

# CHAPTER 1: LAUNCH DAY

**Log date:** February 5, 2415

**Location:** Xanthe

**Log note:** Sometimes it comes down to one person who cares

HISTORY IS FULL OF DATES of great significance. In 774 Nigellus Ahexotl became the first man to set foot on the Moon. In 924 the Mayan Republic founded the first lunar colony. 989 saw the Mayan Republic destroyed in a nuclear war with Rome, which led to the birth of the Spanish Empire. All of these events changed the course of mankind and led to a very different future than the one that wise men had predicted.

1867 proved to be another pivotal year. Up to that point, the Spanish Empire appeared to be unstoppable. As the Emperor grew in power and influence, he decided to wage war on Mars and the rest of the colonies that were out among the stars. With no provocation or warning, he attacked the *Sparrow* and vaporized much of the Martian city of Tikal. The Rangers then made the fateful decision to create an impenetrable Wall around Sol, which imprisoned Earth and its Emperor in a cage from which he could not escape. That act ended Earth's dominance over the star colonies and gave them their independence.

The future looked bright for this new interstellar society. The Diano Corporation had founded colonies in nearly a hundred star systems. That same company had also created one of the wonders of the age: the Zero-Point-Energy plant. This amazing device could extract endless energy from the quantum froth of space itself, and turn that energy directly into matter.

In the beginning these devices were used to terraform planets, by pumping out streams of atmospheric gases. This radically transformed space exploration and made colonization far more practical. The old method of terraformation required at least a century to create a habitable world, but the first generation of ZPE plants cut that time down to just two decades. Later generations improved it even further.

It began to look like mankind would finally achieve its ancient dream of inheriting the stars. They would succeed where the ancient Mayans had failed. After all, there was nothing to stop them. There were no enemies lurking in the dark places of outer space, waiting in secret to ambush them and destroy all they had built – or so they thought.

But mankind proved to be its own undoing. Men forgot about the corruption that lurked within. The very technology that was created to colonize the stars ended up destroying mankind's desire to do so. Once the ZPEs were able to manufacture atmospheric gases, it took only a century to enhance them to produce any element on the periodic table – and in virtually any quantity that was desired. It took a bit more effort to combine those elements into complex physical goods, but that also proved to be possible. By 2017 the Rangers had a device that could produce practically any physical item that was wanted, in any quantity that was desired, and at virtually no cost.

There was a catch: the artificial atoms created by the ZPEs were not as stable as normal matter. All matter is subject to decay, and some atoms decay far more quickly than others. An atom of Uranium-235 has a half life of 720 million years, which means that if you had a pound of uranium, after 720 million years you would only have half a pound remaining. Uranium-232, however, has a half

life of just 69 years. The shorter the half life, the quicker the material vanishes.

The decay rate of ZPE-created matter depended on the atom itself, but on average the half life was around five to ten thousand years. This meant that if you created a ten thousand pound block of iron, after a year had passed it would be a pound lighter. For things such as atmospheric gases this was not a major concern; it was easy enough to create more oxygen. But this posed a significant challenge when the matter was used to create machinery or electronics. Since the atoms themselves were not stable, it did not take long for the machines to break – and you never knew what part of the machine would stop working first.

A wise civilization would have used this amazing technology to usher in a bold new age. In the 10<sup>th</sup> century the Mayan Republic invented space travel and founded a colony on Mars, but they were never able to bring the costs down far enough to make space exploration practical. Space travel was exclusively the domain of the government – and when the Mayans destroyed themselves, access to space was lost. When the Spanish Empire rediscovered space travel in the 17<sup>th</sup> century they invented a cheap way to access space, and that opened up an entirely new frontier. When the cost of something declines, all sorts of new possibilities open up.

Imagine what you could build if the raw materials were free! Think of the inventions and the endless new possibilities. Mankind could create as they never had before. What was once only possible in a virtual world could now be built in reality.

But mankind chose another road. Billions of people realized that since goods were now free there was no longer any reason to work. They could simply stay at home and gorge themselves, and let the ZPE provide for their needs. Why have a job or go to school? Why bother to even get out of bed in the morning? Why should anyone build anything?

As this attitude began to take hold, the Ranger governments created massive welfare states. The vast majority of citizens did nothing and produced nothing. They were uneducated and idle, and had their needs provided for by the government – courtesy of ZPE technology. People stopped inventing. They stopped founding new colonies and even stopped forming families. The Ranger population began falling, and one by one the colonies started to die.

But there was a flaw in the system. *Someone* had to keep the ZPEs going. The buildings that people lived in and the utilities they depended upon would not maintain themselves, and the ZPE-created matter was constantly decaying. Since no one was willing to work, society began to fall apart. Instead of providing endless wealth, the ZPEs were so poorly managed that they could barely provide for people's basic needs. Since things were going poorly the idle masses rioted and demanded more from their politicians. The politicians stayed in office by making promises they could not keep. When the politicians failed to live up to their word, people rioted even more. The future became quite dark.

The only reason civilization did not die out altogether was because of the Diano Corporation. There were some people who still had a burning desire to *create*, and who were unwilling to sit at home and do nothing with their lives. They knew that God had created them for a purpose and they wanted to fulfill that purpose. The Diano Corporation gathered these people and employed them. They were the ones who maintained the ZPEs that billions of hateful strangers depended upon. They were the glue that desperately tried to hold the last dregs of civilization together. A few thousand workers managed to keep the entire rest of humanity alive – all while ungrateful governments persecuted them and demanded that they give even more. No one appreciated the work that was being done – lest of all the Rangers, who used them as a scapegoat for the countless problems that they themselves had created.

