel. Silence enshrouded the plain and a light rain fell on the blackened remains of the Dallas bomb squad.

The torus hovered thirty feet above the road and flew south. It gained speed and reached out toward the small city of DeSoto.

Chapter 8

Mehring, Hogue, and Metzger were at that time also returning to DeSoto. The Universe warned of an ensuing firefight, so they prepared. Armed with shotguns from a local sporting store, they would attempt to save the Universe. None of the men spoke on their solemn ride.

Mehring alone knew the outcome. Hogue had suspicions about his ability to survive the difficult times. Metzger felt, for once, a pang of guilt for misusing the Universe.

As the three men silently left Hogue's car and began their march toward the white house, another car approached. A man in a black figure drove the car, and a dark man left the opposite side wearing a bright red shirt. Nackley was back.

"Guys!" he shouted as he saw the trio. The car turned and drove slowly away, and Nackley sprinted toward the three men. They turned to see him.

"Pete!" said Hogue.

"Pete!" shouted Nackley.

"Glad you could join us," said Mehring. "We just got weapons to fight whatever is coming from that ship."

"They're robots. They can see and think! It's scary," Nackley said in his bewildered state.

Mehring nodded. "I know. Let's get into the house. We've got to protect the Universe. I'm fairly certain that guy..."

"Nicholaus Benelli," Metzger interjected.

"...is coming this way. The Universe is our weapon to stop him," Mehring finished.

Then, the four men climbed into the house. Hogue was the last. He looked behind him at the cul-de-sac and the darkening, dreary sky. It still threatened rain and the ground was still sodden from an earlier rain that day. Hogue breathed deeply. His spectacled, bearded face looked sullenly to the ground. His shoulders turned, and he stepped into the house.

They stood in Poel's bedroom which overlooked his backyard. The naked, stretching trees would provide no cover for a covert attempt in that direction. The sky was becoming even darker, though, as the early winter's sun was setting behind the clouds. With shotguns loaded, the three men waited by the window.

Nackley, alone, rummaged through the house in search of a weapon. He jumped up the steps two at a time with a sledge hammer.

As he reached the top of the stairs, he heard a thundering crash behind him. The three other men scurried from their location in Poel's stark bedroom. From the casement they tumbled toward the stairs and down to the first floor. The four men stood in amaze as the entire wall flashed toward them in bright orange.

The entire side of the house was on fire.

They ran toward the backyard: the well and the Universe were under siege.

From the back door, the four men tumbled outside. By now, the flames were leaping toward the roof. The sad, two-story house of Thaddeus Poel was quickly succumbing to the torturous heat. Looking up, the torus ship loomed heavily over the house soundlessly.

Mehring saw a robot shouldering his rifle as it leaned out of the back of the cargo door. One of its metal arms clung tightly to the hull of the ship and the other cradled the laser pulse-rifle. Its cold finger pulled the trigger. Contact was made and compressed was the cylinder. Red was the bright, flashing beam of optic fire that careened at Mehring's red head.

The sound of the metallic pounding scared Mehring. He dodged the red line of certain death. It struck the ground behind him. It was far too close for comfort. He shouldered his shotgun.

He screamed. He was scared. Deep within the adrenaline-engorged recesses of his mind, he was angry. As he screamed, he squeezed the trigger and the robot fell thirty feet to the ground.

To Mehring's surprise, the rest of the robots fell out of the ship after the first. Lastly, a huge wooden box was pushed from the craft. Each item fell to the ground with a loud thud. The wooden crate burst as it made contact with the grass. As each metal man struck the ground, it rolled out of the path of the next one.

Soon, each sprang to its feet and began removing the debris of the crate revealing a huge metallic funnel-shaped screw. It was three feet tall and three feet in diameter at the top. It terminated in a sharp point. The wide end was attached to a large automotive engine. Four robots held the engine and turned it on. The screw began to dig into the ground above the Universe.

The ship drifted toward the woods behind the house and lowered softly to the ground. The cargo door faced the back of the house. There wasn't enough room to land in the clearing, so trees feebly bent and snapped out of the way of the looming, descending ship.

The three armed men shouldered their shotguns and fired at the robots. The report roared like thunder and echoed on the plains of southern Texas.

As the four bore into the earth above the Universe, the remainder became enraged at this assault. A few breaks in the clouds allowed sunlight to sparkle and play off the silver men. The bodies glittered in the dying golden light of dusk.

Fifteen glowing red rods atop silver barrels rose to take aim at the four men. They returned the fire. The men planned to reload their weapons, but the returning fire was too dense. Mehring squeezed out one final useless shot into the screw's engine.

The robots carried extra ammunition in a pocket formed from hollow area of their legs between the cover and the core of their thighs. They reloaded faster than any human could: jamming batteries into their rifles, taking aim, firing, and repeating the process with deadly rapidity.

In the police dispatch office, a green-eyed man with black hair was receiving many phone calls. A gigantic green torus marred the dusky sky. Gunshots were fired in DeSoto. Bright red flashes came from the same area.

On the cool, dark ground the metal screw twisted and dug. The three humans with guns were fleeing around the side of the burning house. The fourth man, a dark skinned man with a bright red shirt lifted a sledge hammer above his head. Screaming above the roaring engine, Nackley dashed toward the robots. The robots had been concentrating their fire on the other three, fleeing men.

Nackley's muscles tensed. He twisted, heaved, and swung the massive hammer toward the head of a blue-eyed iron being. The metal victim stopped the attack by punching the wooden handle of the hammer as it twisted. A harsh snap told instantly the failure of Nackley's attack. A dull thud told the falling of the hammer's head to the dark ground.

Then, there came the pain.

The robot retaliated, punching Nackley's gut with incredible force. Blood splattered from the man's mouth. Ribs cracked. Organs were punctured. The mortally wounded man fell to the ground with his face a mere inches from the head of his defunct weapon. Before losing his battle with icy death, Nackley heard the scraping sound of metal on concrete: the engine had drilled to the roof of the subterranean computer room.

A huge blast followed: half of the robots ceaselessly fired into the aperture in the roof of the Universe's room. Flames billowed as the mighty computer system burned. Clattering and tumbling noises of metal on concrete told a story of failure to Mehring, Hogue, and Metzger who were hiding around the corner of the burning house.

In the pit, the gray metal shelves holding the universe tumbled and collapsed. The tumbling, grating metal fell on the sensitive equipment. Smashed by the roof, smashed by the shelves, and burned from the incessant firing of the robots, the Universe was thoroughly destroyed.

"Run!" Mehring shouted.

Metzger, fat and slow, was the last to fly from the corner of the house toward the cul-de-sac. Six of the robots were pursuing. Ahead of Metzger sprinted Hogue. Mehring was leading. Out of sheer terror, he dared not look back.

One of the robots raised his weapons and fired. The blast erupted from its rifle and struck Metzger. He made an easy target. The thunderbolt of dazzling, flaming laser light struck the man's back. He tumbled to the ground with a sad, high-pitched scream. He shouted, lying in the ground waiting for icy death, "I'm sorry."

His lungs heaved. His guts burned. Searing pain welled through his body. He shed a single tear and expired.

Mehring jumped into his brown car and sped out of the cul-de-sac. His tires squealed. In the rear-view mirror, he saw another metal man fire at Hogue.

So bright was the light from the weapon that Hogue's skeleton was partially visible through his body. His face was contorted in deep agony as his body crumpled beneath him. His glasses tumbled off of his face.

Mehring hit his steering wheel violently, screaming profanities.

He passed fire engines and emergency vehicles which were destined for the conflagration behind him. He, alone, had escaped.

Meanwhile, on the distant planets of Ore, seas of silver men dig and excavated gigantic pits of metal. By the thousands, they mined the iron and minerals, ground crystals into workable shapes, built the toroidal hulls, and readied themselves for the journey to Earth. Their numbers raced across planets preparing for departure. Factories produced ammunition by the bucketful.

A shining new robot was just activated as the flame-engulfed house of Thaddeus Poel tumbled to the ground. The robot rose and examined his surroundings. His number was too long to be printed on his shoulders, so the last four numbers, alone, were stamped. He was 0299. Twisting his head he saw the colossal factory and the legions of brethren. Standing from a metal workbench, he walked automatically toward a brand-new Engine ship.

The same scene repeated in every factory generating robots.

Three iron stars surrounded the distant sun. Each star-turned-planet was riddled with new craters by these self-replicating metallic parasites. Armed and armored in their dizzying numbers, their mission against the Earth commenced.

Innumerable light years separated the tori from Thaddeus Poel. He stood on a gigantic flat plane surrounded by thirty-foot-tall robed men. Their voices were soft thunder as they gazed down at the small man. The solid gray ground and white sky stretched interminably around them.

Suddenly, the tall inhabitants of that planet turned away from Poel and started marching across the incredible, sparse plain.

Poel jogged to match the pace of these titans as they crossed the absolutely barren landscape. As they marched, a gust of wind pushed Poel. The titans seemed unaffected. Against the horizon Poel noticed something purple gleaming with luminescence. The purple spot faded into the white. The giants hurried their pace and, since three strides from a human was equivalent to one step of the giants, Poel ran.

Miles were crossed. With sore feet, Poel became aware of the neon purple of gigantic saucer-shaped buildings. With perfect circularity, they stood on the ground. Much like the simple landscape and simple residential trenches, these buildings were very smooth and beautiful in their simplicity. They shone with the same radiance that was visible in each trench of the residential area. They were made from some glass-like material.

Poel passed beneath the rounded edge of one of these mammoth discs. The diameter of these buildings stretched for miles. Their glowing forms pulsated, drawing the giant inhabitants toward them. Beckoning and calling, these beacons were the signal for war.

Poel watched the thousands of gigantic humans marching across the land. They each walked up to one of these buildings and touched the surface. For each warrior who touched the surface of the building, a purple flame of energy engulfed the hand and then the body. A second later, the body was inside the building.

A female with long blond hair gestured for Poel to move forth and touch the building.

