

Where Gravity Sleeps

4 – Opening Eyes

Arnie Rosen sat absorbed at his holographic workstation. Images of pages of calculations and notes floated neatly in mid-air to the side of his simulation, as though they were floating in zero G. He'd been up for thirty hours and he looked wretched. "There must be something I missed. There must be something..." He muttered to himself.

One hour from now, words would leave his mouth. If they turned out to be true, the information they conveyed would change the world as no other words ever had before. He would give up his career, or his life, to find out that they were not true. But soon it was his fate to utter these words. He was too tired to be anxious any more.

He thumbed his console and made a connection to his wife.

"Julie?" He asked thinly.

"Arnie, you look exhausted. When are you coming home dear? You need some rest." Julie said, concerned.

"Yes, I do. I'll be home by about 7:30 I hope. Listen, Julie, this is really important. I'm going to tell you something and you must believe me. Our lives may well depend on it."

"My goodness, what is it, Arnie?"

"Julie, I believe the Earth isn't going to be a good place to live for very much longer. I want to exercise my option to transfer to New Eden. I want you to get us two one way tickets to New Eden, to leave in six weeks. Please do it tonight. No, do it right after we get off the phone. We'll worry about everything else later, but right now buying the tickets is the most important thing." He said wearily, but with unmistakable certainty.

"My God, move off the Earth? You're kidding, right? Arnie, we have friends and family here; we hardly know anybody up there. Do you know how much those tickets will cost? Why don't you come home and we'll talk about it. OK?"

"I'll come home and we'll talk about it — there's no question of that. But, buy the tickets anyway, please? Humor a tired old man, OK? CSSI will

reimburse us; it's in the option agreement. I want to be sure we can get the tickets. You see? Anyway, I have to go in a few minutes to get ready for the conference. It will be on the newsweb if you want to follow it. Julie, things are going to get crazy. Don't talk to anyone yet about our plans, OK?" He asked her in a restrained sounding but nonetheless emphatic tone.

"Dear, don't you think you're over-reacting a bit here? I think you're really tired, that's what I think."

"My love, you must believe me. Please." He began to weep but composed himself quickly. "Julie, please — do as I ask. It means everything for us."

"OK, OK" She said with a bit of anger in her voice. "I don't know what's going on but I don't think it's fair for you to decide for us both that we are moving to New Eden without even consulting me. It's just not *like* you Arnie."

"That's right. Please trust me that something... big is happening, going to happen... bigger than me and you and us and everyone and everything we know.

"What? She calmed down enough to start to feel really worried. "Are we in danger?"

"Yes." He struggled even to say the word.

"Arnie, whatever happens, I'm with you. I'll buy the tickets as soon as we say good-bye. What is going to happen?"

"The... Earth." He choked.

"Yes?"

"It's..." He didn't know how to tell her. If he didn't have the strength to tell his wife, how would he be able to tell the entire conference? Still, it was harder because it was his wife. It tested his resolve. He stood up to it. "It's... going to die. It's going to be shot through the heart and I don't think there is anything we can possibly do about it."

The line was quiet while Julie considered what she just heard. "Arnie, I don't understand what you mean, but it sounds horrible! I'll watch you on the newsweb.

A few more tears formed on his tired face. "I love you."

“I love you.” They ended the connection. Then she purchased the tickets, specifying an immediate debit instead of a delayed-payment purchase. Doing so meant it was harder to return them; however, you owned them and you could not be bumped. If you didn’t go, you lost your money. The tickets were very expensive — Arnie and Julie could have added a new room to their modest house for the same price. She had to use most of their liquid funds and sell off part of their investments. She owned the tickets fifteen minutes later.

An hour later Arnie’s conference began on the scienceweb’s news portal. She played it through the holographic display in her office. There were a buzz of reporters with holocameras and microphones jostling for position in front of the podium. Arnie was sitting down to the side. His eyes were closed and he looked like he was napping. The conference had not started yet. She waited. She’d seen conferences before, but this was very different. Not only were the reporters there, there were military officers, some notable civil leaders, and security guards everywhere. Someone stood up to the podium and spoke.

“Let’s come to order folks and we’ll get started.” He waited a minute while the crowd settled into their seats.

Today is Friday, April 12th, 2143. I am Dr. Alan Fisher, the director of CSSI’s Astrophysics Department and the Ingersoll Observatory. I’m here to open the presentation this evening. Dr. Arnold Rosen will make today’s presentation. Dr. Rosen has led a team of CSSI researchers in studying the Heccat phenomenon and he is prepared today to report on their preliminary findings. Please hold your questions until the end of Mr. Rosen’s presentation. Now, please welcome Dr. Arnold Rosen.

Arnie stepped up to the microphone and stared out over the audience that was giving him a polite round of applause that ended quickly. He envied their ignorance for a moment. There were four hundred or so people there and also a large remote audience. He guessed as many as 10,000 people might see his presentation live. Almost nobody outside the scientific community knew anything about Heccat yet. Most were scientists of one sort or another. Under any other circumstances he would have been ecstatic for such an opportunity. Instead, he was beyond exhausted, beyond frustrated, beyond sad – just empty. He had no name for this feeling because he’d never known of its existence. Now he hardened himself for the task ahead and he let go of everything but his will to speak.

