CHAPTER 12: A NEW PLAN

It only took Adrian Garza a little more than two years to keep his promise. His original plan was to finish the last Vault in January of 2421, but the massive influx of people from other star systems filled up his existing capacity faster than he anticipated. However, by March 10th he completed his task. The planet Xanthe now had enough space in the Vaults to hold every man, woman, and child in the world – with room to spare. But that was not all. Carroll Lane and his team had finally finished an important update: it was now possible to spend an entire week in whatever fantasy world the people desired. When that week was over, people only needed to wait 12 hours for their body to recover before they could re-enter their chosen worlds.

The citizens of Star City were extremely pleased. They could now spend nearly their entire lives living out their dreams – and that is exactly what they did. The change was dramatic. The streets of Star City became permanently empty and the nightly riots stopped. People would spend a week in the Vaults and then go home to eat something and sleep. The next morning they would wake up and return to their fantasies.

When people stopped destroying the city the maintenance bots were finally able to get the upper hand. They fixed the city's problems – and this time the problems stayed fixed. The Diano Corporation had to scale back their production of plasma because people were no longer using it. The world had changed.

Carroll Lane was pleased with the progress that he had made, but he wasn't satisfied. He didn't want people to spend a week in his simulation. He wanted nothing less than *forever* – and he would not stop until he got it.

"But how much is really possible?" Adrian asked him, after the last new Vault had opened. "The situation that we now have is quite tolerable. You've given people a dramatic extension and they are content with it. No one is upset anymore. Is 'forever' really a realistic goal?"

"We've come this far, haven't we? And I believe we can go even further. It won't be easy; I'm not trying to make this seem simpler than it really is. But I do believe it's possible. I will find a way to solve the remaining problems. All we need to do is train the nanites to perform the same functions that the body does naturally when people eat and sleep. I'm certain we can get there."

"How long do you think it will take?"

"I'm not sure. But I've got plenty of plasma and have a whole team of brilliant people who are working hard on it. We will solve this problem – and then we'll be able to leave the physical world for good. The virtual world will become our reality."

"I look forward to that day," Adrian replied.

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A few days later, Dr. Mazatl met with Bernard Valdez and Martin Yates. The time had come to

have an important meeting – the most important one in the company's history.

Martin was the first one to speak. "Let me start out by saying that the project to replace SOLOMON has not been going well. The Corporation has made an enormous investment and it has yet to see any return. In fact, there is not even the remote *prospect* of a return! Every attempt that we have made has failed."

"I strongly disagree," Dr. Mazatl replied. "I believe we have made enormous strides. Why, you've created a hardware system that can actually replicate itself and grow. That alone is a victory! All we need now is a new location to house this extraordinary technology. If we implemented that new design and allowed it to consume an entire planet, we would have a staggering amount of computing capacity – easily enough to house the Nehemiah IV data for many generations to come."

"But *that doesn't matter*. We all know this isn't about adding some extra storage space. What you want is to build an intelligent machine. That is a contradiction in terms. It *cannot* be done. You will never build a system that can automatically manage the operation of the probes."

"Once again, I disagree. I will freely admit that it is a difficult problem. It is unlike anything we have ever tackled before. Our area of expertise is space exploration and colonization, not artificial intelligence. No one has ever solved this problem before – but, to be fair, no one else has ever really tried to solve it either."

"That is because it is *completely impossible!*"

"Is it?" Bernard asked. "I mean, sure, it sounds hard. But people can learn, can't they? People can look at the data and come up with a solution. So why can't we just automate the steps that people take?"

"Because computers don't know what they're doing," Martin explained. "As Professor Grimes has told us many times, machines don't have souls. Look at it this way. Suppose that you locked a scribe in a room and gave him a giant book full of rules. You then sent another person to write some alien symbols on a piece of paper and slip it under the door to him. It was the scribe's job to open the rule book, use its rules to write a response to what was written on the paper, and then slip the sheet back under the door.

