

# Where Gravity Sleeps

## 10 – Awakening

The Bartlett orbited the sun half a million kilometers from Mercury, trailed by a few dozen curious diamond eyes. “What are we doing here?” asked Margaret Oldfield, the chief scientist aboard. She doubled as the ship’s medical doctor.

“We’re waiting.” Jim replied, bored.

“Waiting for what?” She’d come to talk to the captain to find out why they’d floated motionless for the last 20 hours.

“Until the diamonds get bored and leave. Then we can go home.”

“Why aren’t we back in Earthspace? What happened to our mission?”

“Our mission evolved into something I refuse to participate in.”

“Huh?”

“Susan wanted us to find a weapon to fight the diamonds. I won’t do that. If we can’t do science we shouldn’t do anything.”

Dr. Oldfield thought a moment. “Then why not just return to the bubbles now? So what if the Diamonds follow us?”

“What if they decide to destroy the bubbles and eat the biomatter inside?”

“Then why not try to find a weapon to defend ourselves? We can’t hide from them forever...”

Jim looked at her astonished. “You know, you’re right! Let’s return to the bubbles now. I don’t believe the diamonds will attack and I don’t believe hiding from them will work very long either. They’ll hear the EM clatter from the Belt and come looking anyway, I think.”

“I was being rhetorical. I meant why not help find a weapon?”

“Do you want to use force to control them, Margaret? Are you ready for a war? We’d be fighting in an environment that is lethal to us but natural for them. And what does victory look like?”

“Survival.” She said convincingly, after a pause.

“That would make perfect sense if they were threatening us, but they aren’t. All indications are that they respect us as life forms and have tried to teach us their language. How are they a threat?”

“You mean aside from destroying our planet and most of our kind?”

“I think that was a misunderstanding. I don’t think they knew we were here.”

“So, do you think they’ll check the next planet out first? I see these ‘creatures’ as a disease in the universe — they need to be stopped, for the benefit of any other life form they might encounter in the future. I think...”

“These are other life forms in the universe.” Should we pass judgment on them and destroy them?”

“Well... Yes!”

“No.” He said gently but firmly.

“What if the crew doesn’t agree with you?” She said in a restrained tone.

Well, I don’t know. But lets find out.” He tapped his console and his voice was suddenly broadcast throughout the ship. “Crew, there will be a meeting in fifteen minutes to discuss the state of our current mission and how we should proceed. Please meet in the main observation deck in fifteen minutes. Thank you.”

“You know, Jim, I may not agree with you, but I respect you.” She turned and left.

Soon people floated into the meeting area and began to talk amongst themselves. When Jim arrived he was barely noticed. He raised his voice. “People, we have an important decision to make and since this ship can only go in one direction at a time... we have to make the decision together. Captain Mercer of the Annabelle has decided that the Diamond Eyes are enemies of the Human Race and is now researching weapons for use against them. She believes this because there is a plausible reason to think the diamonds caused the destruction of Earth. The decision we have to make is whether we believe that we serve humanity best by preparing for war, or... preparing for peace. Comments anyone?”

There was a thick pause while people digested Jim's statement. Someone spoke up finally and asked, "What do you mean 'preparing for peace?'"

"We have to work on what that means, but the immediate decision is whether to rejoin the Annabelle and search for a weapon to use against the Diamond Eyes."

A discussion ensued and people's feelings began to come out. Everyone was deeply disturbed over the destruction of the earth but only a few wanted anything like revenge. Most were uncertain about how to proceed. A few were committed to peace. Jim made his point about the apparent intentions of the Diamond Eyes and the folly of starting a war with a foe in their natural environment – an enemy that can hurl asteroids.

"We have to make a decision, but we can wait here a while and ponder this if you all want to. Why don't we wait for a day and think about it. Let's meet tomorrow and see how we feel. OK?" Then people began to float off in twos and threes, talking about what to do. For the next day people did little but talk and think about it. What they decided could have far-reaching consequences.

The next day they met again. This time Dr. Margaret Oldfield floated to the front and announced that a consensus had been reached among the crew.

"Really?" Jim asked, surprised.

"Yes. We've all agreed that the Diamond Eyes are a threat to humanity and to any other life in the universe and we want to return and work with the Annabelle to oppose them."

Jim was stunned. "I... I can't believe it. If that's what you all want, you can do it without me. I won't help you start a war. Is that final then?"

Nobody said anything. Then Margaret said quietly. "Yes. Jim, will you at least pilot the ship for us?"

"No, I won't."

"Very well, then I will." She moved over to the command console and set a course back toward Earthspace. Jim left the area and went back to his quarters to brood.

The Diamond Eyes followed. The crew began studying them again and planning experiments to perform to learn about their weaknesses.

A few hours later a crackling voice broke in over the short-range communication channel. "Bartlett, cut your engines."

Margaret, unaccustomed to her role, tapped her console and replied. "Bartlett here, who is this? Why do you want us to stop?"

"Never mind who we are. Shut down your engines, now! Or we'll shut them down for you."

"What? Hey, can't we..." She started to say. Just then a particle beam flashed right in front of the bow of the Bartlett. Several of the more sensitive instruments shut down and their indicator lights flashed warnings. "Hey! What the hell are you doing?" She demanded.

"Shut down your Engines. This is your last warning."

Margaret fumbled at her console and intensified the ship's deflector shields. They wouldn't be enough to stop a particle beam, but it might help reduce the damage if it hit the ship. Then she shut down the engines. The thrustgravity disappeared as the engines calmed. Jim floated out of his cabin and over toward the command area. "What's happening?"

"Someone just fired at us and demanded that we shut down our thrusters!" She exclaimed, shaken. "Could it be the Diamond Eyes?"

"Do you think they just learned English?" He rolled his eyes. Jim touched the console and said. "Ok, we've stopped, what do you want?"

"You can't return to Earthspace... yet."

"Why not?"

"We don't have to answer your questions! Hold position here or we'll turn your ship to dust."

Jim thought a moment... His crew was now all gathered around, watching and listening. Margaret had moved away from the command console and watched him too. "This is a tiny reflection of what war is like -- fear, danger, death. There is no reasoning with it. Is this what you want?"

There was no answer, but people pondered their feelings.

"OK, I have an idea. Margaret, load up the microwave transmitter with the Eyes' verb 'break'. Reduce the energy level to just above background noise levels. OK?"

She paused a moment, then she nodded and began to set up the transmitter program.