The Diano Corporation eventually realized that their zeal to keep civilization going had actually destroyed it. They had made it possible for mankind to become completely feral and utterly disconnected from reality. The only way to fix the problem was to unplug and let people reap the consequences of their actions – but no one was willing to do that. The company knew that the end was coming and it knew that it had inadvertently made things worse, but it did not want to be responsible for the final blow.

So the Corporation made a different choice. It decided to make one last attempt to preserve civilization before the Dark Ages came and destroyed everything. There was one more task to accomplish before the end came – and February 5, 2415 was the day the company launched that final task out to the stars.

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It was a cold, rainy day in Star City on the planet Xanthe, in the Tau Ceti system – 43 years before Victor Stryker died. At one time the planet's weather had been controlled by an amazing system of satellites, but those machines had fallen out of the sky a century ago. The Diano Corporation did its best to keep Star City from collapsing into ruin, but they were not a charity and they did not have endless resources. They did what they could to keep people alive while focusing on their real goal: the launch of the Nehemiah IV probes.

Victor Stryker's alarm clock went off at precisely 6 AM – as it did every day. Unlike virtually everyone else on the planet, he got up, took a shower, and got ready to go to work. Victor loved the early morning hours: that was when his mind was at its sharpest and when he did his best work. Victor was particularly excited about today, because it was finally launch day.

After grabbing a quick breakfast Victor picked up his briefcase and went outside. Victor lived in a decaying apartment building located outside of Star City. Most of the planet's residents preferred to live inside the city limits, but Victor always thought they were insane. The city was a dangerous place to be. After all, it was in poor condition, it was filled with angry people who had nothing to do with their time, and it was prone to riots. Who would want to live in that kind of environment? Victor liked peace and quiet, and there was no peace or quiet to be had in the city. That's why he had chosen to live alone, far away from everyone else.

The crumbling brick apartment building that he called home was all but abandoned. Only three other people lived there, and all of them were Diano employees. None of them went to work as early as Victor did, which meant he commuted to work alone. Victor didn't really mind, though. On this planet there were really only two choices: be alone, or be with people who were psychotic and insane. Alone was really the best way to go.

Victor stepped outside his apartment building and looked around. Rain fell down from the sky – a cold, bitter rain. If it had been a bit colder it might have snowed. *I wish it had snowed*, he thought to himself. *I hate rain in the winter. It's a miserable experience.*

In front of the building was an abandoned road. The pavement was broken and in poor repair. Old garbage littered the street, and weeds were growing up through the cracks. Down the road were a few other buildings; all of them were either boarded up or had been burned down. Beyond the road were tree-covered hills, and in the distance Victor could see the skyline of Star City. At one time it had been the proudest Ranger city. In its glory days it had been run by giants like Governor Nicholas, who saved the Rangers from the Spanish Empire. There was a time when people thought that Xanthe

would become the capitol world of the galaxy itself, but that was when people still had hope. No one foresaw the doom that actually claimed mankind. Star City looked like it had been devastated by war, but in reality it had been laid low by neglect and hate.

Victor took out his umbrella and began walking down the road. After a half-mile he came to his destination: the subway. At one time the subway had served the entire city and the area beyond. However, in modern times there were only a few lines that were still functional. When the rioting began the Diano Corporation decided they needed a safe way to transport their workers around the city, so they took over the abandoned metro system and went to work. They closed down most of the tunnels and locked the general public out. Once the rioters had been ejected, they rebuilt a few key subway stations and protected them by locked gates and teams of armed guards. Only Diano employees were allowed to use the system. The politicians constantly complained about this and said it was a cruel injustice, but they never mentioned the fact that *they* were the ones who had given the metro lines to the Corporation in exchange for keeping the city's ZPEs running for a few more years.

Victor walked up to the station's entrance and stood quietly in front of the gate. The subway entrance was a small, ugly metal tunnel that descended into the ground. The tunnel was protected by a set of large blast doors that were four inches thick and made of a substance far stronger than steel. The entrance had been designed to withstand a direct attack and had the strength of a bunker. Since the Corporation had been running the subway system, no rioters had ever been able to breach the gates – despite the fact that they were attacked on a daily basis. Dr. Mazatl, the current head of the Diano Corporation, had pleaded with the city government to put a stop to the attacks. The government said that the people had a right to take back what had been so cruelly stolen from them. Dr. Mazatl's protested that the Corporation had a legal title to the subway system, but the city ignored him. The government had learned long ago that the Diano Corporation was not going to use its power to protect itself, so they knew they could treat it with contempt.

There were four guard robots standing outside the gate. All of them were heavily armored and had large energy weapons. Victor knew they were there to protect him, but the sight of them still made him deeply uncomfortable. True, he used machines on a daily basis, and a large part of his life was spent programming them – but he drew the line at giving them weapons. Artificial intelligence was a great thing, but he had serious misgivings about weaponizing it. Victor wished the Corporation could have human beings for guards, but humans were too rare and precious to risk on the dangerous streets of the city. Any task that could possibly be done by a machine had already been automated, and that would never change. If it wasn't for automation the world would have ended long ago. *Which might have been for the best*, Victor mused. *Twelve percent of the city's inhabitants tried to kill someone in the past year, and the government will not prosecute them for it. What, exactly, do we think we're saving?*

The robot that had given itself the name Charlie scanned Victor while he waited in front of the gate. “Good morning, Victor,” Charlie said pleasantly. The bioscan completed successfully and verified Victor's identity. “Are you ready for launch day?”