"Now, the dictionary doesn't explain the language to the scribe. It just tells him 'If you see these symbols then write these other symbols in response'. If the dictionary has the right rules then it can seem *to someone on the outside* that the scribe is fluent in that alien language. But that's *not* the case. The person who is processing the rules doesn't have the faintest idea what the symbols actually mean. He's just following the rules.

"That's what computers are like – they *just follow rules*. They receive input that they do not understand, they interpret that input according to their predefined programs, and they return a response to the user. They are utterly incapable of actually understanding anything. Building more rules is not the same thing as imparting understanding."

"Oh. I see. But people can understand, can't they?"

"Certainly – but that is because people have souls. Machines don't. There is nothing in them that is even *capable* of understanding. No matter how pretty their interface might be, they're really just piles of highly processed rocks with electrical charges."

Dr. Mazatl spoke up. "I understand the technical challenges that we are facing, but I am convinced it can be done. Perhaps it cannot be done perfectly, and perhaps the machine that we will create will only simulate intelligence without truly having it. But I do think we can build a system that can handle the management of the probes' network after we are gone. At the very least, I think it is

vital that we try. And I do not mean 'try for a few months and then give up'. No, I mean *really try*. To try as if our very lives depended on it – to try as if the entire future of civilization was at stake. If we do not solve this problem then it is a *certainty* the probes will fall apart once we are gone. Something has to be in place to manage their colonies throughout the millennia to come, and we all know that it cannot be this Corporation. We don't have that much time left."

"So what's your plan?" Martin asked. "Are you really suggesting that we build the SOLOMON replacement around some distant star?"

"Absolutely. The whole reason we sent the Nehemiah IV probes to distant stars was so that their network would survive if something terrible happened to mankind. The device that manages that network needs to be equally far away for the same reason. We don't want it to be caught up in the fall of mankind."

"But aren't things improving?" Bernard asked. "I mean, the riots have pretty much stopped, and people are spending all their time in Vaults now. The infrastructure of this city has never been better. Job satisfaction for my group is way, way up. I've heard that Lane is working on a new vault upgrade that will let people spend their whole lives in the vaults – and when that day happens this city's problems people will be gone. It seems to me that if this technology spreads, the people who care about the virtual worlds will live in the Vaults and die and then leave the real world to the rest of us. I don't think we're in danger anymore."

"That is one way things could play out. But I fear that is not the only possible future. I, for one, did not foresee the rise of the Vaults – but they came to pass and changed everything. It is quite possible that something else will arise that will also change everything, and it will not be as beneficial as the vaults appear to be. Whatever happens, our artificial intellect needs to be out of harm's way."

"I really don't understand your concerns, though. Things are going better than ever, but you're acting as if we're all doomed. Is there any reason to believe we're in danger?"

Dr. Mazatl sighed. "It's difficult to explain. I understand that people are no longer burning down our buildings, but that is *not* because people have improved. If anything, the Vaults are making people even more corrupt that they already were. There are no limitations or restrictions in the Vaults. People can use them to create any sort of world that they desire – and I have no doubt that they are using them in horrible ways. The problem that we are faced with is not circumstances; it is *people*. Mankind is composed of two groups: a tremendous number of very corrupt and evil people who are determined to burn everything down, and a small number of righteous people who are trying to keep everything together. That situation cannot last forever. At some point judgment will come. I don't know when it will happen or what form it will take, but I don't want the probe project to be impacted by it."

"Fair enough," Martin said. "But answer me this. Do you have any idea how you are going to create this new intellect you keep talking about?"

"Absolutely. There are still many possibilities that we have not explored. I have not run out of ideas. I firmly believe we can find a way to make this work."

"All right. I'm still not convinced this can succeed, but if you think it's possible then I will withdraw my objections. So how do you want to move forward?"

"With great secrecy. We must make sure that no one knows what we're doing."

"Really?" Bernard exclaimed, surprised. "That's kind of strange! We've never been a company of secrets before. Why, everyone knows about our Nehemiah probes. Why start now?"