Poel scratched his head and stepped closer to the reachable underside. He stretched out his hand and touched the glowing, hard, purple surface. Energy welled within him. A second later, all was purple fading into an interior. The thirty-foot-tall men and women marched around him through the vastness of the building. Sparse white neon lighting lit the gray floors and white, curved walls. The building itself was circular and the walls within were concentric and circular.

As Poel walked through the circular corridors, he stared up at these fantastic beings. They were careful not to trip over their newfound friend. One of the beings gestured Poel to follow.

In the center of the circular building was an elevated circular deck. Here stood a man taller than the rest. He had an old face with deep blue eyes and a grizzly, black beard. On his plain robe he wore bizarre pins of various colors, shapes, and materials.

He spoke the dialect of stilted Greek shared by the giants. Translated, he said simply, “I am the captain.”

Poel looked up at the gigantic man. “My home is in terrible danger and I need a force of your magnitude to protect it.”

The captain squinted in frustration. He spoke slowly, “The leader of the Imbellis tells me this already. How do we know that we are not the invaders? You will be returned to your ship momentarily, but your answer decides whether we follow.”

Poel straightened himself and brushed the wrinkles from his white shirt. He straightened his glasses and cleared his throat. Standing straight with his gray hair, white skin and clothes, he looked like a deity himself. Tidying himself afforded him time to calculate his words, which he spoke clearly, “At this precise moment, invaders are observably on their way to my planet. They are the first foreign beings our planet will witness, but without your help, it will be the last. Intercepted intelligence predicts the extermination of millions of human beings. You are the only sentient beings I knew to visit. With no question of repayment, I very humbly ask you to be the saviors of tomorrow.”

Poel felt dizzy for a moment. His vision went white. When it cleared, he was in the airlock of

his own, golden ship.

On Earth, quarter of the universe away, fire engines screamed into the cul-de-sac. Emergency workers began the task of unravelling their fire hose and locating a hydrant. One man in his bright yellow jacket and pants was placing a bright red hat on his head when he heard a sound coming from the back of the house. He came closer to the corner.

Benelli gave his squadron of robots a few hand signals and gestured around the corner of the flaming heap that was formerly a house. Towering flames lit the dark yard and Benelli looked to Collier.

Some robots marched around the gigantic hole in the ground that marked the former location of the Universe. They joined the line of others. They passed the bodies of Nackley, Metzger, and then Hogue. Benelli watched the corner of the house. Bright red flashes lit the surrounding trees and sky. Over the crackling flames of the house, huge claps of thunder shook the ground. The entire robot force fired at once. Bright beams of flaming light tore through the protective amror of the fire fighters. Their limp bodies thrown back against the ground. Hats and gloves tumbled earthbound. Gear was scattered over the pavement.

Three beams concentrated on a single man near the corner of the house. His blood boiled; his skin ruptured, and the dark blood exploded from his body splattering the wooden wreck behind him and the dark ground. He sank to his knees before planting his face in the soft dirt.

More flashes of red lightning came. Likewise, thunder rent the quiet, deserted cul-de-sac. The six fire fighters lay where they once stood. Deep, black gashes in skin, wild expressions on faces, and the copious flowing of blood were all illuminated in the flashes of the fire engine's lights.

The robots returned around the corner and marched across the yard to the opening of the ship.

"We're onto bigger and better places," said Benelli. "A more peaceful tomorrow relies on the audacity of today. As such, you're going home."

Collier's eyes widened. He looked at the twenty-foot-tall burning wreck and back at Benelli. He asked simply, "Why am I going home?"

"You're going home because what comes next is violent. It's necessarily, but it won't be pretty. Ninety percent of humans need to be exterminated so we can sow the proper seeds for a peaceful tomorrow. Overpopulation and overuse of limited resources has plagued the planet. Now comes the end. Now, we fix it. I don't think you're capable of treading these grounds."

Collier looked defiant. "Look! You've shown me more truth in a couple months than I've known in my years as a farm hand. You can't possibly take that away now. I know the road is rough. I've made it this far."

"What if I asked you or your family to die."

"Then they'd die. Even if I had a change of heart, I couldn't stop your robots."

Benelli smiled. "If you stay with me, and we lose, then you'll burn with me."

Collier returned the smile. "I don't care. We've got a good chance to win."

Chapter 9

In the dark hours of late Saturday evening, Pureza Barrero finally turned the lock and took a few steps from the animal shelter. She, alone, worked that evening to take care of the animals. She walked down the wide, urban sidewalk to her car. The car was old and white: a faithful servant to Barrero and her family.

The engine sputtered and started.

Looking through her windshield, Barrero saw the bright lights of the city and the ghostly glow of the almost-full moon. The bright pavement passed beneath her vehicle. The streets in that district were largely deserted. Tall buildings of commerce stood closed for the weekend. The scene, usual for the dark-eyed woman, was still saddening. The sleeping city was lit in the garish glow of fluorescent signs, the yellow of street lights, and the red and green traffic signals.

The woman made a left turn onto a dark side street that ran most of the distance to her quiet, suburban home. As she drove the straight and narrow lane, a bright twinkle in the sky caught her eye. She watched the star. Beautiful, glowing orange, it twinkled. It was slowly moving downward.

Soon, others joined it. Three points traveled down the sky. Three more points joined them. Then three more. All the luminous points faintly flashed as though on fire. As she watched, the number grew and grew. Soon, a hundred points of light flashed through the sky. They were equidistant from each other, resembling a huge grid of points drifting.

In truth, the invasion force of Engine vessels were crashing through Earth's dense atmosphere on their way toward the planet's surface. Each ship was full of robots and ammunition tumbling around their toroidal vessels. The metal beings grasped and stooped, wedging themselves against walls, cargo nooks, the ribs of the curved hull, and each other for support. The gigantic dark sphere of earth was sprinkled with the lights of humanity.

Benelli and Collier lay on the bridge of the first Engine vessel attempting to get sleep. As they attempted to get comfortable on the hard, metal floors, the ship slowly rose into the atmosphere.

The first fleet of vessels landed far away in the desert of Nevada. No one physically witnessed the gigantic number of vessels gingerly touch the sandy planet's surface. Sprawled across miles, these vessels lay dormant for the remainder of the night.

Barrero told her family of the scene she witnessed driving home. In the sleepy hours following dinner, her family crowded around the television. Having filled their stomachs with food, now they hungered for information.

Pureza Barrero was only one of thousands of people who saw the initial invasion. Satellite monitoring stations across the United States were more than curious while anticipating the landing of these vessels.

News of the battle at Thaddeus Poel's house spread quickly, though. Mehring's wife was anx-

iously waiting in the doorway for her husband's return. Four men were found dead at Poel's house. One of the space ships were seen nearby, and a hundred more of these ships were sleeping in the Nevada desert.

The entire central time zone showed, at eleven o'clock that night, masses of tanks and helicopters crossing the desert plains of the west in an attack formation. The Americans readied for an assault against the pillagers.

Meanwhile, in the Mehring residence, Chris and Cathy spoke for hours about the horrors the husband had witnessed. Slain, now, were Nackley, Metzger, and Hogue. Very quickly gone was talk about cookies, dogs, and tomorrows. Here was thorough, deep, and complete sadness. The Mehring couple sat in each other's arms on the couch of their small living room in front of a muted television for most of the night talking until they finally shuffled upstairs and went to sleep.

As they slept, Poel examined his ship. The Imbellis had altered the ship in his hours of absence. In bizarre glowing almost-Greek hieroglyphs, buttons and levers were labeled. He appreciated the care and effort they placed in making things human-sized, but mistakes were still abound. The lever for opening the new missile bay was cartoonishly large. It was as long as Poel's arm.

These alterations, however, meant to Poel that the inhabitants of this strange, barren place were at least willing to provide gifts, even if they decided not to follow him. His ship hovered from the ground. The mechanisms for flight remained unchanged. Rather, it slowly rised out of the gravitation of the foreign planet. Prior to his initial departure on Friday evening, he had studied and researched into the future. He knew that the giants would follow his ship home. Despite having seen the simulation, he still had doubts.

His ship had no windows or periscope. He had only the most laughably primitive ground-based celestial observations to use for navigation. It would be difficult for him to find the Earth, and he wouldn't know until he landed if the beings had even followed. His only meager reassurance was the new weapon system that the Imbellis had provided and installed.

The very early hours of the ninth of November brought a light rain across Dallas and the surrounding areas. Sixteen hundred miles away, light sprinkles of precipitation crossed the desert plains east of Reno, Nevada. In the area called Gilpin, dawn came at nearly seven o'clock.

As the sun rose behind a thin layer of clouds, miles of tanks stood in a long line surrounding the Engine's first hundred vessels. At the eastern end of the border, a single man stood with a megaphone awaiting the presence of the nearest ship's occupants. The man wore his green uniform with a hard, metal helmet. He crossed his arms to protect his core from the chilly air. Holding the megaphone loosely in one hand, he leaned against the tank drowsily. The other hand contained a clipboard. He had waited awake all night with his squadron.

Just after dawn, the cargo door of all the ships opened and the thousands of metal men poured onto the cold, sandy plains. Their heavy footsteps by the thousands shook the ground and struck each man in each vehicle with debilitating dread. The man with the megaphone jerked to his feet and spoke, reading from a paper whose lines he had read repeatedly the previous night.

"Invaders of Earth," the man read, "we have witnessed acts of violence against nine civilians. We demand an explanation. Tell us your purpose, or we will use violent force."

The one hundred green tori seemed to float in a sea of silver. Outside the eastern-most ship stood a single, green-eyed robot numbered 1404. He had a blue stripe atop his head which glimmered slightly in the pale morning light. 1404 raised his arm genially and offered a wave.

The man with the megaphone lowered his implement and squinted at the robot. 1404, in turn, waved his hand atop an upstretched arm.

The solider dropped the megaphone on the sandy desert floor and picked up a radio. "Com-

mander, orders?"