Victor hesitated. He hated it when they talked to him because he never knew how to respond. He knew that Charlie was a soulless machine, but since it had been programmed to act in a civilized manner he felt that he should probably do the same. Treating a programmable weapon as if it was a human being was insane, but why insult something that could snap you in half? If the weapon chose to be pleasant, Victor would respond in kind.

“Absolutely! At least, I think I'm ready. I just hope I haven't forgotten something important. The

probes are really complicated and there's a lot that could go wrong. I know we tried to plan for everything, but everything is a *lot* of things. Somehow there's always one thing that you never think about that has a way of coming back to haunt you."

Charlie opened the gate and let Victor in. "Well, have a good day."

Victor nodded and walked into the tunnel. The programmable weapon closed the gate behind him and locked him inside the subway system.

The tunnel led deep underground. Unlike the city itself, it was brightly lit and well maintained. Its orderly appearance was largely due to the fact that it didn't have millions of people entering it every day and trying to set it on fire. Keeping it in good condition didn't take very much effort.

After a brief walk Victor arrived at the metro platform and sat down on a bench. He then waited for the automated train to arrive. As he suspected, he was the only person present. Victor had not seen another human being since he left the office yesterday.

*I guess the robots really have taken over, Victor thought. People always said they would rise up and rule the world. The really sad thing is that we asked them to do it – they didn't take it over by force. It seems that all I ever see are robots these days. I probably engage more robots in conversation than people – which is insane. After all, robots don't care. They pretend to care, but that's really not the same thing. They're just machines – imitations of life, made in the image of man. They don't have souls and they have no idea what they're saying or doing. I might as well be talking to a brick! Yet every morning I say hello to them, like I'm some kind of moron. It's madness.*

The subway train arrived precisely five minutes after Victor sat down. The train was always on time – after all, it was fully automated. The people on Xanthe were highly untrustworthy and prone to irrational acts of violence, but the machines were completely dependable. They always did exactly what was expected of them and they never let anyone down. *Maybe that's why there are robots everywhere. In so many cases robots really are better than people. At least, better than the people here, anyway. The machines in my neighborhood never give me any trouble. But whenever I see a new person in my apartment building, I know he's only there for one reason and I'm in big trouble.*

Victor boarded the subway and glanced around. To his enormous surprise he saw that there was someone else on board – a short, stock individual who was wearing a brown hat and a neatly-pressed suit. Not only was he well-known, but he was also the only non-employee who was allowed to use the subway system. "Good morning, Professor Grimes!" Victor called out, as he took a seat across from the man. "This is quite a surprise. I thought classes didn't start until next week."

"That is quite true," the professor agreed. "I'm just running some errands today. Most of my students are going to be joining remotely this year, and the equipment at the university isn't in good working order. There's a bit of repair work I need to complete before I can start the semester."

"After what happened last year I'm surprised *any* of it still works! I wish the Corporation would take over the university and put it on its maintenance list. It's the only institution of higher learning that's left on the planet, and it's in terrible shape. It's unreasonable to expect you to manage it all by yourself. You're only one man."

"I'm afraid the Corporation can't do everything, young man. In fact, it's rather remarkable how much they *are* able to do. Besides, I'm not sure the school is worth the effort. I've only got five students this semester, and it's anyone's guess if they will actually show up. Most people just don't believe that education is worth the effort."

"Hmmm. Well, I suppose that's true. After all, why bother to study if you can get whatever you want for free?"

"But that's the rub, isn't it?" Professor Grimes said. "People *can't* get what they want for free. Someone has to work in order to create all these 'free' things – and if no one works then no one will have anything. The only way a government can give things away for free is by using force to take those things away from the people who actually made them. But since people aren't educated, they're too foolish to understand what the problem actually is. So politicians exploit that lack of knowledge and stay in office by blaming everything on the few people who actually *do* work. It's a vicious cycle that can only end in mass death."

"Now there's a cheerful thought! Goodness. I bet no one ever accused you of being an optimist."

"Things are the way they are, I'm afraid, and it does no good to anyone to pretend that we don't have a problem. In fact, it's quite amazing that things have lasted as long as they have! I would be quite astonished if civilization lasted another fifty years. Mark my words, Victor: the two of us are going to see the end of the Ranger civilization. That is, if someone doesn't kill us first – after all, societies love to murder their most productive members. I'm afraid there's nothing we can do to stop the dark times that are coming."

"Don't you have any hope at all? Isn't there at least a *chance* that things could get better?"

"Well, let's think about that," the professor commented, as the train raced through the underground tunnels. "The reason we're in this mess is because people are corrupt and don't want to work. This is sin at work, Victor – a very deep sin that has grown much worse through successive generations. The only possible cure for sin is Christ, but I'm afraid that people love the darkness and hate the light. If there was massive repentance and conversion then things would certainly improve, but matters have been trending toward evil for a couple centuries now and no change of heart has taken place. Noah preached for a century to a world that refused to hear it. Throughout the galaxy missionaries have been preaching for longer than that, but their results have been no better than Noah's. No, I fear that what is coming is not revival, but judgment. Mankind had its chance and did not take advantage of it, so now it is time for the end."

"But couldn't–"

"Do you remember Alpha Mensae?" Grimes asked. "At one time it was mankind's most distant colony – a shining example of what mankind could accomplish. But as time went on, evil grew. A hundred years ago its government murdered the Diano employees who worked there and seized control of the ZPE. By the end of that year the ZPE was non-functional, the planet's cities had been burned to the ground, and everyone was dead. That planet is now a radioactive wasteland, and will probably remain uninhabitable until Jesus returns. Alpha Mensae is not alone, Victor. Dozens of other colonies made the same choice and are dead for the same reason. One by one the stars are going dark. It's foolish to think that trend is going to stop."