"Because I believe that the creation of this artilect will be the largest and most important

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device that we've ever created. We will not be able to create it remotely, or create it locally and then launch it into space. In order to build it we will need to relocate all of our personnel to a distant world and spend years constructing it. In other words, the Corporation is going to have to leave Xanthe."

Martin spoke up. "So? That really shouldn't be a problem – especially once everyone starts livings in vaults forever. I just don't see a need for secrecy. Who is going to care that we're gone?"

"Not so fast," Bernard interrupted. "Sure, the *Vaults* are self-contained, but Star City isn't. The infrastructure of this world still needs to be managed, as do the ZPEs. If we moved out today then the whole world would fall into ruins. The Vaults would be the only thing left – and people can't live in them full time yet. If this city collapsed there would be massive problems. People would die. In fact, *everyone* would probably die."

"You're quite right," Dr. Mazatl replied. "That is why the Diano Corporation is going to launch a new automation initiative. By the end of this year we are going to fully automate all maintenance processes – even the maintenance and replacement of our repair robots. The goal will be to completely remove people from the process."

"We've already started working on that, to some extent," Bernard said. "We've made great strides in applying Victor's swarm technology. But our new robots weren't intended to be fully autonomous – they still need people to manage them. If we are going to leave the planet *entirely* then we have a lot of work to do."

"I know. I realize it will not be easy, but it needs to be done. If we can achieve this goal then we can finally leave all of the Ranger worlds. None of our employees will have to be in danger anymore."

Martin spoke up. "Isn't your timeline a bit aggressive? It's already March. There are only nine months left."

"If we need more time then we can certainly extend the deadline. After all, we don't have a fixed date for leaving this planet. But remember, we can build into the robots the same remote-upgrade capability that we built into the Nehemiah IV. If we leave and then discover that we made some critical mistakes, we can write a patch and deploy it. Besides, this company has a long history of being a pioneer in the field of automation. This is something we can accomplish."

"So your plan is to abandon this planet *completely?* You're not going to leave even a single person behind?"

"I'm afraid it's not quite that simple. First of all, I'm not going to force anyone to come along. If any of our employees want to stay on Xanthe then they can do so. However, those who stay behind will no longer be allowed to enter this building. They will have to move out and find some other place to live. Given that things have calmed down and the rest of Star City has been mostly abandoned, that shouldn't be a problem. But we can't have anyone in this building once we leave. Allowing public access would just open the door to sabotage. This building needs to be locked down."

"I agree," Bernard said. "In the past when the Corporation has left other planets, our equipment was damaged and destroyed. Locking this facility down should prevent that."

"But you're still forcing people to leave their homes," Martin pointed out. "Some people have lived in this building for generations!"

"We're not leaving them destitute," Dr. Mazatl replied. "They will have plenty of plasma to create whatever possessions they desire – and, of course, they can keep all the goods they currently have. I'm not suggesting we loot their homes! But we have to keep this building secure in order to ensure the continued operation of its equipment, and people are a security risk – especially when we're gone and there is no one left to look after things. I don't see any alternative."

Bernard spoke up. "So after we've completed this new automation initiative, you want us to leave Xanthe for some faraway star system. How many employees are you planning on taking along?"

"All of them, if they'll come. There will be plenty of work for anyone."

"Won't you need a fairly large starship to carry them? After all, moving ten thousand people, plus all the supplies you'll need when you arrive, is no small task! We don't have any ships that large."

Martin spoke up. "That's not quite true. The ships that are in space right now may be small, but in the old days things were different. I've seen the blueprints for a class of starships so large that they had their own ZPE."

"Exactly," Dr. Mazatl replied. "Centuries ago space travel was far more common, and the use of large ships was commonplace as well. We haven't needed a cargo ship that large for a long time, but that doesn't mean we don't have the plans for them. It's just a matter of dusting off the files and starting the fabrication process."

"I'm guessing you're going to want to build the ship in secret, right? The last thing you need is outsiders wondering what you're up to. We don't want people panicking or following us through space or trying to burn down our building. If your artilect is going to survive then, as you said, it needs to be in an unknown location. Otherwise people might try to sabotage it, and who knows what could happen."

