

The Nucleus

A Cosmic Premise

“We see this in the story of Noah, where God threatens to do away with humanity because of its constant failure to fulfill the requirements of justice and peace: “I have determined to make an end of all flesh; for the earth is filled with violence through them” (Gen 6:13).”

Although “the wickedness of man was great in the earth” (Gen 6:5) and the Lord “was sorry that he had made man on the earth” (Gen 6:6), nonetheless, through Noah, who remained innocent and just, God decided to open a path of salvation. In this way he gave humanity the chance of a new beginning.

-The Pope

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Cover

John, as a grand villain, endeavors to claim the Earth as his own and embraces megalomania and worldly drama as his motivators. As a member of an elite secret organization of world leaders, the Valar, John makes good use of his connections to achieve his aims. For his more underhanded dealings, he hides in plain sight as the logic advisor to the Pope. Under the guise of savior, he rains down hell upon humanity by pulling the string and adjusting the dials of his carefully constructed machine of domination. The Vatican is thrilled to ride the wave of domination across the globe and finally achieve God’s will.

Through careful and sometimes ruthless adjustments of his “machine”, John orchestrates The Last Crusade, the annihilation of the Middle East, and World War III, which is the final culmination of European expansion, resulting in a new Christian Empire that knows no limits on the Earth. Although purely scientific and not religious, John cares not that religion dominates man. For him, the end justifies the means, and control of the world matters more than world ideologies. His hunger cannot be sated by the Earth alone...

Why have we not yet detected intelligent life in the cosmos? It could be that intelligent beings are extinguishing all life in the galaxy as a mercy. For, they certainly have found a more compassionate solution to existence by now. We are in love with our existence and our legacy of life on the Earth, but perhaps all we are to them is just

another petri dish. Maybe someday they will offer to us their superior solution and extinguish all life on the Earth. Would you choose to be an angel in their invention, called Heaven, or one of the faithful to "reality" as we know it?

Introduction

This story utilizes religion and science as the players in a story about World War III. It straddles the line between parody and believability. The villain will be the leader of a radical faction of a secret organization that is committed to saving humanity and the biosphere by whatever means possible. They are comprised of people that share a belief that population control is the key factor in any logical solution. They are also opposed to religion, believing it to be a holdover of humanities past that interferes with their aims. Science, logic, and reason comprise their belief system. This secret organization calls itself Valar.

Members of Valar endeavor to help humanity by using their wisdom to predict critical moments in the future at which times the execution of relatively minor acts of influence can have larger impact. In a twist of irony, logical deduction reveals that the most likely scenario facing humanity in the near future critically depends on Christians to secure the most positive outcome as seen from their point of view. However, the required acts of influence in this scenario are so terrible that members of Valar become divided on its execution. A few radical members decide to go forward without the knowledge of the group with plans to influence world politics with the ultimate goal of starting World War III.

Chapter 1 A Monster is Born

One of John's first memories as a child was when he was given a present by an uncle. It was an ant farm. At first he followed the instructions that came with the toy. But as his natural curiosity grew he devised plans for the ants. He collected many varieties of ants that he found were abundant in his Florida neighborhood. He learned about their behavior as he conducted his experiments. Eventually he discovered which two species of ants were the top dogs. They were a stinging red ant species and a larger black ant species. He had a favorite he wished would win – the black. He hated the red species because he had received many painful acidic stings of formic acid from them, and they made mosquito-like itchy bumps wherever they bit his body.

He became so involved in their ant fate that he developed feelings for the winged "queen" of the black ants. In spite of his prejudice he forced himself to be as fair as he could as he drew battle lines and populated his armies. He observed with fascination as the fate of the universe he had created and had become so completely engrossed in unfolded before his eyes. At first there were minor skirmishes where the ant's territories overlapped. He decided to withhold food from all of them to force them to predate on each other – to get the ball rolling -- to turn his ant farm into a war zone.

Over several days' battles raged as the momentum swung from one side to the other. He could see that the individual ant could not picture the entire war in their little

minds, but there was some kind of “intelligence” governing their actions. ‘Like little robots.’ he marveled. It played out better than he expected. It would go down to the wire. He begged his mom to let him see the end. ‘But Mom, it’s almost over, I have to know what’s gonna happen.’ Relieved and irritated he laid back down to watch the finale.

Only two were left alive. The winged queen he loved and the giant-headed red soldier ant – the warrior king. She could not fly away, but she was twice his size. She would have no choice but to fight him to the death if John did not rescue her. John debated this as the two matched off. ‘Maybe ‘I’ll give her a chance to win this – she’s a queen after all. I’ll save her if I must — if it gets ugly.’ Then it happened. In an instant, before he could even move an inch, the red warrior bit down viciously on the head of his beloved queen. He watched in disbelief as she curled into a ball and moved no more.

Anger seized him. The disappointment felt like a cruel betrayal of the world. He would not stand for it. He seized the red ant and placed it on his father’s vise. Raising a large hammer from the work bench the vise was bolted to, he slammed it down on the ant. ‘I...hate...you!’ he growled over and over again with each swing of the hammer. He looked at the ants and the farm when he had calmed enough. He knew it was done. Grabbing the ant farm in one hand and the can of gasoline for the lawnmower in the other, he walked outside. Kneeling down, he poured gasoline over the ant farm. He dropped the match and watched it all burn – a funeral pyre. ‘Don’t ever love again.’ he shuddered to himself through tears.

On his next birthday his parents got him a BB-gun. He enjoyed playing with it like most kids do. He imagined himself a hunter, a soldier, a cowboy. But the feeling he liked the most was the sense of power it gave him. He could decide the fate of a thing at a distance. He knew he could shoot birds and animals that other kids at his school talked about shooting, but something held him back whenever he had something alive in his sights. Killing ants and other bugs did not bother him too much, though when he saw a damaged bug he felt a certain regret – as if he had broken a perfect machine for no good reason.

Then one day he hit upon an idea. He did not know it yet but two sides of his mind were battling for control. He did not want to kill animals but they were the most interesting targets, he thought. The solution was a balance between black and white. He would hunt lizards around his house. There were a couple of species, both were about three or four inches long. They had an interesting trait. He had long since become adept at catching them. Most of the time he could capture them without harming them, but occasionally he would grab them only by their tails. When this happened their tail would come off and they would run away apparently unharmed, for the most part. The tails would wiggle for several minutes, which fascinated him. ‘This must be an adaptation to help them escape from predators like birds.’ he reasoned. His logical solution was to only shoot their tails off. He had found a balance between environmentalism and fun.

When he poured over history when he was a child, he was thrilled by the feats of Nazi Germany, their dreadful efficiency, their madness, and their advanced technology. As a child he fantasized about flying for the Luftwaffe, as Lipfert himself, fighting in the skies over World War II’s Eastern front, where the greatest battles in the history of man took place. He soon realized that any form of admiration directed at the Nazis, even one of a detached historian, was taken as an insult to America’s veterans. He kept his

fantasies to himself where he dreamed of being a brilliant scientist who heroically rescues the Nazi Empire in the nick of time.

When he became a little older and discovered natural history, he became obsessed with evolution. As he studied human evolution, he became confused as to why Hitler directed Germans to attack the gene pools surrounding them. As far as he could tell they were all part of what he thought to be the European gene pool. Why did he choose to exterminate the Jews? He had read that more than half of the financial backing of the Nazi war machine was funded by assets stolen from Jewish populations. Was the choice to end their existence merely a means to an end? Why didn't Hitler save at least Jewish scientist to help him develop technologies like atomic weapons? "Was he stupid or did really hate them?" he pondered aloud to himself.

In his heart he did not think it any ones right to decide an entire gene pools fate with no logical purpose. He could not justify Hitler's choices in any moral or logical way when there were far better ways of achieving great things on the world stage. Then he dreamed of going back in time, before World War II started, to guide Hitler on a more logical mission.

John did not know it yet, but he would be plagued and blessed by grandiosity his whole life. His delusional fantasies fueled his determination and captained his purpose. He preferred originality to tradition and repetition, setting him apart from his colleagues. His gifts allowed him to succeed at whatever he set his mind to, and his ego told him that he knew best.

Chapter 2 God Fire Industries

He spent the next few years exploring the realms of his reality. Science, history, philosophy, business, and pleasure. One of his favorite hobbies was the restoration of history's machines. From airplanes to computers, he liked to see first hand the innovations and the evolution of these technologies. Beside finding the subject fascinating, he knew that he would gain invaluable insight into the processes of practical creation through its study.

One day, John was flying his replica of one of the variants of the German Messerschmitt 109 that Lipfert flew. He was engaged in a heated mock dogfight with a fellow enthusiast, who was a Russian who preferred to fly his people's answer to the 109, the Yak-7. They were dog fighting over the western shores of the Black Sea, critiquing each others strategies and executions by radio. 'If I were Lipfert you would be dead by now.' John laughed.

'Den it good ting you not.' Yuri retorted.

'I know. With my skills I'd need a Spitfire to stay on your tail.' John admitted.

'Wrong front, comrade.' Yuri grunted as he pulled more g's.

In flying John found his greatest pleasures in the physical world. He found that there were many elements to his love of flying. Besides the practical, there was history, there was technology, there were skills to hone, there was excitement and adrenaline, there was peace, there was fantasy, and there was inspiration. After a few more maneuvers Yuri complained that his fuel was running low. 'I'll see you at the hanger, Yuri. Great fight!'

'Where you go now?' Asked Yuri.

'I've got to work out my plans to take over the world.' John half joked.

'You know dis game, right?' Yuri chuckled.

'Don't worry Yuri, we're on the same side in my war. Horridoh!' John bade Yuri farewell as he dove toward a crowd of sun bathers.

John thought of modern science as a kind of Henry Ford's version of a science assembly line. He knew he was better than that. "They are so occupied with protocols and delegation that they forget science is an act of creation, and divine creation is not inspired through business as usual." For the mediocre and the poor it was a necessary servitude. What I need is my own research institute that I can direct like a "CEO of Science", but in the spirit of Oppenheimer's team and not a Henry Fordian workforce. 'I need Ferraris not Fords.' he snickered with cold delight.

'Ferraris, what have been some Ferraris...The atomic bomb has got to be the single biggest invention ever...now, ahh, the Spitfire...that is not quite as important, although you could argue that it was a crucial element of what deflected Hitler toward Russia, the Battle of Britain, but it was just so sweet...like Ferraris. Oh yes, then there my favorite of favorites, the Saturn V. The rocket that put man on the moon! But then if you zoom out, you see that the whole program to put a man on the moon was arguably the Ferrari that shone upon mankind the worthiest of light. If I were God, I would have a twinkle in my eye! And the Shuttle program was awesome too, although it cost more than expected - but history won't care about money. The relationships get complicated, but they're all Ferrari elements.'

'One Ferrari I need is an update to the nuclear bomb. They are so damn bad for the environment that I hesitate to use them. I need to make an anti-matter bomb. One that can be burst over a target as a focused pulse of energy and that limits environmental impact by the fact that it does not utilize large quantities of radioactive isotopes.' John spoke into his voice recorder. 'It'll be the Manhattan Project all over again. Oh, this is just too much fun. Thank you God!'

To be safe, the missiles would be launched from submarines. On the submarine, the anti-matter would be contained in the safest and most reliable "vessel" that could be contrived. Only when launch codes were received would anti-matter be transferred to a portable vessel that would be placed into the missile. 'Imagine, the decommissioned nuclear arsenal will flood the radio isotope reserves...so I'll design a better and safer reactor, Ferrari number two, and get even more filthy rich from both ends. Not to mention by shorting the isotope stock market.'

'Another Ferrari I need to make is the science and technology of Biosphere Remediation. This one I need to corner the whole market on so I can adjust things as I need to, to carefully find a balance between my goals and any unnecessary roughness. Oh yeah, then there's the Ferrari that is Star Wars Tech that I'll need, to limit damage. Hmm...how many is that? And, of course, there's the one closest to my heart, the Ferrari that will be the Biosphere Genome Depository. When I'm through playing war games I'll make amends.'

John went on to achieve all the Ferrari's he dreamt of, with the help of the best minds that money or other incentives could attract, of course. One of his more amusing inventions was a flying vehicle based on the Star Wars speeder bike. He even developed a GPS controlled auto pilot program that would send the rider on any desired

journey within the limitations of the vehicle. 'You guys tested this out, right? I mean I'm not going to become a spot on a redwood, am I?' John asked, trying not to laugh.

'Don't worry, if you do you won't feel a thing.' Joked the team leader.

'Well, if I do, just light up the tree, okay?' John replied, envisioning a grand funeral pyre.

'You're the man.' The team leader assured him.

John's God Fire Industries was a nod to his belief that God is the Universe and science is the study of God and the knowledge we glean is the essence of God, God Fire. 'I love science and kind of like to believe that science is the study of God - The Universe. Its just so awesome what you can do with it all. Science is like fire times a million...no a Billion. Science is God Fire. If you play with fire you might get burned, but who wants to do without fire?' At God Fire Industries, they played. John chose the corporate logo, a mushroom cloud.

Claim the Moon and Mars

The Space Corps was spun off from the umbrella of the Air Force and was headed by a General of great vision and determination. He was assisted in his aims by John, who controlled enormous resources. Both John and the General believed in establishing colonies on the Moon and Mars. Like the Air Force had its airmen and the Navy had its seamen, the Space Force would have its Spacemen. It seemed ironic to many that humans would be the first Spacemen known to man in place of aliens. More amusingly, perhaps, trainees would go by the name of Space Cadets.

John wants to terraform Mars to "claim more territory" as he would think of it. NASA had been doing well that first decade of the 21st century. John had kept an eye on Mars exploration since childhood when he first realized its potential, and when this new wave of data came streaming in from Mars, John wasted no time forming it all into a web of logic. But, in the second decade of the 21st century things began to decline in America, due to its growing inefficiency and the corresponding debt it had amassed. Manned Mars exploration had been put on hold.

To get the ball really rolling again on Mars, he would need a plan. It was simple - "give them what they want and they'll throw money at it". John had money and influence enough to do it on his own, having deep control of the aerospace industry. "But, why not just point them in the right direction? All they need is the discovery of life on Mars. And if its not there, by God, I'll make it so its found anyway!"

John had been secretly developing the technology of synthetic life. It was part of his plan to control the effects that ocean acidification would have on the Earth's biosphere in the near future. 'It will be the biggest scheme in history. By the time they figure it out, I'll be dead. Mars will have become New Earth and the wonderful biosphere of the Earth will have a second stage, for both conservation and fascination, and a hedge against extinction. That will be my gift to humanity and the cosmos. As for me? I will merely live up to my potential.'

To fool them he would tweak the genes of his terrestrially derived Martian life forms enough to appear to astrobiologists to be distant early relatives of terrestrial life. Being the prime NASA and Space Force contractor, John's God Fire Industries would be in control at both ends, and in between. He would plan for the addition of his

synthetic Martian critters to counterfeit ice cores and make the swap. But, there was a lot of work to do and several “Ferraris” of science and engineering to develop.

The scientist would be led to believe that life on both Mars and the Earth had a common origin. They would tout the theory of planetary cross-contamination as a confirmed prediction of the lifers - “life finds a way”. Though John deeply respected the world of science, he believed his betrayal to be the logical choice. He would use the same biotechnology to save the Earth’s biosphere and help bring it to Mars. The prevailing views that we should not play God with biospheres would be flung aside for survival’s sake. ‘What do you think? John would ask. Let the Earth die and leave Mars to the bugs for all eternity? Get real dumbasses. This is it!’

On Mars, the ice sheet remnants at the equator were to be tunneled. Here, again radiation is shielded, but by the ice in this case, and the remnants offer relatively easy construction of habitats. The equatorial zone also enjoys the highest temperatures on Mars and more efficient orbital access.

On Mars there was no need to hoard water because the ice sheet remnants at the equator were being tunneled. The tunneling machines were to be nuclear powered affairs that slowly burrowed into the ice sheet remnants on descending spirals and loops. Electro-nuclear generators, as they were called, were the primary power source of the colonists and were used to power ice drilling tools and machines. These wonders of engineering were solid state devices with no moving parts that directly converted radiation into electricity through the excitation of the electron clouds of the materials atoms. They were capable of generating electricity for as long as the integrated radioactive fuel would last.

One particular ice borer, as they were called, operated on a gravity and heat driven system, and was directed by electromagnetically generated torsional and vibrational applied forces. Pulsed and alternating currents were applied to the heating elements and electromagnets of the ice borer that induced the motion. The heat generated caused the ice to be boiled off into channels in the face of the piston-shaped ice borer that routed the steam and suspended particle to collectors and filters. The electromagnets interacted with the mass of the borer and each other to steer it along a path through the ice. Ingeniously, as with the electro-nuclear generator energy source, the borer had no moving parts other than its total self - an irony of sorts for a drill-like device.

In effect, these ice borers were steam generating, nuclear-powered heating elements, in the shape of great pistons. They boiled off the dusty glacial ice remnants, making safe drinking water, while recovering suspended particles and dissolved minerals in the process, which were thus mined from the drilled ice. The system that processed the “mined” water, dust, and minerals was of a water-based hydraulic design, which reduced launch weight and supply costs. The steam provided the power to run the system. In some designs, the steam could also be made to cause the drill to rotate in the conventional fashion. That is, with a cutting disc that could ground the ice. The slush was then routed into the nuclear boilers. From there, out came the filtered steam. The electro-nuclear generator-powered ice borer technological marriage was an ingenious marriage of technology in terms of simplicity and reliability.