"But there has to be *something!* I refuse to believe there's no hope."

"There *is* something that can be done – and you're busy doing it. Terrible times are coming, Victor, and neither of us can stop it. When people refuse to repent, judgment will come; it cannot be delayed forever. But the evil age won't last forever. One day sanity will return and all will be well again."

"Do you think we'll live to see it?"

"Of course! After all, Victor, you and I have been saved by the sacrifice of Christ. His blood has covered our sins, and God has given us His perfect righteousness. When we die we will enter His presence – and the day is coming when He will return and raise our bodies back to life again and make

us perfect immortals. When He returns He will usher in a kingdom that will never end and which will never see evil. Jesus will forever reign over a civilization that is free of death, suffering, and pain. You and I will live in that kingdom for all the ages of eternity. I assure you that we are *not* going to miss it. Believe me, I am quite looking forward to it. Imagine the university I could run there!

“But for now God has placed us here, and we must all do our part. Speaking of which, I heard on the news that the Nehemiah IV probes are going to be launched this afternoon. Is that true?”

“It is. Well, as long as everything goes well today. Which it probably will, I think. There's still a lot that we need to do, you know? I just wish Dr. Temilotzin had lived to see this day. This is the final, ultimate fulfillment of his dream. He invented the Nehemiah probes, and today we are finishing them. He would have loved this. We've finally achieved what he set out to do.”

“Dr. Temilotzin was born in 2184 – more than two hundred and thirty years ago,” Grimes remarked. “He lived a long life, to be sure, but no one lives *that* long. The last time someone lived to be two hundred years old was back in Old Testament times. But speaking of the probes, have you heard how the government is characterizing the launch?”

“Do you mean you actually listen to the news broadcasts?” Victor asked in surprise. “But surely you know they're all lies! I stopped paying attention to what they were saying years ago.”

“Then you have made a grave mistake. The reason you should listen to their broadcasts is *not* to find out the truth. You are quite right – they are liars, and their lies are very transparent. No, the reason you should pay attention is because they are telling you in advance what their next move is going to be. By the latest census reports there are 10 million people in Star City, which means that we are badly outnumbered by psychotic madmen. The only way we can win is to know in advance what they are going to do next, and then prepare a countermove.”

The professor reached into his pocket and pulled out a small electronic device. He turned it on, pressed a few buttons, and then handed it to Victor. “Read this,” he said.

Victor began reading the article:

“In an extraordinary act of stupidity, the Diano Corporation is scheduled to launch a series of ill-conceived probes into outer space. These probes – which the company has poured billions of solars into – will not serve the welfare of the people. Instead they will fly off into a distant region of the galaxy, where no one lives, in order to perform completely pointless tasks.

“This foolish idea is the brainchild of Dr. Laurence Mazatl, who has been forced to testify before the city council six times in the last year to defend himself. President Rios has made it clear that space exploration is a criminal waste of resources, and that the Diano Corporation's money should be spent to better the lives of the citizens of Xanthe.

“‘By launching these probes, Mazatl is showing nothing but contempt for the citizens of this world,’ Rios told reporters this morning. ‘He is clearly guilty of treason. Such an action will not be tolerated. If he goes through with his wicked plan then I will see to it that he and his employees are prosecuted to the fullest extent of the law.’”

Victor stopped reading the article. “But this is insane! First of all, the Diano Corporation does not owe the government anything – in fact, the government is deeply in debt to the Corporation. They

owe us billions for ZPE usage that they are never going to pay. Second, space exploration is *not* illegal! Dr. Mazatl hasn't done anything wrong and the Corporation has not violated any laws. Rios is way out of line here. This is ridiculous.”

“Oh, I quite agree. But that doesn't mean you shouldn't take him seriously. Rios is a genuine threat, and Mazatl's refusal to stand up to him is only breeding more trouble. Mark my words: Rios' speech will be followed by action. The Corporation will continue to be attacked until it starts defending itself.”

“But they would be crazy to try to arrest Dr. Mazatl! Don't they know what would happen if they shut the Diano Corporation down? They are completely dependent on us for food, water, power – everything! You said it yourself – without us they would die. It would be Alpha Mensae all over again.”

“Just because it is insane doesn't mean they won't do it. History is full of leaders who did insane things and reaped terrible results. The Corporation has placed itself in a terrible position. They should never have decided to maintain all of civilization's infrastructure for free, on all the worlds that mankind has inhabited. If they had abandoned the colonies centuries ago, when things began to go bad, then things might have turned out differently. They did have the option of removing the ZPEs from the market. They could have decided *not* to indulge the wishes of billions of people who are nothing but parasites. They had no responsibility to make sure that murderers and psychopaths led comfortable, work-free lives. They could have fled to some other planet and built their probes in peace. But instead of doing that they made the decisions that, sadly, led to the world we have today. And how is civilization responding? They are massacring the company's employees in world after world. This was all very preventable.”

“So what should we do?” Victor asked.

“Why, finish the job that you started, of course. I believe what you are doing is important. But if I were you I wouldn't go back to your apartment. The Diano Building is a fortress; your apartment is not. Rios is about to declare war and I fear it is going to get ugly. I have told this to Dr. Mazatl many times: the Corporation needs to flee Xanthe. If it stays here it is only a matter of time before the parasite kills the host.”

As the train began to slow down, the two men stood up. “Well, young man, I hope launch day goes well! Despite what Rios has to say about it, the launching of the Nehemiah IV probes is a momentous occasion. The Corporation is about to do something truly astounding. Future historians will look back on this as one of your greatest accomplishments. I sincerely hope that the Corporation survives to do more astounding things in the future.”