We first became aware of the Heccat phenomenon on March 19, 2143. We’ve spent the last three weeks performing a thorough, world-wide research effort, with the cooperation of dozens of top

universities and government research facilities, to determine the nature of the phenomenon and learn some of its physical characteristics. Heccat is an interstellar body, perhaps a fragment from some fractured, at least 1000 kilometers across and possibly more. It is composed —

Someone from the audience interrupted him. “Who discovered it Dr. Rosen?”

Arnie ignored the question without even looking up. He continued his presentation.

— primarily of iron and nickel, we think, with an external layer of accreted ices and other elements. It seems to have a very wide variety of elements present on or in it, which is making a detailed compositional analysis more difficult. It is traveling at about 15,000 kilometers per second, or roughly eight percent of the speed of light.

He was sweating, but it wasn't hot. He wiped his brow and took a deep breath. It was just numbers to some of the people in the room, but others were clearly shocked and there were suddenly many small side discussions.

It is traveling toward our solar system. Our trajectory simulations predict it will strike the Earth on Thursday, September 17th, 2144, at 1:14:52 P.M. GMT.

He stopped when his voice tightened into a chopped squeal. The room was deathly silent for a moment as everyone digested what they just heard. Murmurs began to develop as it sunk in. Half the people were using personal communicators and having urgent, serious conversations with people not present at the meeting. Many people were in shock or disbelief. Others didn't understand the details, but they knew it wasn't good.

His sweat felt clammy and he was nauseous. He looked pale. He cleared his voice and continued.

Our research predicts the collision will occur opposing our direction of orbit, 21.3 degrees toward the sun, 18.2 degrees declination from the plane of Earth's orbit. The strike is predicted to be at latitude 27 degrees, 18 minutes, 44 seconds, and at longitude 41 degrees, 47 minutes, 9 seconds. This is close to the middle of the Atlantic Ocean, near the Tropic of Cancer.

He stopped to breathe for a few moments. Everyone in the room was in abject astonishment unless they already knew, and those people had looked astonished when they walked into the room and they stayed looking that way until now. Many of them sighed in relief; holding such a secret, even for a few hours was draining. Nobody said anything. Arnie Rosen went on.

The package you all have contains summaries of the scienceweb reports and their addresses in the scienceweb. It also includes the simulation programming and results and a scienceweb address where you can access the simulation. We expect other researchers to collect independent data to corroborate or disprove our results and we will link the reports as they appear. My CSSI staff and I are committed to assisting any and all such research efforts. Now, if there are any questions, I will be happy to try to answer them. Please bear in mind that we don't know very much more about this phenomenon than I've already said.

Yes, you there."

"Thank you Dr. Rosen. Ted Robine, New York Times. Will you tell us who discovered the phenomenon?" It was the same voice that had interrupted his presentation. It came from a holonews reporter.

"No." Arnie said coolly. "Next question. You there." He pointed to someone else.

Ted spoke up indignantly. "Hey! Wait, wait! Why not? Why don't you want us to know?" The tone of his voice suggested that there was a cover-up and Arnie was at the head of it.

Arnie wanted to wring his neck, but he knew he had better put the matter to rest as well as possible. "We are trying to protect this individual. CSSI and this individual have agreed that it is in the individual's best interest to keep their name secret. I will say this though: were it not for this person, we might not know about Heccat for a long time. Perhaps not until mere days or even hours before our encounter with it, however close that happens to be. If you want to show thanks, allow this person to retain their anonymity." Arnie's plea was powerful enough to silence Ted Robine for the time being. "Now, you've been very patient, what was your question?" He pointed again to the second questioner.

"Alan Roche, WebScience Daily. If Heccat really does strike the Earth, what will happen? Another Ice age?"

“Nobody knows for sure. I can try to put it into context for you. We believe that 65 million years ago an asteroid approximately 10 kilometers across struck the Earth and caused the extinction of many species of animals and most of the dinosaurs. Our own near-earth asteroids, such as Apollo travel at about 25 kilometers per second. So Heccat is at least 100 times as big and moving more than 600 times as fast. We don’t have the physics yet to predict what will happen and I don’t want to speculate. Several teams around the world have already begun to work on a model for predicting the effects. Next question — you.” Arnie pointed to another reporter. “Yes, you. Yes. What is your question?”

“Marge Ellington, Science and You. Is there any way to stop this Heccat object from hitting the Earth? Can we blow it up out in space before it gets here? Or deflect it so it doesn’t hit us?”

“We and others around the world are now focusing our attention on just that question. The answer is that we don’t know yet, but we are going to try to find some way to protect ourselves.”

Questions continued for a while. Several visiting scientists questioned how the research and simulation programming were performed. “It’s all available for public inspection on the scienceweb. We welcome comments and we hope for the salvation of us all that we are wrong and that someone will find an error in our calculations.”

The questioning finally ended and the conference was over. Arnie didn’t know it, but by the time the conference had been underway for 7 minutes, 12 major holonet networks and 72 separate webforums were tuned in. By the time it was over, millions of people knew his face and hoped he was wrong.

The world began to change even in those first minutes. People coming home from work caught a summary or excerpts of the Heccat announcement. People were forced to confront their mortality, even if only for a moment during one of the many news clips.

Arnie finally went home. He was driven by a secret service escort, who stayed in the car in front of the Rosen house after Arnie disappeared inside. Julie was home and gave him a heartwarming hug. He was completely exhausted and wept silently as he held her.

“Are you hungry, dear?” She had prepared some food hours ago.