The ample quantities of dust collected from the melted ice were ingeniously utilized by the colonists as well. The materials were incorporated into the walls of the

circular tunnels, which were poured continuously down the line as progress was made. The pioneers joked about how the borers of the ice remnants were like Hobbit-hole makers tunneling into the side of Bag Shot Row where Ice-Bag End was to be found.

The miracle construction material for the walls of the tunnels and other space projects was called Foamrock. The stuff had such great tensile strength that you could dilute it with air bubbles so that only 10 percent was actual product, with the remaining 90 percent of the volume being air or whatever other gas was infused. It expanded to fill in molds with such efficiency that single cement truck worth of product could supply enough for an entire house. The stuff resembled a closed-cell Styrofoam, and was nearly as light. And, like Styrofoam, it was a great insulator. The nearest familiar construction products are EPS foam and VBS tape. Yet, the miracle material was as hard as brick, and fireproof as well. It was more akin to volcanic tuff than any plastic. It was like high tensile concrete expanded to ten times its volume, but with no loss of strength.

Foamrock was the ideal space building material for a number of reasons. Its initially foamy and slurry-like state made for nearly impervious and seamless insulating walls when it solidified. Another of Foamrock's excellent traits was that it was easily repairable. You could just frame and pour, and the slurry would make perfect bonds with any existing solidified Foamrock it came into contact with. It was the wall grown up and more because it was light enough to be used for roofing too. In fact, an entire structure could be made out of it! God Fire industries was to thank for this breakthrough.

Foamrock was poured along the tunnel walls that spiraled through the ice sheet remnants like DNA-inspired art. Sometimes tunnel systems even closely resembled DNA in that parallel tunnels were connected at regular intervals by cross tunnels that made the rungs of the ladder-like double helix. All the while, various patterns and structures were integrated into the Foamrock for various essentials, such as liquid, gas, electrical, and information conduits. And, for roller coaster-like or train-cog type assisting steps, rails, and pave ways for the vehicles that ran through the tunnels.

In other tunnels designs, segments arched upwards from the main lines to provide crash free emergency stopping for runaway vehicles in a manner reminiscent of emergency truck ramps in steep terrain back on Earth. I wasn't long, however, before actual runaway ramps were being constructed on the surface along Martian and Lunar highways. Within 20 years of the onset of colony construction projects, dozens of geology reconnaissance convoys were scouting out the New Worlds, as Mars and the Moon became known. As with the mountain men and prospectors of the American Frontier, the Spacemen were establishing frontier outposts and forts, depots and remote stations that gradually stemmed outwards across the virgin lands from the colonies, like melon vines growing across abandoned fields.

Chapter 3 Destiny

Through the years John amassed an enormous collection of only the finest research teams, labs, and infrastructure elements, and, of course, business associates. He enjoyed having a hand in everything that he felt he could genuinely improve. His dream of world conquest, long put on the back burner because he understood people

were too content to make war, remained that, his favorite fantasy. But that was about to change.

He had attended an annual science conference that focused on global warming and there had absorbed the wide range of ideas of the various lecturers so that he could quickly get up to speed on the latest research. Some lecturers were the most distinguished in their field and lead the way in the ocean of ideas. Others included researchers on the cutting edge of science - heroes of sorts if they proved prophetic. While other were interested in what some called fringe science, regularly scoffed at, they held on to the belief that they would someday be vindicated.

John loved science but understood that it was but one element in a wider reality. Like all association, its members were subject to the same human limitations of all people. The most ironic of these was delusion. John agreed with Richard Feynman views on human limitation: "What do we mean by 'understanding' something? The world is something like a great chess game being played by the gods, and we are observers. We have caught on to a few of the rules - fundamental physics. If we know the rules, we consider that we 'understand' the world. But even if we know every rule, what we can explain is very limited, because we cannot follow the play of the game using the rules, much less tell what is going to happen next."

'The point I take being,' John would often explain to scientists. 'is that science has yet to discover everything. What it has discovered is like Newton to Einstein: both models work beautifully, but there is a question of perspective. I believe that there are many perspectives hidden from us yet. As a scientist and a human I understand how we all can delude ourselves into believing that we have worked it all out. I think that science is essentially humanities best educated guess as to our reality, however. As science has progressed, so too has the clarity of that vision of reality improved. Are we in for any surprises? I believe so.'

'We also have to understand the difference between cutting edge and fringe science.' John would go on if he continued to have an audience. "Scientists tend to fear cutting edge research, but loathe fringe. I love cutting edge and dismiss fringe. The trick is to discern the difference. An educated guess is best, if it is unbiased.'

He liked to imagine cutting edge researchers as "The Silver Surfer's" of Science. Surfing the seas of ideas to have the thrill of discovery. They are scouts of Science. Like Lewis and Clark were to expansion. 'If I had the time I would sail the Black Sea and the White Cliffs. Oh, brother, right?' He scribbled on the conference schedule. 'A scout of Science...sailing the seas of ideas...a hero of sorts...and full of himself too.'

At other times, while lost in distraction, John would ponder: 'Is science truly my faith...or perhaps religion. I believe in a "purity of logic". What I mean to say is that logical deduction, untainted by bias, is a most pure form of reasoning. I believe that purity of logic is indeed the very essence of Science.' He would try that on them.

Although global warming had been on John's "radar" for some time, he did not feel like it would have much impact in his lifetime. He just figured solutions would be found by our descendants when they needed them. Then and there, in the middle of the conference, he connected the dots. 'Why aren't they talking about THAT?' John wondered out loud.

'Maybe they aren't ready to announce it yet. They would want to get the paper published first to claim credit on what will be the biggest of news, well, if the public can

understand it, that is. But in science circles they would be sensations.’ He thought to himself. He decided he would beat them to the punch, but he would offer to share his research to make more alliances.

Using the most advanced super-computers and cutting edge environmental models to predict the global patterns of Earth’s biosphere, he had come to the conclusion that a recently discovered phenomenon would soon threaten life on Earth and civilization itself. He would have to call a special meeting. This would be no ordinary meeting. He would go right to the top. ‘But not yet...I need more than facts...I need a plan.’ he mused. ‘I need to take charge of this thing’.

A few of the most influential people in the world had created a brotherhood. It was known only by its members and was called Valar. John had lustfully embraced his membership after he had been approached by a trusted colleague. Inside he was delighted to find that his brotherhood was like an extension of his mind. Like they were clones of him. Each man doing his part in an ensemble of puppeteers — a sort of Puppeteer’s Ministry.

He had been depressed for some time since his discovery. He had racked his brain in the effort to find some hope of saving humanity from entering another dark age. Then it happened! He figured out a way to save the world and have a blast while he was at it - WWII!!!! He had been giddy with excitement for weeks. He joked later into his recorder: ‘Peering deeply into the fog of the future, he had resolved a vision: His logical solution. History will judge me “The Monster” I’m sure, but its just too sweet.’ He accepted his role it.

He pondered over how his humble upbringing, his lust for influence, his fascination with history, his military experience, and his logic-derived vision of the future had all coalesced into a perspective of a lifetime, at this moment in history. He concluded that the peculiar nature of his life and mind made him the perfect man for the job. Destiny was before him. He had only to seize it.

He typed the password into his private computer. He only used this one for the most private of communications. The room was electromagnetically shielded and all connections to the outside world were isolated by encryption. It was anything but austere, John spared no expense, of course. He could survive for a year in this underground palace, no matter what happened up there. He typed ‘I wish to call a full emergency meeting at the earliest. I must present a critical discovery of the gravest consequences.’ He sent the message to the acting president of Valar.

Chapter 4 The Valar

The philosophy of the Valar was somewhere in between two familiar extremes of perspective held by groups of people who had very different but similarly influential impact on the world in the twentieth century. The first was that promoted by Leo Szilard, a brilliant physicist who greatly influenced the development of the atomic bomb, in part because of his hope that people of similar education and philosophy could form a band that he called the Bund. His noble intentions were for his Bund to help mankind through the efforts and sacrifices of its members. Though never openly or formally organized,

his ideas were generally shared by the closely knit group of people that engineered the A-bomb.

The other “plan” for humanity was of a darker and highly controversial kind. An example of this darker meddling might be found at the end of WWII. Although, nuclear weapons were never used on Germany, that fact that the United States had shown the world it possessed and was willing to use this horrifying new weapon by detonating not one but two on Japan, proved to the Soviet Union that it had no choice at that time but to stop its advance into Europe near Berlin. If not for this deterrent, the United States and its allies would have been hard pressed to stop the Soviet Union’s march across Europe. Indeed, historians have debated whether the decision to drop the A-bombs was more because of the Soviet threat than any real need for its use on an already collapsing Japan, brought to its knees by its inability to deflect equally devastating conventional bombing raids. The Valar were willing to make such decisions.

Aware as they were of the awesome power at their hand, the Valar brotherhood had endeavored tirelessly to guide humanity into a brighter future. But now they would know that the jig was up. Drastic actions, long imagined and feared, were now at hand. They rarely met face to face for fear of revealing themselves, but John had called a special meeting. Considered an oddball by other members of the Valar, John had gained grudging respect because of his gifts of insight and imagination. They had learned to listen to him when he had anything to say as he usually proved to be dead on.

‘I have called you all here this evening to inform you of a newly understood phenomenon that will very likely threaten the existence of the world as we know it. I’ve put together a presentation based on my analysis of the situation, and some suggested approaches as to our world agenda.’ John clicked the remote that controlled the computer that ran his PowerPoint-like program.

‘The phenomenon is called ocean acidification. It is related to global warming in that fossil fuel consumption is at the root of the problem, and carbon dioxide is the animal. However, the results will not be something anyone would spin-doctor as “Climate Change”. In this case, CO₂ is absorbed by the oceans, causing the oceans pH or acidity/alkalinity level to change. I won’t bore you with the details, but suffice it to say that at some point in the near future the pH of the oceans will drop, similarly to a swimming pool’s water when you add muriatic acid, to a level that will stress marine life.’

‘Many species will be stressed by this increasing acidity, but the ones that matter the most are certain types of oxygen producing plankton known as phytoplankton. Many varieties of these organisms, such as coccolithophores, incorporate calcium carbonate shells as part of their structures. To draw an analogy, do you remember how the agricultural pesticide DDT caused the shells of eggs of birds like the Bald Eagle to become too fragile, by inhibiting calcium carbonate deposition during egg development inside the bird? Well, this is a bit like that. The phytoplankton can’t grow their shells properly and start to die off.’

‘The result of ocean acidification is that oxygen production goes down. Now, oxygen released by phytoplankton in the oceans makes up over 50% of the Earth’s biospheres’ O₂ output. This oxygen source is responsible for more than half of the oxygen in the atmosphere. Right now, the percentage of oxygen is near 21%. At 16% we loose consciousness. At 12% we die. In the beginning it will not be so severe. So,

you see how the whole biosphere, including organisms on land, will be likewise stressed. We will see a gradual decline in atmospheric oxygen levels that will take decades to become critical. It is up to humanity to decide just how bad things will eventually become. This is the period I wish to focus on tonight.'

'As the oxygen concentrations in the atmosphere decrease, up until about 2050, food production decreases, and eventually stockpiles dwindle even in developed nations. This is mainly because although plants release oxygen through photosynthesis, they also "breathe" oxygen through a process called transpiration. Research has shown that higher than normal concentrations of oxygen have little effect on plant productivity, however lower than normal concentrations reduces productivity. Starvation will affect third world countries first, but eventually all countries will be affected. This period of partial world famine could last for 10 or 20 years, with some years being worse than others, forcing people to face this oncoming doom with increasing dread.'

'Despite ongoing fears of environmental disaster leading up to the event, the rate of world fossil fuel consumption will continue to rise, mainly because of growth in developing nations. More than half of the world's supply of oil has already been consumed. The released carbon dioxide has entered the biosphere and it cannot be artificially removed in any significant way with today's technology. The rate of worldwide fossil fuel consumption continues to rise. It is unlikely that other energy sources will be able to reduce the rate of consumption of fossil fuel in the near future, before a starvation event, in my opinion.'

'The heaviest losses will occur in under-developed regions in part because they do not have stockpiles of food and other essentials, and they do not have the infrastructure and scientific resources to adapt on such a scale. The most basic of these technologies will be centered on supplying people with supplemental oxygen, anything from the breathers used by people with lung disease and climbers at high elevation, to the inclusion of oxygen generating equipment in vehicles, homes, larger structures, and even domes. Factoring the world's technological inequality and decreasing world food production, computer models predict that in worst case scenarios, loss of human life could be as high as 90 percent in underdeveloped regions and 70 percent in the rest of the world, dropping world population to near one or two billion from a high of eight to ten billion. It will be, by far, the most catastrophic event in human history - what may become known as The Great Culling.'

'After the Great Culling, as I refer to the event, other energy sources will provide the majority of the world's requirements. Carbon dioxide in the atmosphere will stay at elevated levels for a century or longer, but breakthroughs in technology will allow the human population to stabilize. Animals preserved in zoos, along with frozen embryos will form the basis of a global effort to repopulate the biosphere when environmental conditions improve sufficiently. Perhaps humanity will have learned to live within its means.'

'The other effect of high atmospheric carbon dioxide, especially global warming, will cause relatively little damage. However, sea levels will rise as the ice caps continue to melt, and average global temperatures will rise to levels never before seen in recorded history. These taken together this will result in a small loss of coastal landmass and a more significant shift of climate zones and ecosystems across the globe.'

Fortunately, the Earth will not suffer the dreaded changes to ocean currents that many feared would lead to a new Ice Age.'

'So, what do we do? Even though we cannot stop this crash landing, it is still logical to try to save the world as best we can until then. Why? Because it is a question of degree. What I mean is, what we do until the Great Culling in terms of fossil fuel consumption and new technologies will help to reduce the severity of the event. And, there are other ways of preparing on the individual basis, and in terms of the whole of humanity, to increase the odds of making it through the bottleneck. The following are a few of my suggestions/predictions going forward.'

'During this period leading up to the Great Culling, governments around the world will necessarily invest all available assets into developing new technologies to combat the various effects of ocean acidification. Some of the most important efforts may include attempts at raising ocean pH through chemical means, and engineering synthetic life that are designed to mimic photosynthesis in order to generate oxygen and perhaps support the oceanic food web.'

'Another point to mention is the severe anoxic conditions of the ocean that lead to massive die offs of life, and more importantly, the associated blooms of certain microorganisms that cause red tides on a global scale, releasing toxic gasses like sulfur dioxide that further stress all life on the earth. Crops and animals should be genetically modified to better cope with changing conditions, including both the low oxygen, which reduces plant and animal productivity, and the toxic gasses, which can cause tissue damage.'

'I strongly recommend that we go forward with our plans for a mile-wide geodesic dome over Houston. As the "end" draws nearer, the construction of geodesic domes over cities should accelerate. The domes will protect inhabitant from the low oxygen and the sometimes toxic air quality related to ocean acidification. Nuclear power plants could be placed far from cities. A proper design that includes a contamination containment dome to would be logical.'

'Domes are vulnerable to acts of war or terrorism. Underground cities would be the safest. Construction of underground facilities and eventually cities should also ramp up, being driven in part by increasing fears of nuclear war as governments increasingly struggle to maintain order, and for fear of potential territorial disputes as starving refugees cross borders. Underground cities can still be attacked if weapons are smuggled in, but security technologies will advance to the point that this is should be virtually impossible.'

'By this time there will be bases on the Moon that will play a role in space defense. Any exploratory Martian stations that may be in operation will not play any role other than detached observation, and they will need to be self-sufficient if return to Earth is not possible.'

'So, why don't we just let it all go down? If everyone on the surface dies that would only leave people below ground who would be a cut above on average. Compassion is one motive. As far as preserving the environment is concerned, expansive ecosystems could be preserved under domes and underground. These must be operated and protected until specimens can be reintroduced into the natural environment. Almost all animal life around the planet that does not succumb to low

oxygen levels will be hunted down, driving countless species to extinction outside of zoos and preserves.'

'Now, I'd like to present an idea to take maximum advantage of our future. I believe that with regard to the future there is no certainty...only opportunity.'

'Many things could lead to revolution. I believe that people will change at the precipice. In this case the precipice will be a bare cupboard. Riots will ensue and the military will be called in to protect the orderly from the disorderly. Conditions will deteriorate further, and in the face of all turmoil will be our opportunity to guide humanity on a path of our choosing.'

'What I recommend is a new phase of European expansion that will pick up where it left off. My suggestion is that all lands of the Middle East become European conquered territories. To initiate this expansion, we will need to find an excuse to start a war between the West, especially including America, Russia, and Germany, and as many Middle Eastern nations as possible. This is to include North Africa, and so, basically all Muslim nations, which provides a convenient angle on which to incite such a war. In essence, it would be a holy war between Christendom and Islam. Meanwhile, England and the Commonwealth could tackle sub-Saharan Africa. The spoils of war will be the incentives, and competition between the major players will motivate our armies. As an option or if hostilities break out, America could march south against Mexico and Central America, and even take the Caribbean.'