“Thanks,” Victor said. He grabbed his briefcase and waited for the train to stop.

“And don't forget – you signed up for my Applied History course! The class begins on February 18. I think you'll find it interesting.”

“Your classes are always interesting,” Victor replied, grinning.

When the train came to a stop, the two men left the train and went their separate ways.

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Victor Stryker worked in the Diano Building, which was the galactic headquarters of the Diano Corporation. In fact, nearly all of the company's employees on Xanthe worked there – except for a handful of brave souls who were dispatched to areas around Star City to fix infrastructure problems.



At 287 stories tall, the Diano Building was the largest skyscraper in existence, and had been for centuries. The building was more than five hundred years old but was still in excellent condition (largely because the public was not allowed to enter it). Four ZPE plants resided in its massive frame and provided for nearly all the needs of Star City.

At one time the building had been made of glass and steel, but the glass had been replaced long ago by a thick protective armor. The building was guarded by an army of robots, and a fortified perimeter kept rioters a quarter mile away from the structure at all times. In the past century no intruder had ever managed to penetrate its security. Very few non-employees were allowed to enter the building – and no government employee or politician had been allowed inside in Victor's lifetime.

Today the skyscraper was buzzing with activity. Everyone in the building was playing some role to prepare for the launch of the Nehemiah IV probes. The probes themselves were actually already in space – they were far too large to be constructed inside the building, and so they had been manufactured in orbit around Xanthe (which put them out of reach of the city's greedy politicians). The massive probes were a staggering five miles long, and had the most advanced artificial intelligence, replication, and terraformation abilities that mankind had ever seen.

Although there was a small group of engineers making some final preparations on the heavily fortified spacedock, most of the work was being done on the ground. Like all Nehemiah-class probes, the IV series was entirely automated and would not carry a crew. The physical construction of the probes had been completed a week ago, and a final series of tests had uncovered hundreds of flaws in their operating software. Over the past week, people had worked frantically to fix the software in time for the launch to proceed on schedule.

After Victor exited the subway he walked up the access tunnel, through another armored gate, and entered the basement of the building. He then took the elevator to the 194<sup>th</sup> floor. When he stepped out of the elevator he saw that the employees in his division were already in their offices, busy working on patches that were due in a few hours. No one was walking the halls or running around.

*I feel like I'm late, Victor thought. Yet I'm definitely on time. I know I have work to do but I'm sure I can complete it this morning. Maybe I should have gotten here earlier? I don't know. Oh well. I'm here now, I guess.*

On the way to his office, Victor stopped by to check on his coworkers. He cracked open the door to Carroll Lane's office and waved at him. "How are things going today?"

"Not good," Lane grumbled. "I just don't understand why this isn't working! It keeps telling me the message format is invalid, but I've checked and it's perfectly fine. The software has finally lost its mind."

"It might be a library conflict," Victor suggested. "I've seen that happen before. Patrick has been struggling to resolve versioning issues with the build script."

"Do you have a minute to lend a hand? I could really use some help. This was supposed to be deployed an hour ago."

"Sure," Victor replied.

Victor had known Carroll Lane for years. Both of them had worked for the Corporation their entire lives, as had their parents before them. Since associating with people outside the Building usually resulted in physical trauma or death, the Corporation became the only world that its employees knew. As Victor and Lane's careers progressed they were assigned to the same team, and they came to know each other. Although both of them were software developers they did not have

the same job: Lane specialized in operations while Victor worked with long-range telemetry.

Victor liked working with Lane because he was smart, had a good grasp of technology, and was a hard worker. Like Victor, he was deeply concerned about the world outside the Building but he didn't know what could be done about it. Lane was certain that *something* could be done, though. "Technology always has an answer," he insisted. "No problem is unsolvable." But nothing anyone did seemed to make much of a difference.

There were a few minor victories. Occasionally someone from the outside would join the Corporation. This was extremely rare and was usually the result of missionaries who planted churches throughout the city. Although it was great to see an outsider who was willing to work, it took years of training to give them the skillset they needed in order to actually contribute something. Most people on the outside had no idea who their parents were, and were loosely raised by robots that tried to protect the city's many "unaccompanied" children and keep them fed. The government was supposed to educate the young, but instead they had shut down the schools a generation ago and, despite many promises, never reopened them. It took an outsider a lot of dedication to surmount those obstacles and become productive in the highly technical environment of the Corporation, but it did happen.

Victor ended up spending the entire morning in Carroll Lane's office. The bug proved far more difficult to resolve than he had originally thought.

"One more time," Lane said wearily. He pressed a button on the console. A series of numbers appeared on his holoscreen, and a timer began incrementing.

Victor leaned back in his chair. "I really think we've got it this time. It's going to pass – I'm sure of it."

"That's what you said an hour ago. I just wish we'd found out about this sooner. How did we miss this?"

"Well, none of our automated tests covered it. It's an unusual edge case that just never came up. You need a really special set of circumstances in order to trigger that I/O failure. It's no wonder it wasn't being handled properly! It never even crossed my mind."

Lane sighed as he watched the indicators on the screen. "That's been the problem with this project all along, hasn't it? We can never think of everything. Over the past two centuries the company has launched three generations of Nehemiah probes, and today we launch the fourth. Every single one of the previous generations failed because of little problems like this. Sure, the probes work fine at first, but once they start to replicate things go horribly wrong."

"I'm still not convinced this is going to work," Victor agreed. "At least in the past the probes used real matter to recreate themselves. I admit that it didn't work very well, but what we're doing now is just crazy. We are trying to create an entire fleet of probes out of matter that is inherently unstable. I don't care what the simulations claim; in practice it won't even take a year before the decay destroys the probe. These probes are far too complicated."