“Yes.” He spoke in a whisper. He just sat there quietly and ate while she talked to him.

“I bought the tickets, Arnie. They cost a fortune, but I’ll bet they’ll cost a lot more now...” Julie was a literature major by training and a writer by profession. She was not a scientist, but she was married to one. She’d learned enough from him and on her own that she now understood fairly well what Heccat meant for Earth. She also deeply believed in her husband, so she had little real belief that he was wrong.

He finished eating and went to bed. But Julie wasn’t tired yet. She began to search for information on New Eden on the scienceweb. She read about it and the rest of the Outer Earth for hours. She found still more information in the Travelweb.

New Eden was the third Floyd bubble built, after Floyd and Olympus. New Eden was a biological refuge and a research center for over two dozen universities and almost 300 private research firms. It was an academic community in space, living in a wildlife and plant reserve. It was an ecoparadise populated by people who could appreciate and protect it. It had a wide variety of environments within it and a staggering variety of animals and plants. Many of the different ecosystems existed side-by-side. Some required a degree of thermal and biological isolation, however, so New Eden was divided into three large regions and dozens of smaller ones. The large sections separated New Eden into different broad climatic regions. Different ecosystems within the same general climate conditions were distributed around the floor. Steep, high mountains, or sometimes artificial barriers separated incompatible ecosystems within the same climate.

The ecosystems of each of the bubbles was modeled in great detail by mighty computational engines which were programmed and maintained by the Department of Ecosystem Management (EcoMan) on New Eden. In general the ecosystems ran themselves. However, because of the smaller populations, EcoMan had to watch closely to be sure the diversity survived. There had already been some failures: extinctions. But extinction took on a less final meaning after genetic reconstitution had become easy. Vast archives on New Eden stored representations of the DNA sequences for every animal and plant in the bubbles, as well a large variety of plants and animals not even on New Eden. In fact, for most plants and animals, there were at least 100 samples from different donors. The redundancy meant that they could sequence and clone a genetically viable population of any of species in the archives. The scientists in the Ecosystem Management Department had already done so on a few notable occasions.

Julie marveled over what she learned about the incredible space station. She found it elegant and beautiful. She saw pictures of it, but she had a hard time getting a grasp on just how big it was. She was intrigued. She

wondered what life would be like aboard it. She wondered why Arnie hadn't brought up the possibility of moving to New Eden before, but then she realized that it had always been she who wanted to remain on Earth. Not only on Earth, but in the same town and the same house they had always lived. She had never wanted to leave the security of their home and their social connections, but she believed now that it was going to leave her no matter what she did.

By the time she climbed into bed with Arnie, she knew more about New Eden than some of the people living there. She thought it might not be such a bad place after all.

The news about Heccat spread over the weekend and by Sunday night the holonet networks and the webforums were jammed with debates and interviews, testimonials and criticism covering all aspects of what Heccat meant for Earth.

Monday came and the business markets fell steeply, except for the stocks of companies which made or supported spacecraft and space industries. The prices for those shares rose sharply. Predictably, there were people looking to make money on the end of the world.

Monday night Arnie returned from CSSI, with an armed escort of Federal Agents. They stopped at his door and did not come in with him, but wished him a good night.

He stepped inside and Julie was there, "Arnie! I'm so glad to see you." They embraced. "I'm starved, wanna eat?"

"Food. Good." He grunted comically like a caveman and followed her into the kitchen. They ate bread sticks and drank a glass of wine while they prepared a salad and some fish.

"I've been reading all about New Eden." She said while they were eating.

"Nice place, huh?"

"I'm excited, Arnie. We leave on May Twenty-Fourth. I can hardly wait!"

"Oh, yea?" He smiled. Then his smile faded and looked down at his dinner and continued eating. I can, he thought.

"We can't bring much with us, can we?" She asked. "I read the ticket and we're only allowed two hundred fifty kilograms each."

"Does that include what we weigh?" He asked, perking up a little.

“No. But, if you looked like cousin Charley you’d have to pay a surcharge for body weight.” She put her hands out to make her look like she weighed twice as much as she did.

Arnie didn’t respond.

“Well, he is big.” She insisted.

“Why is it called the Heccat phenomanon. What does it mean? Did you mean Hecate, the Greek Goddess of Ghosts?”

“Yes. That’s right.”

“Well, I’m surprised. I didn’t think you knew anything about Greek Mythology. But, why spell it H-e-c-c-a-t? That’s not a modern spelling.” She was intrigued. She could tell he was hiding something. “I know you didn’t make a spelling mistake here, dear.”

“Do you know who discovered it? He asked her.

“No. Why, do I know him or her?”

“No, you don’t — not yet anyway — but you’re most likely going to meet him, I think. I’ll tell you, but I’m trusting you not to tell anyone else.”

“Scout’s honor.” She raised her fingers and smiled.

“I’m serious, Julie. This is really important.” He insisted.

“I promise. Even the courts can’t make me reveal your secrets, Arnie.”

“His name is Ian Macbeth.” He said quietly.

She thought for a minute. “Doesn’t ring a bell. Macbeth? Hmm, wait a minute...” She pulled over a console and thumbed through its menus for a minute. “You sneak! I never even knew you read Shakespeare. You took the spelling from Macbeth. It seems like a risk; someone might figure it out.” She said. Then she thought about it for a moment. “No, I guess they won’t. You can’t make the connection unless you already know the answer. That’s clever. But why?” She asked.