'Besides oil and other resources, and land for growing what we can, the bodies of our enemies will necessity drive the soldiers on. I am not necessarily suggesting that our troops resort to cannibalism, but rather a sort of "hog army" could be employed. Following the front lines, battalions devoted to raising pigs on the flesh of dead people would scavenge. Something like wood chippers could be utilized to process the meat so that it can be easily dispensed into pig troughs for ready consumption. We could also limit provisions such that the troops must kill to acquire adequate sustenance. With this control we could drive our armies endlessly forward. In the meantime, we should do all that we can to prepare for all out war between the West and the Middle East before things become too environmentally destabilized.'

'Well that's about it! In wrapping up I'd like to say to you all that if my plan seems more akin to madness than wisdom, consider the madness that drove Europeans on to conquer the New World and the inestimable gains that were enjoyed. This upcoming environmental calamity may be seen as a superlative circumstance in history during which, once again, fortune will favor the bold. I'll take any questions, either tonight or anytime.'" John sat down and poured himself a glass with an air of casualness that made even the most emotionally calloused members among the group look at him with a nauseous wonder.'

'Well that's about it! In wrapping up I'd like to say to you all that if my plan seems more akin to madness than wisdom, consider that the causes of saving humanity and the biosphere are both compassionate and wise. This may be a case in we must choose the lesser of evils. I'll take any questions, either tonight or anytime.'" John sat down and poured himself a glass with an air of casualness that made even the most emotionally calloused members among the group look at him with a nauseous wonder.'

After a silence that seemed to last forever, so long in fact that even John began to think he had gone too far, the president rose and walked to the podium. He glanced

and winked at John, unable to contain an ear-to-ear grin. 'Now that's what I call an emergency presentation!' As he scratched his head. 'I think we should all take fifteen and prepare a few question for ur...Dr. Evil here.'

Chapter 5 The Plan

After much going back and forth concerning everything from the science to the merits and drawbacks of genocide, it was voted that this degree of meddling with humanity was a bit over the line, at least until people were starving in the first world. However, it was unanimously voted on a whim that John should be their Dr. Evil if they decide to go forward with WWIII. To which John retorted. 'I feel purpose built!'

As chance would have it, in order for his plans to unfold he would have to give assistance to a group of people he had held a grudge against since childhood. For him, Christians were a people who were nearly "there" as he thought of it. He was raised among them, so he understood them. His mother even tried to make him one of them, but he thought knew better even at an early age. They mostly seemed at times surpassingly bright, but they seemed not logical enough to understand the supreme importance of science. This was a frustration amplified by how close they were to finally "getting it".

He reasoned that two things must happen for his plan to work. First, the Christians must be prepared to take over control of the lands they occupy when traditional government falls. The most important elements of infrastructure to their cause should be identified, and means to secure and defend them formed. John decides he will endeavor to beat the Christians into shape. He would persuade, or if necessary, buy the Pope's cooperation to get the Christians moving in the right directions. To maximize the Christians chances of success, he will need to form a new sort of Hitler Youth that will be called the American League of Crusaders (ALOC). Critics will call them warlocks after White and Republican League of Crusaders, which they mostly were.

Because of the potential backlash of being associated with the ALOC, John would have to be careful about how to proceed. Through indirect financial support, he would foster the formation of youth clubs through church organizations. These clubs would innocently train members in the art and science of warfare through paintball game activities in a variety of settings, including crucial nighttime and city-themed environs. Firearms training at shooting ranges would also be implemented. In addition, club members would be encouraged to join the military for further training and perhaps even to gain combat experience.

Because Israel, Vatican City, Washington DC, and New York City were the most likely targets of terrorism, it is decided to locate the headquarters of the ALOC in a safer location. It is decided that Houston, TX offered the best combination of climate, geography, security, population ideology, and infrastructure to begin the process of planning, recruitment and training. An additional benefit was that Houston was to host the construction of the first city-sized dome, which was to be one mile in diameter (google "Dome over Houston"). Construction of was slated to begin soon, with God Fire Industries being a major contractor. The air within the dome would be filtered and fully oxygenated to isolate it from the atmospheric deterioration that was already beginning.

In time, John would persuade the Pope into forming a European network based on ALOC, which would be called The European League of Crusaders (ELOC). As part of his grand scheme, he would enter the Vatican incognito for a secret one-on-one meeting with the Pope. While in Vatican City he would use any means to cultivate a trusting friendship with the Pope, including donations and a promise to fund the construction of a Vatican dome. John dreamt that, like many a Roman emperor, he could oversee the expansion of *his* future empire from Rome itself.

John's Letter to the Pope

Your Eminence,

We are an organization that is committed to saving humanity and the biosphere. After careful consideration we have concluded that the world is likely to suffer a severe climatic event in the near future. We believe that world production of food will be severely depressed during this period. Starvation will eventually affect all people on all continents worldwide, leading to total collapses of government around the world. We are writing to you because we have come to the conclusion that Christians will play a critical role in future events that could very well lead to World War III.

Some people will argue that the evolution of science and technology has been at the root of man-created environmental threats. Indeed, progress in science and technology has allowed world population to soar in step. While it is true that technology is a double-edged sword, overpopulation is the other half of the equation. I hold that the only realistic solution to this paradox is to move forward. My belief being that people will have to evolve to the point at which technology can be used to remediate the environment and population control becomes a highest priority.

My hope is that the combination of new technologies and population control could enable a population to become relatively isolated from the natural environment in such a way that it becomes effectively protected from natural disaster. This is not to say that the environment would necessarily be neglected. In the future, it should be possible to largely restore the biosphere to pre-human conditions while protecting humanity at the same time.

Because of the widespread and dominate footprint of Christian organization over much of the globe, we believe that Christians, preparing independently and with the help church organizations, are the best hope for the survival and preservation of humanity through a starvation event. We are in a position to provide assistance to Christian organizations in this endeavor via a number of technological and financial solutions. In return, I ask for your assistance in the formation of an international league of crusaders, which, together with the ALOC, could work towards a better future.

Godspeed!

John and the Pope work to form the ELOC, whose intended mission it is to secure control and maintain order, for the present. Once starvation leads to desperation, he reveals to them their secret mission.

To win the day, Crusaders had to be thoroughly trained and at a state of readiness, both physically and mentally. One thing John knew was that they must guarantee that ALOC personnel would be armed to the teeth at the beginning of the end. It would also be helpful to the goal of American expansion if civilians in general were also well armed, especially with assault rifles. This would foster the right mindset and facilitate induction into rapidly forming armies. However, threatening to undermine his plans, there had been an ongoing NATO threat to disarm American civilians that was being supported by Left-wing voters.

To counter this, John has a plan that he presents to his ranking members of the ALOC through a video that he uploaded to a computer-controlled projector. Using computer software, he alters his face and voice so as to conceal his identity. He knew that the plan would leak even if there were not undercover agents in the audience and that there would be an investigation. The file of the video would be automatically erased after being played. John expected that after an investigation by the FBI led to nothing, it would be passed off as a sick prank by a far right extremist and not representative of the mainstream views of ALOC members. Yet, his speech would sow the seeds of an irresistibly logical ALOC counterstrike against the NATO threat.

John's "We the People" speech at the first annual ALOC meeting in Houston, TX. He tailors his speech in such a way as to appeal to the conservative Christian in order to gain their support for his plan.

'In the event of a NATO enforced weapons confiscation in America, we will orchestrate an armed one-million-man march on the Capitol and make the following demands in the name of "We the People". First, to insure that America remains free, the Second Amendment and the Right to Free Speech are made Fundamental Rights of the Constitution that can never be challenged. Secondly, to end government influence on the genetics of America, forced integration is made unconstitutional and voluntary segregation is made a Fundamental Right of the Constitution. Thirdly, to foster even-handed thinking and limit extremism among the population, it is made unconstitutional for any media or educational system of America to be politically biased.'

'If the above demands are not met, civil war is declared by the armed forces of We the People on those responsible for the threats imposed by NATO. The ALOC will assist the formation of this army of liberty and we will join forces with them. Individuals responsible for empowering the threats to the freedoms guaranteed by the Constitution will be deemed traitors. Individuals that take up arms against the armed forces of We the People will be deemed terrorists. In order to establish a rebalancing of the voting public to insure that the Constitution is upheld, actions will be taken against traitors and terrorists, including the deportations and executions of those held responsible.'

'I believe that a fundamental right exists to take such extreme actions as part of the inherent requirement of an armed population implied in the "We the People" concept imagined by the founding fathers of America - that is, the population must be in charge of its destiny and its representation, which can only be secured by force, even by means of a revolution, if necessary. Without the Second Amendment, the phrase "We the People", would lose its truth and would be reduced to delusion, such that, the opening lines to the Constitution could, in essence, be replaced by "You the People who are Told What to do", or more rudely "We the Wimps" as an insult to the Americans that might not rise to this latest and most fundamental challenge to their most fundamental freedom, out of cowardice or inaction.'

'To the people that believe that an armed America poses an unacceptable threat to itself in the form of mass shootings, I suggest that they consider the Second Amendment as the lesser of evils. For instance, imagine a government that treats its people like the former Soviet Union where anyone could be sent into oblivion, or one that enacts forced integration or even forced interbreeding programs. Also, consider giving up the advantages of modern weapons in the event of political, social, or environmental upheaval in a country of diversity. And, most relevantly in regard to the NATO threat, imagine being subjected to the influences of outside forces that do not have your best interests in mind, or indeed, ones harboring unfavorable intention or hostile plans.'

'We will launch a tactical march on the Capitol. The plan is to disperse the army of We the People in the form of SWAT teams and seize the city. The Government will be given the chance to peacefully redress the balance of Left and Right, which has become intolerably Leftist. A significant force will surround the primary legislative building for show, but the majority of the forces will be assigned to individual and specific blocks and city sectors. Each squad, modeled after SWAT-like teams, will have a particular mission assignment in addition to general suppression of civilian activity.'

'Specialized elements of the forces of We the People will handle specific tasks of the sacking of the city. Some units will handle cutting power and communications. Others will be assigned to road blocking intended to prevent the influx of government vehicles, and the escape of civilians en masse. Still other units will be dedicated to chopper suppression, which poses one of the greatest threats to the soldiers of We the People. Suppression will be mainly achieved through the use of tracer rounds, flack cannons, and anti-aircraft missiles. Heavy weapons squads will forestall tank and armored vehicle supported Government troop threats. The forces of We the People will utilize dirt bikes and ATV's to speed assault and dispersal.'

'In the event the Government does not concede to our demands, we will "take out" those individuals deemed to be intolerable threats to a free America and the will of We the People. The attack will commence under cover of darkness. We must cause no unnecessary pain or distress to human targets, and troops will adhere to a policy of dreadful efficiency and maximum kill ratio.'

The troops of the army of We the People would be outfitted with bullet and fire proof uniforms and cloaks, and will be equipped with air-filtering, motorcycle style inspired helmets that could be upgraded to supply oxygen to offset future atmospheric loss, all designed by God Fire Industries for the military. In addition to improving survival

and mission objectives, the cloaks and helmets would provide camouflage, protection from the elements, and a reduction of heat signature to infrared scopes. The preferred rifle caliber of the standard troop was the .308 fired with an AR-10 or AK variant, and the preferred sidearm caliber was the 10mm. These were mated with night vision capable scopes and infrared lasers for night fighting, the preferred environ for stealth engagements. In addition, each troop was equipped with a minimal pack, vest, and belt system containing survival gear and other essentials for dispersed survival and subsequent action.

It was hoped, and largely believed, that the reaction of the Government forces to the actions of the forces of We the People would be half-hearted. For, many officers and enlisted men in the U.S. military sympathized with the goals of the forces of We the People, being the military and patriot-minded people they were. And, indeed, a good percentage of the forces of We the People were veterans who would prefer not to engage their own kind in battle. However, it was expected that the Generals of the U.S. military would need to make at least a show of effort, yet would be dissuaded by adequate resistance.

Although Washington DC was the jewel in the crown, so to speak, sieges of other cities were planned as well. In addition to primary targets, riot instigating strikes at other cities would be conducted to keep the government forces off balance and uncertain. This would keep government forces from planning for and/or concentrating forces against an individual strike. Thus, multiple cities would be targeted at any given time in both planning and in actions. It was also expected that rioting across America in general, either in response to the threat of civil war or actual civil war, would tie up significant assets through the very essential efforts of riot suppression preparedness and execution. In this way, the armed forces of We the People could accomplish mission goals and live to fight another day.

John thought that a balanced media and educational system would “program” the people with more balanced political views, which would help to secure the right to bear arms, and would also appeal to the conservative Christian who believe that their values are under attack by the Left-leaning media and educational systems of America. It was hoped by many that the NATO threat was the long sought catalyst that would trigger the actions necessary for the inevitable reversal of trend in American politics and values. He believed that much of the threat to his plans could be solved with the pen and social programming. Yet, John was prepared to use the old fashioned solution to the question of political balance — extremism and genocide. He would prune the Left to whatever degree he felt necessary.

As far as his global ambitions were concerned, John would prepare with the other members of his radical Valar faction to insure that the ALOC and ELOC would help to form armies of “Crusaders” that he would someday lead on the campaign of what he referred to as “The Last Crusade”, the conquest of the nations of Islam. Surreptitiously, through careful planning, members of his faction would influence world events to insure that the Crusaders would indeed embark on their mission from God. To achieve this, he told himself that he would not use weapons of mass destruction unless absolutely necessary. Using the wealth and connections of the Valar, they would acquire the necessary tools.

He feared it might come down to destroying cities like Washington, DC and New York City. Such acts which could easily be made to appear as a radical Islamic attacks. In fact, he toyed with the idea of destroying DC once the Christians were at a state of ready. However, he doubted whether this decapitation of government would result in the essential Christian takeover. He would have to wait for societal conditions to deteriorate. If he could pull this off, he snickered to himself, it would seem to some that the Pope and the Anti-Christ were destined to become chums.

He knew that Christians were too soft in this modern age of comfort to face this solution. But it was just a matter of time before necessity forced them to face the truth, when his logical solution was just too compelling to ignore. When they understood that his logical solution was simply a best case scenario, a choice of lesser of evils. He understood that now. John believed that eventually they would too.

He knew if they could see into his mind, Christian leaders would not trust him entirely. The thought amused him that he could play the role of an advisor, lofty-minded, immersed in dark logic, pulling strings, influencing the very outcome of history itself. He must accept it, for him the logic was clear, he must be a Christian. His ultimate goal would be to become logic advisor to the Pope. He would fully apply himself to this endeavor through whatever opportunities he could conjure.

John was satisfied with his plans. But, in those rare moments when his heart awoke, when he listened to the music that he loved, he would feel great sadness and doubt at the prospect of Armageddon. Now, he knew that it would be a rare case in which, logic told him, he would have an opportunity to do something so grand, in the present, in his lifetime. Indeed, it would be his moral responsibility to humanity and the biosphere to capitalize on the opportunity. But how could he justify to himself his endeavoring to influence the future by hatching a plot that would decide the fate of entire peoples and have the ultimate goal of starting World War III?

Chapter 6 Passion and Purpose

As concerns over the effects of ocean acidification grew and eclipsed those of global warming, the formation of a national Department of Preparedness, intended to prepare America for the environmental challenges that were now being predicted by scientist, was gaining momentum on Capitol Hill. John realized that he needed to get his corporation involved in the science at the research level to better insure that he would have the necessary control over the development of ocean acidification remediation. He was counting on the depletion of atmospheric oxygen. It was the basis of his plans of world conquest, after all. His focus in this battle would be on the Department of Prepolgy at the University of Colorado in Boulder, which was the preeminent research center on ocean acidification in the world. He would do whatever was required to keep the Department of Prepolgy at the epicenter of academic research, while controlling the basic research being conducted there and positioning God Fire Industries to become its primary research partner and producer of product.

He met Cleo while attending a science conference at the Department of Prepolgy. John chose Cleo also because he found her to be attractive and realized that pillow talk could be vital to his espionage. She was a microbiologist and well

positioned in the faculty to provide intel on the on the research being conducted there that was most relevant to his plans. He told her that he was very interested in funding the department's research, and she seemed responsive to his overtures. So he offered to take her on a trip to Granby, Colorado so that they could get to know each other better, and to hash out a rough funding plan.

Not wanting to pass up the opportunities, Cleo agreed on a purely professional basis, while considering the other possibilities. Being attractive, ambitious, and lacking moral fiber, she was not above selling herself. She knew the ways of men, especially men who were full of themselves. Men who thought that they could woo a woman with gifts and sweet talk. John was immensely wealthy and she sensed a certain insincerity in him. She took him for just another playboy who would take advantage of her ambition. She had been used by men before who had not come through with their promises. With luck, she would make this one pay for it.

John would often vacation in the Colorado Rockies to get away from it all. He preferred Colorado to other states because of the drier climate that made it less buggy than other mountainous regions. He had a glider in his hanger at and airfield in Granby. It was a two tandem setup that allowed for side-by-side piloting. He would sometimes employ an expert pilot to teach and thrill him. It was a fully aerobatic self-powered craft that had an electric engine to get it aloft. Once up to altitude he could soar for hours if the updrafts were strong enough. On a sunny summer's day, as it would be, updrafts would be in abundance. The feeling and experience of a glider was like no other flying craft. You were in touch with the sky. The subtlest of air current were felt, as if you were an eagle on the wing. If this didn't bring out her sensuality, nothing would.