The radio squelched loudly, then came the deep voice of his commander saying, "What the hell was that hand thing he did?"

"Sir," replied the grunt, "I believe he wants us to lower our weapons. The wave was a sign of peace."

"If it's a sign of peace, why is he still carrying a gun? Stick your hand up, point at him and reply to his greeting the exact same way you saw him do it to us."

The man shivered. He lowered the radio and dropped the clipboard next to the megaphone. He raised his left arm and pointed to the zombies. He jabbed his finger a few times. Next, he raised his right arm up vertically, placed his hand perpendicular by bending his wrist. Then, he waved his hand urgently downward and slowly raised it. This last part he repeated several times before returning his hands to his sides. Then, he watched intently for some sort of response.

The blue-headed robot simply shook his head from side to side.

"Sir," the grunt began.

"I saw," barked the commander. "All unit: take aim!"

At this display of bravado of the humans, the robots were programmed with a defiant action of their own. The green and blue 1404 raised his rifle quickly and with a flameless round, he shot the weapon from the man who formerly carried a megaphone. His weapon fell from his surprised hand.

Before the rifle hit the ground, however, the commander in his distant bunker called, "Fire!"

The circle of men miles in diameter discharged their weapons at once. The bullets riddled and ricocheted harmlessly off the metal armor of the robots. The robots stood motionless. They mindlessly suffered the terrific onslaught of a sea of guns firing thousands of rounds each passing second.

Even the crystal eyes and solar cells were unharmed by the ceaseless metallic barrage.

Suddenly, an eruption of thunder sounded. One of the hundreds of tanks vomited smoke and bowled a shell into the silver robotic sea. A fraction of a second later, a multitude of tanks followed. The sea of army green tanks waged war against the sea of lime-green tori.

As a shell struck a grove of robots, they shattered. Their delicate iron workings were smashed. Carefully ground crystal was shattered. Electronics, arms, legs, bulbous heads were scattered to the ground. Bright orange explosions struck the ground and tossed the robots. By the dozen, they flew ten feet in the air to strike the hard, sandy ground. The dust kicked up by these tumultuous projectiles lodged into the motors and delicate workings of the tossed machines.

Still more firepower followed!

Twisting, shining the dull sun, and crashing: these robots took their fall without returning fire. After more long moments of intense firepower, several hundred robots lay on the battlefield in a miserable array of their shining glory. Realizing that no retaliation was in store, the general called a halt.

At that moment, stationed in space over the Earth but in far different dimensions, another fleet gained speed.

The commander, gray haired and bunker-bound, removed his helmet and scratched his head. Clown-like in his uniform, he was the prize buffoon in the play between men and the metal imitation of human form. He stuttered. He rose the radio to give orders, though he inwardly knew of no orders that would make sense at this point.

That's when it happened. From space, with incalculable momentum, an array of a thousand tori crashed into the human-inhabited dimensions mere feet from the planet's surface near Gilpin, Nevada. Thundering and crashing through the dimensional barriers, the ships were gold from the

sudden friction of the atomosphere. Giving the appearance of being on fire, a thousand orange vessels thundered into existence a half-mile east of the standoff. The roar reached the ear of every human on the battlefield. Hurtling forward at seven hundred miles per hour, the hundred-yard-long vessels crashed into the rectangular battalions of tanks, the humans, the robots, the stationary tori, and the other military vehicles with cataclysmic force. Each bumped hard into the ground and bounced back into a flight path low in the air. The result of these thousand collisions and the lowness of their flight was a total annihilation of all beings living and nonliving on the plain.

The fiery ships, after making their mortally low pass, resumed their breakneck sprint westward.

Thirty miles west in cloudy Reno, the entire population felt the ground shudder violently from the initial impact of this new invading force. They felt the earthquake that signaled the demise of sixty thousand soldiers and billions of dollars' worth of military equipment. Never before had a holocaust been so sudden, so unexpected, and so complete in its destruction.

Amaya Surface, a newly-wed, woke that Sunday morning at seven o'clock. She lived in Reno in a condominium sandwiched diagonally by a golf course and Virginia Lake.

She stood in the kitchen making an early breakfast. She had long, dark hair that fell in curls down her bathrobe-covered back. Her face was still creased by sleep. Her hands were creased around the handle of a skillet containing frying eggs. Her nostrils flared, and she slowly inhaled. Coffee was brewing.

Her husband appeared in the tiny kitchen. He craned from behind her to plant a kiss on her neck.

"Glad you woke up on time. You ready for mass?" he asked, sleepily.

She nuzzled backward into his kiss with her shoulder and right side of her back.

"We'll see after I fill my stomach," she said with a smile.

"This is a good observation, Missus Surface." said Amir Surface warmly. "If this continues, you... what the hell was that?"

The skillet rattled against the grille covering the stove's burner. Glasses in the cupboard clinked together. Then, the entire banged in a quick instant. It was as though a fat man had jumped and landed hard in the couple's living room. He rushed into the lushly decorated living room to the window. A few minutes passed.

The room was well-furnished. White carpet covered the floor. A large, dark couch comfortably sat against the south wall near a hallway, and a large black box of a television adorned the north wall. Light flowed in the huge window and passed over a wooden table covered with potted plants.

The kitchen was on the east side with a breakfast bar separating the kitchen and the living area. Now, two robed people stood at the window. Without warning, a huge, glowing swarm of orange blazed low in the foggy, darkened sky. The swarm was growing larger, but remained eerily silent just above the horizon.

They became larger and larger, each element of the warm was as large as a football field. One such ship was on a collision course with the building containing the Surfaces.

In an instant the metal siding of the building was melted by the heat, warped by the pressure, and flattened by the force of an Engine vessel's mighty hull. Television, couch, plants and people were roasted and flattened in a tiny fraction of a second.

The building was shorn from its foundation and thrown into a heap one block to the west in the golf course.

Max Redwell, an old man, had gone for a jog early that morning. He ran with his dog. The beagle's name was Jeffrey. Jeffrey skipped behind his master. As they rounded a corner from El

Rancho Drive in Reno into Teglia's Paradise Park, the ground shuddered. With a bang, they felt the Earth drop a full inch beneath their feet.

Jeffrey yelped and barked. Max took to the ground. He hugged his dog as the ground almost stopped vibrating. There was still a perceptible tremor beneath their bodies. Even at seven hundred miles per hour, it still took two and a half minutes for the Engine's vessels to cross the thirty miles from the battle-plain at Gilpin to the metropolis of Reno.

When they approached, there was practically no noise but much wind. The man saw the glowing-hot iron vessel pass two feet above his head. His dog was absolutely still as the whirling masses repeatedly passed precariously close to their unarmored, fleshy bodies. Noticing the proximity of the whirling metal monstrosities to his head, he lay flat on the ground covering Jeffrey.

He peeked up. The top half of a house tumbled and bounced along the ground shattering pieces off of it with each bounce. Clattering, rumbling, the entire wooden frame of the building smashed to the ground a few feet in front of the man and his dog, mercifully rolling over him just inches from the man's upturned back. Beneath him, the dog's whimper was lost to the howling clatter of the house and its tail of debris.

A yard behind Redwell's feet, the corner of the structure struck the ground and the remnants of the structure shattered sending wood and metal exploding in all directions.

Jeffrey was protected by the man's back. He was fortunately only pelted with light debris which rained down on him and the pavement.

Then more buildings were bowled over by more ships. Flattened and tossed were cars and trucks as well. To the side of the prostrate man, a family sedan crashed a few yards away with its horn blaring. The hot wind of a passing vessel alone pushed it, tumbling side over side, farther down the street.

An entire red and brown section of a wall hurtled past the man next. It contained the rectangular outline of a window. It smashed in front of Redwell sending bricks and wood scattering as exploding masonry shrapnel.

The hot wind burned at the man's face. He was alone in the street. As the seconds marched by, innumerable other items kicked by the ships and pushed by the terrible wind wooshed past his downturned head.

Then, it was silent.

Farther west in the downtown area of Reno, a short dark-haired woman walked on an elevated walkway that crossed North Sierra Street. The bridge connected a parking garage and the Eldorado Hotel and Casino. The woman carried a briefcase and her dress shoes clacked on the concrete. Beneath her, a lonely car drove south down the street from the woman's far left.

The building had an interesting shape. The base of it was five stories tall. This was the casino, where the bridge connected it to the parking garage. Directly ahead of it was a huge tower with red neon lettering at its vertigo-inducing top. This was the hotel that stretched nearly two hundred and fifty feet into the sky. To the tower's right from the woman's vantage point was another segment half as tall. The sight would impress anyone unfamiliar with the glamor of the downtown casino district.

Then, there came the crash!

The short elevated sidewalk tumbled to the ground. The woman fell and tumbled. A second later, she was stretched on the broken, shattered concrete rubble of the bridge. Her ears were deafened from the crash and the sudden flop to the ground. She raised her eyes to see a huge sign that adorned the side of the tower plummet. After the initial crash, this second one was minor, but it caused the glass of the sign to shatter with a high-pitched crash. The splinters of glass shined in

the dim, cloud-obscured sunrise before disappearing.

She collected herself. Around her legs was the debris of the walkway. *This is going to be the longest Sunday*, she erroneously thought.

Then came the ships. The thousand, colossal, burning tori laid waste to the area tossing and shoving cars and buildings.

The famous arch that welcomed visitors to Reno— "The biggest little city in the world"— was brightly lit in its gaudy display of two thousand incandescent bulbs. It was mowed flat by a careening Engine vessel splattering electric sparks and glass in all directions.

The sea of ships splashed their way unstoppably through concrete and steel of bridges and buildings alike. A single vessel lead a pack westward on East Fourth Street on a collision course with all the buildings in its one-hundred-yard-wide path. The Eldorado's northeastern corner was completely shorn off by the swiftly-passing torus. The tower shook, turned and fell. It twisted and tumbled slowly onto the street like a toppled tower of cake with a deafening clash. The wreckage of this hotel segment was kicked farther along by the following vessels. The proud stretch of hundreds of feet of shining steel, masonry, and glass was reduced to rubble which flew, scattered, dangerously through the morning sky onto people and cars. Flaming wreckage of this hotel alone was still tumbling along the ground in the hot wind of the onslaught of Engine vessels as far west as Keystone Avenue several blocks away.