“It needed a name and I wanted to make it somehow related to his name, since he discovered it. He didn’t want to go on record as its discoverer, but we had already filed his name. But, we’re trying to keep it out of the press so it doesn’t interfere with his life. See, his wife just had a new baby girl

last Wednesday. I heard that she's still in the hospital after having a C-section."

"Wednesday? No wonder he doesn't want to be bothered."

"I'd like to do something nice for them -- they deserve it after what they went through and what his discovery may mean for us all."

"She's still in the hospital? Why don't we go see them and find out what they might need?"

He paused for a moment and looked at her. "Sure. OK."

The next day they went to the hospital. Helen was recovering well from her surgery. Ian had been at the hospital the whole time. He had slept on a cot the hospital provided for him. They both looked tired and happy. Their baby was with them. Arnie introduced everyone, except he had to ask the name of the baby.

"Her name is Athena." Helen was smiling widely as she was holding her sleeping infant daughter.

They talked a while about Athena. Then Arnie asked "Ian, Helen, do you need anything?"

"Well, actually, neither of us was able to finish our finals last week. Will you find out for us if we can make the tests up?"

"I'm sure you can, but I'll find out the details and make sure you both get the chance."

"Ian, do you mind if I ask you a question?"

"Sure."

"How did you discover Heccat?" Julie asked him. She wondered how many other people might ever hear the story from the source.

He recounted the story, but when he finished telling them about his getting fired, he put his arm around Helen. "I wouldn't have found it at all, actually, if it weren't for Helen. See, I believed it was a speck of dust too. I accepted it. It was Helen who convinced me to find out more. I just programmed a simulation with the data. Anyone who had tried it would have found it." He said.

"So, you both discovered it together, then?" Julie said.

“I didn’t know that, I’ll have to amend my notes.” Arnie said, somewhat surprised that he had overlooked it.

They talked a while more and then Arnie and Julie left. They talked on their way out of the Hospital. “They’re a cute couple.” Julie remarked. “I’m glad we came to meet them. You say she was taking her finals when she went into labor? Oh, my!”

“Yes, they took her away in an ambulance. I’ll make sure she gets a fair chance to finish them.”

It took 13 minutes and 54 seconds for the broadcast from Earthspace to reach Jane’s World. It took about the same length of time for everyone on Jane’s World to find out about Heccat. The people of Jane’s World already knew that at any moment their survival could depend on their ability to communicate with each other. There were a series of powerful loudspeakers mounted on the walls around the cavern. They were seldom used except in emergencies.

Several people happened to be following Earth’s scienceweb and they posted pages to a public announcement forum in JanesWorldWeb. A few minutes later, the long-quiet loudspeakers crackled and came alive.

“Hello Janians. Please stand by for an important announcement from your Mayor.” Then the speakers were silent. People stopped whatever they were doing. Many had not been on Jane’s world long enough to have been there the last time the speakers were used.

Then a different voice spoke. It was the Mayor, Morena Ramirez. He was normally quite flamboyant and he was always very popular. The Mayor was a civic leader and he was a remarkably adept politician. There were seldom issues in Jane’s World that required mayoral leadership. Jane’s World was a very safe place even though it was in the Belt.

Hello Janians, It has come to my attention that researchers at CSSI on Earth have discovered an interstellar object called... uh... Heccat. According to the CSSI astronomers and, ah, astrophysicists, it’s on a collision course with Earth. My god... can you believe this? The collision is predicted to happen about 18 months from now. All the details are on the Earth’s scienceweb and are being downloaded to JanesWorldWeb.

As Mayor, I am asking you all to use a new forum on Heccat, that’s h-e-c-c-a-t, to keep up with developments and to post your

thoughts, ideas, and concerns. This is hard news for people everywhere and most of us here on Jane's World have families on Earth. Our prayers and hopes are with them tonight and all nights from now on.

He had finished reading his prepared statement, but he continued.

This might seem like a long way away, but even if it turns out to be false, this is going to affect Jane's World in ways we can't necessarily anticipate. We may be forced to make some difficult decisions if it is true. If we must make them, I want them to be made by us all. Please be prepared for an increase in the number of votes from now on. I am personally asking all of you to stay current with the Heccat webforum and to vote in each and every referendum.

Also, I think we need to reconsider our self-sufficiency status. I'll be following the Heccat channel and I want to hear from anyone who sees a weakness in our self-sufficiency plan. That's something each of us can do in our own jobs, no matter where we are or what we do. If we can't synthesize a replacement for what we use on Jane's World, I want to know about it.

Janians, I, your mayor, Morena Ramirez, thank you for your help and your thoughtful consideration.

Within minutes, thousands of Janians were on the new Heccat channel and a long dialogue had been born.

Moses, Claudia and Greg had heard it too. They had been on Jane's World two days now. "All those p-p-people on Earth — if that He-He-Heccat thing hi-hits it — well, everyone's g-gonna be trying to get off b-b-before it d-does and that's for sure."

"But, where will they go? The moon? The bubbles? There can't be room for more than a couple hundred thousand people in the Outer Earth. There are more than nine billion people on Earth." Greg said horrified. Practically everyone in the Belt had family on Earth. Greg immediately thought of his parents and his brother.

"I wonder if even the Outer Earth will be safe if that thing hits the Earth?" Claudia said. "I mean, what if the Earth gets pulverized? What happens to the moon and the bubbles?"