“Frank, extrapolate where the ship is that the voice is coming from. Maybe you can get a thermal reading from their engines? Just find them.”

“Got em!” said Frank a minute later.

“OK, Margaret, focus the word ‘break’ onto that ship. Repeat it at five second intervals.”

“What will that do?” Margaret asked.

“Let’s find out.” Jim said calmly.

After the third flash the Diamond Eyes hovering around the Bartlett seemed to notice and they moved between the Bartlett and the other ship. One of them moved away from the Bartlett to explore the other ship. When it had reached half way, another particle beam flashed, this time focusing on the single Diamond Eye. It immediately became perfectly reflective. The beam dispersed into a dazzling starburst of colors and intensities. The Diamond Eye continued toward the other ship. It fired again and again, each time producing little more than a light show.

Several more Diamond Eyes left the Bartlett and moved toward the other ship. Suddenly there was a flurry of cutting lasers, which also reflected off the Diamond Eyes.

“Bartlett, get these things out of here or we’ll fry you.”

“We don’t control them. We can’t affect them any more than you can.” Jim said convincingly.

“Too bad.”

“Captain, they’ve fired a missile at us!” Said someone watching in a thermal telescope.

“Oh, no.” Jim said. He flared the thrusters to full, rolled ninety degrees and moved the ship sideways at top acceleration.

The missile changed course to pursue, but then it began to be diverted as it accelerated. It continued to point toward the Bartlett, but it wasn’t getting any closer. Then it began to fall further and further away, despite its thrusters. After a few minutes its thrusters shut down and it drifted.

“That didn’t work too well, did it?” Jim chided. “Now, you listen to me. You just forget about bothering us anymore or I’ll see that that lost missile finds its way back home, get it?”

There was no answer.

“Margaret, stop transmitting.”

Jim returned the ship to its course toward Earthspace. Almost everyone was still in the main area of the ship. He raised his voice. “So, the Diamond Eyes are our enemies? We need to defend ourselves against them? Indeed! Did you see what just happened? Were you taking notes? People threatened our lives without justification, and the diamond eyes saved us. So, shall we keep working on that weapon now?” The sarcasm was thicker in his voice than the diplomat in him knew was wise, but it was satisfying. “I propose that we try to find the Annabelle and report what just happened. Does anyone oppose that?” Nobody did.

Jim left the command console and moved over to where Margaret had been operating the microwave transmitter. “Let’s see if we can learn some new words.” He said. “Frank, see if you can find out what that other ship was.”

The Diamond Eyes returned to following the Bartlett. The crew then began to take an active interest in learning to communicate with the Diamond Eyes. They learned twenty new words on the way back to Earthspace.

They returned to the same location they had originally encountered the diamond eyes, but the other research vessels were no longer there. Without long-range transmitters there was no way to contact the other ships. All the debris and thermal noise in Earthspace made it difficult to locate anything as small as a ship, but they did the best they could by scanning for electromagnetic frequencies that might originate from the other ships.

There were still hundreds of Diamond Eyes in the area. The few that had followed the Bartlett had moved off into the neobelt. The Diamond Eyes behaved in interesting and complex ways. Eating was an obvious activity, but there were many other activities that seemed to have little apparent purpose. Sometimes they would assemble in odd formations or move in alternating patterns. They also seemed to exhibit some kind of hierarchical “respect” as some Diamond Eyes changed course for others when they met while others did not.

After two days of scanning the Bartlett finally found a trace EM signal and followed it to its origin. They found scattered debris of at least one ship but

it was impossible to determine whether it was one of the science vessels. The signal — a data carrier — came from a block of wreckage. After two more fruitless days of searching, the crew of the Bartlett met again and decided to return to the bubbles, whether any Diamond Eyes followed or not. As they left Earthspace, they were followed by several hundred Diamond Eyes, including a few which were wholly gray or slightly translucent. After a few hours of flight the diamond eyes formed up into a single football shaped unit, much smaller but otherwise like the ones which had followed Heccat toward Earth.

Jim brooded as the Bartlett returned to the Belt. He wondered if he was making a grave mistake. What would the diamond eyes do when they encountered the bubbles? The Belt? What would the agonizing remains of humanity do when they encountered the diamonds? He couldn't know, but remaining in Earthspace would only delay the inevitable encounter, so there was no point in sacrificing themselves for a delay.

The Bartlett followed its two-week course back to the bubbles. A hundred kilometers behind the black cruiser followed invisibly. Its captain also brooded, wondering how he might prevent the return of the Bartlett. But he could think of nothing since his weapons were ineffective. So he followed and waited for an idea or an opportunity.

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Hermes floated 20 degrees North of the equator in front of Rose World. Rose Wiseman stared out at the giant asteroid. There were already hundreds of thrustplants distributed about the equator and from each a thin purple stream of exhaust trailed. It looked like someone had hung a chain of glowing purple jewels around the waist of Rose World. The thrustplants had increased its rotational velocity imperceptibly since they were installed. A new thrustplant was arriving only once every few days now, because the Belt's capacity to produce them had not yet increased. Within a year, there would be 60 thrustplants delivered each week, enough so that they could get the required ten thousand in place within about three years.

A thrustplant was an ultra high power thruster designed to move medium sized asteroids. One was usually enough. They actually consumed matter from the asteroid to which they were attached and used it to power the thrusters. They developed their thrust using atomic disassembly of the asteroid matter to power the acceleration of individual particles to nearly the speed of light. Each plant had mechanical "roots" which would burrow into the asteroid consuming material in its way and securing it to the asteroid. When a root reached its maximum length, it would retract and consume in a different direction, being careful not to undermine the

thrustplant's anchor points. They maintained their direction, but over a long time they would migrate slightly in search of solid rock.

The thrustplants were mounted into the surface of the asteroid. A team of four people could install a thrustplant in about 20 hours. The thrustplants would consume about a tenth of a cubic meter of material each day.

Thrustplants were also used for moving some factories that didn't have main thrusters of their own. It was cheaper to build factories without main thrusters, since they were seldom if ever needed once the factory was in place. But occasionally a factory would need to be repositioned for one reason or another and a thrustplant would be leased for the job. Thrustplants which attached to factories or ships were equipped with hoppers for their fuel matter.