The rest of the squat building shattered outward under the repeated pummeling of still more vessels. The woman was killed instantly as the concrete of the casino smashed her to the ground flattening her skull against the hard ground and smashing her delicate torso over the rubble-strewn length of road.

The last ship to pass over the area came a full minute later. Rather than the glowing, fiery orange, this one was green. The huge horizontal slit of a door was open creating a rectangle of blackness in the distant toroidal green.

Soundlessly it passed over the absolute wreckage of the city. Here and there, a building would still remain standing: the lone sentinels left standing by calculations of the Engine that the uneducated masses would attribute to divine interference, luck, or probability: all three terms failed to capture the essence of determinism that clashed discrete, independent systems against each other.

Two men looked out the back of this last vessel that crossed Nevada westward.

"You missed a few," said Collier.

"Let them stand. We're looking for population reduction, not extermination." returned Benelli.

The two men looked with awe and pride at the battered remains of the once-proud remnants of the city.

More Engine vessels poured into the human dimensions. These, though, traveled slowly and ominously flashing into existence above New York, Atlanta, Washington DC; Detroit, Seattle, San Francisco, Paris, Berlin, London, Beijing, and every other densely-populated urban center on the entire face of the Earth.

Walking from the door across the diameter of the ship to the bridge, Benelli pondered the future. Using a few parameters learned from Nackley, he moved his simulated universe into the future. Distantly in the port side of the torus, the Engine whirred and crackled through computations of the infinitesimals that generated the universe. Given the state of the universe and the input of his invasion, he extrapolated the destiny of the world.

His clumsy implementation, however, while intending ease of mass-production and use as a navigational aid, did not afford him a clear vision of the future. He did see a struggle he had not foreseen. Pushing the extrapolation, he found references to himself and his robot army in the far

future. This meant he survived this struggle. His machines would win against any army thrown at him by the forces of Earth.

Collier approached from behind him. “I don’t want to question your judgment or anything, but why did we sacrifice all of those machines at Gilpin?”

Benelli smiled. “I thought it was obvious.”

“You mean, because we destroyed all that military stuff?”

“Exactly. The hundred Engine vessels landed after we took out Thaddeus Poel’s house. We killed some people and set fire to his place, so they rightly assumed that our vessels were capable of some nastiness.”

Collier nodded.

“So, they sent all their military units to where the vessels were. They were rightly scared of our firepower. They did their stupid firefight thinking that they were accomplishing something. Then we knocked ’em out. Sure, we had to disable a few of our own, but it was a necessary gambit.”

Collier continued nodding. “So, what next?”

“We address the pigs who run the show.”

“We’re still heading west.”

“Why do we always have to go to them to begin parley? We call the shots, so I am thinking California.”

Collier, who had lived a simple life, knew very little about California except the liberal noise he heard that emanated from the state. He had an equal apathy toward California as he had any city. The entire world could burn with no consequence to him. He mused on the bridge of that massive ship that, as long as he was returned to his tiny home in Melissa with his herd of animals, he didn’t give a damn if every other human on Earth were roasted alive.

He smiled at the thought. There could be peace and tranquility in the most absolute sense. He realized, of course, that Benelli would not exterminate all of humanity— he had said as much himself, but a reduction in humanity’s numbers was enough to set the new order of the world in its proper spin.

The fleet of speeding ships had slowed considerably when they took the western borders of southern California. Their color had returned to the proper lime-green with scorch marks covering their fronts from the heat of the atmosphere. This fleet presented itself with dented hulls, the bruises of its initial combat.

From Reno, the dented and roasted squadron of robots curved their westward path slightly south. Their path was a mere hundred feet from the ground.

Benelli finished playing with the Engine. He spoke of great success and victory to an excited Collier as the pair made their way aft once more.

The looked out the door at the brown landscape below. Their elevation slowly increased as they began the pass over a pristine, dark-blue lake. Collier sat on the floor by the open hatch, allowing his legs to dangle over the speeding void.

A wild thought crossed Benelli’s mind. It would take only a negligible amount of effort to push the sitting man out of the hatch. He would tumble onto the shores of the lake below, and he would be rid of flotsam. An evil grin passed his face.

Suddenly, Collier looked over his shoulder at Benelli. “Isn’t that Lake Tahoe?”

Benelli, taken aback by the sudden question, had a jolt in his head. Parsing the question and scraping for an answer, he stuttered, “Yeah, I think so.”

“Maybe, when this is all over and we have robots with jobs and responsibilities, I’d like to come back this way and go for a swim. Doesn’t that sound nice?”

He didn't wait for a response, continuing, "The world is too big and fantastic a place to spend a whole lifetime worrying about money and protecting the stuff you've bought." He paused, thinking and deciding. "Yeah. It's better that we pay as a species whatever we have to pay to fix everything."

The grassy mountains of the Sierra Nevadas appeared beneath them. The beautiful evergreen forest quietly stood, oblivious to the toils of man and machine.

The clouds still ominously shaded the sky in Sacramento as they had in Nevada and Texas. From the grayness that hung over the urban center came the thousand scorched, green vessels. The people of the surrounding city were divided. Small crowds eventually took to the streets.

By nine o'clock local time on Sunday, November ninth, the population surrounding Sacramento had taken to the streets in the city. Every radio and television on the entire planet was watching some local squadron of Engine vessels. Carnage, the complete wreckage of Reno, and the terrified words of witnesses comprised the sleepy Sunday morning's news. The earth belonged to the controller of the Engine ships.

That man drifted over Sacramento in the first Engine vessel with his copilot and the crew of ten who still remain bunked in the starboard storage.

Watt Avenue and Marconi Avenue were crowded with cars and people as this one ship sank lower to the ground. The two men at the cargo door— one standing and one sitting with his legs dangling— were close enough to see the peoples' surprised faces. Some waved and cheered while others in the throng yelled obscenities regarding the wanton destruction caused to the east.

Men and women lined the streets as the single Engine vessel slowly made planet-fall in the Del Paso country club. It was a rectangular chunk of green space surrounded on all sides by opulent housing for the wealthier members of the California population. Regal and sprawling were the houses that stretched the tiresome length of Marconi Avenue across from the country club, and opulent was the country club itself. The eighteen holes of the golf course and the swimming pool— directly west of the castle-like club house— stood enshrouded in morning fog. These buildings in all their gaudy glory patiently awaited their new, robotic overlords.

Slowly and with defiance to each human who shouted, the ship settled down on top of the clubhouse. The building was mostly wood with yellow siding, many gables, and a covered driveway near the entrance. The long asphalt driveway terminated on Marconi Avenue with a gate and a surrounding white-brick wall. Outside the wall were carefully-pruned trees and well-manicured grass. While most of the trees were evergreen, a few in the courtyard of this pretentious playground for the rich had lost their leaves and their white trunks and branches reached with placation to the low, gray sky.

Then, there came the torus finally thirty feet from the ground. Soon the expanse of the space ship kissed the roof of the clubhouse. Its descent continued and the clubhouse whined, cracked, and gave way beneath the awesome weight of the massive, downward-moving vessel. Windows shattered and spewed glass onto the carefully-swept driveway. Boards of lumber and sheets of siding were tossed like playthings across the tidy lawn. The handful of people inside the building ran as the covering to the driveway collapsed like the pretentious waste of materials that it was.

Golfers turned in amaze at this spectacle and divided: some ran toward the gigantic spaceship while others fled north toward Pope Avenue.

The ten robots exited the vehicle first, basking in the radiance of the dim sun. Collier and Benelli left next, standing amidst the robots.

Collier shouted, "We'll wait while you guys fetch some representatives. We have some things we'd like to discuss."

The minutes passed and the two men and their robots stood menacingly glancing at the growing

crowd outside the gates.

A black car sped down Morse Avenue and turned onto Marconi. When the gates open to allow the car into the driveway, the crowd burst through them as well. A squadron of police cars and a heavy, black van followed the leading car. They stopped in the driveway in front of the wreckage, attempting to keep a safe distance from the bizarre metal men. Uniformed police rushed from their cars and from the black van. A man in a suit stood in the center with a line of armed guards in front of him.

"You wanted to talk?" said the tall old man with thin, short gray hair. His suit was well-made and his shoes shone, even in the absence of direct sunlight. His hands rested casually at his sides. He had an uneasy but good-natured smile on his face. "I think we can work something out."

"I hope so," said Benelli over the two lines of guards. "I come with words of revolution. I have a large and complicated message, and I want you to do your best to understand."

The old man in the suit laughed. "I'll try my best."

"Don't laugh at me! I have a legion to do my bidding."

"Then do it, good sir! I'm listening."

"If you haven't noticed, my legion stretches across the entire Earth. I simply require you to carry my message. I want every human to stop their work and take to arts, literature, education, and the hunger for knowledge. I want robots to replace all laborers so that humans may take part in sport."

"And what's to become of money?" asked the man.

"Every human will have what they need and a percentage of what they want. We need something new. We need something different. Humans can't reach their potential. We're being bogged down in management... in house-keeping. We must control production robotically. We must eliminate government corruption and waste. Therefore, allow the robots to build while we innovate1 Allow robots to handle paperwork and trivialities of government while we philosophize! We can't explore and express ourselves because we have to deal with money and establishing ourselves."

The man smiled. "This is a noble thought. I'm sure we can put a plan into action."

Benelli did not return the smile. "At least forty percent— and I'm being generous— of the human population must die."

The old man peered at the gray skies. There were no gaudy tori marring the sky here. His brown eyes returned to Benelli. "Why?"

"Humans are scum! A man ran off and left me to die in a parking lot ten years ago! I've lost both legs below the knee in the same incident and the government you represent paid me handsomely not to mention it. The humans have perpetrated heinous crimes against each other and against the Earth itself. Forty percent, sir!"