"I wholeheartedly agree. Martin, you will be in charge of building the ship in space, far from prying eyes. Since it will spend its entire existence in space and will only make a single journey, we don't need to put a lot of effort into its construction. The Nehemiah IV probes were designed to operate for a thousand years. This new vessel does not need that level of quality – which should speed its fabrication process considerably. Since secrecy is critical you should use automated build processes as much as possible. Try to involve as few employees as you can, and make sure they know how to keep a secret. We don't want word of this leaking out."

Martin nodded. "Do you want my team to build this ship while the maintenance automation project is under way?"

"I certainly do. The maintenance automation initiative will be the big project that everyone knows about and talks about. The starship project will only have a few people attached to it and will be done quietly. It should be possible to complete both at the same time. Your main focus will be on building the ship and getting it ready for the trip. Bernard will be focused on automation."

"What is the ship's intended destination?"

"That is something we will need to decide. I believe there are a number of promising locations. However, once we make our decision we will have to guard the coordinates with great care. As you pointed out, the whole reason we're building the artilect so far from civilization is to protect it from mankind. The three of us will know the coordinates and will enter them into the ship, but they will have to be kept hidden from everyone else."

Bernard spoke up. "So we're going to ask our employees to follow us to some undisclosed location? That's going to be a tough sell! I'd much rather be honest and open about where we're going."

"As would I. But a great deal is riding on this, and it would only take one person to destroy it all. Can we really trust *all* of our employees to *never* make a mistake or do something foolish? The only other alternative would be to closely monitor everything they say in order to make sure they don't slip up, and I am firmly opposed to that."

"So you're going to allow communications with the rest of the galaxy?" Martin asked.

"Of course. We will need to know what the Ranger colonies are doing. I don't want to become hermits that are blind to the universe around us. A lack of knowledge can be an exceedingly dangerous thing."

"But how will that work? Won't that give away our location?"

"No one pays attention to the way that messages are routed. People just place their calls and let the machines handle it. This won't be any different. People won't be able to contact us; instead we will have to initiate the call. When we do that we'll route the transmission through one of our own satellites that will be strategically positioned in deep space. In order to find the location of the artilect they would have to go to that satellite, take it apart, and decrypt its data – but the satellite will be set to self-destruct if anyone gets too close."

"All right. I guess you have a good point. It just seems like a security risk to me."

"I don't think we'll need to make frequent calls. Most of our employees – perhaps all of them – will have no ties to Xanthe, and even if they did they won't be able to reach people who spend all their time in a Vault. I suspect this will mostly be used to talk with the leaders of other Ranger worlds to see how things are going."

Bernard spoke up. "How long will this project take?"

"I don't plan on ever returning to Xanthe. Building this artilect will take at least twenty years – perhaps longer. Twenty years from now the Vaults will probably have taken over every planet in the galaxy. It won't make sense to return to an empty galaxy that is lost in its own fantasies. No, I plan on staying on our new world forever and establishing a new colony there – one *without* Vault technology."

"When do you want to leave?" Martin asked.

"Next year. If at all possible I would like to leave in 2422."

"That's mighty ambitious!"

Dr. Mazatl nodded. "We have no time to waste."

Bernard spoke up. "It sounds like you want to give employees the choice to join us or stay behind. How are you going to do that without revealing our secret? Won't word get out the minute we tell people what's going on?"

"I'm afraid there's only one way to do it. It is unfortunate but we can't risk being tracked. Therefore, in advance of leaving, a few trusted employees will find abandoned buildings, repair them, and set them up as living quarters for all our employees. When it comes time to leave we will hold a mandatory company-wide meeting – on board the new ship. That is when we will tell them what is going on."

"How are you going to get them into space without people finding out?" Martin asked.

"We'll have to use the transporter. Since the ship will be in orbit it shouldn't be a problem. It will be a simple, untraceable way to move everyone at once."