First he would drive her over Rocky Mountain National Park on the Trail Ridge Road in his electric-powered Tesla roadster. He thought that she would appreciate the thoughtful consideration for the environment, while being thrilled by the g-forces. He knew he was a good driver and that he could push the turns just enough to exhilarate her without causing her too much fear. On the shore of Grand Lake, they would have dinner, a vegetarian's delight, before mounting to the skies on the following day. He would rent two rooms, of course, but after a few drinks and a smoke, who knows what might happen. If she wasn't ready on their first night, he would try to keep her high long enough on the second day to be persuaded to spend a second night.

He thought about her dark, long, silky hair. Her perky small-to-medium sized breasts. Her small waist and curvaceous figure. But, especially her tight, young, plump, exquisitely shaped butt. Though John had not the time for real women. He had been testing sex robots to satisfy his needs at God Fire Industries. But, for her he would make an exception. Something about her really got to him. It was as if he became some primitive sexual beast when he thought about her. Though he was afraid for himself, of losing his logical way, the temptation was too hard to resist. So he decided that he would try to win her, for both his mission and to give into this sexual craving for her.

He picked her up on Saturday morning from her house in Boulder, Colorado. They had bagels and coffee for breakfast before heading up to the mountains. It was a beautiful day. The sky was perfectly clear and they road with the top down. Up the steep climb from Lyons, they weaved their way up through the foothills of the Rocky Mountain range to Estes Park, the touristy town on the edge of the high peaks of Rocky Mountain National Park. There the horizon opened up to reveal the majesty of what lie ahead. The

chief of the the mountains of the park was Long's Peak. He had climbed it twice before and thought that he might talk her into summiting it with him at some future date if things worked out.

They stopped frequently at turnoffs to take in the views. Flowers were in abundance and snow highlighted the peaks. Here and there, marmots, picas, and chipmunks added charm to the rocky outcrops. They took a few short hikes to immerse themselves in the beauty of the Rocky Mountains. As they walked, she talked about the wonders on the Earth and he responded with agreeable enthusiasm. Though he appreciated nature to some degree, he was more interested in seducing her. So, he told her that it was his mission to save the natural world with his vast resources, even though he knew that he would sacrifice it all for his dream of world conquest in a minute.

Wanting to believe that John was being sincere and because he was so wealthy and connected, she thought that he was worth the effort to attempt to open his selfish heart to the things that she cared about most – the salvation of the natural world in the face of man's progress. She knew that she was good in bed and thought it a fair bet. She would win his heart through the satisfaction of his lust. Besides, John was good looking, and she was horny. If she could, she would knock him head over heels with sex so that he would become putty in her hands. In the meantime, she would enjoy the ride.

When they reached the town of Grand Lake, on the west side of the Rocky Mountain National Park, they had dinner on the lake the town was named after. The sun was setting behind them and the mountains were tinged with the gold of sunset. He told her that he would like to take her up in his glider in the morning and that she would experience a dream world of the skies as if an angel. She said yes to this tempting offer. She reluctantly agreed to stay the night so as to seem not too easy, even though it was her plan to bed with him that night. He purchased adjoining rooms and a bottle of vodka. He had the best pot in his pocket. She agreed to stargaze with him into the evening.

The night was beautiful. The quarter Moon and Mars were gracing the heavens. The Milky Way was visible in the dark skies far from the light wash of Denver. Even the Andromeda galaxy was discernible. The stars, reflected in the calm waters of Grand Lake, were enchanting. They talked late into the night, relating the innermost secrets and dreams that they were willing to reveal. John talked about his plans to colonized the Moon and Mars. Cleo talked about her desires to save the biosphere and expressed her opinion that it was more precious than any rock in the heavens. John said that he would like to be further inspired by her love of the biosphere, and asked if she would help to broaden his appreciation for the wonders of the natural world of the Earth. She suggested to him that he might visit the Amazon Rainforest to see another example of the wonders of the Earth for himself. He imagined that it would be too hot for he's liking, but he said that he would.

So it was that they entered the realm of passion. After the preliminary kissing, they got down to business. John was a sexual dynamo given all his practice and exercise with the sex robots. She let him do most of the work as he seemed to know what he was doing. When his energy finally began to ebb, she took the reigns. They were well matched, both mentally and physically. When they were finished, John laid back on the bed with a smile that could not be subdued, and Cleo perceived that she had got him good. A few more times, and he would be hers, she thought. She could not resist at laughing at his look of complete satisfaction. 'Maybe he's not such a bad idiot.'

She thought. At the same time, while convulsing in orgasmic shock, John thought, 'Wow, what a goddess of love. I've gotta get more of this!'

On the following morning they took their time waking up as they were pretty well hung-over. He hugged her from behind and thought how she was more satisfying than a sex robot. He liked the way her body nestled in with his. He enjoyed her warmth, her breathing, and the scent of her skin. He also recalled how she had responded to his love making the night before. Cleo was a bit loud at times, maybe, yet it bolstered his ego. And she was a real woman. He thought that eventually that fact could have unfortunate consequences, but he would enjoy her at least until she became problematic. He could always dump her, he assured himself. But, even John had some remote vulnerability in his barely human heart. But, so far, soo good.

After breakfast on the lake, they drove to the airfield. John taxied his glider to the runway with Cleo beside him. The glider rolled along on its single wheel, and the wings leveled as it picked up speed. When it reached takeoff speed, John pulled back on the stick and they lifted off effortlessly into the clear blue skies. After climbing to ten thousand feet, John retracted the engine to improve the aerodynamics. Cleo was struck by the silence and the feeling of intermittent weightlessness as the glider responded to the air currents. John circled the craft to find an updraft as a bird would. Soon, he found one and the glider was carried upwards. To the east they could see the mountains that they had driven over and hiked the day before. The sun glistened off of Grand Lake and Lake Granby far below.

To thrill her, John proceeded to gently work the stick to perform a few graceful aerobatic maneuvers. When she had gotten over the novelty of the experience, John turned on the autopilot and they began to kiss. John reclined the seats and proceeded to make love to Cleo. First he wrestled off her pants and mounted her from behind. Next, she got on top of him. The canopy steamed with their passion. He kept an eye on their altitude and the horizon, and answered radio calls as needed. Fortunately, the stick was disengaged in auto pilot mode as they bumped it in tune with his thrusting and her gyrations. Just as they reached climax together, the altitude warning buzzer went off. 'Perfect timing.' Thought John.

John redeployed the engine to regain some altitude. They cruised around a little longer and John took the opportunity to point out Long's Peak on the horizon. He said that he would be back in town in about a month and asked her if she would like to accompany him on a hike to its summit. She accepted his offer, and he suggested that she take a few hikes in the interim to build up her stamina and better acclimatize to the thinner air of high elevations, especially since atmospheric oxygen levels had now dropped to 20 percent from what had been the norm of 21 percent. He would bring along oxygen just in case. They also agreed to work together on the funding plan he had promised her.

They drove back to Boulder into the evening. He said that he had to get ready for a flight out of Denver on his private jet to take care of some pressing business back at God Fire Industries. She said that she had an early ocean acidification class to teach in the morning. When he pulled into her driveway, she asked if he would like to come in for a quickie. He figured. "What the hell." Before leaving, he asked her if name was short for something. She replied that Cleopatra was the name her parents had given her. He joked that he thought that it was very appropriate for her. She laughed and said that she

was glad that he thought so. He drove away thinking that he had found his queen of Egypt, but that he would not play the part of Antony. He quickly scanned the nude videos of her that he taken without her knowledge, thinking that he would make a sex robot in her image. She went for a shower and smiled when she saw her pill case sitting on the bathroom counter.

A month had passed and Cleo and John had worked out a preliminary funding plan for ocean acidification research and remediation.

'You know Cleo, the Department of Prepology will have to be expanded if we are to meet all of our goals.' John reasoned.

'I have no idea if the Dean will go along with that.' Cleo replied.

'When we meet with him tomorrow I could offer to construct a new tower on campus.' John suggested.

'You would actually do that?' Cleo hopefully asked.

'Sure I would. It's the end of the world that we are facing. Isn't it? You can't take it with you.'

'You are my hero, John.' Cleo supportively replied, beginning to believe that John was really a good guy.

'How would you like to be the director of the genetic engineering section? I could make that a stipulation of the offer. I need someone to work closely with our joint efforts at God Fire Industries. I want to be the primary supplier of product.' John offered.

'That would be a dream come true! You can count on me to give it everything I've got. You know how much I care about the biosphere.' Cleo answered with disbelief.

The next day John and Cleo met with the Dean of the college and the head of the Department of Prepology.

'So Dean, I've got some big plans for your college. For having the foresight to open the first Department of Prepology in the world, I'd like to reward you with some significant donations and an offer to construct a new tower on your campus that I intend to make the world's center for ocean acidification research and remediation.' John casually offered.

'Indeed! Well, I can barely contain my excitement at the prospect. The high elevation of the Front Range of Colorado has put us on the forefront of oxygen depletion, so that certainly would be fitting. What have you got in mind? I'd love to hear all about it.' The Dean exclaimed.

'Cleo will work with you on the specifics of the donations and research and what not, but I'd like to talk about the tower. You see, God Fire Industries has been developing a new construction material I call Foamrock. We are developing it for the Lunar and Mars colonies, but it will have application here on Earth as well. I'd like to use it to construct the tower because of the speed with which we could complete the build, and time is precious.' John said.

'I've never heard of it. Tell me about it, if you will.' The Dean inquired.

'It's a synthetic material that can be poured into molds. It is one tenth as dense as concrete yet equally strong. I've brought a sample of it for you to look at.' John explained while handing a brick-shaped sample to the Dean.

'It's so light. Is it really as strong as concrete?' The Dean asked, looking doubtful.

'Not only is it as strong, it is relatively impervious to chipping and cracking and so does not require reinforcement with rebar, and is very resistant to weathering, as well. I can assure you that it will stand the test of time. Please feel free to have your engineers test it.' John assured the Dean with a certain pride in his product.

'How exciting. Your company is quite innovative. The tower will be a great boon to the college. It is an honor to accept your generous offer, no doubt. Do you have a name in mind for this new tower?' The Dean inquired.

'I don't want to name it after myself or my company. After all, the work that will be done there will be for the salvation of the world. How about something simple and encouraging. May I suggest "Hope Tower"?' John facetiously recommended.

John spent the night with Cleo, and very early the following morning they headed to the trailhead of Long's Peak for their summit hike. You had to start well before sunrise to reach the summit before the usual afternoon thunderstorms formed. He planned to reach the summit by noon. He brought a little pot along for the return hike as his aging knees were beginning to give him trouble. He found that pot really made the return parts of hikes easier and more enjoyable. But, he would not smoke on the way up because he would just want to sit down and enjoy the high. He also brought the oxygen canisters to assist them on the way up. It was a very strenuous hike of some seven miles, and, more challenging, it required a vertical ascent of one mile.

Cleo had hiked a few times since their first lustful time together as John had suggested, and was hopeful of reaching the top. She had planned to confess something there and she was really worried about how John would take the news. She was afraid she might have made a terrible blunder in taking advantage of him that would result in disaster for her and the University of Colorado. He was turning out to be the man who was making her dreams come true, and now she felt guilty about trying to take him for a fool.

At the trailhead, at four am, they donned headlamps and began to dog their way ever upward. The air was crisp and cold and Long's Peak was silhouetted against the stars. The pines sighed in the breezes and water gurgled when they crossed the occasional stream. They talked little in the dark and concentrated on their pace and breathing. John thought of his dreams of world conquest and how everything was falling into place, while Cleo pondered what she would say to break the news and how she might salvage the situation if John reacted badly. She thought of not telling him and simply having an abortion, but she had done that once before and had been racked with guilt ever since. She prayed to God for forgiveness and for guidance.

Finally, the sun broke the horizon when they were about a quarter of the way up to the summit.

'I think its time for a short break.' John suggested. 'How are you doing so far?' he asked.

'Fine. I'm glad the sun is rising. It's a bit scary in the dark.' She replied.

'You're doing great.' John reassured her, giving her a hug and a kiss.

She didn't want to tell him, but she had been feeling a bit like vomiting, figuring it was morning sickness.

'Do you feel like you need oxygen yet?' John inquired.

'No, my breathing is fine. Maybe a sip of water though. She answered.

Soon they continued up the trail, taking in the views above and below them. The sky scrapers of Denver and the surrounding plains could be seen far off through the haze, while the vast vertical rock wall and great notch of the summit came into view now and then as they worked their way up the switchbacks of the trail. By mid-morning they had reached Boulder Field, a relatively flat expanse of boulders at the base of the rock wall of the summit. From here the trail would be spotty, with only paint spots on rocks to mark the way. The hike up from there didn't require actual climbing skills, but required some degree of nerve as very steep sections and dizzying drop-offs lie ahead.

The Keyhole, an appropriately named, near-circular pass at the first ridge, marked the beginning of this more challenging endgame. When they reached the Keyhole, they stopped for a bit to take in the awesome view looking down the far side of the ridge. It was surprisingly steep for Cleo, and she seemed a bit unnerved.

'Is it like this the rest of the way up?' She couldn't help but ask.

'Yes.' John replied. 'But its not really as bad as it might seem to you. Hundreds of people reach the summit nearly every summer's day. You'll probably get used to it soon enough. Have some oxygen and a bite to eat and let it soak in. Then we'll see if you want to continue.'

As she watched other hikers make their way along the obscure route, she gradually worked up her courage.

'Okay, I guess. I should at least try.' She half-heartily stated.

The going was fairly easy at first as they hiked a nearly horizontal course across the flank of the mountain. Then they reached a very steep ravine of scree, but it was more physically demanding than scary. She continued up without the need of encouragement. At the top of this was a mind-blowing view of the high mountains.

'This is what mountaineers must really love.' Cleo said with awe in her eyes.

'Its why I put myself though all of this.' John replied with satisfaction.

It was dizzying, yet intoxicating. Eventually, a smile overcame her worried expression and eclipsed her fear.

'I have to make it to the summit.' She said with some determination.

'That's my girl. Just one more steep climb a little way ahead.' John replied encouragingly.

This was followed by a more or less horizontal path to the final accent up a very smooth and steep granite slope to the summit. When wet, this slope could be fairly treacherous for the novice, but the granite was dry and so the soles of her boots provided ample traction.

'This is the final section.' John reported with glee. 'We've just about made it!'

'Fantastic.' She joined in with enthusiasm.

At last they reached the summit.

'Its incredible!' She exclaimed. 'I'm so glad that you brought me here.'

John raised his arms in triumph and laughed out loud.

The summit itself was nearly flat and strewn with boulders. It was shaped like two football fields laid end to end. People were relaxing around the perimeter of the flat top

of the summit, soaking in the views. John and Cleo stumbled over to the nearest vacant section to catch their breath. After huffing on oxygen for a bit, they recovered. They took some water and a snack. Then John broke out his pipe.

'I hope you don't mind.' He asked Cleo, taking a hit before she could reply.

'I don't mind at all.' She laughed.

'Do you want some?' He asked, as he offered her the pipe.

'No thanks.' She reluctantly answered, thinking of her condition.

They sat for a while and then lazily waked around the summit to take in the 360 degree views. When they reached a secluded spot, John advanced upon her.

'Are you crazy? Here?' She protested as she looked nervously around.

'Sure! This is the ultimate Rocky Mountain High! Come on baby. Don't worry, I'll be quick.' John encouraged her.

She reluctantly gave in, and they found a flat spot just below the rim of the summit.

'Get on your hand and knees and I'll keep an eye out.' John pleaded. He had been following her most of the way as they had trekked up the mountain and the view had inspired his fantasies. From his vantage point, John could just look over the summit rim, but he was soon distracted by her perfect behind as she pulled her pants down just enough to provide him entry. He unzipped, and John unloaded one so quickly that no one had noticed, not even Cleo.

As John laid back, thinking that life couldn't get any sweeter, Cleo, felling a bit used, figured it was probably the the best time to unload something of her own.

'John, I've got something to tell you.' Cleo seriously told him.

Thinking that she was going to tell him that she loved him, he tried to think of a suitable reply.

'I'm pregnant.' She finally revealed.

For a long time, John pondered what she had said. So much so that Cleo became uncomfortable at his silence.

So she repeated, 'I'm pregnant.' And added, 'The baby is yours. I've decided that I won't have an abortion.'

Various thoughts passed through John's mind, everything from being a happy father to throwing her off the mountain. 'So she has played me as I played her.' He guessed. 'What to do?' He tried to decide through the fog of his delirium. 'I can't screw this up.' John reminded himself. In the end, all he could manage was a forced smile and a, 'I'm happy for you'.

Chapter 7 The Department of Preparedness

The legislation to form the Department of Preparedness was finally signed by the President when the atmospheric oxygen level had dropped to 19 percent. As it had become clearer that the world might end due to ocean acidification if we did nothing, the increasing pressure to find a solution made a Department of Preparedness logical. The National Oceanic and Atmospheric Administration (NOAA) would manage oceanic and atmospheric monitoring. NASA would be charged with handling the space hardware, satellite imagery, and data transfer, with research institutes and universities processing

the information. Decision making concerning important aspects of the major projects were made by committees of the Department of Preparedness.