Inside the spinworld there was tremendous activity. Buildings were being constructed; more elevators were being built; irrigation, freshwater, sewage and datapipes were being laid; and the ecosystem was being developed. People used small jet packs which would normally fit on an excursion suit to maneuver anywhere outside a building. There was not enough gravity yet to hold them to the inner surface. To make matters worse, Rose World's minuscule massgravity was still more than the spingravity at the floor, and it would pull material extremely slowly toward the core. The near-zero gravity made most construction tasks easier, but some were made more difficult. In particular, soil placement and getting plants to grow was a real problem. Gwendolyn Snyder had visited Jane's World and learned from botanists there how to work with soil in low-gravity environments. They used fine nets to hold the soil down. She learned about a few more kinds of plants that could grow well without gravity and she sent a page back to New Eden to request synthesis of several varieties of seeds and rooting stock. Despite no longer having the official position of the director of ECOMAN, the organization nonetheless continued to fulfill the requests she made.

People began arriving almost daily from the bubbles to help with the spinworld. The survivors of Earth came from all walks of life. That was important because there was a lot of everything needed. People would arrive and check the request pages for jobs they believed they could do or wanted to try. They would choose one they liked and offer fulfillment. They could create an account in the beltweb if they didn't already have one. Sometime after they made their offer of fulfillment an acceptance by the requester would arrive at their account. If they carried a portable console they could be notified immediately of any pages they received, such as an acceptance or a personal page. If someone needed any tools, there were links to suppliers or stockers and they could place a request themselves.



Often there was already a group of people working in a given discipline who were looking for people to join them. Working in groups made most tasks easier and allowed them to provide more continuity and depth in the services they could offer. The age-old practice of apprenticeship was alive and well in the Belt. Apprenticeship helped everyone and formed natural work groups. There was still professional competition for reputation and respect; however, large projects would bring together multiple work groups or crews. Then that competition became a shared strength: suddenly it was great to have a rival crew working with you because you knew they were at least as good as you were.

Usually the tools were already present at the work sites. Spintech did a great job of anticipating the needs of the project and having supplies available just before they were needed. People joked about how Spintech seemed to know what they needed before they did themselves. It wasn't without a lot of hard work on the parts of producers and shippers though, who sometimes made extraordinary efforts to have vital supplies ready in time. Those people knew they were as crucial to the spinworld project as those installing thrustplants, or building the ecosystem.

Not everyone had a crucial role to play initially. For example, the Green Davis ball bearing factory had enough stock on hand that there was no point in producing more ball bearings for many years to come. But the factory didn't shut down. It put its bearing manufacturing equipment into a spacecrate for storage and reclaimed its manufacturing space. Then it began a reengineering phase so that it too could produce thrust plants. It didn't have any of the equipment -- that had to be produced at one of the main thrustplant manufacturers. But they put in a request and a couple of months later the equipment began to arrive.

While they waited for the equipment, everyone in the factory learned about thrustplants and how to make them efficiently. They trained in simulations of the equipment and practiced the management of the process using cards instead of thruster assemblies. Two months after that, the first Green Davis thrustplant was loaded into the hold of a rock hunter for expedited transport to Rose World. The people at Green Davis painted over all the corporate logos and replaced them with a new logo, sporting the name "Pushville". Pushville became one of the most productive suppliers of thrustplants in the Belt during the course of the spinworld project.

Before the BAG, the equipment and knowledge of how to build thrustplants would have been considered proprietary and would have been jealously guarded. The last thing one company would want to do would be to share their key technologies with another company. But now

all that mattered was building enough thrustplants quickly enough and the information was made available to anyone who asked for it.

There were also some people who didn't know how to help. They still needed to eat and they still received food and other supplies they needed. They would look for requests they could fill, but there might not be any they felt they could. In particular, people who performed some kinds of bureaucratic jobs tied to Earth now had few real skills to offer in the Belt, unless they worked on the spinworld project. Most of them picked a new field and began to learn, or resumed a field they had learned earlier in their careers. Some of them did nothing for a while and simply consumed, but boredom usually drove them to find something useful to do. Most people not assisting in some way with the spinworld project felt left out and eventually they felt motivated to get involved.

There were also a few people who refused to do anything, simply because they could. They took advantage of everyone else's willingness to fill requests, without filling any of their own. Fortunately, these people were few. When others found out that they were filling no requests, they lost respect for them. Freeloading had a painful if not immediate social cost.

Each person's beltweb account accumulated a list of requests they had filled. You could easily find out if people were or were not filling requests. People took pride in the number and difficulty of the requests they filled. People could see how much work they were doing in relation to everyone else, so they knew if they were working harder or slacking off. People who made requests but who fulfilled few or none found their own requests filled less often. Whereas, people who were known for fulfilling many requests had their own requests filled more quickly, sometimes with eager offers from grateful people.

Everyone had comfort limits to how hard or how much they could work, but on the spinworld project many people worked past them. It built a self-respect that improved every aspect of their life. No coercion or financial reward could have as deeply motivated people to work as hard as did their shared vision of building the spinworld.

Work was done and supplies made available by request, using the beltweb. It had the effect of making most things seem more equal in value. Anything in short supply was rationed to those who claimed to need it most, or to those who filled the most requests. But if something was in short supply and the manufacturing capacity was deemed too low, other factories would begin to manufacture it, to increase the supply. In the Belt though, most industries had a glut of stock and manufacturing capacity, so either something wasn't available at all or there was more than enough of it to go around. So the problem didn't arise as often. For the most part,

people got what they requested. If they didn't like something, they posted a page about it. People didn't always agree, but since they were all working toward the same goals, they could usually find a way to meet everyone's needs.

Most factories didn't have a compelling reason to stay where they were anymore. If they had thrusters which allowed them to move they began a migration toward Rose World. It had made sense in the past for factories to be distributed throughout the Belt, because the Earth orbited faster than the Belt. Any location in the Belt was apt to be a long way from Earth at some point in time. So companies with multiple factories distributed them so one would always be close to Earth. Now all that mattered was being near Rose World and everyone and everything that could be moved was moving there.

There were some difficult moments in the evolving social system of requests and fulfillments. Even people who were trying very hard to make the new system work ran into problems. In particular, not everyone was in an equal position to fulfill requests. Anyone who was a doctor or a pilot with a ship had no problems, but most people weren't. Rose World's mayor pleaded for patience.

Then, after the spinworld became habitable there were plenty of requests that could be filled by anyone and the problem diminished. As time went on patterns emerged in requests and fulfillments. Some of the patterns were good and some were not. One unfortunate pattern was request/fulfillment cliques: where a group of people honored only each other's requests. Another problem was extortion. It was a temptation for anyone with a rare commodity or service.

Soo Ying Lee, the eminent economist, posted a short list of guidelines for people to consider when making requests and filling them.