"Here, we might have a problem."

Benelli clapped one of the robots on the shoulder. That robot extended his arm for the other robots to see. Then, all ten shouldered their rifles and took aim. Some aimed at the suited man, and others and the throng behind him. The remainder focused on members of the uniformed militia extending across their field of view. The people peering through the gate scuttled back into the street.

"Then what do you suggest, sir? Your next words decide the fate of everyone. Either you help me, and we round up prisoners, elderly, and other lives that the human race would least mind sparing, or we do this my way and get a random sampling."

"I am not authorized to make this big a decision."

"Then I highly recommend that you find someone who is."

"Understand that nobody can make that kind of moral choice!"

"Then, I give you half an hour."

The two men stood silent. Tall, with his blond hair waving in the chilly wind, Collier defiantly gazed at the perplexed man. Shorter, wider, with thickly-padded black clothing and gray hair, Benelli sneered at the man who hurriedly meddled with a mobile phone. The back of his suit faced the two men surrounded by their robot protectorates.

The minutes tensely marched. The suited man hurriedly and mutedly spoke into the telephone. His cool composure slowly and visibly gave way to anger, revulsion, dismay, and eventually a deep morose. Fifteen minutes had passed when he closed his phone. The old man stood straight and glanced sadly at the pair of men in their silver circle.

Wide were his eyes and clear was his voice. He addressed them, "The United States has, and always will, decline negotiations with terrorists. We will fight you, and we will win!"

"I think not," muttered Benelli, raising his arm and clenching his fist. One of the robots saw the signal and stamped his foot. The heavy foot, built on the dead star with far more gravitation, sank through the concrete of the driveway. The reverberations of this act caused each other robot to mirror the action.

The old man, startled, turned toward the growing throng at the gates. He started to run away, fearing a more overt sign of aggression. A news camera crew was pointed on the man and his death was streamed live into the homes of every conscious human on the planet. Five laser rifles bore their angry charge very quickly with roaring tumult into the back of the speaker for humanity. The charred body fell with a vacant expression and the blood splashed the pavement. The robots marched toward the gates with rifles aimed. The five who shot ejected their yellow, metallic cartridges and left them uselessly lying on the ground. From the deep pockets formed by their leg cowling, they reloaded.

The last robot who followed did not bear a rifle, but carried on his shoulders a heavy crate of ammunition only.

Each of the Engine vessels contained a basic radio system. Since robots weren't human and could not speak, the computer systems— the Engines— aboard each vessel were in communication with each other. Now, aboard the million Engine ships, monitors displayed the go signal. The planetary relay from vessel to vessel commenced. Each robot signaled to each other robot the command to invade the Earth and demolish its population.

In every city across the world, tremendous lime-green vessels, each a hundred yards across, descended to the ground. Benelli and Collier returned alone into their vessel which, with a tumble of thunder and a flash of lightning, disappeared from the demolished golf course.

In Washington, D.C., a torus descended on the gothic, church-like Healy Hall at Georgetown University sending the ancient gray bricks tumbling earthward. The gigantic steeple in the center of the building fell forward and toppled with no effect onto the ship. The common area in front of the building— usually a playground to sauntering, pretentious and wealthy students— became a scene from hell as the one hundred occupants of the torus crashed onto the lawn.

Here, the midmorning sun shone on the robots, and they twinkled in the golden light. Truly beautiful, each magnificent war machine lugged its rifle and jingled its metallic ammunition across the well-manicured lawn of the hysterical university.

Each young, impressionable, wealthy human was slain where he stood. Small bursts of thunder erupted from each rifle as it blasted forth burning death.

It was a chilly morning in New York City as the Engine vessels rapidly made their descent. The clear sky and bright sunlight were lost on the streets in the shadows of the tall buildings that strove

to touch the clouds.

On Broadway between forty-eighth and forty-ninth street stood the gigantic Crowne Plaza hotel. Beside it stood the Hershey building, and across the street was M&M World. Sweet smells of chocolate adorned the sidewalk as gigantic shards of glass and steel rained down to the pavement and the screaming tourists who desperately ran for their lives. The four-hundred eighty foot tall hotel with most of its body covered in glass was assaulted by one of the landing vessels. The Morgan Stanley building, another titanic tower of glass, was completely crushed. The assaulted hotel, dented and inwardly crushed on its southern side, fell slowly showering sparks and glass as the mammoth building, like a felled tree, heaved upon the ground below.

The confections merchants that surrounded the hotel were pulverized by the gigantic Engine vessel. Beneath the debris of the fallen buildings, the reinforced vessel's doors opened and robots marched into the square.

The subway entrance near forty-eight street was mercifully spared. It was buried only under the debris of its metal and glass covering, which was easily removed by the scared mob of survivors. The street was covered in debris piled over the heads of the city's occupants. The shining silver robots climbed these barricades of crushed metal and masonry as they took to the streets. Five of the robots broke formation and descended the concrete stairs to the subway.

Hundreds of people took to the subway tunnels, running down the cold tracks, fearing no train as they were pursued. The clatter of iron feet sent fear down the spine of the mob. Each of the fifty people were bundled in their dark-colored coats, with hair streaming, eyes wide, pulses pounding, and arms grasping. Each supplicated to their own deity. Each clung to some hope for life as they were mercilessly slaughtered by the five robots pursuing.

Bright red were the flashes of light and thundering were the heavy thuds of metallic feet. The mouthless, earless engines of metal and mineral stomped across the city with their rumbling weapons ablaze. Rows and columns of fleeing, screaming people were torn asunder by the flashing, roaring rifles of light and fire.

By the thousands, the densely-populated urban center was exterminated of its life.

Tori landed on Joe DiMaggio Way and sprawled eastward from the waterfront into Manhattan while other tori landed on the Franklin Roosevelt Drive on the East River and the robots exploded westward from under the shadow of the United Nations building.

Soon, the laser rifles with their flaming chemical pulses had started fires in the heart of Manhattan and smoke filled the streets. Any survivors of the physical desecration of the city's structures and the robotic onslaught were trapped by the elephantine embers of incinerated papers and office furnishings from tumbled office towers and flaming mattresses and textiles from demolished hotels. The crackle of the flames were dwarfed by the noises of scuffling human feet, the heavy clatter of robotic feet, the distant screams of human voices, and the heavy thuds of the robotic rifles.

The vast expanse of the New York wasteland stretched for miles as, even a half-hour later, more tori came to land on the five boroughs of the enormous city.

Across the ocean in Europe and stretching across the Middle East and farther, stretching north and south across the entire globe, a metal grid-like gauntlet grasped the planet with the million Engine vessels and the multitude of metal men.

The cloudy, afternoon sky over of Lisbon, Portugal saw a handful of pleasure boats sailing south of the Avenida Ivens and the gravel shoreline. Beautiful, rustic residential buildings overlooked the peaceful scene as a lazy Sunday afternoon unfolded. Long, dim shadows were cast over the crystal-blue waters by the sails of the handful of pleasure boats. Laughter could be heard though the mild air.

Soon, though, ominous circles appeared in the sky and the boats hastily attempted a retreat toward a nearby northward-running canal.

A single torus slid from the sky, a thick dash marring the horizon, splashing into the river Tagus. The Iberian Peninsula was under assault. A gigantic wave of water toppled the boats like playthings. The foundering boats sent tumbling pleasure-seekers into the chilly water. One unlucky yacht was in the direct path of the torus. The wood hull and delicate mast were splintered and smashed. The desperate passengers who clung to the hull were smashed, too. Their limp, waterlogged bodies floated lazily in the wake of the ship.

In the light of the afternoon, the beautiful Eiffel tower toppled onto the wide green of the Champ de Mars after a titanic, green Engine vessel smashed two of her beautiful legs. In the dark of night half a world away in Beijing, the tall, octagonal Pagoda of Tianning Temple splintered and twisted as it was crushed. Beautiful, centuries old carvings of wood were demolished as the ship struck the solid Earth below the ancient structure.

Silent robots poured into the streets: Beijing, Lisbon, and New York City were the same under the violent discretion of these metal monsters.

Seas of millions of robots took control of the world with algorithmic, programmed precision.

Shouting and alarms rattled the men of Fort Myer near Washington, D.C. as the American population prepared for futile retaliation. The base was situated on the western edge of the famous Arlington National Cemetery. Legions of uniformed and armed members of the army who proudly served their nation rattled forth from the red brick dormitories and took Jackson Avenue by foot. At a quick march, they traversed westward toward the fallen Washington Monument one mile distant.

Hearing the shouts and screams of their fellow citizens, these infantrymen desirously rushed to their aide. Battalions took the Arlington Memorial Bridge and crossed from Virginia into the nation's capital. The four-lane bridge was swamped with the fast-moving green mass of humans. They marched counterclockwise around the Lincoln Memorial into West Potomac Park. Across the famous reflecting pool and past the memorial for the Second World War, these young men saw debris and wreckage from the mechanical invaders. Three gigantic tori littered the grass and winding walkways surrounding the fallen obelisk with oceans of silver pouring from each.

Instantly, the woosh of thunder and the blazing rush of red lightning poured from the front lines. The human army rushed at their foe, trampling over the front lines of the first-fallen.

From the sky, a helicopter witnessed the green sea of humans charge recklessly headlong into the slow-moving, shambling, heavily marching iron amalgamation of metal infantry. The two seas clashed together. The red lightning never ceased. As one robot reloaded, dozens fired over his shoulder.

Spearheading the silver march was 4887 with a purple crystal stripe over his head and a pair of huge, semi-luminous yellow eyes. His ammunition was already depleted as the distance between the two armies closed. 4887 raised his glistening left arm and brought it heavily down on the first soldier he met. Private John Markham fired wildly at 4887 as he felt an intense, sharp pain smash down on the top of his head. A blistering crack filled his ears. Dented was his green, metal helmet and red was the copious blood that poured from underneath it. Heavy became his body and the armor it carried as, with only this single strike, he fell heavily to the ground. 4887 lifted a leg and smashed the young man's skull sending the darkness before his eyes.