“D-d-don’t know wha-what ta think. But if they d-d-decide not to stay in the Outer er-Earth then they’re gonna b-be comin’ our w-way soon, sure enough.”

They looked out across Jane’s World. The same thoughts were going through the minds of most people in the Belt as they found out about Heccat. The Belt was changing too.

Rose flew back to her apartment and began preparations for their departure. She flipped on a holonews channel while she collected things she wanted to take with her. They were talking about Heccat and it was the first time she’d heard any details about it. She knew that there had been some sort of conference the day before where it was announced and she soon realized something big was happening. Some of the details were filled in as she continued her work. She used a console to contact Hermes.

“Hermes, good news, I’ve found a pilot.” She said quickly.

“Excellent work Rose, is she good?” Hermes asked.

“He’s very good —one of the best. Look in the spaceport logs for yesterday’s arrivals. He flew the mail ship Audrey, which nearly crashed. He saved it.”

“He flies a mail ship Rose?”

“Just for that one flight. Check it out. Listen, Hermes, we need to accelerate our timetable. Can we leave tonight at 19:30 hours?” She asked urgently.

“Yes, I can be ready as early as 18:00.”

“OK, 18:00 then. Listen, Hermes, from now on, don’t discuss our plans or our crew with anyone. I can’t tell you what’s up over this connection, but assume we’re in a tight security posture from now on. OK?”

“OK. If we’re leaving at 18:00, I’ve got work to do and I’ll definitely watch the holo’ of your pilot.”

“Our pilot, Hermes. Rose out.” She ended the connection and continued her preparations.

She did everything she could from her apartment. She cancelled her lease, sold most of her holdings, and transferred her web identity home

location to Hermes, so that she could be reached. She ordered many kinds of supplies and had them delivered to Hermes. She was frustrated to find that not everything she needed was available on Olympus. She found that she could get most of the scarce supplies on New Atlantis, so she purchased them in advance and ordered that they be delivered to a reserved docking slip there. As she purchased supplies from her console, she copied Hermes on the transactions, so he would know what to expect to receive. When she'd done all she could she finished packing her own bags and crates. She left them in her apartment. She flew her interior craft to a shuttlemart and sold it. She rented another one that she could return at the spaceport. By the time she returned to her apartment to begin loading the rental craft it was about 4:30 PM.

She listened to more of the holonews as she packed. Something big was happening, but she just didn't have time right now to worry about it. She hauled her cargo up to the roof of her building and loaded, securing it so it would not shift while she flew. Then she set out over Kronos to retrieve the last available items she needed and finally to pick up Ishmael.

Ishmael had spent the day enraptured by Olympus. He'd already written Rose a poem and now his mind was wandering. He'd watched the sun reflecting off of the mirrorwings traverse the skywindow all day. Now it was hanging low behind him. He was at such peace here. It was tragic, he thought, that the moonie thugs would find him if he stayed. They were idiots and might not figure it out. But, he knew that they might hire someone who could.

He looked up and saw an interior craft approaching. He watched it, expecting it to be Rose's, but it wasn't. It was flying toward his hilltop and he realized he'd better not be seen. He hid behind a rock. The craft continued its approach and finally landed nearby. He was silent and peered around the rock. He was worried because he couldn't see the pilot. He waited silently.

He nearly jumped out of his clothes when someone tickled his ribs from behind. "Are you hiding from me, Ishmael?" It was Rose.

"Hey! Don't sneak up on me like that!" He said feigning immense annoyance. "Anyway, how many of those interior craft do you own anyway?" He asked, changing the subject.

"None." She said enjoying his confusion.

He shook his head and put his hands over his ears. "No, no. I don't want to understand." He held up a hand as if to ward off any more of her words.

“Suit yourself.” She handed him a bag.

“What’s this?” He opened it. There was a new green pilot’s jumpsuit in it. “An excursion suit?” He took an immediate interest in the suit. It had a face-shield deflector generator instead of a helmet. You could still attach a mask or bubble to the suit at the neck, but you didn’t need one. It had numerous pockets and a thinner than usual power and recycling plant on the back. It was the best suit he’d ever held in his hands.

“Go on, put it on.” She urged him. She was smiling deviously. He wondered if there was a joke he wasn’t getting. He knew there probably was, but he decided to put it on anyway. He looked around: they were in the middle of nowhere. He handed the suit to her to hold and he stripped off his clothes. She took those from him as well. She watched his naked body with relish.

He reached for the suit and she pulled it back. “We have an hour to kill before Hermes will be ready to leave and I don’t want to wait at the spaceport.” She feigned a pout and dropped the jumpsuit behind her. She blinked overtly three times and smiled. When he glanced at his clothes in her hand, she dropped them behind her too.

“Um... want to read my poem, little girl?”

“Later. Show me what it means first...” She said and then kissed him.

Ishmael eventually got his jumpsuit back and they left the hilltop and flew to the spaceport. They tied their gear together and maneuvered it through the floatland to the dock where Hermes was waiting. The spaceport was unusually busy. Large holodisplays were following a live broadcast of an interview with some scientists discussing Heccat. Ishmael had no idea what was going on, but he did notice that many of the people in the spaceport were intently watching the holodisplays.

There were no windows nearby and Ishmael wondered what Hermes looked like. They found his dock and went through the airlock, pulling their gear along behind them. Then they were finally on board. They secured the gear into the hold and went up to the bridge.