"That's exactly why we need to ramp up their numbers as quickly as possible. It only takes a day for the probes to reproduce themselves. I say we should start by having the probes do nothing but make more probes. In a single year we could have enough probes to colonize the entire galaxy. At that point the error rate doesn't matter."

"I know. But then you get into the control problem. Dr. Mazatl doesn't like the idea of probes that are incredibly powerful, completely independent, and unstable. He's afraid that the wrong combination of parts will fail and they will decide to consume all the resources in the galaxy or

something. Since the probe hardware can't be fully trusted, all probe management is done here. We have to give the probes their next assignment and approve their key decisions. The Corporation just doesn't have the capacity to manage a hundred billion probes."

"He's going to have to let go sometime," Lane pointed out. "We might be able to manage hundreds of probes, and maybe even thousands, but there's no way we can direct millions of them no matter what systems we put in place. These probes have to be autonomous. The idea that the probes might turn on us one day or go haywire is just silly."

"Is it?" Victor asked. "I mean, we can't control what parts of the probes decay first. If the probes got corrupted in the wrong way, and—"

"It doesn't matter! Even if something did happen, the half-life would protect us. Besides, the probes aren't weaponized."

"But they can still blow up stars. I'd hate for their orders to get messed up and lead the probes to think they need to return home and turn our sun into a black hole."

"I guess," Lane said. "I just don't see how we can guard against catastrophic failure – even if we *are* watching them all the time. I say we should just go for it."

"The risk is too great. The complexity of these probes is staggering – we're asking them to do ridiculous things, and it would be so easy to lose control over them. Not only are they supposed to terraform planets and plant cities – cities that can literally *grow* – but they can also change the orbit of planets and even alter a star's chemistry! We've never attempted anything on this scale before. Something is going to go wrong. It's a certainty. If everything is routed through this building then we can kill them if something goes wrong."

Lane reached over and pressed a series of buttons on the console, which triggered the run of another series of tests. "If something goes wrong then we've lost anyway. This generation has to work and it has to be perfect. Did you hear the news broadcast this morning? President Rios is losing patience with us. There isn't going to be a Nehemiah V probe. This is our very last shot at getting it right."

"Which is why this series of probes can be upgraded remotely. This time the probes have an extensive monitoring system. We can tell the moment something goes wrong and we can create a patch and upload it. We can fix the problem as it occurs, instead of letting it go unchecked. All we need is enough time to monitor the autocorrection system and work out the bugs."

"Which we may or may not have," Lane replied, sighing. "Things are looking pretty grim out there. I believe in this effort as much as anyone, but we're running out of time."

Victor suddenly remembered something. "Hey, can I use your console for a moment?"

"Sure," Lane said. He backed away from it and allowed Victor to take his seat.

Victor minimized the tests that were running and pulled up a different application, then typed in a few commands. When the log entries appeared on the screen he became very, very irritated. "I should have known she wouldn't do it! Look at that. Do you see that? I *knew* it!"

Lane smiled. "Susanna really gets to you, doesn't she?"

"Has she ever done anything she was supposed to? Have you ever seen her complete a single assignment? I don't understand why she hasn't been fired. I know her family has been in the company for four generations, but her performance is completely unacceptable. Why would Dr. Mazatl give her an important assignment like that, anyway? Didn't he realize she was not dependable?"

"You're looking at it all wrong. Dr. Mazatl gave her a trivial assignment just to see if she was capable of doing anything. The probes will work just fine without the Stryker Twins' administrative

access. If she failed to upload that keyfile it would cause no harm – but it would give him grounds to fire her.”

“The keyfile is *not* unimportant – it's critical!” Victor fumed. “This has got to be fixed *now*.”

Lane rolled his eyes. “Give it a rest, Victor. You're a great programmer and all, but sometimes I worry about you. You can't really believe that the Twins are still alive out there somewhere, can you? Everyone knows they're dead. The whole reason Sol has been imprisoned for the past 500 years is because the Emperor killed them! Stop worrying about people who are dead and gone. Fixing this I/O bug is vastly more important.”

Victor was tempted to respond, but he decided against it. He simply closed the security application and reopened the unit tests. To his relief, the tests had already completed. “There we go. I knew it would work! The tests passed, so it looks like we're in good shape. I'll let you package up the solution and get it deployed, while I go track down Susanna Hamilton. It's time we had a talk.”

“Good luck with that,” Lane replied, as Victor left his office and stormed off.

Most of the development team was on the same floor, but Susanna had been such a disruptive influence that she was put three floors down. Dr. Mazatl had hoped that by keeping her physically away from the rest of the team she wouldn't cause as many problems, but that proved to be wrong. Susanna found ways to cause trouble no matter where she was. Victor understood why he was so reluctant to fire anyone who was willing to work, but he wasn't convinced that Susanna was actually willing to do anything.

Victor found Susanna sitting at her desk. A glance at her screen confirmed the fact that instead of working, she was busy playing poker. “Excuse me, Susanna, but could I talk to you for a second?”

“Go away,” Susanna said, without turning around. “I'm busy working.”

“No you're not. I can see your screen from here. You know that you're not allowed to gamble on company time, right?”

“Whatever, loser. Stop harassing me, ok? Go away and leave me alone.”

Victor sighed. “When are you going to upload the Stryker Twins' access rights to the probes? That has got to be done before the probes are launched, and it's your responsibility.”

“I did that weeks ago.”

“No you didn't! I just checked. You need to stop goofing off and do this *now*. We don't have a lot of time. The probes are going to be launched in a few hours!”