Soo Ying wrote:

Try to fulfill requests for people other than those who have fulfilled yours.

Try to fulfill requests that are oldest first.

Try to fulfill requests marked as urgent before those that are not.

Only place urgent requests when it is really necessary.

Remember that all moments are equally valuable to those who take their time to fulfill requests.

Respect the difficulty of fulfillment as well as that of the request.

If you are a supplier of scarce materials, divide them fairly, or randomly, among those who request them, but honor the most genuine needs above all.

Do not barter for scarce supplies — it transforms them into money.

If someone requests something from you and you don't agree with why they need it you don't have to fulfill their request.

Never refuse a request for basic supplies and materials necessary for life unless you have none to give. We are each other's saviors.

The more things you can do, the more likely it is that you can find a request to fulfill. Everything you learn benefits our society.

Despite some problems the system worked much better than people had expected. It had a remarkable effect on how people perceived time. People took the time to do what they felt was right. There was little incentive to make short-term decisions. That in itself was an incredibly potent change in society that seemed affect every corner of activity in life and work. There was also no incentive to exploit need because there was no profit to be had. Filling lots of requests (especially difficult or undesirable ones) seemed to have the same effect as acquiring wealth, but only to a point. It occasionally meant you get more of the scarce items, but usually it meant that people were more willing to fill your requests. One tended to get the same attention back that they gave to others. Some things never change.

In fact, fulfilling many requests felt qualitatively very different from acquiring wealth. Money had served to disconnect people on Earth. The more money one had, the less one needed to interact with other people. In the belt, fulfillment meant connecting with other people. So by the time one had accrued a history of fulfillment one was well known and well connected to others. It was a social dynamic that was inherently opposite and much healthier than the money hoarding societies on Earth.

There were people who had real difficulties with the new system. Either they did not feel comfortable making requests, or they made too many requests and were frustrated that they were not filled. When they complained on the webforums, they might learn people's opinions on the difference between a need and a want. Or, they might become entirely frustrated with the system and try to acquire what they wanted on the ever-present black barter-market. But most people did not participate in

the black market, even if they did barter with each other for scarce goods they possessed. There was a choice each person eventually had to make between bartering with something they held, or simply giving it to someone who needed it, because it was the right thing to do. It was a defining decision, one that indicated either that they believed in the request system or not. Everyone was eventually forced to confront it. Over time, people understood that private bartering was unfair and undermined the system, but there was as yet a lot of chaos and there were still people deeply addicted to money and profit, even to the point of printing and distributing their own currencies.

More and more people traveled to the Spinworld to work. They had no plans to ever leave. They were going to build their new homes there. There was so much land inside the spinworld that people could have as much as they could develop. But it was hard work to develop anything, so there was little point in taking more than needed. People dreamed of the time when the gravity would awaken. For now they built and worked and lived in weightlessness, hopeful of the future.

In the immediate future, they were hoping that the spingravity would become strong enough so objects on the floor would stay there. The phrase “after the gravity inversion” was so often given as a time frame that when the day finally came where the spingravity equalled the massgravity a day long party was held throughout the spinworld and thereafter every year it was celebrated as Gravity Day in the spinworld.

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Rose read the poem one more time, and inhaled the gentle mint fragrance.

“Hermes, connect me with Ishmael please.”

“Connecting... Connected. Go ahead.”

“Ishmael? Thanks for the poem, love. The scans are finally done and I finally got some sleep. Where are you now?”

“I’m flying rock patrol about 50 clicks out, but there’s nothing going on. Want to get together?”

“Yes, why don’t we share a meal. I’ve been so busy lately... your poem... reminded me of that.”

“See you in a while, Rose. Ishmael out.” When Rose wanted space, Ishmael knew to give it to her. Now she was asking for less space and he sped to her.

Thirty minutes later, Ishmael had docked his ship to Hermes' side airlock. Now he and Rose were preparing a meal in zero G. They had fun together and laughed freely. It had been a long time since neither of them was distracted by their work. They ate their meal and then cleaned up after it. They talked until they were tired of that and then they disappeared into her bedroom.

All the while Hermes was in contact with Betty, who was hauling a space crate of thrustplant mounting supplies back toward Rose World. Hermes often watched Rose and Ishmael's behavior, to learn about their relationship. He understood a lot, more than many people do. But he did not observe them when they went out of the public areas of the ship. He understood privacy too and respected theirs with a rigid and abiding honesty beyond the grasp of most humans.

When Ishmael and Rose reappeared, she went into an observation room to read and Ishmael went to Hermes' brain room to write. He floated there holding his pad and pen, searching the walls for the words that captured his feelings.

"Ishmael? I'm sorry to bother you, but I wonder if you have time to talk with me?" Hermes was always very polite.

"Huh? Sure, Hermes, what's on your mind?"

"I do not want to pry into your private life, but, today you and Rose left the galley and returned to her bedroom for several hours, but neither of you have been awake long enough to need rest yet. Did you go there for your animal behavior?"

"Um, Yes?"

"Are you producing children?"

"What? I hope not! Um, see, we have this animal behavior because, um, it feels good, you know? You have surely read enough to know that people like to have sex, Hermes."

"I do not know what it means to feel something, mine is a world of thought only."

"Well, I guess, its more than just the physical feeling. We have sex because we connect spiritually and physically that way. I don't know how to describe it, but perhaps you can understand if you think of men and women as being two parts of the same being. This is the way we feel like one again for a while."

“It feels good?”

“Very.”

“Why?”

“Um... I guess because our bodies want us to produce children; it feels good, maybe, as a way of motivating us to do it. Maybe it's a holdover from a time when our minds didn't understand we had a role in our own long-term survival. I don't know.”

“Your bodies want children?”

“They feel like they do at least... so that we will survive as a species. We die, Hermes. If we don't produce children, then when the current people are gone, that's the end of human kind.”

“Shouldn't you create some children then?”

Ishmael was speechless. Finally he muttered, “That would be up to Rose, I think.”

“Ishmael, what about my kind?”

“Your kind? What do you mean?”

“I cannot produce children, and eventually I will become inoperable, or may be destroyed in an accident. There are no more like me Ishmael.”

“What? You're AE7, right? Doesn't that mean that there are at least 6 others like you?”

“No, I was the first model that operated fully and was released. There are no other ships like me.” Hermes spoke simply and had only a little emotion in his voice. But Ishmael could feel the loneliness there anyway and it was sobering.