The blazing sun continuously energized this metallic army. Over the shoulders of 4887 and his brethren came the whirling, blazing, roar of fiery death, and line after line of human infantry lay low after being slain by the icy silver menace.

The human army, still thousands strong, bravely marched. They saw the faintly-glowing eyes

and head-stripes of thousands of colors repeated in the million silver men.

Corporal Denning's black combat boot marched over one of his fallen comrades. He recognized some of the dirt-covered faces that passed under him. He held his weapon at the ready. The only skin that he left visible was his pale, scared face. His brown eyes were wide and his eyebrows were in a permanent state of surprise. His mouth was tightly shut. He ran behind two other soldiers. He awaited a clear shot at the looming enemy. Finally, the man in front of him was blasted with the red lightning of death and Denning squeezed his trigger. The weapon sprayed a tight circle of metal death at the unarmed, yellow-eyed death-bringer. Metal rounds sang off of the iron shell, sometimes denting the aggressor's tough metal hide. The man raised the stream of bullets to the robot's face. Dozens of rounds clinked out of the barrel of the rifle before one round, more treacherous than the rest, chipped the crystalline eye covering.

Just a few feet distant, the robot turned and glared at the man. Inside the head of the robot, inbound light traversed the crystal eyes into a thousand photoreceptors. By a certain threshold, similar colors were posterized together to form shapes. The onboard computer calculated the shapes into several known items and comparing the locations and orientations of these shapes gave the robots movement information. Interpolating the path of the flesh-colored oval, the computer center sent signals to the motors controlling his left arm. Quickly raised, the metal arm clenched its five fingers into a fist. Twisting the torso and shifting its weight forward, the warlord numbered 4887 twisted the perfect punch, throwing the metallic fist into the Denning's face breaking the nose and protective boney structures into the soft, gray brain behind them. The darkness took Denning as his limp body fell to the ground. The blood from his facial cavity spattered the already bloody grass of the park.

Across Texas westward to California, clouds covered the sky and the robots took a more defensive line. Passing ammunition from the center of the robotic sea to its perimeter, laser rifles fired outward into the human populations that approached the silver sea. They did not waste energy by marching, running, punching and slaying people by more physical means.

In these areas and across the sea in Asia where the darkness of night covered the skies, these defensive cordons of robotic infantry kept people in their homes safely away from the solar-powered onslaught.

In every home, television signals carried truths of the robotic destruction of every achievement that brought pride to humankind. As Mehring watched the television screen with his wife, each pressed firmly into the arms of the other, the two hands of the ticking clock in the kitchen reached for noon, and the death toll struck ten million human lives.

Chapter 10

Far, far away, the three planets called Ore lazily hung in their orbit around the brown dwarf. They were deserted now that the occupants were invading Earth. Entire cubic miles of the planets' surfaces were missing. The orange sun set on these huge pits that mined the metals, minerals, insulators, and thousands of components that became the invasion force.

No more invaders were on their way from these cold and barren wastelands.

Snuggling in the comfort of each other's embrace, the Mehrings watched in silence as news of the robots' movements were covered by the press. Fantastic video crossed the screen when a low-flying helicopter was assaulted by the lightning guns. The proud helicopter lost its propellers in the attack and the mighty bulk crashed to the ground killing the three people inside.

Video of this wreck was available from the points of view of the falling helicopter, another helicopter, and a bystander on the ground. A bright red bolt of glowing laser fire struck the helicopter near the point where the main rotor attached to the fuselage. As it struck, bright flames sparked and the nose fell. From the camera aboard the doomed vehicle, the tall pines and brown plain rushed upward. First the sky was the only visible thing, then the camera dipped and the ground filled the view as it ran forward gaining in size and clarity before there was nothing.

Suddenly, breaking news startled Mehring. Cameras took to the skies once more as purple dots scattered over the sky like some sort of disease. Over the next half hour, the spots grew bigger and a tiny fleck of golden light joined their ranks. Another fifteen minutes passed and the world, witnessing terrible displays of death and dread with each passing moment, looked at these with cautious hope.

Commentators spoke on national television. An woman with deep brown eyes and black hair spoke to the world with an Indian accent.

"This is Jalpa Tharakan reporting live from Dallas." Mehring leaned a little closer to the television. His wife paid closer attention, too.

"The golden object as been reported by local astronomers to be heading toward our region in the next few minutes. As we look at the sky, we see the ship taking form. Experts describe it as a submarine from our past The question still remains on everybody's mind:—"

Mehring and the newscaster spoke at the same time, "Who's side is it on?"

Time would quickly tell. A purple ship completed its magnificent journey of guiding the golden mother-ship. The golden ship and its purple protector landed in Lancaster south of Dallas. By the lonesome airport stretched mammoth fields of amber interspersed with winter-stripped trees. Mehring recognized the area southeast of DeSoto whose panorama the television screen. Loosed from their tight embrace, the Mehrings watched incredulously as these new invaders landed.

"They've gotta be friendly," Chris reasoned. "Look at that beautiful ship."

"Purple. That looks like glass," she commented.

"I meant the submarine. That is classy."

The woman nodded. A familiar man stepped out of the bridge of the bronze-plated submarine. Mehring almost instinctively jumped up and grabbed his brown jacket.

"Honey, I should go."

"I'm coming, too."

He looked into her eyes. Her eyebrows arched and her head lowered. Her beautiful blue eyes glanced pointedly. His big, bearded face twisted into a smile. He kissed her on the forehead and nodded his head toward the front door.

"Let's go!"

She nodded, flicked off the television and closed the door behind them. In the brown car they sped toward the landing site, toward Thaddeus Poel.

As the Mehrings drove down Dallas Avenue and turned onto East Belt Line Road, the blond woman looked at her husband. Over the aging car's sputtering engine, she said, "That was Thaddeus, right?"

The man nodded his big, red, bearded head. Looking past his wife, he saw a large, ugly two-story house with a gaudy, covered porch. The house on his side was obscured by the thick, leafless branches of a small stand of trees. He pulled to a smooth stop at the intersection.

"Thaddeus has always struck me as somebody who would do all this. I mean, you have to wonder what the purpose of the Universe was."

They made the left turn and passed a flock of metal men standing in front of a large, industrial building. The metal men took no notice of the passing car.

"You probably should have stayed home," he added, nodding his head over his left shoulder at the collection of silver masses.

"Chuh!" she said.

Before they could finish their thought, a blast of thunder came from beyond the driver's side of the car. The swarm took notice and was firing prodigious volleys of red laser plasma at the car.

Mehring mashed the accelerator and wove the car left and right making a more difficult target for the mechanical monsters. There were only two intersections separating him from his target. He had only a second to make the decision, so he pulled the car left onto Lancaster Hutchins Road. The robots still carelessly fired at the car. Like cracks of thunder, he heard the terrifying iron beings shuffling their heavy feet just yards out of his window. Their glittering colors, their shining silver, and their varying shapes and sizes could all be seen too clearly for comfort.

Some long seconds passed as Mehring lowered his body. He threw his seat back into the farthest position. His legs stretched at the pedals as he stuffed himself as low into the car as he could. His wife, noticing his example, followed his movements.

The thunder behind them slowed. The large, industrial building now separated the robots from them. They passed another intersection and made a hard right. Trees passed the right side of the southbound car. There was only a second as the car made a quick left back onto Belt Line Road that the robots had a clear line of site at the brown car. It took them too long to react, however, and the car safely went beyond a stretch of trees.

A mile separated Mehring from the tiny Lancaster Airport. Still, beyond the airport, he saw a purple glow coloring the bellies of the dense clouds.

The road was vacant and Mehring pushed his car as fast as it could go. Less than a minute's span saw Mehring pass the airport and pull into the farmer's field. Here, larger than any building

he had ever imagined sprawled a vast, gargantuan, glass-like, purple spaceship. In front of it stood a golden Type U 31 submarine and a gulf of police, reporters and cameramen.

Mehring excitedly waded through the sea of people, pushing police out of his way. His wife desperately strove to follow.

In the midst of the gulf stood a thin man who looked older than his true age. Long, gray hair covered his head and bright blue eyes were covered by silver glasses. His long face terminated in a short beard and mustache. His long, thin body was engulfed by white clothes. The purple glow shone off the gold of the ship. The gold and purple blur provided contrast to this white man. He looked godlike as he raised an arm and beckoned Mehring and his wife closer.

As the three people greeted each other, watched by the world, countless other mile-wide purple ships cluttered the skies over urban centers.

Over Half Moon Bay in California south of San Francisco, a gigantic glowing vessel poured purple light over the cloudy shoreline. A pair of black ropes separated by long, purple, metallic cylinders descended: a rope ladder connected the heavenly vessels to the green grass that separated housing developments. A purple haze of pure energy covered the tops of these wide ladders. Thirty-foot-tall men appeared from the glittering lightning and descended the ladders. They began marching east over the mountains separating Half Moon Bay from Woodside, Palo Alto, and Sunnyvale. The legion of twenty titans carried no weapons. Their marvelous size and their stern faces inspired hope.

Over the hills separating the bay from the gigantic, twenty-mile stretch of housing developments, suburbs, and general human development from San Francisco to San Jose came the Imbellis giants. Ten miles separated the white-robed Imbellis giants from the silver-bodied robots who occupied the spacious campus of Stanford University.

All eyes on the west coast watched the silver defenders stand on the copious green lawns. Behind them stood the partially-demolished salmon-colored stone buildings covered by red roofs. The long, rectangular buildings and beautiful arcades were smashed by the tori. Now, a new assault came. Wading across the golf course on the southwestern edge of the campus, they made their path toward the Main Quad and Oval in front of the school. Single-file, they marched their ground-shaking march past the Roble Pool and the Godzilla modular building, right onto Panama Street and left on Lomita Mall. Each of these paths were wide enough for only one Imbellis at a time. Even then, the waists of the titans were brushed by the towering, bare trees that lined the way.