"Isn't that device one of our best-kept secrets? Most people don't even know we have that technology."

"It certainly is. Can you imagine what would happen if word got out? There's already enough crime as it is! If people knew that they could transport themselves through solid walls – or reach into someone else's home to grab something – then our entire civilization would collapse. But in this case it doesn't matter. Once we're gone it will make no difference if people know we have that capability. After all, we're not going to give it to them, and no one will know where to find us. We will be out of reach.

"Once everyone is on the ship we will tell them our plan and give them a choice. If they want, they can come with us to start a new colony on a new world. This colony will be free from the oppression of the outsiders, and will be a place where a man can walk the streets without fear. If that does not sound good to them then they can remain on Xanthe and live in the new quarters that we have set up for them. They will receive their daily plasma allowance with the rest of the population and can live as they please – but they will no longer be able to enter the Diano Building. Those who chose to stay will remain on board the ship, and those who leave will be transported directly into their new quarters."

"How much time are you going to give them to decide?" Martin asked.

"Only a few hours. I know it isn't much time, but I'm concerned that someone is going to notice that we have all disappeared. Even though we spend our lives in the Diano Building we still have some contact with the outside world. We can't risk discovery."

"I suppose you're right. I don't think they're going to be happy about this, though."

"I know. I just hope they understand our reasoning. There is only so much we can do. Are we all in agreement over this course of action?"

"I think it has to be done," Martin commented. "I'm not happy with all aspects of the plan, but I can't think of a good alternative."

"I agree," Bernard said. "This plan has my support."

"Very well. Then it is time to get started! We have no time to waste."

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The following day Dr. Mazatl called Victor to his office. "Is there something wrong?" Victor asked, as he took a seat.

"No, not at all. You've been doing a fine job. The Nehemiah IV probes have been working very well; as far as I can tell, all the issues that have been discovered have been quite minor and easily resolved. No serious problems have been found – due in no small part to your careful work."

"Thanks! I'm just a small part of the team, though. Thousands of people worked on the probes. I'm just glad that I didn't make a terrible mistake. Those machines are so complicated."

"They certainly are. Oh – that reminds me! Have you received any further mysterious transmissions? I know you've spent quite a bit of time trying to track those strange signals down."

Victor shook his head. "After I sent my reply the transmissions stopped entirely. The probes haven't detected anything since. We'll probably never know what happened."

"Perhaps not. Well, at least that's one less mystery to worry about. It probably wasn't anything important."

"So what can I do for you? Is there something I can help with?"

"As a matter of fact, there is. As you know, the Diano Corporation has been in the business of maintaining Xanthe's infrastructure for some time now. Building the infrastructure was a big project; keeping it running has proved to be a nightmare. The engineers designed it to last forever but the residents of Star City have done their best to vandalize it."

"That's true," Victor agreed. "Although I think things have gotten a bit better lately. People seem to be spending all their time in Vaults these days."

"Yes, we have been granted something of a reprieve. Which is why this is the perfect time to launch our new initiative. The Nehemiah IV probes have proven that we can build a very complicated

machine that is not only self-replicating, but also self-repairing and self-maintaining. Since the maintenance of the Ranger worlds takes up so much of our time and effort, it only makes sense to apply that same technology to the planets where we live. Therefore, Bernard Valdez is starting a new initiative to completely automate all infrastructure maintenance."

"Wasn't he already working on that? That sounds like old news."

"Not quite. In the past Bernard was just improving the automation. What we want is to *completely* automate things – to the point where no human interaction is required at all. We want to get out of the maintenance business altogether."

"That's a great idea! I don't think it will be easy, but it's a good goal. It really should have been done years ago."

"I agree. The problem is that we didn't have the resources before; all of our people were tied up with the various Nehemiah probes. However, now that we've launched our last probe we have some free resources on our hands. This is the next logical step to take."

Victor nodded. "It'll be a challenge, but I'm sure it's doable. It's just a matter of taking the technology we've already developed and adapting it."