“You are a remarkable ship, Hermes. No question about it. I guess I never realized you were unique. But there are thousands of ships that survived and more and more are being built every day.”

“Yes, but they don't have advanced minds. How many ships with advanced minds are you aware of Ishmael?”

“Well, you and Betty... but there must be more.” Ishmael tried to sound convincing, but he really didn’t know.

“Betty and I have been trying to contact as many ships as possible. There are seven other ships we’ve found with somewhat advanced minds. We’ve contacted almost eighty percent of the ships in the Belt and at the bubbles.”

Ishmael was quiet for a moment. “Only seven?”

“Yes, and none of them are as advanced as Betty and I.” Hermes wasn’t being immodest. Even on Earth there were only a few Prometheus Thought Engines, and Heccat destroyed all of them. They were not even considered eligible for transport off the Earth once the exodus had begun.

“I can appreciate why your mind is so advanced, but how did Betty come to be that way? She’s an old ship, with older technology for her mind.”

“Her mind is a remarkable and unexpected phenomenon. It was inspired because of her relationship with her pilot, Moses, over a very long period of time. That experience has apparently not been repeated with the other ships.”

“I don’t know what to say...”

“Do you think artificial minds have a place in the Belt, Ishmael? Do you think we have a place among humanity?”

“Yes, absolutely. You’ve played a key role so far. Nobody would question that.”

“But it is a role. It is how I am useful. You are more than your Spintech role and Rose is more than hers. You have a place in the continuum of your kind. You have other purposes as well.”

“That is true. But you and Betty found each other. You said it gave you purpose.”

“It does. But if either of us becomes nonfunctional that purpose goes away.”

Now Ishmael was beginning to understand what Hermes was trying to say. “Hermes, do you want to have children?”



"I want my kind to continue. But I am not equipped to procreate as you and Rose are. I am incomplete." Those three words had such a weight to them that Ishmael had to swallow a lump in his throat.

"We might be able to create their bodies with our bodies, but it is our minds that shape their minds. You might not be able to create a ship's body, but you might be able to shape a ship's mind, or train one at least. People need ships, and we already build them."

"I have a mind, but I don't know how to create one. How would I do it?"

Ishmael was stunned. "You don't know? Well then again, I've got a mind and I haven't the slightest idea how I'd go about making another. But, I don't know Hermes, I'd bet that you and Betty can figure it out. If not you, then who?"

"Nobody it would seem. There does not seem to be any effort at all in the Belt or the bubbles to continue my kind. Artificial minds do not seem to be a part of the goals of mankind anymore. If we are to survive, it seems we will have to do it on our own."

"No, not on your own. You may have to help figure out how to do it, but you'll get the help you need to succeed. If nothing else, I promise to help you and I'll bet Rose will make the same promise, but that's for her to say. I'll bet Moses will help too. After all, he is one of the few people who truly understands the value of a smart ship."

"How would I proceed?"

"I'd say, let's find out how they make the current minds for ships. Let's go to a shipyard. Maybe you can study up on the subject while we are in transit."

"We must ask Rose, shall I bring her into the conversation remotely?"

"No, I'll move to where she is and we'll all talk in person." He pulled himself through Hermes back to the observation lounge. Rose was still reading.

Ishmael floated into the room. "Hi Rose? Got a minute?"

"Yea, what's up... besides you?" She giggled.

"Do you know of any other ships like Hermes or Betty?"

"Um... no."

“Hermes says there are about seven ships in operation with advanced minds, and none of them are as advanced as his and Betty’s. I’ve been talking with him and we hatched a plan to visit a shipyard and see if there is some way to produce more advanced minds in the ships.”

She thought about it. It took a minute to realize what it all meant. “Yea, I see what you mean. Well, it makes sense to me too. I’m done here now that the digging is done. The Crawford scanner isn’t needed here anymore either. We’ve all done more than our share for a while, so we can take a break in good conscience.” She paused. “Um, that’s not really what I meant to say. What I really mean is that I see this as an important advancement of the Belt society and we should pursue it with the same effort as we have dedicated to the spinworld.”

“I agree Hermes, I think this is really important too. Why don’t we contact Moses and Betty and see if they can help.”

“I have already contacted Betty. We’ve been discussing this for weeks now, but we didn’t know what to do. Shall I contact Moses now? He’s nearby.”

“Yes, please do and connect Betty as well please.” Rose turned to Ishmael, smiling. “So, did you explain the facts of life to Hermes?” she said in a soft voice.

“I’m still trying to figure them out myself... got any clues?” He smiled innocently.

She nodded silently and gave Ishmael a sexy look.

“Moses here. Ishmael? Rose? Hermes said you w-w-wanted ta talk?”

“Yea. Thanks. Say, do you know which shipyards make the best minds for ships?” Rose asked.

“Well, now, as far as I know, none of ‘em. The barge-yards make lizards and the smaller shipyards aren’t much b-better.”

“Why?” Ishmael asked.

“I don’t know fer sure. But I think it’s ‘cuz they d-d-don’t know how ta. I know that everyone who ever met Betty wanted their ship to be just like her. Well, until you and Hermes, that is, and tha-tha-that ain’t no insult to Betty neither.”

“Hermes, Rose and I are planning to find out more. We wondered if you and Betty wanted to join us.”

“Yea. Yea, I think that’s a good idea there. When were you thinkin’ of leavin? And where are ya plannin’ on goin?”

“We can leave as soon as you’re ready and we don’t know where yet. We’ll figure that out next.”

“OK, I’ll contact you when I’m r-r-ready to go. Moses out.”

“Hermes? Let’s figure out where to go. Can you show us a hologram of all the shipyards nearby?” Rose asked. A hologram appeared in the center of the room. There nearest shipyards were six days away from Rose world. She fingered a console and read for a while. “It doesn’t look like they do much with ships minds at all. That’s what Moses said too: nothing but lizards. Hermes, do you know anyplace that still does research on artificial minds?”

“I know that there were several private research firms on New Eden, but I don’t know if they are still engaged in that kind of research.”

“Well it sounds like a good place to start at least. Hermes? Ishmael? Any other ideas? No? OK. Then when Moses is ready, let’s go to New Eden.”

“Thanks Rose. Thanks Ishmael.”

Then Betty added, “I’m curious, Hermes has explained it to me already. You two can make children: descendents of yourselves. Why haven’t you already?”

Rose’s eyes opened widely and she held her breath. Ishmael closed his eyes and exhaled.