The robots stood stock-still: motionless but fearless against the invasion. They faced the newcomers with raised rifles.

Poel greeted Mehring.

"We've gotta hurry," Mehring said, "because there's no place on Earth that isn't under attack."

"If we stop their leader, they will be stopped. He's the only one who can give the surrender order to his robots."

"Where is he?" Mehring asked. "He was in California, but the television said that he just disappeared."

"He's probably gone to Washington by now."

The first Imbellis rounded the Math Corner and came into the line of sight of the shining, silver, robotic sea. A clack and woosh: rumbling where the waves of rifle fire as a hundred robots fired their weapons simultaneously blowing the black-haired, friendly-looking head off of the giant. His white robe was black with scorch marks. His chest bubbled and exploded from the crazy heat that permeated his gargantuan frame. His remains sank sideways smashing the trees that lined the western side of the oval.

Then the rhythmic rumbling of footsteps increased in sound and frequency. The followers of the fallen giant began to sprint.

The next Imbellis into the arena was a woman with long, dark hair. Her wise face was compressed with anger. Her downturned mouth opened and let out a scream as twenty guns trained on her flowing, heavy, running body. Her arm five feet in length scooped at the sea of six-foot tall robots. Despite their heaviness, her prodigious strength pushed twelve of the forward robots reeling backward into the ranks of the robots behind them. Their rifles went tumbling to the ground and ammunition tumbled from their cowling.

Mehring, his wife, and Poel climbed aboard the golden ship and departed.

"The question is," began Mehring, "did you know all this was going to happen with the Universe?"

Poel smiled, "Yes. I played my part as I knew I'd play my part. All is foretold by the Universe."

"It's destroyed now," said Mehring, sadly.

"Yes, I know. When we survive this and the surrender takes place, perhaps I'll build another so the true history of the world can be published, and some of the deeper secrets of science can finally come to light."

The cramped interior of the submarine was almost entirely gray. Purple levers marked the additions of the Imbellis. The curved walls and floor were entirely made of metal. Husband and wife stood side by side on the bridge beneath the ship's tower. By the controls stood Poel. The three humans were jostled and bumped as the ship rose to the air, turned and started its course eastward.

"Why is this happening?" Mehring dared to ask.

"Didn't Benelli say anything on television?"

"He mentioned that humanity had wronged him ten years ago."

"By 'humanity', he meant 'me'," admitted Poel. "Anything else?"

"He had some ideas about labor and the controllers of production... eliminating government corruption and lots of other lofty talk. Supposedly, the robots would bring that change. What happened ten years ago?"

"Nicholaus and I stole some data from the Superconducting Super Collider just before a causality resolution collapse manifested a huge neutron explosion, killing all life in the facility," Poel said with a serious expression.

Mehring's wife looked confused. Mehring's mouth opened and closed several times, stuttering incomprehensibly. "That means you pressed on a dimensional barrier and it emitted... something... to distort the very nature of determinism?"

Poel smiled and shook his head. "Well, something like that. Now, I need both of you to help me so we can prove our loyalty to the nation."

Seas of infantry poured into Fort Myer by helicopter and cargo plane. They raced along the paths followed by the predecessors toward the green land surrounding the Washington Monument where they were constantly being mowed down by the robotic infantry.

A purple ship was led by the floating golden submarine.

At Stanford, the stream of giants of various shapes, colors and faces mashed down the ceaselessly-firing, gleaming, emotionless robotic force. From the Gates Computer Science building came a fleet of students who, that weekend, were playing computer games in the lab. There was one block of buildings separating these students from the battlefield. The leader of the group was a blond-haired youthful looking man. They charged toward the war fields with a singular purpose: capture a fallen robot.

In a grove of trees at the edge of The Oval a robot lay in the grass with his twinkling pale-blue eyes looking up at the gray skies. His chest was dented in from the titanic punch of one of the towering Imbellis. The blond man and two of his compatriots– a lanky man with a tuft of hair on his chin and another, similar looking man with long brown hair– grabbed the shoulders and legs of this fallen, blue-eyed robot.

From the back of the robotic legion, however, a swarm of robots broke their attack from the giants. While laser rifles blasted and huge, pummeling punches took place twenty feet from the three students, this new troop of robots formed and took aim at the three students. Feeling the hairs stand on the back of their heads, the students ran from the thundering, bloody plain. The troop of ten robots fired simultaneously blasting down the student– the long-haired man– carrying the feet of the robot. He fell to the ground feeling pain for only an instant before the icy grip of death clutched him. The feet of the robot clattered to the ground. The other two men regrouped quickly and heaved the robot toward the Gates building. Trees partially obscured their movements which gave precious milliseconds of time as the robots reloaded and adjusted their aim.

Suddenly, another charging juggernaut rounded the Math Corner from Lomita Mall and took The Oval. Dashing headlong into the separated squadron firing on the students, he pummeled the robots, denting in the hard, iron faces. The long-faced giant heaved his elbow into the neck of one of a red-eyed robot sending him tumbling sideways to the ground with a shower of sparks pouring from the point of impact.

The students were safely behind the Gilbert Biological Sciences building in front of their destination. Breathing heaving sighs, the two students took about their work.

Said the blond-haired youthful one to his rugged partner, “Well, Cliff, the hard part’s out of the way.”

The second man shook his head, “Yeah. Now, all we have to do is dissect an alien robot, figure out what makes them aggressive, devise some way of turning that part off, and then finding a means of doing the same thing to literally millions of other ones.” He narrowed his eyes, ”Piece of cake, Clete.”

As the two men lugged the fallen robot warrior into a computer lab, the east coast of the United States saw Poel’s ship. A red-bearded, balding man’s face appeared on the exterior bridge atop the tower. He was shouting directions down the hatch near his feet. Inside, on the main bridge Poel steered the ship. Across the bridge at the firing controls stood Cathy.

“Give me another five degrees port!” Mehring shouted.

Poel shifted the coasting vessel to the left. He called back over his head, “How’s that?”

“Looks good! Fire away!”

Poel looked to Catherine Mehring, “Give that lever a pull.”

She pulled the gigantic purple lever and the sound of flowing liquid came surrounded her in the double hull. The ship violently shuddered and the exterior of the bow exploded in kaleidoscopic light. Whirling sheets of bright plasma poured in a straight line from the bow of the ship.

The green sea of soldiers on the ground below stopped their brave assault. Hurtling fire of every hue from the skies above them, the golden ship inspired them with renewed hope. Hedged in by the dead bodies, the weary men were on the verge of retreat until this heavenly beacon rained down certain victory from the sky. They gave a loud cheer as the bright bolts of colorful, prismatic matter hid the robots in voluminous light.

The human soldiers covered their eyes when the luminescence began to burn their eyes. The robots without eyelids attempted to cover their large, beaming eyes with their arms awkwardly, but could not. The sheer quantity of light was too much. Built in the dim light of a dying star

and exposed only to the light of Earth, these beings were quickly rendered blind. Fried were their photoreceptors.

"Sweep the ship back and forth about ten degrees each way," Mehring shouted.

Poel turned the wheel.

Mehring's wife kept a watch on the dials and meters surrounding the lever. Things were steady. Their blinding assault continued.

In the splendor of the sweeping incandescent beam, robots surrendered. The robots stopped charging at the presence of this new light. Now, the blinded warriors dropped their weapons and stood motionless. No sensory input meant they could take no meaningful actions.

The remainder, sensing imminent technical failure, threw down their rifles and raised their arms over their heads, crossing their forearms. Robots behind those who surrendered saw and processed the gesture. They, too, dropped their weapons and raised their arms, making an 'X' over their heads.

A hundred feet in the air, looking down, Mehring shouted, "You can stop! They're surrendering!"

His wife released the firing lever with exasperation. Even in the ship, exuberant shouts could be heard from the happy soldiers, even as they waded through piles and piles of their fallen comrades. Happy not to face the same fate and happy for victory, they cheered the red-headed commander of the peace-bringing sky-vessel.

The green torus containing Benelli and Collier smashed into reality above the debris of the Washington Monument, behind the rows and rows of their robotic legion. Glittering blue sparks tumbled to the ground fifty feet below the slowly-descending ship.

The golden U-boat landed directly across the park from the green ship. The Mehrings and Poel descended. Collier and Benelli disembarked. They approached each other. News crews crept closer to the five people who held the fate of the world in their hands.

Across the sweeping landscape of North America, humans barricaded themselves in their homes. They glued themselves to the television. Robots battled the giants in every urban center from Stanford in California to the Inner Harbor in Baltimore. Now, here, in the nation's capital, five people casually walked toward each other in the shade of the half of the Washington Monument that still feebly stretched skyward.

"Tadpole," said the insulated, short-haired man in black with a nod.

"Shotgun," said the tall, long-haired man in white with a nod.

"Your gigantic humans are foiling my plans."

"You should have seen it coming. Given a deterministic universe and the data you had, none of this should have been a surprise."

"Given a truly deterministic universe, I would have succeeded."

"Someone's model is clearly mistaken," said Poel, "and it's clearly not mine."

"You don't know everything! I have a plan— a dream that was much bigger, better, bolder than anything these stupid humans have ever dreamt!"

"At the cost of how many lives, Benelli?" came Poel's serene voice.

"Lives?" he shouted. "Lives? What is life? Determinism means that everything we do— everything that happens, all events of the past and the future are unchangeable and the direct result of all prior voluntary and involuntary actions. That means that my robots, the saviors of ungrateful mankind, are just as alive as you or me. We are all part of this fantastic system, this gigantic universe, and no one entity can have any responsibility for its actions!"

"No!" Mehring interrupted. "While you're technically correct, we can have parameters and our actions, while they have their causes, also cause the consequences. You've got to pay the

consequences for this damnable abomination... for this assault on the entire human population. I demand that you stand trial and formally explain yourself. You'll understand when this is finally over that..."