Part of the plan was to spread the spores of genetically modified super algae, some selected for their ability to grow rapidly and produce copious amounts of oxygen when and where introduced into the ocean environment, by ship or pipeline, in accordance with data-based models that factored in parameters that included real-time ocean current and nutrient conditions. John's God Fire Industries was on the forefront of genetically engineered algae research given its ties to the Department of Prepology and was well positioned to be chosen as the major supplier of products containing super algae. It was critical to John's plans of conquest that the project to save the world from the effects of ocean acidification not be wholly successful. He engineered his products to be effective enough so as to allow God Fire Industries to remain the top supplier, yet they would fall short of what he was actually capable of achieving.

The scientists would invent the solutions, suppliers would manufacture the products, and conscripted vessels would be charged with its introduction to the environment. Given so monumental a task, a significant percentage of the worldwide fleet of ocean goers would have to be applied to the task. The solutions involved using the Navy to help spread the seeds of hope across the oceans. This meant that the Department of Preparedness would have a military presence. The number of commercial vessels far exceeded the Navy's fleets, but the Navy would coordinate the dispersal of solutions by enforcing strict fleet compliance. Working in tandem with the fleet would be pipeline, with the Coast Guard overseeing coastlines and Marines more distant constructions and operations.

In addition, a great effort would be made to increase global fertilizer production because special oil-derived and synthetic-based floating fertilizer agents were to be introduced by ships and pipelines into suitable areas. The fertilizers agents would float to the surface over broad areas, and slowly dissolve, releasing vital nutrients that would augment natural sources from upwelling and runoff from agriculture. These agents were reminiscent of the surface scum of oil spill disasters, though designed to be environmentally friendly. Basically, fertilizer in equaled oxygen out. This would help make up for lost natural oxygen production due to the gradual demise of acidity sensitive oxygen producing organisms.

As well as they could manage they would turn the oceans into great oxygen generating algae farms, turning a blue planet green. One could compare the plan to a home owner applying a "seed and feed" product to his lawn to fill-in patches. Many of those who had complained about genetically modified foods, now complained about genetically modified oceans, and claimed that the Navy would declare war on Mother Nature. But, to do nothing meant a worse mass extinction. The welfare of the natural ecosystem was in fact a big factor in the design of the plan. Scientist would be in control of product design and scientist generally wish to preserve nature as well as we might. The only way the scientific community would get fully behind this was if the natural environment was a top factor. Product introduction would be closely controlled at, or restricted from locations where important ecosystem functions were occurring. In critical zones, product would be carefully introduced to help support the natural food web, while elsewhere, production of algae would be maximized.

It was not feasible to completely replace the phytoplankton that was disappearing across all the oceans with super algae in the short term. Even with the greatest efforts at dispersing the super algae, it would take decades for sufficient migration to take place across all of the sunlit, or photoactive, upper reaches of the oceans. And this does not factor in the upwelling of ancient deep water that continuously occurs at the edges of many continents. However, given the right plan and adequate time and maintenance, it was theoretically possible for a bioengineered organism to effectively replace a disappearing assemblage of phytoplankton in both food web and oxygen producing roles. And, what replacement organisms that nature might take thousands of years to naturally evolve, humans could develop in decades. At the start of the effort to achieve this, it would be far more economical and productive to concentrate the algae and the fertilizer dispersal to relatively defined parts of oceans.

The Sargasso Sea in the middle of the North Atlantic was a particular favorite for these future concentration efforts. It was bordered by America, Europe, and North Africa for one thing, but what made it especially attractive to ecologically minded was the fact that it was a kind of dead zone created by the Gulf Stream and three other currents, which circulated water in a great oval around it. The zone within was relatively placid and, most importantly, somewhat isolated from the ocean water surrounding it. It was occupied by floating rafts of Sargasso weed in which many fish and crustaceans made a living. In between the rafts there was clear, nutrient-poor water. In this zone, the microscopic super algae would grow intensely where fertilized, but where not, they would languish. The fact that no current would carry the super algae to other regions in excess made it an ideal ocean-scale test and development region.

Chapter 8 Fruition and Philanthropy

It had been a few years since the inception of the Department of Preparedness. Atmospheric oxygen levels had dropped faster than predicted and had now come down to 18 percent. The pipelines in the Sargasso Sea along the West coast of North America had been laid out. The testing and trial runs of oxygen producing product had only just been completed and the winners had been chosen. John had been working closely with Cleo at the Department of Prepology to create his SuperAlgae brand. It had to be good enough to win the competition, but no more. Working independently at God Fire Industry labs, he realized that he could improve the genetically engineered super algae to the point that it would be efficient enough to not only stop the drop off, but actually return the atmospheric level of oxygen to 21 percent in a few decades. Of course, this would not do for his plans to succeed. So, he only funded research at the Department of Prepology that would lead to less productive strains of algae. He used these to manufacture his SuperAlgae product.

Driving from Denver International Airport to Boulder in his Tesla minivan, he thought how people around the world were reacting to the ongoing environmental calamity and how long it would be before things began to fall to pieces. In the First World, societies were adapting quite well to the oxygen depletion. The Front Range of Colorado had been on the leading edge of the new wave of technological innovations designed to allow people to cope with lower oxygen. Car makers had been among the

first to offer oxygen generators as optional equipment. The housing industry had followed suit, and air conditioning manufacturers were offering upgrades to existing systems. Retail and workplace structures were adding airlock entryways to reduce oxygen loss. People on foot were carrying portable oxygen generators in backpacks.

In the agricultural world, food and animal production had dropped to 80 percent of normal. Free range animals were being phased out because the animals were beginning to struggling. Enormous structures were being constructed to house as many animals as possible for the meat markets. Domes were still very expensive and were only being used to cover the most lucrative of city scapes. Whats more, the oceans were beginning to suffer a global ecological collapse and fish were dying off from starvation and toxicity. Countries that were highly dependent on the sea for food, such as Japan, were hit the hardest. To amplify their suffering, America had decided to stop all exports of food products. Though America had not yet dipped into its food reserves owing to it's dwindling surplus of food production, it was predicted that production would equal consumption in five years if oxygen levels continued to decrease at its current pace.

In the Third World, people were in grave danger because they had not the means to supply all their citizens with oxygen generating equipment. At 18 percent oxygen, the human body cannot perform exertions without the risk of blackouts. This meant that people could not easily tend crops or acquire food by other means. Many simply gave up and starved to death. Wildlife was also experiencing die offs as they could not cover enough ground to find sufficient food. Predators and scavengers could stumble on weak or dead animals for now, but eventually they would succumb as well as their prey dwindled. This meant that zoos and other such facilities were the only remaining lifeline for many species.

As these thought came to their conclusion, John pulled into the parking garage of Hope Tower. The bottom three floors of the twenty story structure were devoted to parking. Because the garage was sealed, only electric-powered vehicles were permitted to enter. Using his gate transponder, he passed through the airlock and found the nearest VIP parking space. He always carried an oxygen supply in his briefcase backpack for emergencies, but today, he carried a few special items. He entered an elevator and sped to the seventh floor.

As he walked out, he spied his little buddy.

'Daddy!' Johnny excitedly let out when he caught sight of his father and ran down the hallway and into his arms.

'Its great to see you. What have you been doing? Playing with your Zeppelin, it looks like.' John returned, seeing the toy floating nearby.

'Yeah, it's really neat. Look what I can make it do.' Johnny said as he worked the controller and piloted the Zeppelin through several hoops positioned here and there.

'It looks like you've really got the hang of it. I'm impressed.' John supportively answered. Guess what I've got for you this time?

'A rocket ship?' Johnny guessed, hopefully.

'Maybe next time, sport. It's a special robot that you can control like your Zeppelin. You can talk to it and it will do what you ask. Answered John, handing the toy to Johnny.

'Wow! Cool! How does it work? Johnny questioned with wide eyes.'

'I'll teach you tonight. Now, where's mommy? I've got a surprise for her to.' John asked.

'In the lab, like always.' Johnny answered, pointing to the door of the lab.

'We'll be out in a few minutes. Don't go anywhere. Okay?' John said as he walked to the door.

Entering the lab, John could see Cleo working at a microscope. He crept up behind her and blew into her ear. Cleo turned and laughed and gave John a quick kiss.

'Just give me a minute. I'm almost finished.' Cleo requested.

'No problem. Where are the cups? Oh, I see them.' John said as he worked on opening the champagne.

'Does that mean you have good news?' She asked.

'The very best! I was awarded the contract.' John reported.

'Really!' Cleo exclaimed, forgetting about what she was doing. She joined John and the cork shot across the room.

They had a toast or two to the fruition of their labors.

'I could not have done it without your help. I picked up something special for you to remember this momentous occasion.' John said, as he handed her a jewelry case.

Cleo opened it excitedly and gasped. 'Is this what I think it is? It really is! The Hope Diamond!!!' Cleo screamed and then stared at John with gaping mouth.

'Not so loud. You know, some people would murder for that thing.' John said with amusement, while checking to see if anyone else was in the lab.

'Don't worry. I'm alone tonight.' Cleo replied, regaining herself. She put on a wry smile and walked over to the door and opened it a crack to check on Johnny. Then she locked the door and proceeded to rape John. A few minutes later they walked out, looking a little disheveled.

Waking up the next morning in the house on the mountainside overlooking Boulder that John had bought for Cleo and his son, he stumbled down to the kitchen to get some coffee brewing. 'I need a vacation.' He thought. 'I just wonder.'

Later, Cleo brought Johnny down for breakfast and John and Johnny had ham and eggs. Cleo had vegetarian's fare. 'You know, it's a good thing people are taking steps to keep our animals alive. Isn't pig good Johnny?'

'Oink, oink.' Johnny imitated and then asked. 'Can we go to the zoo today so we can taste the other animals?'

'Now, that's a good idea, kiddo. What do you say Mama?' John asked.

'Sounds like fun.' Cleo agreed.

At the Denver Zoo, they walked around with their oxygen masks. You could still manage without them, but you would tend to get lightheaded. The animals were mostly kept inside their pens nowadays for their safety.

'Isn't a shame they're all cooped up inside now?' Cleo rhetorically stated. 'I wish that we could erect a dome over the whole zoo, or at least some parts. Is there anything you can do, John?'

'Now that you mention it, I've been thinking of becoming a philanthropist. I'll have money coming out of my ears with this Department of Preparedness contract, and it would be selfish not to spend some of it to help save some of the world's most precious things. That Hope diamond was my first foray. Who knows what might happen in DC? You know, when I was there I heard that the Smithsonian Institute was auctioning things

off to raise money. They are going transfer most of their possessions to a salt mine. The facility is under construction. So I put in a bid.' John answered thoughtfully.

'I love the animals, Daddy. Could you please save the animals?' Johnny pleaded.

'We might construct domes over zoos, but if things get ugly, people might break in to eat them. Perhaps salt mines are the answer. It will take a lot of doing, though. Besides being adequately housed and cared for, they will have to be fed. That's the tricky part. We cant count on food being delivered from the surface. We will have to stock up a lot of feed, or grow food in the salt mines. We might even be able to make a self-sustaining system. But, to keep the predators fed, we will have to raise a lot of herbivores and omnivores. I'll have to crunch the numbers to see what's feasible, but I'm sure we can save at least some of them.' John considered.

'What are salt mine, Daddy?' Johnny asked.

'They are caves deep underground where people have scooped out salt. They have taken so much out that the caves go on for miles in all directions. There is so much space down there that it would take you a whole day to walk around them.' John explained.

'That's sounds fun. Can we go there?' Johnny asked.

'Yeah, we'll visit one. But, how would you like to go the Moon first?' John asked.

'The Moon in the sky?' Johnny asked, pointing up.

'Are you serious, John?' Cleo asked, with some disbelief.

Chapter 9 A Honey on the Moon

Because John was the supplier of Foamrock to the first commercial and scientific lunar colonies, he had good reason to visit these structures, many of which had been in operation for a decade now. Cleo was a top scientist in the field of super algae, and the colony they would visit, was successfully operated as a self-sufficient system, and was highly dependent on bacteria and algae for the conversion of human and animal waste into the basis of a food chain. With a little finagling and payoffs, he was able to secure two tickets on the next flight to the Moon. Johnny would tag along and would serve as a promotional ploy that SpaceX was eager to capitalize on. He would be the first child to be launched into space. SpaceX quickly fabricated a spacesuit for him.

Because it was a three day flight to the Moon, SpaceX had developed a rocket-powered spacecraft with a passenger capsule that was designed a bit like a passenger train. After being released from a large first stage on the fringes of space, the spacecraft would propel itself to the Moon where it would land vertically. Passengers and crew would disembark via an air-locked boarding ramp that was moved into position over an access hatch after landing. Baggage and freight were similarly removed from the spacecraft through access hatches positioned lower on the craft. The spacecraft would be refueled and loaded for the return flight to the Earth. It would enter the Earth's atmosphere in a nose-forward orientation to deal with the heat of reentry, with control being afforded with small wings. Then, after reaching the proper position and altitude, the spacecraft would swing itself around for a vertical landing.

Travelers could purchase their own private cabin or choose a sleeping berth in a sleeper section in which passenger would spend the majority of their voyage. A small

multipurpose section, used for entertainment, socializing, dining, and work, provided views of the heavens. There were also two vacuum-powered toilets. Much as with a small commercial airplane, there was a pilot, co-pilot, and stewardess. In addition, there was a technician who was also trained in medical care. The stewardess could double as a nurse. During blastoff and landing, all would strap in after donning their customized spacesuits for added safety, but at other times, passengers could dress as they wished and move about the cabin.

After strapping Johnny in the entertainment section for games and cartoons, John and Cleo returned to their private cabin to get undressed. The first thing that John noticed was that Cleo's breasts did not sag at all, and that the plumpness of her butt was enhanced. It was a lot like how a naked woman looks underwater, but he found that he did not have to worry about her natural lubrication washing away. Her body also displayed a jello-like reverberation to their motions of love-making that enchanted him. The sex itself was a little awkward. Without gravity, they would tend to bounce or drift apart. Certain positions were easier to manage than others. They experimented and gradually worked out solutions for most of them. For some positions it was a matter of gripping each other with arms or legs, whereas for others, they found that elastic straps provided a helpful return force to the effect of bouncing apart. He took notes on how to create a sex suit system and guidebook for weightless Kama Sutra.

After the three days of relaxation during the Earth-Moon transit, John and Cleo were ready to get to work. In addition to investigating the largely Foamrock installation to examine its field performance in the lunar environment, John would also probe into the workings of the of the lunar colony's life support and agricultural systems. He thought it would provide an excellent model for the systems he would apply to the developing of similar systems for use in salt mines. Cleo would work with the scientists who were overseeing the colony's algae-based systems to observe field performance and exchange ideas to the mutual benefit of the Earth and space colonies.

Johnny would spend much of his time in the daycare center of the colony, which was yet awaiting the first human baby to be born beyond the Earth, while serving as a test subject for the medical and practical aspects of child rearing. He was a joy for the people of the colony to see and interact with, and inspired a few couples to plan for a child of their own. His favorite thing to do was to play with the colony's two resident cats and their litter of eight playful kittens. Besides the cats, the daycare center was home to hamsters, rabbits, and other small creatures. There were also several aquariums and terrariums that housed a variety of fish, amphibian, and reptile species. It was important to the colonists to include as many species of animals and plants into their lunar microcosm.

On the Moon, the shadowed polar craters were favored for colonization. In craters near the poles, radiation caused by solar wind and solar flares is reduced through the natural shielding provided by the crater walls. Near the poles, ice is often present in permanently shadowed depressions such as craters. Water Ice-rich soils were mined from the darkest and coldest parts of craters near the North and South Poles of the Moon. It was the richest pay dirt to be had. Water was infinitely invaluable on the Moon. The ice was hoarded by the colonists as if it were air, from which breathable oxygen could, in fact, be readily made.

As if hunkering in foxholes, the habitats were constructed on site, tucked inside the most favorable and suitable of polar craters. The larger ones exceeded 100 meters in width and actually capped an entire crater by its rim. The living spaces were located on the bottom levels nearer the center to maximize adsorption of radiation by the upper mass of the entire internal superstructure. The top upper levels usually served as the aqua-cultural domains where food was cultivated because water is an effective shield against cosmic radiation. Some habitats within craters received controlled sunlight from reflectors on crater rims and from orbiting sources, which was transmitted through skylights that checkered roofs of the uppermost level to facilitate growth. Other habitats relied on solar arrays on the surface and electro-nuclear generators to supply lighting setups with power.

Besides the shallow pools of water of the top levels that were a part of the radiation protection and aqua-cultural systems, pools and fountains were often located throughout the lower levels, with lakes even occupying the lowest levels of a few. These pools independently served critically as agricultural and aqua-cultural support, aesthetically for psychological well being as part of nature parks, and collectively as the water reserves of the colonies. Some crater structures were completely devoted to the preservation of natural ecosystems. Like arboretums, they contained the natural plant life of specific forests of the Earth's dwindling natural environments. Other crater structures devoted any number of levels to the preservation of life on Earth.