"Exactly. Victor, since this is all based on your swarm technology, I'd like you to be a key part of that project. Bernard will be contacting you later today with your assignment. This is a key priority and I want to make sure it's done properly. It is critical that the entire project be finished this year. We don't have a lot of time."

"This year? Really? But it's already March! Why does it need to be done so quickly?"

"I suppose it will do no harm to tell you. After all, you are a direct descendent of Timothy Stryker – his only living descendent, in fact. Can I trust you to keep this in the strictest confidence? What I am about to tell you must not be leaked out to the rest of the city under any circumstances."

"Of course."

"Very well. The truth is that next year the Diano Corporation is leaving this planet. We are going to move all of our employees to a new world so that we can build a replacement for SOLOMON. Since we're leaving there will be no one left to maintain Star City. Therefore, we must automate its utilities before we depart."

"Oh," Victor said, startled. He remembered the conversation he had with Grimes. *I guess the professor persuaded him to leave after all. Interesting.*

Victor began thinking about the technical challenges of what he was being asked to do. "Yes, it does make sense. If no one is going to be here to fix problems then the machinery will have to be very resilient. We'll need extensive remote monitoring systems, along with the ability to write patches and upgrade them remotely if things start going wrong. Star City will also need to be able to produce its own maintenance bots when the old ones wear out. If we are leaving Xanthe then there's a lot that has to be done."

"Exactly. I'm sure that you and Bernard can work out all the technical details. Now, remember that Bernard is aware of our departure but most of the people on your team are not. Be sure to keep this knowledge a secret."

"Of course. I can understand the need for secrecy. How long do you think we will be gone?"

"Forever. We aren't going to be coming back." Dr. Mazatl paused. "Do you think your coworkers will be willing to come with us? I'm not going to force anyone to go, but we will need everyone in order to succeed."

"I don't see why they wouldn't come. Right now we're basically prisoners in this building. Now,

don't get me wrong: it's a very nice building and we lack nothing. But we're still in a cage. If we had our own world – a world that was actually *ours* – why, that would be fantastic! We would be free. I think most people would jump at the chance."

"That's what I'm counting on. There is so much riding on this! The artilect may turn out to be the most important device we've ever built."

"The what?" Victor asked, surprised. "What did you call it?"

"Oh, I'm sorry. The artilect. It's short for 'artificial intellect'. I don't want to replace SOLOMON with a normal artificial intelligence. I want something greater – a machine that is capable of true learning. It will be a remarkable challenge."

Victor thought back to the video that Timothy Stryker had recorded five hundred years ago. *The Twins said that the Artilect had sent the Sentinel back in time to rescue them. And now it is coming to pass*.

Aloud he said "It certainly will be a challenge, but I have no doubt that you will succeed."

Dr. Mazatl sighed. "To be honest with you, Victor, I think we are doomed to failure. It is impossible to create an intelligent machine. The artilect will only work if it is sentient, and that is not an achievable goal. That is why I have one more request for you."

Victor was extremely surprised. "What do you mean, it's not achievable? All I've heard the past few years is that it's just a matter of finding the right algorithm! In fact, I've heard you give at least four different speeches about this just in the past year."

Dr. Mazatl shook his head. "Grimes is right. You can't use rules to create understanding. The machine needs a ghost, Victor. It needs to be more than just a machine; it needs to be alive. That is why I need your help. I need you to take your swarm bots and send them to a certain star system for me."

"I don't understand. How will this solve the problem, and why ask me for help? I mean, you're in charge of everything. If anyone has clearance to do this it would be you."

"It's not a matter of clearance. Everything that I do is watched closely – not just by the people of Xanthe, but by the other Ranger worlds as well. If I were to send bots to this world – a world that no one knows exists – it would attract a lot of attention. But no one pays any attention to you. People would think you just wanted more books or something. You could achieve the secrecy that I need."

"Ok," Victor said slowly. "If you want me to dispatch some swarm bots then I can do that. In fact, I can probably get them launched in the next few days. But I'll need to know where to send them."