Susanna finally turned around and glared at Victor. “I've had quite enough out of you, you pompous windbag! All you ever do every single day is harass me. If you don't leave right now I *will* file a complaint against you. You absolutely sicken me. Go drop dead somewhere before I beat your skull in.”

Victor frowned. He started to say something but then he thought better of it. Instead he turned around and walked off.

“Just as I thought,” Susanna called out to him as he walked away. “You're nothing but a coward!”

But Victor was not retreating. Instead he took the elevator up to the top floor of the building. After making his way down a series of empty hallways he came to Dr. Mazatl's office.

Victor opened the door to the office and peeked inside. “Excuse me, sir. Do you have a minute?”

Dr. Mazatl was drinking a cup of coffee. In front of him was a giant stack of papers that were covered in handwritten notes. Victor couldn't see what was on his holoscreen, but the digital walls of

his office were filled with notes, charts, and streams of information. He could tell that the leader of the company had about 20 different things on his mind right now.

"I'm afraid not. I'm sure it's important, but can it wait? Lane just published a new patch and wants to get it committed to the probes, but the flight engineers are running system tests right now and don't want to take the probes offline. We've also found a disturbing power fluctuation in probe #2's ZPE that we're trying to track down. All I've been doing for the past 20 hours is dealing with problem after problem."

"Then I'm afraid I've got another problem for you. Susanna Hamilton is refusing to publish the Stryker Twins' access rights to the probes. When I talked to her about it she threatened to kill me."

"That's what this is about?" Dr. Mazatl looked surprised. "I realize that Susanna has been a thorn in your side for some time, but surely she can wait until tomorrow. If the power fluctuation isn't fixed we'll have to delay the launch."

"I don't care about firing Susanna! Well, I mean, I do, but that's not why I'm here. What bothers me is that she hasn't uploaded the Twins' keyfile. That has got to be done before the launch. We can't do it afterward."

"But that doesn't matter either. Look, Victor, I know you have a personal connection to the Twins. I know you're a descendent of their brother, Timothy Stryker. I know how much they mean to you, but honestly, the Twins are dead. Uploading the keyfile to give them administrative rights to the probes is a purely symbolic move. It's not going to fix the future and it's not going to help anybody. I know what Timothy said, but his story just isn't reasonable. It's utter nonsense to think that their keyfile will somehow cause an AI from the future to go back in time to save their life. Timothy was brilliant, but someone must have played some sort of cruel prank on him. Be reasonable, Victor."

"Uploading their keyfile is corporate policy," Victor insisted.

"It's also a security risk. Very few people have that kind of control over these probes – and for a good reason. Why should we give it to the dead? Allen has been asking us to put a stop to this foolishness for years, and I'm inclined to listen to him. It just doesn't make any sense."

"It's hardly a risk, sir. No one with their DNA is going to come along and use it. I'm the last living Stryker, and my DNA is nothing like theirs. But this does have to be done now. The security system on these probes can't be changed after the launch – that was put in place in the last generation to prevent another hacking incident. This has to be done now. I know it's a pain, but if you'll do it I'll get out of your hair and will leave you in peace."

Dr. Mazatl sighed. "Fine, fine. Hold on a second." He tapped a few buttons on his console, then stared at his holoscreen thoughtfully. He then pressed a few more buttons. "It looks like you're right – in fact, Susanna hasn't done any work whatsoever for the past week. As you requested, I've gone ahead and uploaded the Twins' keyfile – against my better judgment. Never let it be said that I didn't follow corporate policy, as foolish as it may be. Now I guess we need to go and have a little talk with her. At least this is one problem that I can easily resolve."

He tapped another button on his console, and a video window appeared on his holoscreen. "Tracy, can you send two security bots to Susanna Hamilton's desk?"

"Of course," she replied.

"Thanks."

Mazatl then got up out of his chair. Victor could tell that he was extremely tired; he looked weary and haggard. "I guess today is just one of those days, isn't it, Victor? Sometimes you just don't get any breaks."

"We'll get through this, sir," Victor replied. "I have no doubt that the probes will be a success."

"I wish I shared your confidence. I have very grave doubts about the wisdom of building a machine out of unstable parts – and about our future on this planet. I think it's time we changed our course."

Dr. Mazatl led the way to Susanna's desk, and Victor followed close behind him. As they took the elevator down, Mazatl spoke up. "Tell me something, Victor. What are you hoping the probes will accomplish?"

"The terraformation of the galaxy, of course! I think these probes have everything they need to accomplish that, and more. The IV series is the finest machine that mankind has ever built."

"Quite so. They certainly are remarkable machines, and I have tremendous respect for the engineers who built them. But I'm afraid they are not perfect. After the probes are launched, I think we are going to have to design something to run the project once we're gone. They will need someone to watch over them."

"But isn't that dangerous? I thought you were worried about, well, bad things happening."

"It is a risk," Dr. Mazatl agreed. "I think the probes do need someone to manage them – but that someone cannot be us. What we need is a system that is *not* inherently unstable and that does not depend upon us. SOLOMON is a good system but it is just a data warehouse, nothing more. It cannot offer guidance and it cannot patch any bugs that are found. We are going to need something better."

After the elevator came to a stop, the two men stepped out into the hallway and walked over to Susanna Hamilton's desk. The two robotic security guards were already standing by. The guards saw Mazatl approach, but they took no action. They simply waited for his command.

Victor noticed that Susanna was still playing poker.

"Excuse me, Susanna, but we need to talk," Dr. Mazatl said gently.

"Drop dead," Susanna replied, without turning around. "You can't tell me what to do!"