Luna Laguna, simply called Laguna by the colonists, was the crater structure that John, Cleo, and Johnny were visiting. The business model of Luna Laguna was built around the growing interest in eco-tourism, but with a lunar venture appeal for the fabulously wealthy. Their claim to fame was the coral reef pool that occupied its lowest level. The structure itself was of the type that completely filled in the crater it occupied to the very rim. The structure was flat-topped and its roof measured 200 yards across. Ordinary lunar craters, having a depth to diameter ratio of 0.2, meant that the height of the structure was 40 yards or 120 feet. With the exception of the 50 foot tall bottom level of the crater, which held the lagoon, the levels were built on a plan of 10 feet high to accommodate ventilation and essential utilities. This meant that Luna Laguna was a 7 story structure, not including the lagoon level.

The pool, called Luna Lagoon was 30 feet deep near the center of the bottom of the crater, and the air space above the water was 20 feet high. The structure of Luna Laguna was made nearly entirely of Foamrock, and the whole of the interior of the crater was clad with it as well. This provided both insulation and water proofing. The low gravitational force of the Moon, which is one-sixth that of the Earth, meant that the load bearing elements of the structure of Luna Laguna were under one-sixth the stress for a comparable structure on the Earth. Whats more, Foamrock was only one ten the density of concrete. Still, the roof of the lagoon required support to carry the immense load of the structure above it. An ingenious solution to maximize visitor enjoyment that did not require the usual multitude of columns that would otherwise spoil the views was adopted. A large central column arched outwards from the floor of the crater to the roof above. In addition, very heavy beams imbedded in the level above ran across the central column in a radiating pattern to the crater wall.

Visitors could walk around the central column on any of three levels behind a viewing wall that had viewing windows, offering 360 degree views of the deepest part of the lagoon. Above were elevated sections where visitors could enjoy unobstructed views of the lagoon. Wave-makers induced realistic waves, fans created a pleasant breeze, and the outer wall of the lagoon was painted azure blue to achieve the illusion of sitting on a tropical island. Leading from openings in the viewing wall were four viewing tunnels that visitors could walk through for a totally immersive experience. These tunnels led to a single-level outer viewing wall that encircled the shallower outer perimeter of the lagoon. There was also docks where glass-bottomed boats could be launched. Snorkeling and scuba-diving were permitted on a limited basis to prevent contamination of the sensitive marine ecosystem.

Returning from the daycare center where they dropped Johnny off after breakfast, John and Cleo rounded the corridor to their suite. Because of the circular plan of crater habitats like Luna Laguna, a circular layout to the corridors was used that reminded some people of layout of Star Trek's Enterprise.

'I've spent two days wandering around this place and I need a break. How about you?' John asked Cleo, hopefully.

'Okay, Captain Kirk, show me what its like to make love on the Moon.' Cleo joked.

'Beam me up, Scotty.' John replied in enthusiastic agreement. Because of the low gravity on the Moon, the downward strokes of John's motions were as if in slow motion.

'This reminds me of the song by the Pointer Sisters. What was it?' John asked.

'Oh yeah. "Slow Hand". I think.' Cleo answered, laughing. '

Well, honey, at least I can go on like this for a while because it doesn't take much energy.' John offered.

'Sure. Its nice. Then we'll try some other positions because we'll need to go faster to blast me off.' Cleo managed to say between sighs.

A few hours later, John and Cleo were hungry and decide to go find Johnny and have some lunch.

'Hey Starbuck. You want to go see the big fishies after lunch?' John said when they entered the daycare center.

'Okay.' Johnny replied, as kittens bounded around him almost like flying squirrels.

After lunch, they all went to one of the central elevators and took it down to the base level. They soon found the viewing platform and slowly walked around it while observing the myriad of fish swimming through the crystal clear and brightly lit water. The fish were none the wiser to the effects of the lower gravity of the Moon, which were minimal under water, and seemed to be flourishing in a completely natural coral reef complex. The most noticeable difference was the way in which bubbles rose more slowly through the water than they did on Earth. All of the once glorious coral reefs of the Earth were utterly decimated by ocean acidification now, and only existed in a healthy state at Aquariums and in the tanks of commercial and private collectors.

The three of them took their time, walking slowly around the outer viewing wall.

'John, its magical. Do you think we could reproduce something like this in the salt mines to help to save this wonderful ecosystem?' Cleo asked.

'I don't see why not. We will have square miles to work with. You know, I've learned a lot studying the Luna Laguna environmental systems, and I realize now that it will require my full attention to work out a really good plan to save as much as we can. I could use your help. You know a lot more about biology than I do. If you can provide me with a list of ecological environments and species you think we can save, I can get my engineers and architects to draft up plans. The sooner we begin construction the sooner we can start to transplant plants and animals to the salt mine habitats. We'll have to put larger animals in zoo-type enclosures. The herbivores will depend on large agricultural tracts of grass and fruits, and we will need to raise domesticated animals to feed the predators, which will require more space still.

The good news is that some salt mines are tall enough to permit multilevel construction. We can grow food as they do here and on the Earth, with hydroponics and high intensity lighting that increases yield. What I'm envisioning is a Luna Laguna, but one that is orders of magnitude larger. We might even move there if things get ugly on the surface, you know, if the oceanic remediation efforts don't turn out to be enough to prevent whole scale starvation. It could be a place for the best of humanity to survive. I might be able to persuade my colleagues to invest in the effort for the same safety line. We could block off the entrance until things settle down topside. Then we can work to help the world recover. What do you think?' John finished.

'I can't express how happy that would make me. Even though I have hope that oceanic remediation will work, if we wait too long, it will be too late. I have colleagues at the Department of Prepolology that I know would get behind this with all that they've got. With a word from you, John, I'm sure that the Dean would authorize the formation of a branch of our department devoted to what you are asking for, and more. You are such a great guy, John. I feel like the luckiest girl in the world to be with you. I love you. Cleo replied, hugging and kissing John with tears streaming down her face.

'My darling, you know, I would do it all just to make you happy, because I love you so much.' John almost genuinely replied, while figuring what would be the point of inheriting a global empire in utter shambles with little hope of recovery.

'Why are you crying Mommy?' Johnny asked, looking concerned.

'Because Daddy has made Mommy so happy.' Cleo reassured Johnny, as she knelt down and hugged him.

'Don't worry Johnny. Mommies are like that some times. Now, who's up for a Moon buggy ride?'

'Me, me, me!' Johnny excitedly let out while jumping three feet in the air.

So, they left the lagoon and took an elevator at the central column to the top level of Luna Laguna. From the elevator, they walked about 80 yards to the outer perimeter of the complex. Walking up a flight of stairs, they entered the crater rim viewing ring, which was elevated just above the roof of Luna Laguna. From the rim viewing ring, people could take in the lunar landscape. Although radiation was a more of a concern at the surface of the Moon, electrostatic generators positioned around the rim viewing ring and atop the roof of Luna Laguna provided a fair degree of protection against solar-derived and cosmic radiation. In the rim viewing ring, people could walk or ride a tram around the perimeter.

Luna Laguna was located 3.5 degrees from the South Pole of the Moon and nearly centered on the Earth-facing side. Since the Moon is tidally locked to the Earth,

the Earth always remained near the same location in the sky, which, on average, was just barely above the northern horizon. However, because of the effect of latitudinal libration, caused by the 6.7 degree tilt of the Moon's rotational axis to the plane of its orbit around the Earth, the Earth would rise above and fall below the horizon at Luna Laguna as the Moon orbited the Earth. In contrast to the relatively stationary position of the Earth, the Sun traced its way across the northern half of the horizon in synchrony with the Moon's 27.3 day rotational period. At Luna Laguna, the Sun would cross the sky from left to right over a two week period. The Sun would then set for two weeks while on its track behind the Moon. During this two week period, the Moonscape could be illuminated by Earthlight for up to two weeks, depending on latitudinal libration. During some cycles, both the Sun and the Earth would fall below the horizon and the Moonscape would be illuminated only by starlight.

Whereas the Moon, and the Sun by chance, appear to have an angular size of 0.5 degrees as seen from the Earth, the Earth appears to be 1.9 angular degrees in size from the Moon owing to the Earth's greater size. This meant that the Moon appeared to be about four times the size of the Moon as seen from the Earth. On the other hand, the Sun appeared to be the same size as seen from the Earth because the Moon and the Earth are approximately the same distance from the Sun. Additionally, the Earth would be seen to go through phases as the Moon does from the Earth, but 180 degrees out of phase, such that a full Moon would coincide with a New Earth.

As it was on that particular day, a Last Quarter Earth and the Sun were just above the horizon, with the Sun far to the left of the Earth. Long shadows were cast across the lunar landscape by crater rims, hills, and rocks. As is always the case on the Moon, sky was black and the stars were clearly visible because there was virtually no atmosphere to scatter light.

'This is an unforgettable sight. Beyond words...' Cleo trailed off.

'The nearest words I can think of are surreal and enchanting.' John agreed.

'In...can...ting.' Johnny repeated.

'I checked the astronomy calendar and I discovered that we are in for a treat in about a week, when the Sun will be eclipsed by a New Earth. A solar eclipse lasts longer here than on the Earth because the Earth is so much bigger relative to the Moon. Totality will last for over an hour here compared to the usual minutes on the Earth. It will coincide with a lunar eclipse from the point of view of the Earth. I read that we will be still be able to see the clouds of the Earth illuminated by the subdued Moonshine, set against the solar corona. John informed them.

'I can hardly wait.' Cleo said.

'In less than two weeks, the Sun will set, off to the right, and the Earth will dip below the horizon soon after. So, soak it in while it lasts. A little after the time we leave, the Sun and the Earth will rise again.' John explained.

'A four week trip to the Moon and back. I can't think of a more incredible vacation.' Cleo responded.

'I see a Moon buggy!' Johnny shouted.

'That's right partner. We'd better catch the next ride before it's your bedtime.'

John said, picking up Johnny.

'Wait a minute. I've got to take a picture.' Cleo said.

They rounded the 300 yards or so to the opposite side of the rim viewing ring where the lunar vehicle hanger was located in a bounding, slow motion jog. As they neared the descending stairwell to the hanger they could see the launch pad they had landed on three days before in the distance, some 300 yards away to the South. The spacecraft had since rocketed away on its return journey to the Earth. They would return to the Earth on the next spacecraft to arrive, who's flights were scheduled in sync with the roughly four week orbit of the Moon.

They boarded the next electro-statically shielded Moon rover. It was a large, six-wheeled vehicle that was reminiscent of the large, bomb-shielded, all-terrain troops carriers employed by the military back on the Earth. Each wheel was powered by an electric motor. The power was delivered by a hybrid setup employing batteries and an internal combustion engine that ran on compressed oxygen and hydrogen. The exhaust of combustion was composed solely of water vapor, which was recovered with onboard condensers for recycling. The water could be easily be split back into oxygen and hydrogen by electrolysis at the hanger.

'This is going to be so much fun!' Johnny said with excitement.

Having basically no atmosphere, the Moon did not have seasons as Earthlings knew them, but the surface temperature fluctuations through the day and night cycles were extreme. Where the Sun shown directly over head, the surface temperatures could reach 260 degrees Fahrenheit. In the dark, the surface temperatures could drop to minus 280 degrees Fahrenheit. Moving toward the poles, the angle of the Sun to the ground becomes more shallow, resulting in the solar energy being spread out over more ground surface area. This means that maximum daytime temperatures are not as great nearer to the poles, thus decreasing temperature swings. However, solar panels could still be made to take full advantage of the Sun's energy by orienting them perpendicular to the Sun, regardless of the latitude.

After passing through an airlock, the first destination they headed toward on their hour-long tour were the solar arrays that were located beyond the launch pad. Nearly all structures outside of Luna Laguna were located to the South with the purpose of not degrading the most appreciated views of the Earth to the North, along with as much of the surrounding pristine Moonscape as possible. Like on the Earth, the solar arrays received sunlight only about half of the day, except that on the Moon a day lasted 27.3 Earth days. And, as on the Earth, batteries supplied energy during the dark periods.

Next, they passed by the nuclear power station. It did not have the traditional cooling tower to condense the spent steam as with Earth-based systems because the evaporated water could not be wasted on the Moon. Instead, water was cooled in the frigid environment of shadowed craters by conductive radiators. The conducted heat was in turn used to melt the natural deposits of ice within the craters. The released water was collected for use by the thirsty colonies.

From there, they arrived at the hangers of the shuttlecraft that were used to ferry people and cargo across the Moon. The area was also host to a truck depot, which brought cargo to and from nearby and more distant hubs. A few of the shuttlecraft were dedicated for sightseeing expeditions. The rocket engines were powered by hydrogen and oxygen derived from water mined from the Moon. Unfortunately, there was no way to recover the water vapor that comprised the rocket exhaust.

'I purchase three tickets for us to take a tour of the Moon. We'll leave from here the day after tomorrow. But, don't worry, we'll be back in time for the solar eclipse.' John informed Cleo and John.

'What we'll we see?' Cleo asked.

'First we'll stop at the Apollo 11 Visitor Center, and then we'll spend two nights at Luna Amazonas at the North Pole to check out their rainforest. Then we'll come back to Luna Laguna. We'll see many interesting geological feature along the way.' John informed them. After passing by a few interesting geological highlights, they returned to the rover hanger.

John and Cleo spent the next day relaxing and packing for their trip to the North pole of the Moon. The following day, they boarded a Moon rover with Johnny and made their way to the shuttle hangers. Once aboard, they blasted off to the North and enjoyed the lunar highlands in transit to the Apollo 11 Visitor Center. The pilot pointed out interesting mountains, rilles, and fault lines along the way. As they hovered over the Sea of Tranquility, they saw that the entire area that that Neil Armstrong and Buzz Aldrin had explored were cordoned off to preserve the most special of historical anthropomorphic settings. The landing site of the Apollo 11 mission was and would forever be even more special that the pyramids of Egypt in the eyes of historians, present and future, for it represented the very first concrete steps that mankind had taken into the realms of the cosmos.

They dropped onto the landing pad and rolled into the hanger of the Visitor Center. Upon entering the Visitor Center gallery and museum, they saw before them a great viewing platform through which they could contemplate humanity's most epic of exploratory achievements. Nothing, past or future, could ever quite compare to this most singular of historical events. Even John found that his eyes welled with tears as he pondered the significance of this most sacred of the monuments of humanity. Being moved as he was, he made a generous donation to the Society for the Preservation of the Apollo Legacy.

Next, they rocketed towards Luna Amazonas, observing the dark lunar maria that was composed of basaltic lava, which early astronomers called seas. They passed low over the Apollo 15 landing site on the way to the North Pole and could make out the lander and the rover on the Moon's surface. The tracks of the rover could be seen wandering across the Moonscape away from the lander. In a couple more hours they were on their approach to Luna Amazonas and could see it tucked in its crater in very much the same manner as Luna Laguna. They checked into their suite and ordered room service because they were too tuckered to explore anymore that day.

The following morning they went to a restaurant for breakfast and then headed down to the bottom level where the rainforest was established. As with Luna Lagoon, Luna Rainforest, as it was referred to, was granted a tall space to allow for the growth of tropical plants and to provide the resident animals and birds with vertical living space. The outer perimeter of the forest floor was built up into circular watercourse in a series of ramps that gave the rainforest's small watercourses of rivulets and pools the necessary grade to flow. At the bottom of each ramp, the water was pumped back up to the top of the ramp. In addition, there were three waterfalls that cascaded down from the central column into a circular pond that surrounded the column. Visitors could view schools of colorful tropical fish through viewing windows after crossing over the pond's bridges. A

trail gradually spiraled outward from the pond to the outer perimeter's watercourses to maximize the rainforest experience.

They strolled slowly along the trail, stopping frequently to observe the many inhabitants of the ecosystem. They saw colorful birds and small monkeys above, and butterflies and humming birds nearer to eye level. There were countless varieties of orchards, ferns, and other interesting plants growing on either side of the trail. They spotted a few vividly patterned frogs and small scurrying animals through the undergrowth.

Rounding the trail, they bumped into a colleague of John.

'Howdy Elon! Fancy meeting you here.' John greeted him.

'Well, I never!' Elon replied.

After introducing Cleo and Johnny to Elon and briefly catching up, John asked Elon if he would join them for lunch to go over some important plans he was cooking up. Elon agreed to meet up with them there.

'So, what do you think, Elon?' After summing up his plans for a salt mine installation.

'You know, I was thinking of spending my remaining days on the Moon, but I owe a lot to the Earth, and I have a lot of old friends down there. And, it sure would be a terrible shame to see all those animals go extinct. Then there's all the priceless art and artifacts that could be looted or destroyed. Yeah, I guess you're right. We should do something to preserve what we can and to insure that people with knowhow will be around to help rebuild civilization if it all falls apart. You can count me in.' Elon answered.

'That went great. I'm really encouraged by Elon's sentiments. I think now that I'll be able to recruit more investors. I'll make a few calls after we get back to Laguna to get the ball rolling.' John said to Cleo after they departed from Elon's company.

'I can hardly wait to get started.' Cleo replied, beaming.