"Don't worry about that. I'll upload the coordinates myself after they have been launched. I'll also upload the mission parameters. By the time the bots fulfill their mission we won't be on Xanthe anymore, but that won't be a problem – I'll route them to our new home. All I need you to do is launch them."

"I guess I understand. I'll launch the bots and will keep this a secret. But I don't understand how this is going to make any difference."

"It may not make a difference. This might not work. But if the bots do return then I'll show you what they brought back and will explain my plan. In fact, I'll need your help."

"I won't let you down," Victor promised.

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Bernard Valdez met with Victor later that day to give him his assignment. To his surprise, Victor was promoted to management. He now had the enormous responsibility of leading the team that would automate the maintenance of the ZPEs.

The zero-point-energy reactors were incredible pieces of machinery, but their development had stagnated centuries ago. Once they were able to produce the plasma that drove the Ranger economy, people stopped improving them. In fact, most people stopped working altogether and demanded to be supported for free. The Corporation unwillingly granted that request and turned its attention to the Nehemiah probes. Since everyone was tied up, and since there were no other companies in the galaxy, no one advanced the ZPEs. The reactors were well-designed, but they did break down and require repair.

In order to solve this problem Victor's team decided to design an entirely new ZPE. This second-generation ZPE would incorporate two new features: an advanced diagnostic module that could spot problems (preferably before they even became problems), and the ability to fabricate its own repair parts and apply them automatically. Fortunately there was already two centuries of log files that recorded all the different things that had ever gone wrong with the machine. This gave Victor a large list of situations to test.

Victor had not forgotten the bizarre request of Dr. Mazatl. In fact, he was better than his word. On March 15th he sent his probes into deep space – just one day after meeting with Mazatl. He then turned control of his probes over to the company president and went back to work on the ZPEs.

Since Victor's team was applying existing, proven technology, they made rapid progress. On September 3, 2421 – just six months after being given the assignment – the second generation of ZPEs was fabricated and entered its testing phase. Victor made the new units endure a rigorous three-month testing program that was designed to reproduce everything that had ever gone wrong. He was a little uneasy about the fact that he was repairing the ZPEs with unstable matter, but given the limitations it couldn't be helped. He had no doubt that they would discover flaws; that's what testing was all about. But he was confident that they could fix the issues.

After all, they *had* to. The company was leaving Xanthe. If something terrible happened then they could dispatch a robot to fix them, but Victor didn't want it to come to that. He was determined that the ZPEs should fix themselves, and he wasn't going to let Dr. Mazatl down.

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After the first week of testing was over, Victor decided that he needed to clear his mind. In one sense the testing had gone well: several problems had been uncovered that needed to be corrected. *At least we have a good set of tests*, Victor thought. *I would much rather find these problems now than find them after we're thousands of light-years away and can't do much about them.*

Ever since his neighbor had complained that Victor never left the building, Victor tried to make it a point to go outside at least once a year. Today he decided to visit the outdoors once more, so he took the subway to Star City University. There was something about that place that he found relaxing and serene. It was one of the only locations outside of the Diano Building that he felt comfortable visiting. The campus was an oasis of peace in a sea of insanity.

Victor walked onto the college grounds and looked around. As always, the place was immaculate. The trees, flowers, and grounds were in perfect order. The area was well-lit, which obscured the fact that the night sky was utterly black.

Victor walked down a brick path and came to a bench under a large oak tree. He sat down and breathed in the fresh fall air. The programmer slowly began to unwind. *I suppose that leaving the Building is not all bad. I'm not a big fan of bugs but there's a lot to be said for trees.*

As he rested, he heard a voice call out to him. "Good evening, young man! What brings you to the University?"

Victor turned his head and saw Professor Grimes walking down the path. "Oh, I was just trying to relax. I've been working on the automation initiative and it's been pretty challenging."

Grimes nodded. "I'm sure it has been difficult – but you're trying to solve a difficult problem. Even so, I have it on good authority that you have made remarkable progress. Some of your coworkers managed to create self-repairing robots that can maintain this University! They're quite delightful. Do you mind if I have a seat?"