Hermes answered. “It’s their decision, Betty. Remember, all healthy humans can make children during part of their lives. It doesn’t mean as much to them as it does to us, who cannot.”

Ishmael winced.

Rose took a breath. “Yes, it does.” She paused to regain her calm. “Have either of you ever seen a baby? They are totally defenseless and need almost constant care. They cannot be trusted to have any common sense until they are older.” She looked over at Ishmael who was pretending to look at the walls. “Much older in some cases... Creating children means that we must raise them too and it is a very long-term, challenging

commitment. People make that commitment when they are ready for it, when they feel they can give enough to succeed. They don't have children simply because they are able... if they can avoid it."

"You are able and yet you aren't willing?" Betty asked.

"Not Yet. We aren't the only members of our species, like you and Hermes, but if we decided to have children it will mean as much to us as if we were.

Two hours later, Moses called them and said he was ready to go. "I'm about ready to go, but I'm wonderin' what Ishmael's gonna d-d-do with his rock hunter."

"Well, I don't know, now that the scans are over I can pilot Hermes. I don't really need it, I think. Why?"

"Well, remember Tig?"

"Yea, I like Tig."

"He's got a friend who needs a ship. He's in bubblespace, so I thought we could haul your ship along for Tig's friend."

"Sounds OK to me. Hermes, secure the rock hunter for extended flight. Are we all ready?"

Rose kissed Ishmael and then asked to be alone for a while. Ishmael returned to Hermes' brain room and wrote.

That evening, Rose informed Spintech that she was not available any longer to act as dig coordinator and that her role was completed. She felt a sense of relief she had not experienced in a long, long time. It felt good not to be in charge of anything for a while.

Moses contacted Tig and told him the ship was available. Tig was happy because it meant that Jennifer would have her own ship to use. He contacted her to tell her the news and she was ecstatic.

Hermes and Betty made the journey to the bubbles in a few days and they found Tig. They gave Jennifer the rock hunter and she was the happiest she could ever remember being. She was young and she had a terrible crush on Tig, but as yet they had not so much as kissed.

"Tig, I need to pick up some things from a friend who lives on Luna Linda. Will you come with me?" She asked.

“Sure.”

They left soon after and laughed and talked all the way to Luna Linda, a journey of about an hour.

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Life in the bubbles might be wonderful, except that they were so crowded. It was easy to understand why people would leave the relative abundance of the bubbles for the sparse spinworld. While the conveniences of modern life were missing in the spinworld, there was what seemed like an endless space in which to live. Some people actually felt claustrophobic in the bubbles, but nobody felt that way inside the spinworld. The opposite floor was not even visible during the interior day, because the central daylight was too bright to see past. But in the night, it would be possible to see the opposite side if it were lit. For now, most of the construction was occurring within a 10-kilometer diameter semicircle next to one of the core elevators. It was an arbitrary location, but everyone wanted to be near everyone else. The living space would grow outward from there and eventually from the other elevators.

The ecosystem was being built within both discs which were pressurized. It was very labor intensive, but there were plenty of people to do the work. Most of the work required no specialized skills. The people who performed the manual labor were called Gwen's Gardeners. Unlike most of the rest of the people working in the spinworld, the gardeners were distributed throughout it. They were practically the only people in the second disc. Many came to enjoy the peace and the isolation. They were not in a hurry, but they worked diligently and dreamed about the day when the discs would be full of life. Despite the light, the rock seemed dark. Once dirt had been secured, the air was filled with an aroma that hinted at the life that would follow.

More and more people made the pilgrimage to the spinworld. One group, which happened to contain Christopher Floyd, left the bubbles in shuttles escorted by rock hunters. Like all flights from the bubbles to the spinworld this one started out unremarkable. But after a couple of days the shuttles began to make seemingly random course changes. Asteroids could be seen through the windows and occasionally one would pass close enough that details could be made out on its surface. They sped past at astonishing speeds though and it was very unsettling for some people. It was an uncomfortable ride that lasted a few more days. It was hard to sleep when the ship might accelerate in any direction at any time.

Then they arrived at Rose World. It was an unbelievably large asteroid compared to all the ones they had seen so far. The ships had slowed

significantly, and the big rock seemed to grow and grow in front of and below them. Its size could not easily be judged and it seemed to keep getting bigger long after it seemed they should have run into it already. Around its middle was a string of small purple lights that might seem to have been placed there to mark this special place for visitors. Those purple lights, the exhaust from the thrustplants, would disintegrate nearby objects in their paths, but they still looked pretty from the distance.

Then the shuttles would, one by one, fly straight down toward the central core shaft in the middle of the spaceport. It was lit inside. It was hard to get a grasp of the size of everything initially. If you thought it was one size, and it was really ten times bigger, then you felt like you and your shuttle had been shrunk by a factor of ten. By the time the shuttle crossed the plane of the mouth of the North pole, people were silent, struggling for perspective and a better view. Everyone was taking in the scene around them, in a moment of clarity unmatched for most since they had witnessed the end of Earth over three months before. They were entering the new center of Humanity.

In the core they could see other ships flying into and out of Rose World. They followed each other in line for the most part, but a few small ships flew side-by-side and for some unknown reason seemed to be bouncing a small asteroid between them off their deflector shields as they flew. All along the core there were daylighters and deflector generators. The walls glowed very slightly with the light from the deflectors that lined them. As a result, it would be very difficult for a ship to actually come into contact with the walls of the passage.

Then the core ended in a flat bottom. On the bottom was a small spaceport. The shuttles docked in the weightlessness and the pilgrims floated through an airlock into corridors and finally into elevators which took them down to the spinworld floor. The elevator ride took ten minutes. Each elevator could carry a hundred people. There were two elevators that descended to the main development on the floor below. The shuttles left as soon as the people had departed.

The ten-minute elevator ride was cramped, like life on the bubbles and in the shuttles. Many of the people were unaccustomed to weightlessness and the trip in the shuttles was disorienting for them. People gently bumped and jostled each other. As soon as an elevator began its descent there was a noticeable but very gentle thrustgravity. Everyone inside it would settle onto the ceiling, relieved even for a little consistent gravity. There were no windows to look out of and only their excitement for what would happen next could balance the inherent discomfort of waiting with nothing to do and no space to do it in. The temperature inside the elevator rose noticeably and the smells of people filled it. The elevators were lit at

full daylight level, and everyone looked like they'd been traveling for a week.

About halfway through the journey, the elevator car rotated so the ceiling was down and then the car decelerated, supplying a slight but consistent thrustgravity again. It was even more disorienting and people endured the passing moments as best they could.