Now Ishmael could see Hermes was a magnificent ship and fairly large for a rock hunter. He stood quietly and took in the impressive bridge. He’d never flown a ship anything like this. He placed his hand on one of the two articulated pilot’s seats. Unlike the mail ship which was built with plates and rivets, welds and bolts, Hermes appeared to be a single piece of molded titanium. Every instrument, every valve, every switch, was

carefully placed within the curved walls and consoles. Nothing was flat or sharp. The walls and consoles sunk inward between windows, fixtures and instruments, setting them apart from the background material.

The cabin lights illuminated the instruments and consoles. The light seemed to disappear just behind the instruments. All the walls met in curves and the windows were all rounded. In fact, it was difficult to find any straight lines anywhere on anything. The only straight lines that were visible anywhere were in the graphical displays on the screens of some of the the consoles.

After several minutes, Ishmael spoke aloud. "Hello, Hermes, I'm Ishmael, your humble pilot."

"Ishmael? Rose, I thought you were getting Jim Laundryman, the Pilot of the Audrey. Did Jim decline?" Hermes asked.

"Ishmael is Jim." She explained. "Ishmael was flying under the assumed name of Jim Laundryman." Then she introduced him formally to Hermes. "Hermes, this is Ishmael Kalim, our pilot."

"Hello, Ishmael, welcome aboard. I reviewed your landing of Audrey yesterday and I was impressed. If you really are also humble, then I'm doubly impressed."

"Hermes, we need to stop at New Atlantis on our way out of Earthspace. Is everything ready for our departure?" Rose asked.

"Yes. If you'll both strap in, I'll tell the OPC nexus we are preparing for our departure sequence."

They strapped in and Ishmael began to familiarize himself with the instruments and controls. They were laid out differently than any other ship he'd flown, but he liked their arrangement. He asked Hermes several questions and then finally said, "OK, I think I'm ready too."

"Connect me to the OPC please Hermes, let's get underway." Ishmael paused until the connection was established. "Olympus Perimeter Control, this is Hermes, AE7, requesting earliest possible departure sequence." Ishmael could ask Hermes to fly himself and Ishmael had no doubt he could do so. But Ishmael knew it was important to establish immediately that he could fly Hermes competently. He and Hermes needed to get the feel of each other and the sooner they started the better. He ran his fingers over the controls absently, but not hard enough to activate them. He played through various flight sequences, imagining in his mind what

the ship should do in response. “Dim the lights a little please Hermes. A little more please. Thanks.” He looked around the bridge.

“Acknowledged, Hermes, this is OPC, please stand by....” The OPC voice said.

“Ishmael, have you ever flown in the Belt?” Hermes asked.

“No, why Hermes?” Ishmael asked in reply.

“It’s different than Earthspace.” Hermes said.

“OPC to Hermes, you are cleared for departure along course 87, declination 12 degrees, speed 500. You have a two minute launch window beginning — now.”

“Thanks OPC. Hermes out.” Ishmael undocked Hermes and moved the ship one hundred meters straight away from the spaceport. Then he rotated Hermes through three dimensions simultaneously coming to a halt pointing along the new course. Rose was instantly disoriented. Hermes was impressed. Ishmael flew Hermes away from Olympus along the course they’d received. After a few minutes, they were clear of the perimeter control zone. He set a course for New Atlantis. It would take a few hours to get there. The ship would accelerate at 1/3 G for about an hour and then coast most of the way there. They’d be cruising at 10 kilometers/second for a couple of hours and then they’d decelerate.

Ishmael engaged the main thrusters and suddenly there was some thrustgravity. It was refreshing. He and Rose unstrapped themselves and they spent the time with gravity settling into the ship. They unloaded their gear, but they didn’t unpack any of the cargo that had been delivered to Hermes through the day. Ishmael connected his huffcube to a data port in Hermes’ brainroom and kicked off an upload from it. If Hermes wanted to he would be able to read all of Ishmael’s work and favorite books and holoworks. But they would survive now as long as Hermes survived and didn’t purge them, no matter what happened to his accounts on the moon, or to his Huffcube.

After a while the gravity went away along with the gentle hum of the main thrusters. The ship was utterly silent when it was coasting. They continued to unpack in the weightlessness. Ishmael took the opportunity to distribute most of Rose’s packed underwear around their cabin, so that it floated everywhere. She struggled to pull it all out of the air in weightlessness, throwing each piece at him, while Ishmael laughed helplessly until his sides hurt.

Hermes began digesting everything the scienceweb contained concerning Heccat. When that was exhausted, he began learning more about astrophysics. Like everyone else, he wanted to know what would happen if Heccat struck the Earth, but he had no intention of being anywhere in the area when it did.

Five days after Arnie's announcement, the world was relieved to hear from scientists in Italy that Heccat would miss the Earth entirely, by a margin of at least 20,000 kilometers. People from all over were talking about it. The financial markets went up for the first time since what had been dubbed Heccat Monday, which saw one of the worst open market crashes in over a century.

A bitter debate was just beginning in the Scientific community.

Two days later, scientists at CERN claimed Heccat would miss by 47,000 kilometers. And the markets cautiously rose again. A few days later, scientists in Russia announced a plan whereby Heccat could be deflected even if it were going to otherwise strike the Earth. Their plan called for a series of nuclear explosions to divert Heccat's course. A day later, scientists in Mexico announced a bold plan to maneuver an Earth-orbit-crossing asteroid called Toutatis into the path of Heccat, to deflect it at the last minute.