Chapter 10 The Sargasso Project

A spider web of pipelines, as threads to a web, released a God Fire Industries product called SuperAlgae, and supplied ships for additional dispersal across the Sargasso Project, as it came to be called. The pipeline web covered only one-third of the great oval vortex that was outlined by the four currents. The Sargasso Sea itself was centered on the web, with a wide buffer between the pipeline web and the encompassing currents. It really was the best location in all of the oceans if containment was important on a large scale. However, some of the genetically modified algae would still manage to find its way out to other oceans across the globe. This meant that the algae of choice either must not be able to survive without some element that was under control, or the algae must function as phytoplankton replacement and not likely to cause some unforeseen problem over the long term. This is because it would be impossible to eradicate released super algae without some built in vulnerability, such as to a co-engineered virus, for instance.

The biomass of the phytoplankton of the world oceans is directly related to the amount of fertilizer/nutrients in surface waters, as they are the basic raw materials

needed for life. However, the goal of the Sargasso Project was to address the desperate need to generate oxygen, and fast. One could engineer algae that had more than the normal fraction of chloroplasts, the oxygen generating biochemical machines of the cell, so that they could produce oxygen at a rate higher than actually needed for normal cell processes. Such an anomaly would be a wasteful trait with regard to natural selection and efficiency, but it could be a useful creation for space stations or for saving the Earth. Given sufficient fertilizer/nutrients and sunlight, SuperAlgae could make the water fizz with oxygen.

One fear cited was the possibility that super algae could get out of control and raise oxygen to dangerously high levels. But, if the super algae were able to colonize all the oceans, the amount of oxygen released would not run out of control because ultimately the amount of oxygen that could be produced related to the amount of nutrients in the oceans. The problem was that the super algae would burn through the available nutrients while churning out excess oxygen, but not reproduce in sufficient numbers to create enough biomass to serve as adequate food web replacements. So, the super algae of SuperAlgae could not function well as a food web replacement and had to have a control built into it. The control was the lack of an engineered protein that caused the super algae to disintegrate by triggering a biochemical chain reaction within the cell. The protein was part of the SuperAlgae product and the super algae were super-hyper sensitive to its presence. As the super algae drifted from the source area, the concentration of the protein in the water fell below some threshold level, triggering the chain reaction, and causing the super algae to die.

As the SuperAlgae product rose from the lengths of the pipelines that made the circular web of the Sargasso Sea Project, one could see the beginnings of the super algae bloom that was initiated each spring from space (with the unaided eye). First, a circular web of bright green slowly formed in the middle of the Sargasso Sea. Over days and weeks, the pattern rotated clockwise with the encircling current, and the twisting links of the web gradually merged with others. This continued until what formed appeared to the eye or satellite as a continent-sized bright green hurricane of Australia-like proportions. This "algaecane", as it became known, was a seasonal creation and would slowly "wind-up" over a month or two. Then it would burn at max levels for three or four months. This was followed by a one or two-month fade. The release of SuperAlgae was timed with the increase in the intensity and duration of the sun that spring brought. The valves were closed around the end of summer. This meant that for some six months the SuperAlgae veins were flowing. The SuperAlgae mixture would be adjusted according to plans and conditions.

The bi-annual dispersion arrangement gave the bio-farms and fertilizer industries time to stock up in-between dispersion phases. It also gave the indigenous Sargasso seaweed and its inhabitants a time to recover from the changes and swings in seawater chemistry that the SuperAlgae's algaecane brought. The Sargasso Project's algaecane was in fact the largest biochemical plant ever created. In went raw material and out came oxygen. In effect, the algaecane became a great green dial with which John could control the percentage of oxygen in the Earth's atmosphere through manipulation of the SuperAlgae product. And, because the yearly average oxygen level was creeping yet to lower concentrations, most people felt fortunate enough to have a solution that seemed to be working to some degree. The cost for one year's operation was in the trillions in

the day's US Dollar, but on this one you might as well throw in the bank. John raked in the money.

SuperAlgae looked like a thick gray slurry, but it was a type of colloid known as a sol, examples of which include ink, paint, milk of magnesia, and blood. SuperAlgae was composed of a crude oil-derived colloidal base or medium, with whatever nutrients/fertilizers, algae spores, and other additives, including dispersants and algae control factors, held in suspension. The products formation as a colloid prevented the settling out of the solids of the product in the pipelines. The base of the colloid could not be an actual oil for it might react with the suspended particles in an explosive manner and become the greatest pipe bomb that had ever been made. Oil was altered in the chemical refineries and made to be non-reactive to the suspended particles. And, the use of oil derivatives for a medium meant that the matrix of the product could still share some of oil's properties such as a natural buoyancy in water, biodegradability, and water repellency (hydrophobia) that would prevent the hydration of the super algae spores until they reached the surface of the water. With the help of bacteria, the SuperAlgae foam matrix would be broken down at a more or less intended rate, releasing the suspended components and producing the desired algae blooms. The rafts were widespread across the ocean surface, yet concentrated in places so as to create a green halo made of algae emanating from the rafts of foam. The rafts were crucial to producing a nutrient-rich microenvironment which supported strong algae blooms.

An interesting aspect of the preparation of the SuperAlgae colloidal sol was that carbon dioxide was infused into it as micro-bubbles upon entering the pipelines. Its addition served two critical purposes. First, it increased buoyancy enough to counteract the effect of the suspended particles of the colloid, which increased the density of the product to a level greater than that of water, which would cause it to sink and stay at the bottom of a water column. To solve this fundamental problem of physics, the carbon dioxide that was infused into the colloid was pressurized in the pipeline at some desired pressure, so that when the product was released from the pressurized pipelines at depth, the product was transformed into a less dense and quite buoyant substance as the carbon dioxide micro-bubbles expanded. This effect was somewhat akin to carbon dioxide effervescing from an uncorked carbonated liquid, but more like the expansion of nitrogen bubbles that cause the bends as a diver rises to the surface. The expansion of the SuperAlgae transformed the product into a gas-liquid state that overcame the density issue and caused the product to float to the surface in long ropes. At the surface, the oil-derived medium of the colloid reacted to ultraviolet light and the SuperAlgae was transformed into a rubbery, stringy foam that was intended to mimic seaweed in so far as its life sheltering properties.

The second purpose to be served by the use of carbon dioxide was the fact that the process of photosynthesis actually consumes carbon dioxide, such that the near-surface water column can become depleted in carbon dioxide as the chloroplasts of the algae bloom convert carbon dioxide in the water column into carbonic ions and oxygen. Upon reaching the surface, the carbon dioxide in the product was trapped in the seaweed-mimicking surface foam until it was degraded by bacteria, which released the infused carbon dioxide, along with the suspended particles and spores into the near surface water, where it could further support photosynthesis. To sum all sources of carbon dioxide available to the super algae, the product-infused carbon dioxide was

added to the carbon dioxide being generated by the bacteria that were consuming the oil-derived medium of the product, and that of natural ocean levels.

Adding more carbon dioxide to the oceans may have seemed counter productive to some, but the objective was to produce oxygen and support the food chain rather than control the acidity of the oceans. To address this point, considerable effort was made to use carbon dioxide that had been sequestered from the atmosphere. Atmospheric carbon dioxide dissolving into the oceans, was, after all, the source of the problem. Fossil fuel use was still on the rise in 2050 and carbon dioxide absorption by the oceans was projected to increase for at least a century. But, raising the oxygen levels was priority one. So, controlling the oceans acidity was not likely in the near future. Rather, it seemed that genetically modifying life was a way for humans to facilitate the process of evolution so as to prevent a mass extinction. Whatever life they choose to modify would be forever changed in an unnatural way. However, it was argued that the vital elements of the food web could not be lost in the name of idealism if that would mean the loss of the entire ecosystem as we know it. So, a shades of gray solution was to modify the lifeforms of the natural oceanic ecosystem only just enough to prevent a catastrophic collapse of the oceanic ecosystem.

Products and solution that were engineered to address the problem of phytoplankton replacement elsewhere around the globe collectively fell under the Global Ocean Project. Products released under the Global Ocean Project had names like Natralgae and Ocean-Aid. The Global Ocean Project's release plans were designed to generate more or less normal blooms of the bio-engineered phytoplankton replacements, compared to the supercharged affair that was the Sargasso project's algaecane. Where upwelling occurred, pipelines carried the majority of these products to near offshore, in long and narrow networks that ran parallel to the coast. Upwelling is the process by which deep nutrient-rich water rises up the continental shelf to the surface and then flows out to sea in a conveyor belt-like fashion. So, releasing the product offshore along upwelling zones resulted in the product being delivered to wide expanses of the oceans courtesy of Mother Nature. The product would generate an algal bloom that ran nearly uninterrupted along a coast for thousands of miles in some places. One of these was the coast from Alaska to California.

The conveyor belt that ran along the entire west coast of North America carried the algae away from the coast and out to sea. Eventually, the natural nutrients carried by the upwelling currents, and the fertilizer that was a part of the product, would be used up by the algae, causing the bloom to fade. But, some of the algae and its spores would travel the oceans, waiting to happen upon nutrient-rich habitats to start another bloom. Wherever an algae bloom occurred, a food chain made up of larger and larger creatures would also bloom as a consequence. Upon these clouds of plankton, made up of anything from algae to prawn, small fish like sardines would feed, to eventually be fed on by larger creatures.

Thus, the marine ecosystem was fundamentally and irrevocably altered by man. In some fifty years' worth of Global Ocean Project full-scale introduction of product for the replacement of the disappearing phytoplankton, the oceans would be at least fifty percent inoculated with the genetically modified replacement algae, by some estimates. In time, other circumstances would justify the introduction of genetically altered lifeforms to replace a failing ecosystem of sea creatures.

Chapter 11 Erie City

'So, it has been six month since we left the Moon. Have your people had enough time yet to figure out what we can practically save given the preliminary estimates of space my team sent to you last month?' John asked Cleo via a video screen in his private jet.

'Yes, but I was wondering what will be the timeframe going ahead. We will need to recruit and send scientists to far parts of the world to gather specimens, and we can't really collect in earnest until we have facilities to relocate them. I was hoping that we could make direct transfers to the mine.' Cleo answered.

'Well, construction has already started on the Erie mine, and I was informed earlier today that the environmental systems will be up and running in about a quarter of the facility in another six months. It will probably take another year and a half to complete the overall construction.' John informed her.

'That should work out fine. By the way, I got a call from the Department of Preparedness yesterday and I think that they will follow suite with our private endeavor. But, a decision will probably depend on how the Erie mine works out. So, given governmental lagging, I hope that in three years they will start an underground program of their own. The focus there will be on seed stores and other recovery essentials.'

'That's good to hear. You know, the donor program has really taken off and I've decided that we will need another mine to store all of the priceless items that people want stored. I'm flying into Wichita right to go on a tour of the Strataca mine. They already store that sort of stuff there. I will try to work a deal with Strataca to accommodate the property of the donors.' John said.

'Then what?' Cleo asked.

'I really miss you and Johnny, so I thought I'd fly in to see the both of you?' John queried.

'I was hoping you'd say that. We miss you too. Maybe we could do something special.' Cleo answered, smiling.

'What if we headed out to the Erie mine in the morning. I want to see firsthand how construction is going, and I remember that I promised Johnny that we would visit a mine after the Moon.' John suggested.

'That sounds like a plan. Johnny will love that and I'd like to see the mine as well.' Cleo agreed.

'Great. See you tonight, darling.' John said.

'Have a safe flight, love.' Cleo returned.

John reduced the throttles and gently banked the jet on his approach to Wichita airport. He preferred to fly himself around and always rented or drove his own autos. Not only did he enjoy piloting and driving, but he would not allow anyone to spy on him because he could not afford a slip up. He always kept a vehicle at his private hanger at Denver International airport because he so often visited Cleo and Johnny. In this way, almost no one would notice his comings and goings.

John entered the Strataca mine through its visitor center. It hosted regular tours and even underground marathons on occasions. Part of the mine was rented out for safe storage in the constant 68 degree and 45 percent relative humidity of its vaults. Salt mines had been used for many reasons throughout the world down through history

and it was discovered that the stable climate and the salt, which inhibited the growth of fungi and bacteria, were conducive to the preservation of paintings and other works of art. Salt mines typically utilized a pillar and chamber form of excavation. The pillars were required to hold up the roof of the mine. The Strataca mine stretched for over a 1.5 by 2.5 mile space, with a total available space of 1000 acres, and was 650 feet below the Kansas plains. Its ceilings were anywhere from 9 to 17 feet high.

'I think your mine will do beautifully. We will probably have to build a larger elevator to bring down some of the larger items, but I don't see any sticking points.' John told Andy, the owner of the mine.

'That will be fine. We'll make more money storing than we could mining, so I guess it's a win-win situation. Where will all of the donors go if things get ugly?' Andy asked with some concern for the well being of himself and his family.

'Their donations are applied to the fee for a place in an underground city that myself and my partners are constructing. To sweeten the deal, I could save a place for you and your family.' John offered.

'Interesting. Okay, you've got a deal.' Andy replied, shaking John's hand.

Late the following day, John's family of three arrived at the Erie mine from Cleveland. It had formally been the Cargill Morton salt mine, but with the partnership of Elon and several other investors, they had the money to buy the mine and follow through with their construction plans.

'Hold on Johnny. We'll be dropping deep, deep down into the earth.' John said as the elevator began its 1,600 foot descent to the Erie mine.

'It feels like the Moon, Daddy.' Johnny said as the elevator accelerated downward.

'We'll be walking under a big lake when we reach the bottom.' John explained.

'Will we see big fish?' Johnny asked.

'Not yet. Those will come later.' John answered, giggling.

At the bottom, they boarded an electric jeep that Dirk, the site foreman would use to take them on a tour of the areas under construction.

'Are there bats down here?' Johnny asked.

'Not yet, Johnny. When you're a little older, I'll bring you back and you'll have a whole zoo to explore.' John gleefully reported.

'All right sir, we've reached the apartments. As you can see, they are two story structures. We've got studios, and 1, 2, and 3 bedroom units going up. We've designed in common areas and play areas according to plans. Each complex of around 500 units will be assigned a daycare center, a school, and a cafeteria.' The Dirk explained.

'Are we on schedule? Any issues?' John asked.

'No issues to speak of, sir, and we are right on schedule.' Dirk replied. 'Up ahead, the workers are preparing to pour Foamrock into the second level of that complex. It will be the first structure that will be completed. By the way, sir, Foamrock is quite an amazing product. It sure holds up. It makes our job a whole lot easier.' Dirk continued.

'Outstanding! I'm glad to hear your vote of confidence in my product.' John answered.

'Down that shaft there, the tech guys are constructing the nuclear power station. I'm afraid that's off limits for now. It should be up and running in a month. It will have triple door containment. They claim to be using a new design that is inherently

safeguarded from the possibility of meltdown. Each of the four divisions of Erie City will have its own dedicated power station for redundancy. The four divisions will be constructed in series. This is the West division, and it should be ready for occupation in six months.' Dirk informed them.

'That's exciting. Will the bio-habitats be constructed in this division?' Cleo asked.

'Yes Ma'am. Each of the four divisions will be identical. All divisions will host bio-habitats, agricultural complexes, waste treatment plants, and so on. So, each will be self-sustaining like the crater complexes on the Moon, so I understand. Each will be a city unto itself.' Dirk answered, with evident pride.

'Have you left spaces for the large animals?' Cleo asked.

Yes, Ma'am. Coming up on the left are the outdoor holding pens for the elephants, giraffes, and other grazers. Over there, will be the tanks for the dolphins and killer whales, and the fish farms, as well. Beyond, are the fields for growing fruit trees. We are dumping mountains of topsoil down the bulk shaft.

'What about the facilities for first responders and such?' John asked.

'Yes, up ahead on the right are the paramedic station and the firehouse. Then the hospital, recreation center, and the police and military barracks.' Dirk responded.

'Military barracks?' Cleo queried.

'Well, when we return to the surface we may need their help.' John answered.

'All told, each of the four divisions of Erie City will eventually house some ten thousand people. In total, that's a small city of forty-thousand souls.' Dirk said, as he summed up the tour.

'Well, Dirk, that was a fine tour. If you manage to bring everything online by the deadline, I'll guarantee an apartment for you and your family, and that of your best crew. After all, no one knows this place better than you, and, so, we'll need your expertise.' John said, encouragingly.

It would be my honor, sir. This is the greatest project I've ever had the privilege to be a part of. You can count on me to get the job done.' Dirk replied with confidence.

'Now, I promised my son a hike through the mine. Which way would you suggest?' John asked Dirk.

'There's a path that hugs the outer perimeter of the mine just over there. But, I wouldn't recommend that you go too far, sir. The mine is over five miles wide. Here's a flashlight and a radio if you have a problem. I'll leave the jeep for you.' Dirk said.

'Thanks Dirk, we'll be in touch.' John replied, shaking Dirk's hand.

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Two years later, John, Cleo, and Johnny returned to Erie City for the opening ceremony.

'Wow. This is a huge crowd. How many people down here today?' Cleo asked John.

'Well, we have the ten thousand selectees who are running everything from the zoos to the environmental systems, and I think another five thousand visitors who have purchased an apartment. A few of them have already moved in, but most are just checking things out today.' John answered.

'It has been two years since the Sargasso Project was initiated and now atmospheric oxygen levels are down to 17 percent. I know that only half as bad as it would be without the project, but wouldn't you think more people would be moving in given that the predictions are for it to continue dropping?' Cleo wondered.