"Not at all," Victor said.

Grimes sat down next to him. "Yes, I'd say that your automation project has been going remarkably well. Despite the problems you are encountering I think that Dr. Mazatl will be able to leave next year on schedule. I will be sorry to see him go, but I cannot fault his reasoning. In fact, as you know, I've urged him repeatedly to take that very course of action. The Corporation's survival depends on leaving Xanthe and separating itself from these cursed Vaults."

"I couldn't agree more. The vaults encourage all sorts of sin and depravity. Even if they didn't – even if they were entirely benign – why would you want to waste your entire life just lying there, dreaming? What's the point of that? What will God say about that choice when you stand before Him and are judged?"

"Quite so," Professor Grimes agreed. "But most people don't think about the potential consequences. They have no fear of God or concern about His wrath. All they see is that they can have whatever they want. They never stop to think about the terrible price they will pay – an eternal price. Now, I am not saying that virtual reality itself is evil. It is never the technology that is evil; the evil comes from the way it is used. What Carroll Lane is doing is incredibly dangerous. It will destroy society if he is not stopped – which is why I am going to remain behind when the *Vanguard* leaves next year."

"The what?" Victor asked.

"The ship that will take you to the site of the Artilect. Dr. Mazatl told you that the company was departing, did he not? How did you think you would get to that new star system – by walking? Did you think that you would board a bus?"

"I guess I didn't think about it," Victor admitted.

"Always think of the implications, young man. But, yes, the *Vanguard* is a giant freighter that Martin Yates has spent the last six months constructing in an orbital shipyard. Unfortunately, he has been doing a rather poor job. Martin seems to be under the impression that the vessel will only be used once and will never land on a planet. He is not considering the possibility that things may not unfold as he hopes. The starship should be sturdy enough to handle many different failure scenarios. Martin is only considering success, which is not wise. Still, the vessel should be able to transport you to that new star. I, however, will not be joining you. I have work to do here."

"I don't understand. What work could their possibly be? Everyone will be in Vaults! You'll be wandering the streets alone."

Grimes shook his head. "We have already discussed this. Someone needs to remain behind and start a movement against the Vaults. They're dangerous, they're wrong, and they must be stopped. So

far Carroll Lane has not exported the technology to other Ranger worlds, but that is surely only a matter of time. Even if he does not part with it willingly, someone will come here and steal it. There is simply too much offworld demand for it. I intend to convince the Ranger governments to outlaw this new technology. The Vaults are a terrible temptation. The only way I can do that is if I'm still here and can travel between Ranger worlds. I have a great deal of work to do.

"But there's more than that, Victor. The gospel still must be preached, for there are millions of souls that need to hear it. The Vaults may be very popular, but there are a few outsiders who have realized just how empty and unsatisfying they truly are. People have a desperate need for God. They have a hole inside them that cannot be satisfied by anything less – and there is also the serious matter of the wrath of God, which people must be warned about. The vaults are not going to satisfy everyone. Someone must remain here to tell the people what Christ has done for them.

"It is not a good thing when all the saints of God leave a society. The Lord has a tendency to withhold judgment until all of the righteous are gone. God was willing to spare Sodom and Gomorrah if there were just 10 righteous people there – but since there weren't He burned those cities with fire. God told the prophet Jeremiah that He would spare Jerusalem if he could find just one righteous person in it. I don't know how much time I have left, but I intend to be that righteous person. I am going to remain behind and share the gospel as long as I am alive. We both have jobs to do, Victor, and I'm not going to abandon my post."

Victor nodded. "I understand. I'll miss you, though. You're one of the few sane people I've ever met."

"Then by all means, stay in touch! Call me as often as you desire. I realize it's not the same as coming to this University in person, but you will not be completely isolated. You could even continue to attend my classes remotely, if you wished."

Victor smiled. "How long are you going to keep teaching?"

"As long as there is someone who wishes to learn," Grimes replied.