Each day, new predictions and new strategies for combatting Heccat were announced by scientists somewhere. Most of the scientific community was preoccupied with analysis and counter-analysis. It was a battle of meaning and beliefs and scientists around the world were mobilized.

The markets recovered in the confusion. The politicians took no sides and continued business-as-usual. Religious leaders claimed their God or Gods would save the Earth, or punish the Earth, depending upon what their apocalyptic predictions had always been. People began to lose interest. They were unable to follow the dizzying scientific debate, even when they found time to watch the coverage.

Within four weeks, there were dozens of conflicting predictions and the scientists at CSSI were frantically trying to keep up with all of them. It can sometimes take much longer to determine what is wrong with an analysis that it took to originally perform it. That ratio, dubbed the ignorance quotient by CSSI scientists, was low for reputable research, but quite high for some reports they saw. Anyone who could show that Heccat would not strike Earth felt like they were saving the world. Some creative bending of science was done, which catapulted largely unknown researchers into the forefront of the public eye, for a day or even a few hours, until someone

with a more compelling story went on record. It was an incentive that undermined the science.

There were also several different allegations that the whole thing was a hoax. There were harsh editorials from religious extremists that people were perpetrating the myth of the end of the Earth for their own reasons. Other religious fanatics had always believed the world would end soon and undertook elaborate ceremonies. Some were actually happy that it was happening in their lives, so they could witness it. It was a strange time and everyone had been shaken out of the security of generations of worldwide economic and social growth.

The modern, international consumer society of Earth was unprepared for a problem like Heccat. In many ways society had stagnated in sharp contrast to the technological advancements of the preceding century. The political and economic stability actually inhibited change in society and culture, rather than enabling change. The strongest force for change was the ongoing integration of information into people's lives and the mechanisms of society. It connected people and simplified their lives, usually. Now that integration injected desperate fears and hopes into the consciousness of society, just as the bloodstream distributes the poison from a snake's bite. People were harshly shaken out of their sense of security by Heccat, but they didn't know where to go from there. Heccat was culturally confusing, because it was an unmistakable enemy at a time when enemies were passè. It was a threat at a time when threats were routinely overcome. Many people turned toward religion again and it helped them feel better, like an anesthesia.

Another week passed and the debates continued. Some of the predictions had been shown to be in error and several of the defense strategies were deemed infeasible or likely to be ineffective. Most people were waiting until they heard scientific consensus before they would take Heccat seriously any more. The damage caused by poorly done or biased science was the disinterest of the populace. For many people, Heccat became a dispute between scientists as opposed to a threat to their own lives.

Arnie and Julie Rosen were ready to move and their Shuttle would be leaving in four days. They had already informed CSSI and told their family and close friends. They decided they would make it public the next day. They did so by posting the news to a webforum on Heccat. In it Arnie wrote that he was unconvinced of any of the conflicting claims and that he and his wife had chosen to move into space.

It had an immediate effect. Arnie had already become an unwilling celebrity, again, as 'holos of his original press announcement were included widely in media works on Heccat. His public announcement had

sparked a renewed interest in Heccat and people briefly tuned into holonews shows about it.

As a result, a throng of reporters were waiting for him when he left to go to CSSI the next day. They asked questions as he walked toward the government car that waited to drive him to CSSI.

“Dr. Rosen! Dr. Rosen, are you giving up on the Earth? How will you help us find an answer to Heccat if you move away?”

It made Arnie angry. “I’m not giving up on anything, but I am moving my wife and I into space. I’ll continue my research from there. I expect to be as much a part of the effort to working at the CSSI facilities on New Eden.” He said defensively.

Another man pushed his way forward and stood in the Arnie’s way. He held up a gun and fired three shots directly at Arnie’s chest. People screamed. Arnie was thrown backward by the shots and he fell to the ground. He placed his hand on his chest and raised his head to look at the blood on his hands in disbelief. Then he collapsed onto his back and tried to breath. The sky was spinning above him and his vision narrowed.

The gunman was wrestled to the ground by observers. Julie ran from the house screaming and fought her way to her husband’s side. Arnie was now drenched in blood. Tears were streaming down her face. She held his limp hand. Several people were already providing first aid, but Arnie was unconscious. When the ambulance arrived Arnie had already stopped breathing and a man and woman were providing mouth-to-mouth resuscitation and heart massage. The ambulance crew took over, but Arnie wasn’t responding.

Julie was in shock.

She rode stupefied in the Ambulance. Nobody needed to tell her it was a one-way ride for Arnie. He never recovered consciousness and was pronounced dead on arrival at the hospital.

Julie cried until she had no tears left. Then she was quiet -- nearly stoic. Many of their friends wanted to stay with her. She managed to convince most of them to leave. Now she sat with her two closest friends. They were watching a holonews rebroadcast of a speech by the prime minister of India. Julie listened to a translation and watched the thoughtful old woman speak.

I am sad today because I must ask us all to say good-bye perhaps to someone we love dearly. I am sad today and worried about our

mother, our Earth. We must accept the terrible possibility of her death, sad as the thought may be. But regardless of her fate, we must survive. We must survive. We must and we will. I am sure of this: we will survive if we work together. We must either find a way to move out of danger, or to remove the threat.