"I most certainly can," the irritated Mazatl replied. "I run this company, which is a fact you would do well to keep in mind. I *absolutely* have the authority to tell you what to do, and I am deeply disappointed that you have failed to accomplish even the small tasks that we have given to you."

Susanna turned around to look at him. "You're a moron. Don't you understand that it's against the law to fire people? Once you hire someone they're hired for life. I can sit here all day and do absolutely nothing, and there's not a single thing you can do about it. So go away before I file harassment charges against all of you. You people make me sick."

Dr. Mazatl frowned. "It's true that the law says I cannot terminate your employment. However, there are steps that I *can* legally take, and I am going to take them. First, I am going to forcibly remove you from this building and revoke your access to it. I am also going to revoke your subway access and your access to any Corporation computer system, and I will not be giving you any new assignments. I am also reducing your salary to the minimum amount allowed by law. Technically you are still employed, but you won't be doing any 'work' here. Just think of it as a reassignment."

Susanna laughed at him. "You really expect me to believe that? Come on – you don't have the guts to fire me. You've never stood up to anyone in your entire life. Give me a break."

Dr. Mazatl removed a small electronic device from his pocket. He pressed a few buttons on the device, and Susanna's holoscreen suddenly turned off. "It's over, Susanna. It's been done. It is time for you to leave."

"Make me," she snarled.

"If you insist." Dr. Mazatl nodded at the guards, who walked over to her and physically picked her up.

Susanna began beating the armored guards with her fists as they carried her away. "You fascists! I hate you! Do you hear me? *I hate you!* I will make sure that you pay for this. By the time I'm through with you you'll wish you had never been born! And if I ever meet the Twins I'll kill them too. I won't forget this!"

After Susanna was gone, Victor glanced at Mazatl. "Do you think she'll try to cause trouble for us?"

"Everyone on this planet is trying to cause trouble for us," Dr. Mazatl replied wearily. "She'll probably file a lawsuit against us, which we'll ignore. The government will attack us in the press, which we will also ignore. There's a reason none of the company leadership ever leaves the building. But at least Susanna won't be able to come into the office any more to stir up trouble in person. Still, she does demonstrate what we are up against. If we want the probes to survive we need to find a way to automate the entire company so that our work can continue after we're all gone. I just don't know how to accomplish that."

"Is there anything I can do to help?"

"There certainly is. I've got about a thousand things that need done before we launch this afternoon. Come up to my office and we'll get started on them. How much do you know about zero-point energy?"

\* \* \* \* \*

The rest of the day was filled with frantic activity. Victor was so busy that he didn't even have time to stop for lunch. The diagnostic teams found a dozen more problems with the probes – all minor, but past experience had taught them that when it came to replication there was no such thing as a minor problem. Each issue had to be diagnosed and fixed, and then the fix had to be tested to verify its success. Once the fix was in place the entire probe had to be retested in order to make sure the fix had not impacted anything else. It was a grueling process. Carroll Lane was kept busy making fixes, and Victor worked with Dr. Mazatl to manage the retesting and deployment process.

All day long the problems kept coming. The server team had an unexpected problem bringing SOLOMON online after an upgrade: the power system kept shorting out. The electricians eventually found a fault in the wiring system, but fixing it caused even more delays. The data warehouse was not brought back online until four in the afternoon – hours after it was supposed to be running. Once SOLOMON had been restored there was a frantic rush to link it to the probes via a faster-than-light communications system, which was supposed to have been installed the day before.

Things eventually fell into place, but the original schedule could not be kept. Dr. Mazatl originally planned on launching the probes at 2 pm, but that hour came and went and the testing was still not complete. It wasn't until 6:37 pm that all three Nehemiah IV probes finally passed all of their tests and were ready for launch.

Originally the company had planned to send the probes off with speeches and great fanfare, but the launch delay put them behind schedule. Rather than delay the launch even more and give the city government a chance to cause trouble, Dr. Mazatl decided to take a more low-key approach.

When the moment finally came, Dr. Mazatl was seated in his office. Victor had pulled up a chair next to him and was finally starting to relax. The director was tired, but for the first time all day

he felt a feeling of triumph. He pressed a button on his console and opened a video channel to all the holoscreens in the building.

“Well done, everyone! I have good news: the probes have passed their final tests and are ready for launch. This is the moment that we have been working toward for more than two centuries. I'm certain that Dr. Temilotzin would have been very proud of all of you. Good work, everyone! It is now time to launch these probes into deep space and usher in a new age of exploration and discovery.”

Dr. Mazatl tapped a series of codes into his console and then pressed a button. Onscreen, the video changed to show a live feed of the enormous spacedock that housed the three massive Nehemiah IV probes. The armored hangar doors slowly opened, and the three probes floated out of the dock and into space. Once outside, they fired up their spacedrive and began a speedy journey through the Tau Ceti system. Dr. Mazatl then switched to a camera on board probe #1 so the company could continue to watch their progress.

Since the Tau Ceti system was guarded by a Wall, the three probes had to leave the system by way of the Gate before they could begin their long journeys across the galaxy. This protective system had been built in 1860 to protect the star system from the Spanish Empire, and the Corporation had maintained it ever since. It took the probes ten minutes to make their way to the Gate and exit them into deep space. Then, one by one, the probes engaged their massive warp drives and vanished.

“And they are now officially launched!” Mazatl exclaimed triumphantly. “Well done, everyone.”

Dr. Mazatl cut the video feed from the probe. It would take probes months to reach their various destinations. The Corporation had sent them far beyond the boundaries of civilization, in hopes that any problems that society might have would not spill over into the new worlds that the probes would create.

“Godspeed,” he whispered.