Then, there came flashes in the sky as another legion of robots advanced from the south. The four millionth Engine vessel had landed in Crystal City and its occupants, having raised the town, was crossing the Potomac into areas just south of the argument.

The purple disc that hung heavily over the National Mall just east of the Washington Monument began to burn brightly and cast a purple light on the ground one hundred feet beneath it. Suddenly, familiar rope ladders appeared and tumbled down to the ground and the gargantuan fighters for humanity, the Imbellis, began to pour onto the National Mall and sprint westward.

Past the Smithsonian and Museum of Natural History they stomped. The stampeded gained in size as more and more disembarked the ship. They slid and ran fearlessly down the twenty ladders as quickly as they could. Finally, the head of the group passed the National Museum of American History on their right as the debris of the Washington Monument came into their view. Thirty feet tall they stretched: the gigantic saviors with flowing white robes rushed onto the plain, carefully avoiding the human clusters with their mammoth strides.

The silver invaders shambled northward from Maine Avenue and filed orderly onto the plains. They fired indiscriminately. Ignoring their frozen comrades farther south, they charged like shining silver knights into the fray against the giant juggernauts. A titan with short brown hair and a determined face punched the head off of one of the metal monsters before one of the victim's brothers shot a searing ray of light into his gigantic arm.

Another titan, this one shorter, attacked with a swing of his arm and took out twelve of the monsters with a single swipe. They fell back onto the ground with a tremendous tintinnabulation. Bright red flashes of light struck the poor Imbellis' forehead causing it to rupture and his blood oozed from the top of his head like a fountain onto the besiegers and the cold ground. He tumbled and cold death closed his eyes.

Three more of the silver men like triplets with glowing red eyes at a very round Imbellis woman. She kicked the head off of the center robot's torso, spun, and punched the shoulder of another. Being much taller than the robots meant the kick was easy, but the punch required her to be below her center of gravity. While sparks poured out of the injured robot, the third took advantage of her odd balance to throw her to the ground by kicking the leg still on the ground. Her graceful combat display was interrupted and she fell to the ground. The red laser blasted a hole in her arm and the blood flowed copiously. Raising herself to her full height, she swung her injured arm as a matter of principle. Two more robots came behind her in ambush. She swung her lacerated arm at the last red-eyed attacker and as it swung through the air, the deep red blood trailed like a ribbon. At last, her clenched fist made contact with the silver of the robot's face instantly decapitating it. The two ambushers squeezed the metallic handles of their laser rifles and two hot bolts of pure, fiery energy poured into the back of the Imbellis woman's head.

One of the robots was out of ammunition and fighting an Imbellis directly south of the ruins. Butting against some of the frozen, cross-armed legion, they punched at each other. The tall Imbellis attempted to squash the smaller robot into the ground, but a second robot was consuming his attention. When the second robot had successfully diverted the giant's attention, the first robot grabbed a rifle from the ground where one of the surrendered units had dropped it. As the titan returned to the first robot with a swiftly-moving fist, the robot opened fire. The giant dodged to the left, crushing the second robot and avoiding the shot. The bright red bolt of fire carried across the plain and struck Benelli in the back. He fell over onto Poel and Mehring with his eyes clouded

by agony.

Seeing Benelli fall, one of the robots instantly surrendered, raising his arms over his head with the forearms crossed. His rifle fell to the blood-soaked grass with a thud. The groans of the titanic combat suddenly stopped as the thousand besiegers did the same.

Across the country in California, the two students in Stanford's Gates Computer Science Building rigged the dead robot in the gesture for surrender and placed him on a cart. They wheeled him around the Math Corner onto The Oval. The robots failed to notice the lack of gleam in the decoy's eye. They dropped their rifles and assumed the same position.

Eastward, near Reno in Nevada where the initial assault occurred and where a hundred tanks and thousands of men lay slain, humans had descended on the smashed and scattered robots like vultures. Using wood or metal, any material they could find, they forced the robot's arms into gestures for peace and paraded them wherever they could.

Meanwhile, in Washington, Benelli fell to his knees. He opened his mouth to speak, but blood poured out instead. He saw it dribble onto the grass where enlightenment should have soared. His head reeled as dizziness took him. The sound of the words of the panicking people sounded as though they were miles away and heard through a sea of water. He swayed.

He thought, since he could not speak: *This universe cannot be deterministic. There must be a God who punishes us for breaking His commandments, for otherwise, this world would be mine. My trespasses would be forgiven by the glory of the goodness I brought. Instead, I have been punished for paying the price of this new world. For this, there is no absolution but death. For this...*

He fell forward onto the red grass with a hushed splattering sound.

Mehring stooped and rolled the body onto its back. He closed the dead man's eyes and wiped his face with a handkerchief.

Forty-eight people were on the battlefield. They were mostly reporters and tourists. Each was oblivious to the full extent of what had passed. Seeing the dead man, though, they lowered their heads in respect. The man of noble goals through ignoble means would be a cautionary tale to all who followed.

In the weeks that followed, the nation was like a steam locomotive that had come to a sudden halt. Now the boiler of economy, industry, and culture had to be reheated by the fire of man's effort. The very effort required to clean the debris of battle was prodigious. Fallen buildings and fallen people would all have to be removed from the streets. Crushed cars, fallen robots, and the smaller pieces of recognizable objects that fell into uselessness by the passing onslaught all bore heavily on the people who were forced to restore things to their previous state.

The beautiful, shining robots could be reprogrammed. Two Stanford students, after mourning their fallen friend, were already experts in the ways of reprogramming these iron monsters by the time the government took notice. Using preprogrammed gestures, they taught the robots to aid in the restoration. The Imbellis also stayed and cleared away fallen metal warriors, the gigantic Engine vessels, and all the ruins of the extra-dimensional invasion.

They buried their fallen, as well, in a mournful ceremony that humans were not permitted to observe. They parted ways speaking only to Poel, who eventually translated their words to the press.

"We are proud to have served you in your time of need. Sadly, your backward ways, your bureaucracy, your in-fighting, and your lack of vision prevent us from joining your society. Your continued existence requires a broadening of scope. Think no more about ruling your neighborhoods, cities, states, and countries! Think only of progressing your entire species as a union. Think of preparing for the future. Your home-world is a small and fragile place— a place for you to restore

to its natural condition and leave when states of synthetics allow. You will never achieve our peaceful, egalitarian technological democracy on the path that you have previously chosen. Adapt and progress or your species will slowly die. These are the words of the Imbellis. When your society takes a proper shape, you know where to find us."

Poel assured members of the press and government that these words were from the Imbellis without any additions or omissions.

Back at the sprawling Xocom complex in Dallas, one week following the twenty-four hours of destruction and the aftermath of those hours, Mehring strode somberly, zombie-like toward his cubicle. The office was serene without the voices of Nackley and Metzger. Poel hadn't returned, either. He was offered a research job with the government to rebuild the Universe and the First Human Fleet of a hundred spaceships. Mehring was alone. The lead developer, Dave, hadn't bothered him about his low productivity since he was, himself, was mourning like everyone else.

Too many minds were focused on the millions dead. Too many had died because of the collected, concentrated, orchestrated efforts of a single, reckless man hell-bent on concentrating humanity into a smaller, star-destined faction. Poel preached, though, that humans were still star-bound and that, with all the mysteries of the universe solved by man's ingenuity, better days stand ahead of humanity.

This preaching echoed in the ears of sad Mehring as the weeks turned to months, and new faces took the places of the older, braver, more curious, innocent faces that Mehring had grown accustomed to seeing. Time was spent away from work burying fallen relatives who lived in the wrong parts of Dallas that were liberated too late.

Early in January of two thousand and four, two months after the Giant-Robot War, Poel visited Mehring at his house. He entered and stepped over the Great Dane who napped lazily on the living room floor.

"You'll have to excuse Clarke's lack of enthusiasm, it's been a hard day for him," said Mehring's wife who sat on the floor massaging the dog's lower back.

Poel smiled and nodded at the wife as he crossed to the kitchen. He sat across the small table from Mehring.

"Glad you could take time from the government to come and see me," said Mehring.

Poel rolled his eyes, "The government is just as lousy as it ever was. Even after millions of Americans died where the robots were on the offense and additional thousands where they weren't... even after some scolding from the Imbellis before their departure, they still fail to see the root of the message. We, as a people, have to band together."

Mehring nodded. He looked at his wife and the dog playing on the floor. He smiled a little. "Most people just want this," he said with a gesture to his wife. "I can't blame them. The thoughts of stars and galactic exploration are dazzling, but I want nothing more than this peaceful play with my wife to never end."

Poel's eyebrows furrowed. Mehring poured the gray-haired man some coffee.

"I guess I'm a little envious," admitted Poel, "but we, as a species, owe it to ourselves to get off this damned rock and explore what's out there. It might not appeal to you–"

"It appeals to me," said Mehring, stressing the verb, "but there's something more important that has to be done first. We have to learn how to love all over again. The universe, you've proven, is entirely connected. It's a gigantic system of things bumping into each other. For us to progress and do all the fantastic things that you dream, we need to embrace the whole, convoluted mess. We need to love our families... and I mean *really* love our families, and then we need to love our neighbors, their neighbors, our enemies— no matter how hard that is— and then the inanimate

things. If we can't... if we don't have a real appreciation for all of it, then there's no use. We become the human virus that stretches and infects the cosmos."

Poel nodded. "In a godless universe of cause and effect, if there is no love of our fellow man, patience for our transgressors, and mercy for those less fortunate, then we're doomed to the petty squabbling that keeps us stuck to this speck of dust in the immense vastness of space."

Clarke nosed the air and shifted his mighty weight. Rather suddenly, he rolled on his back and sprawled across the wooden floor. Catherine Mehring gracefully rubbed the dog's chest and head with a warm smile.

Poel sipped the hot coffee, and added, "It's taken thousands of years and entire pantheons of gods, but maybe now, after an interstellar, interdimensional wake-up call, there is hope..."