At present, our best knowledge indicates that our mother will not survive. Therefore, I am recommending to the Parliament that we devote all of our national resources to the tasks of building as many spaceships as possible and to shuttling as many of our people off of the Earth as possible. If we fail to do this, then we may not survive either.

I do not think we can make this happen with free enterprise, although I have always believed in its ultimate fairness. Now, we must transcend fairness. Now we must transcend profit and loss. Now we must transcend the employee and the employer. Now we are all equal in our peril our struggle to survive. We must prepare for and undertake an exodus to the Outer Earth. We cannot allow anything to prevent us from succeeding.

Our time here is short and we must make the most of every moment now. Now is the time of our greatest challenge. For us to survive, we must adapt not only our industries, but also our thinking. Now we must build an egg of ourselves, one which can hatch after the calamity to give birth to ourselves again.

My people, I am sad today, but I know I am not alone. I know we are all sad. But we must work through our tears. Together, we will save as much as possible of our culture and ourselves. Good luck and strength to us all.

The local announcer came on after the speech concluded and said that the Indian Parliament had unanimously approved the Prime Minister's proposal.

"I'm so sad." Said Julie and her friends consoled her. "I don't know what matters anymore."

"Are you still going to New Eden?" Her friend Antonia asked.

"I don't know. I know there's not much time. I just don't know. I... I need to sleep." She simply got up and went to her bedroom and shut the door. Her two friends let themselves out.

Julie battled with her grief. She could not believe that Arnie was gone. She was despondent over his murder. Her friends and people from CSSI and

members of the scientific community called her frequently, offering support and condolences. She was very sad, but she had not lost her mind. She decided she did not want to move to New Eden any more. She formed a plan that she felt would honor Arnie's life. She decided to try and get Helen and Ian to New Eden instead. It gave her a goal and that helped to distract her from the horrible hole in her life that she felt otherwise. Arnie and she had never had children. Part of her began to think of Ian and Helen as their children.

The next day, Julie went to the Ingersoll observatory on the CSSI campus. Everyone there offered sympathies, which she accepted numbly. She made her way to Dr. Highland's office.

"Ah, Julie, I'm so sorry. If there is anything I can do..." He seemed genuinely interested in helping.

"Yes, Robert, there is." She said soberly. "I want you to arrange a transfer for two students."

He looked confused. "Excuse me?"

"I want you to see to it that Ian and Helen Macbeth are transferred to New Eden, to work and take their classes at CSSI there." She explained calmly, as if she did this every day.

At the mention of the names, he took in a breath. "Julie, almost every student wants to go to New Eden. It's very competitive. I can't break rules; it wouldn't be fair to the others. Besides, I'm not in administration — I can't personally transfer anybody." He tried to explain lamely.

Julie dismissed it all. "I want you to find a way to transfer them there, or I'll reveal how your bungling almost prevented its discovery. You'll be the laughing stock of the scientific community, instead of a pompous nobody. You find a way to do it and make sure it happens within the next 48 hours, or else..." She turned around to leave.

"But wait! How am I supposed to do that?" He asked helplessly.

She whipped around. "*They have telescopes on New Eden, don't they? Tell them you've got just the person to clean the mirrors.*" She left.

She called the hospital, but Helen had checked out and had gone home. She used a campus directory to find out where they lived and she went there. She knocked on the door, but there was no answer. She wrote a note and slid it under the door. Then she returned home and made many calls. She changed some plans and cancelled others.

She received a holocall from Ian later that night. "Hello, Mrs. Rosen? This is Ian. I... I'm sorry – it's so sad."

"Yes, Ian, I'm sad too." Her voice cracked a little. "Listen, Ian, I'm trying to get you and Helen transferred to New Eden. I already have the two tickets Arnie and I were going to use to get there. I want you two to use them. I know Arnie would approve. The flight is in three days. Can you three be ready to leave by then? Athena can ride in your lap..."

"What? New Eden? We didn't even finish our finals yet. And, we're freshmen anyway. How could we possibly qualify for a transfer to New Eden?" He asked skeptically.

"Ian, if you and Helen aren't qualified, then nobody is. Highland owes you a favor and I just reminded him of it. He'll make it happen, I hope. Will you accept if he can?" She asked.

"I have to talk it over with Helen." He said.

"I'll wait on the line." The screen displayed a standard mute pattern.

A couple of minutes passed and then Ian was back. "Yes." He said with some surprise in his voice. "We would be grateful for the chance to transfer to New Eden and we'll be ready. Mrs. Rosen —thanks for thinking of us."

"I know this is what Arnie would have wanted. Take care you two. I'll be in touch with you later today. Good-bye for now."

Helen and Ian looked at each other. Things were happening too fast. Then they looked at Athena, who was oblivious to everything.

"Athena will never remember Earth," Helen said quietly.

"Perhaps not, but she'll know the Outer Earth, and few kids get that chance."

"What will life be like for us on New Eden?"

"It's nice, I think. We don't have much of a choice, do we?"

"No." She picked Athena up and held her close. "No choice."

Ian held them both and kissed Helen on her forehead. "If we can all be there together then I'll be happy."

She looked in his eyes and tears rolled from hers. But Athena just looked around and then burped. Then Ian and Helen laughed for a few moments and then stopped and looked at each other's eyes again.

"My god, three days! We're leaving in three days! We've got to pack!" He looked around at their apartment. "Fortunately, we don't have very much..."

"I'm scared, Ian."

"Me too."