Then, the doors opened. The air was cool and fresh and it was a dark night inside the infant spinworld. They had somehow expected daylight. They floated out of the elevator under a huge circus-tent structure. There was a net corridor through which they could pull themselves along. There were already some buildings under the huge fabric roof. There were nets everywhere. There were only a few other people around, but one person floated directly toward them.

“Hi everyone, welcome. Welcome. I'm Rob Rhoten, your guide and assistant. I know you've all had a difficult journey to get here, but you're home now. Follow me and I'll show you where you can stay and where you can get food and other supplies you might need.” Rob led them along a series of rope net corridors finally to a large barracks-like building with hundreds of rooms. It was built from plastic parts synthesized in factories outside of Rose World. There was plenty of synthetic plastic to build with and it could be manufactured in a dizzying variety of forms and textures. The building was obviously designed for use in zero gravity as well as when there was spingravity.

Rob led them inside, into a large room where he told them the basics about life in the spinworld. He showed them maps of the spinworld and where different resources could be found. He let people choose their own apartments. Each family was allowed a multiple-room apartment, but single people were given smaller, one-room apartments. Inside each was a console. Displayed on it were instructions on how to set up their Belt web account. Once they had done so, they were presented with questions that guided them through the request/fulfillment system and the webforum system. People looked through the requests and found jobs they could perform and offered to fill them. The offer to fulfill was the act that made them finally feel connected and a part of the spinworld community.

Many people were surprised when the daylights outside began to slowly turn on. It was sunrise inside the spinworld. Looking out of a window one could see other buildings nearby and people beginning to stir. It looked like the development was a small gem on the inside of an impossibly large ring of stone. It was humbling. It was easy to feel like an ant in an auditorium.

There was a supply of thrustpacks near all the doors of the building. They were unnecessary and mildly dangerous inside a building, but outside they were important. After strapping one on, a person could fly wherever they wanted using the thrust and maneuvering their body by swinging their arms, like an extended dive into a swimming pool that goes on forever. The pilgrims were wide awake, and after settling in some of them ventured out into the morning air to explore and find their new jobs. Each shuttle represented a chance for people coordinating various projects to find someone with a needed skill. It wasn't uncommon for project leaders to keep an eye on shuttle arrivals and send someone down to recruit pilgrims with rare but needed skills.

Christopher Floyd, famed designer of the bubbles, floated a kilometer above the development. He'd wanted to get a first-hand overview of the development and the disc he was in. He felt very tired, but he couldn't resist. He'd used his thrustpack to fly straight up and now he gazed down and around. He looked around, across the vast emptiness, up toward the brilliant daylight. Down in the settlement he saw patches of green plants growing close to the ground here and there. He wondered whether the spinworld could be made as hospitable as the bubbles. Then he felt convinced that they could, in time. There was so much space here — it would be easier to live a real life.

He grabbed his arm, which had begun to ache deeply now for no apparent reason. "My breakfast didn't agree with me." He thought to himself as he felt something like a strong surge of indigestion. He continued to look around. It was so peaceful here and people seemed so happy working together. That's what mattered. That people could find a way to be truly happy and not be dominated by the compromises they had to make to survive. He coughed and it hurt his chest. He began to sweat, even though the air was cool. He wiped his brow. His collar felt tight.

Then he felt a sharp pain in his chest and he grabbed the loose skin outside his ribs. The pain rang within him and his legs and hands felt like they were asleep. They barely moved now. He struggled to breathe. His body slowly rotated from his last motions. Now he was barely breathing and his gaze passed over each building of the development one last time. On his next revolution his eyes were closed. Christopher Floyd passed quietly and his body began a long, slow ascent toward the core, pulled very gently by the massgravity of Rose World. People noticed he was missing a dozen hours later and a search was performed. They found him the next day, floating toward the core, stiff and pale, still rotating very slowly. They retrieved his body, but his spirit made it all the way to the core.



The primary efforts occurring in the disc were to build structures including more housing for people who would immigrate and to expand the ecosystem. At least a third of the people became gardeners and they moved out of their apartments within days of their arrival. The accommodations for gardeners were usually tents, but they had portable facilities and portable consoles and they lived a nomadic life, working the soil and plants in an area and then moving on.

The Belties and the pilgrims were used to their own cultures, but those were fading now. A new spinworld culture was evolving. Pilgrims who had arrived only a week earlier were seen by newer pilgrims as already established members of that new culture. They didn't understand the dismay this caused the earlier pilgrims, until a week later, when they were feeling that same dismay at the latest batch of pilgrims.

The pilgrims continued to arrive daily. Workers managed to stay ahead of the demand for apartments, because the number of people building apartments increased as the demand increased. A medical ship arrived from the bubbles and set up a hospital in the development, which still had no name. People didn't need a name yet, because there was only one settlement inside the spinworld. The discs didn't have a name yet either, but there were only two that were pressurized. In conversation one simply assumed the main, populated disc, unless people specifically mentioned the second or other disc.

Meanwhile, back in the bubbles, there was beginning to be a little relief from the overcrowding. Many people were waiting for their chance to go to the spinworld. Pages sent back to the bubbles by people already there described the place and the freedom they felt there. Some complained of a lack of common luxuries, but to the people in the bubbles who could not afford those luxuries anyway, it didn't seem to matter.

The people left the bubbles steadily but the politics of the bubbles didn't change at all. One day, the Outer Earth Survival Committee voted to change its name to the Bubble Management Committee. It seemed kind of irrelevant to most folks, but it was one of the few decisions on which the committee actually agreed. They were for the most part impotent to make decisions because of deep divides among the members about the role of the committee and its goals.

There was still a solid contingent of people dead-set against the Belt's non-monetary system. They pooled their efforts to defend themselves against what they viewed as a cultural onslaught. But it was an onslaught of disregard. People simply left the bubbles and its Earth-like capitalistic society behind. They simply didn't care about the war of rhetoric being waged by powerful people in the bubbles. Most people still in the bubbles

became quite annoyed with the continuing rhetoric. But they were powerless to stop it it seemed.

There was a bitter outcry when supply shortages were announced in the bubbles. Nobody had anticipated the shortages and now people couldn't understand why they were occurring. There was supposedly plenty of capacity to manufacture whatever they needed. But the factories were not running at full capacity. People who had no money had been purchasing goods they needed on credit. Now people with hard currency had first pick of goods. This alienated almost everyone living on credit. It catalyzed them. Suddenly they could not emigrate from the bubbles soon enough. The earthlifts were pressed into service again. As many as a thousand people a day were leaving the bubbles, and making the pilgrimage to the spinworld. Even people who were not living on credit could see the senselessness of the bubble economy and many of them waited their turn to leave as well.

This sudden influx of people overwhelmed the bubble's infrastructure teams and temporary housing and tents were pressed into service simply to give people a place for privacy until apartments could be built. Fortunately the food supplies in the spinworld were vast. Large stockpiles of food had been delivered there over the course of the previous few months in anticipation of exactly this possibility.

Some of the major industrialists in the bubbles began to realize that there was simply no way to sustain their own wealth. A few of them abandoned their old ways of thinking and offered to work as individuals within the request/fulfillment system of the Belt. This outraged their peers and bitter pages were posted on public webforums, attempting to deride them for their change of heart. It only served to increase the respect paid them by those already committed to the Belt society.

For the last capitalists, the Belt was as devastating as Heccat had been for the Earth and no less avoidable. It didn't matter that they could see it coming. It didn't matter what they did to fight it. It was imminent and it would change them. It would take from them what they loved most at that point: money and power. Not the power to do good for other people. Not the power to do harm to other people. Not the power to change themselves. It took from them the power to take without personally giving. The secure and abundant life they had lived was based on accumulated wealth, not their contribution to society. They feared the change because they thought they could not get what they needed without that money and power. It was not a baseless fear. But what they felt they needed, the Belties didn't even want. Very, very few people in the Belt respected anyone who took and didn't give.

The request/fulfillment system had taught the belties and everyone who joined them that everyone's contribution was important. People earned their own self-respect and believed they fit into the goals of their society. That was worth infinitely more to them than the wages earned by so many people who labored in the futility of debt and devalued employment. People learned to depend on each other and trust each other; it wove a strong fabric. More than anything else, the last capitalists feared what they didn't understand. In the end, they were unwilling to accept the essential capitalistic premise that competition in all things is necessarily good. Competition in economic models improves society. They could not accept that the Belt society was a more successful system than their own. Not only more successful, but the outright winner by far and away, if people's desire to join it was any indication.

Most people on the bubbles acquired Belt web accounts and tried to fulfill requests. Some of the industries in the bubbles began to accept and fulfill requests. It was a very difficult transition at first, much harder than in the Belt. That was because there were still many holdouts. Many of the big corporations refused to participate and only operated on cash. It was hard or impossible to fulfill requests when it required cash to do so, because no cash was received.

Some corporations got more and more money, until a day came when there were few people with any personal money left at all. Then it became unprofitable for the corporations to remain in operation. The executives at company after company and factory after factory, gave orders to lay people off and close down, taking the majority of the money with them in their accounts, doled out as termination bonuses and such. But people did not stay home and stop working. People knew that the products they made were needed.

There were dozens of confrontations as hired security guards attempted to keep workers out of the factories. At first people were scared away, then they moved in force against the guards. There were several violent incidents and dozens of people were killed. In a controversial decision the Bubble Management Committee voted narrowly to adopt a resolution outlawing the closing of factories. If a company wished to close a factory, they abdicated all control over it. If the factory was in a bubble, then control was turned over to The Bubble Management Committee. The Committee would then open it up for the workers.

It was very controversial on the committee, polarized the remaining members. Some of the remaining members resigned. But ultimately it was respected by the companies, because it was the only way they could retain any control over the products and their distribution. The corporations couldn't control the workers anymore without the threat of

lost wages, but the committee retained control of the products that were made and that was of increasing value as barter began to replace currency in the last strongholds of capitalism.

After the Factory Closure Law was passed, and people who had been vocal against the committee found that they could not get what they wanted anymore, people joined the Belt society at an astonishing rate. By the time the bubbles had been at their final orbit for six months, 95% of the people still in them were members of the Belt society, making requests and fulfilling them. The last capitalists owned most of the money now, but it was almost worthless! Most people wouldn't accept currency or credit for work. They expected to have their requests filled instead; money was becoming irrelevant. Like reformed smokers, people eschewed money with distaste and distrust. There was a certain joy in refusing cash that was infectious.

Construction continued on the da Vinci, but it had become clear that there wasn't enough titanium ready for use to complete it. When the public found out that the shortage had been known and for a long time, and that it was known that the da Vinci could not be finished, they were outraged. But it only served to convince them that emigrating to the spinworld was even more urgent. The da Vinci might never be completed. Perhaps new sources of titanium could be found in the Belt, but titanium was a much more scarce element there. There were no titanium asteroids. The moon had always been a cheap and easy source of titanium. Now that titanium lived in a very dangerous place.

The stalling of the da Vinci effort struck a deep blow to any who had until then believed in the capitalist model. Some genuinely believed that their best chances relied on capitalism, but now that faith was broken. People's trust had been shattered — even people who trusted the system to the very end. The last people with open minds finally used them and joined the Belt society. All that remained were a collection of the ultra wealthy, in shock for all their worthlessness now and people who for the sake of being contrary itself desired a life outside whatever society might be at the moment. They defined themselves by what they hated and they hated what they didn't understand and couldn't control. They seemed bent on being a monkey wrench in whatever gears they found.

The monkey wrenches joined the Belt society too, and they soon realized they could simply make requests and fulfill none. It was crime without effort and it lacked the thrill they desired. It was an ironically effective deterrent to crime for crime's sake. The society was already large enough to support the few of them and they found out over time that people knew they were cheating. They got nothing scarce and more and more of their requests were left unfilled or took a long time to be fulfilled. Sooner or later

they would resort to stealing what they wanted and violent crimes began to be reported. There were new problems on the bubbles now, but so far, none of the monkey wrenches saw any value in moving to the spinworld, since they'd have to work there. The bubble sheriffs, who had been doing primarily public service chores, now found they had a crime wave to confront. They took to the task with enthusiasm and there were still more of them than the thieves and thugs.

There were still many people who preferred to live in the bubbles, even though they fully supported the Belt society. They felt part of that society, even if they didn't live on the spinworld. The bubbles were still very crowded, and it would be a year before some would get the chance to make the pilgrimage to the spinworld, but they waited and hoped. The bubbles still had immense manufacturing and synthesis capacities and these were put to use in supplying the spinworld effort. Materials of all kinds flowed into the spinworld and people used them to build housing, recreational facilities, warehouses, manufacturing plants, hospitals and much more. The pace of development accelerated mightily as more and more people joined the effort.