'I think it will take something other than a gradual trend to put the fear into them. For the first time, food production in America has dropped below consumption rates, and the national reserves are starting to be tapped. The President announced a rationing plan that will take effect in less than a year. Even though most of the people moving down here are filthy rich and will be able to get what they need on the surface, it might be the trigger. If rioting starts as a consequence of the rationing, I'll bet many of them will make the move.' John said.

'I'm worried. Maybe America should have invested more into producing food. We could build more indoor agricultural setups and put more money into research for developing strains of staples that are better adapted to low oxygen. My time has been split between working on the bio projects for Erie City and super algae research. I think its time for the Department of Prepology shift one hundred percent of our focus on super algae now that we have the zoos and the habitats stocked.' Cleo voiced her thoughts.

'I've got some good news on that front that I think will give you some hope, sweetheart. At the labs at God Fire, we've identified a new strain that could potentially double oxygen output from the Sargasso Project. I didn't want to tell you about it yet because I didn't want to set you up for disappointment if it doesn't work out. But, I can have a sample sent to your lab as soon as possible.' John informed her.

'That's great! We'll get to work on it as soon as we receive it.' Cleo responded hopefully.

Over the preceding two years of overseeing the Erie City project, John had come into more and more contact with people who where afraid of the ultimate consequences of ocean acidification, which was causing him to develop a sense of empathy for the plight of people in general. What's more, the love that had grown in his heart for Cleo and Johnny made him understand what the suffering that he was orchestrating would mean on a personal and emotional level. So, he began to have doubts about his great plan of world domination. The love and empathy he was experiencing was undermining his strict sense of logic. Finally, he had a change of heart and decided that he would develop a superior super algae product that he would market as Ultra-algae. His computer modeling predicted a bottoming of the trend line of atmospheric oxygen at around 16 percent if Ultra-algae were to be utilized in the upcoming seasonal period of distribution.

'I'd like to welcome our visitors that are here today to attend the opening ceremony of Erie City. As acting Mayor of Erie City, it is my great honor to introduce to you the man who was most instrumental in making this dream a reality. Over two years ago, he approached me with the idea of creating such a city to save both the wildlife of our wondrous planet and the civilization that man has labored for eons to create. He has worked tirelessly since then on this great project of salvation and has brilliantly succeeded in bringing it to fruition. May I present to you...' Elon was interrupted at that moment by the ceremony director.

'Sir, I think there is something everyone needs to see before we proceed with the ceremony.' The director informed Elon.

A news broadcast was then displayed on the large screen behind the podium. On it was a video replay of an incident that had occurred just minutes before. The recognizable city of Jerusalem was seen as from the point of view of a helicopter. Then, a white trail could be seen entering the field of view from left to right. Suddenly, there was a bright flash that caused the video to washout completely. Gradually, the image was resorted to reveal a large mushroom cloud rising above an expanding shock wave that appeared to be consuming the city of Jerusalem. After several seconds, the image swung wildly and went blank. Again and again, the clip was replayed to the stunned audience.

Chapter 12 Tragedy

As the audience continued to watch the news broadcast for the next several hours, dozens more similar videos were played. It was becoming apparent that a significant nuclear exchange had taken place between the countries of Pakistan, India, and Israel. Pakistan and India had struggled to maintain control their populations as starvation had set in. Then, the long standing border tensions between the two nations had erupted as raiding parties crossed into each other's lands in search of food. Soon, the skirmishes degenerated into an escalating war. Then, a radical Pakistani General ordered squadrons of nuclear-armed jets to attack India and Israel. India and Israel had no choice but to respond with more than half of their nuclear arsenals, which, in turn, led the Pakistani leadership to deploy all remaining nuclear weapons.

The exchange had transpired over a period of twelve hours. Pakistan was completely devastated in the exchange, whereas India and Israel still retained enough vital assets to pick up the pieces. With Pakistan no longer a threat, the United Nations had little to do other than to offer humanitarian aid to the survivors. Although the world would soon recover from the shock at the knowledge that the hostilities had ended, its fears grew over the coming weeks as scientists began to predict a year without a spring in the Northern hemisphere. It would take three month for the smoke to clear from the atmosphere during what they called a mini-nuclear winter. The smoke would block over fifty percent of the Sun's energy back to space, inhibiting the melting of winter snows and the growth of plants.

This meant that the usual spring startup of the Sargasso Project would have to be delayed for three month, which would cause the atmospheric oxygen level to continue to drop in spite of the introduction of the Ultra-algae product. In addition, the reduced growth of terrestrial plants in the spring would mean even less oxygen would be released to the atmosphere. By the end of the year the oxygen level would drop to 16 percent, the point at which most people would pass out without oxygen supplement. Further, the significantly reduced crop yields caused by the shortened growing season resulted the beginning of a total worldwide famine by the year's end. The great hope was that by the time the next year's summer came to a close, oxygen levels might stabilize between 15 and 16 percent, and the crop yields would balance the consumption of the reduced populations. But, unfortunately, this hope did not factor in the human nature of starving populations.

'Cleo, Elon just informed that they are going to seal Erie City on January the first. That only gives us a few days to meet the deadline. I know that you want to work for as long as you can, but I think that we'd better head back pronto. Rioting is breaking out all over the place and I've just learned that they closed Boulder Municipal Airport due to security issues. That really worries me. So, I'll have to land at Denver International. I want to pick you and Johnny up tonight and head straight back to the airport.' John pleaded.

'But John, I still have a lot of work to do. The data on the newest strains have not been collected yet. I can't just abandon what we've worked so hard this past week.' Cleo objected.

'Listen Cleo, I wouldn't press you on this if I wasn't really worried. I've been watching the news closely and I'm afraid for your safety, and Johnny's. You know that I don't scare easily. You'll just have to pack up what samples you have and rerun them in the lab at Erie. You must listen to me.' John insisted.

'Alright. Alright. When will you arrive?' Cleo finally agreed with a sigh.

'I'm two hours out and it'll take another to drive to Boulder, barring any traffic issues. Can you get everything packed up by then?' John estimated, feeling relieved.

'Sure. I'll stop what I'm doing and start packing. Call me when you land, okay?' Cleo requested.

'I will. Love you. And please don't go outside.' John said.

'Okay. Love you too. Bye.' Cleo replied, cutting the link.

John opened a Denver news webpage to see the latest stories. Several videos were played showing rioting in the streets of Denver. A news reporter told of an incident where an indoor agricultural house was targeted by rioters who were desperate to get their hands on anything they could eat. The National Guard troops had open fired on the rioters, killing more than a dozen people. In another story, groups of civilians were shown firing upon one another in a residential area. Then, a story showing people carrying what looked like chunks of flesh from the Denver Zoo. This was followed by an interruption of the Emergency Broadcast System notifying residents of that a dusk-to-dawn curfew would be enforced in the Denver Metro area, with a warning that people found outside could be shot on sight.

'Damn! I've got a bad feeling about this. I need to beat the curfew.' John said aloud, as he pushed the throttles to max power.

Two hours later, John was shutting down the engines in his hanger as he picked up his phone to call Cleo.

'Hello, John?' Cleo asked, sounding frightened.

'Yeah, it me. What's wrong?' John answered, feeling his heart quicken its pace as his adrenaline surged.

'I see fires on campus, and I just heard somebody scream.' Cleo answered.

'Listen. I'll get there as fast as I can. Take Johnny to the most secure room you can think of and lock the door.' John said, trying to think and remain calm.

'Oh my God.' Cleo spoke, in a high pitched, disbelieving tone.

'What is it?' John asked.

At that moment, the connection was lost. John decided that it would likely be a race against time to save Cleo and Johnny, but that he must be prepared to handle any hostile situations. So, he donned his combat gear, which was similar to the bullet proofing gear that the ALOC utilized. He grabbed his assault rifle, sidearm, combat knife, and duffle bag of ammo magazines and clips. He then hurried to his specially armored, heavy duty off road-optimized SUV that he had decided he should have stored in his hanger for just such a circumstance. He started the engine and sped to the airport exit.

Racing down the E-470 expressway towards Boulder, he tried to phone Cleo again, but the call would not connect. After some time, he turned onto Highway 36, which would take him into Boulder and near to the University of Colorado campus. As he approached Boulder, he saw a semi-tractor on its side and across the road, nearly blocking it. As he slowed down to get around the wreck, he could see many people carrying boxes of goods from the trailer to their cars. Pushing a car out of his way with his truck, he gunned the engine and accelerated down the final grade into Boulder. He noticed the Sun falling below Flatiron Mountain on the West flank of Boulder.

As he reached the campus, he could see smoke rising in many locations, and students running in all directions. Gunfire indicated that something serious was in progress. He imagined that the Police or the National Guard was presently engaging rioters and looters. He was correct, but the Boulder Police task force was overwhelmed by armed gangs of rioters and was retreating eastward across the campus, away from Hope Tower where he assumed Cleo and Johnny were still hiding out, if they had not been evacuated. He would have to risk battle with the rioters to find out if they were still there.

Several armed rioters noticed his truck as he entered the parking garage of Hope Tower and began to work their way toward him. As he raced up the ramps to the third level, he noticed several bodies that appeared to have been grotesquely mutilated. He dared not to think that Cleo and Johnny were amongst the dead. As he pulled up to the bank of elevators, he realized that the emergency lights were on. He would have to use the stairwell. As he gunned the engine to reach the stairwell across the lot, several armed rioters exited the stairwell door. He had just enough time to grab his rifle and take cover before the rioters opened fire on him. He guessed that his outfit led them to believe that he was a SWAT officer. He had no choice but to engage them.

Fortunately, he had recently trained with the Erie City military and knew how to handle himself in a tactical situation, and, luckily, the rioters had no cover. He soon dispatched four of them, with one getting away before he could place his scope's red dot on him. Retrieving his helmet and another magazine, he shut off the engine, locked his doors, and remembered to pocket his keys. He ran to the stairwell as bullets ricocheted around him. He returned fire from just inside the doorway and dropped two more before the others who had followed him into the parking garage took cover behind cars and columns. Clearing the stairs below him, he raced up the stairs, pausing at each bend so as to not be surprised.

He decided that he would go to Cleo's lab on the seventh floor before searching elsewhere for them. When he reached the fourth floor, he heard footsteps above him. So, he positioned himself to surprise them. Two rioters rounded the corner carrying garbage bags of loot. He fired on them as well, and they rolled down the stairs.

Soon, he was at the lab door. It appeared to have been forced open with gunfire. Fearing the worst, he took a deep breath and walked into the lab. There on the floor of the lab were the remains of Cleo and Johnny. They had been cannibalized.

John stared, disbelieving his sight, as his mind entered a state of shock. It disconnected from reality as a human mind will do when faced with an intolerable circumstance. It began to seem to him that he was not really there. That he was a detached observer. Finally he thought of what to do. Walking across the room, he picked up a lab coat and covered their bodies with it after positioning them close together. He then walked over to a lab shelf and found a bottle of alcohol. He poured it over them and set them alight. Then, reacting to a subconscious intuition, he walked back down to the fourth level of the stairwell and retrieved the two trash bags, which were now leaking blood. Without looking inside, he carried the bags back up to the funeral pyre and placed them on it. He then threw more alcohol into the growing blaze. When the heat was too great to bear, he slowly turned and exited the lab.

Chapter 13 Regression

John sat on the stairs for a while. As the initial shock began to fade away, he began to think about the times he had shared with them, his love for them, and how much their loss would mean to him. Tears began to fall down his face, and then he started to sob uncontrollably. It felt to him that his heart was imploding. The realization came to him that it was his fault that had undermined the Sargasso Project, which had led to their deaths. As he considered killing himself to escape the pain and the guilt, his ego and ambition offered to his mind a means of escape from the truth by shutting down his heart and distracting his thinking with thoughts of revenge, empowered by hate. Through a trick of denial and blame, John found a way to cope with his grief and deflect his sense of guilt. So, John regressed to a mental state more terrible than the selfish indifference of his mental state before his time with Cleo and Johnny. In effect, his grief and guilt gave rise to an evil madness. A new John arose from the ashes of his heart and conscience.

'Those human beasts. Those dregs of human evolution. They deserve not to live. I will make them pay by the fire of hell. I will turn the beasts one upon the other.' John said to himself with an unleashed insanity in his eyes as he had never known.

He walked down the stairs to the door of the parking garage level where he had left his truck. He could see no one. Evidently, the surviving rioters had decided to move on. He retrieved a backpack and filled it with extra oxygen canisters, water, and the remaining ammo. Because of the curfew, he decided that it would be necessary to move on foot, or risk waiting until the morning. He decided that he could not bear to do nothing. Exiting the parking garage, he could see that the sun had now set and that the city around him was black. He intended to kill anyone else he came across in a fury of revenge. Nothing would stand between him and his purpose, but death itself. So, he worked his way to the western outskirts of Boulder under the cover of darkness, dodging the occasional patrol car. It would be another 40 miles through sparsely inhabited countryside to Denver International Airport.

The emptiness of the darkness before him was inviting. He took a short break and checked his location with the map program on his phone. It gave him time to reflect once again on all that had happened, but the feelings of loss welled up once again. So, with tears of sorrow and hate, he began a march across the cold and desolate landscape. Through the night and into the morning, he marched. Then, coming upon a gang of men who were camping between himself and his destination, he attacked them without hesitation. Though they returned fire, it was as if God or the Devil was with John, for he was not struck. One after the other, they dropped. Then he robbed the corpses of oxygen, food, and water.

After the battle, he recovered his senses somewhat. He knew that he would have to recover his reasoned thinking and a facade of normalcy to succeed. He would have to persuade the airport security forces to grant him entry to his hanger, and then gain clearance from the tower to depart in his jet. He would tell them that his truck was highjacked by rioters, and that he had barely escaped with his life, while masking the murderous madness that possessed him. He found a creek where he could wash away the blood stains and cool his fevered mind. He removed his battle attire and threw aside his rifle and sidearm. He fell into the creek and let the water swallow him. Drenched and shivering, he walked the final mile to the airport fence. He cut his way through and walked the perimeter to where his hanger was located.

He was soon spotted and was ordered to the ground. They detained and questioned him and he told them his story. The guards gave him a ride after checking his ID, feeling sorry for him. He opened the hanger and boarded his jet where he changed his clothes. When he finally stopped shivering, he started the jet's engines and radioed the tower for clearance to take off. Soon, he was in the air and climbing to cruising altitude. He set the autopilot to take him to Cleveland, and an alarm to wake him in time to land. Exhausted and sleep deprived, he soon nodded off.

Two hours later, the alarm woke John up. For a few moments, he could almost convince himself that all that had happened was a nightmare. But, the unbearable tragedy became undeniable. The only way to fight back against his grief was to occupy his mind, he realized. So, he set himself to the task at hand. With his avionics, he checked his location and heading and called the Cleveland Hopkins International Airport tower for landing instructions. He then entered the landing pattern and, when it was his turn, he began his approach. After landing, he taxied to his private hanger and was met by Air Force MP's.

'Sir, we have orders to appropriate all civilian aircraft for essential military operations.' The MP told him.

'Who do I see? I mean, who's in charge?' John asked, realizing that this would not do for his plans to succeed. 'I have important business at the Department of Preparedness in Washington.' John added, thinking quickly.

'Colonel Howser. He's in the tower, but you'll need an escort.' The MP replied, recognizing John.

The MP's drove John to the hanger and he found Colonel Howser in short order.

'Sir, I must be allowed to have access to my plane. I have very critical business at the Department of Preparedness regarding the Sargasso Project. It is vital that I arrive there later this week.' John lied.

'We should be able to arrange that.' Colonel Howser replied, recognizing John 'What are you doing in Cleveland, by the way?' The General asked.

'I have business at Erie City. I need to retrieve some important documents and samples. You know they are sealing the facility on the 1st of January.' John answered.

'I see. So, you are staying with us on the surface. Well, that's good news. I'm sure that we could use your help. But, I'll have to warn you that the roads are not safe anymore. Even escorted vehicles are being waylaid. I think that I should offer you a helicopter. Would that help?' The Colonel asked.

'I can't thank you enough. If you can loan me a small commercial chopper, I could pilot it myself. I wouldn't want to tie up any of your pilots. I plan to be back in two days.' John suggested.

'Very well. Lieutenant Vickers here will insure that your plane is not appropriated, indefinitely, and see about loaning you a chopper. Good luck to you, and God be with you.' The Colonel said, shaking John's hand.

'The same to you sir, and thank you again.' John replied.

'Before long, John was being driven to a nearby makeshift helicopter field that had become necessary because of the increasing social unrest throughout Cleveland and beyond.

After choosing a four seat chopper, John lifted off and skirted the airports traffic, heading north. He noticed several military vehicles positioned at intervals around the airport perimeter. After reaching Lake Erie, John headed east toward Erie City helicopter field, which was only 30 miles away on the banks of the lake. Looking out over Cleveland, he could see smoke rising from many locations across the city.

'Those idiots. Thank God for the military.' John said to himself.

As he approached to land at the Erie City Helicopter field he could see that the Erie City forces were guarding the perimeter fence of the complex. He walked to the main entrance, and, after showing his badge, entered the reception center. Not wanting to talk to anyone, he quietly slipped into the personnel elevator for his ride to the bottom. Once there, he picked out an electric cart and drove himself to his personal suite at the VIP complex. He scanned his badge to unlock the door and slipped inside. After a hot shower and a quick meal, he fell into bed and died to the world.

In the morning, he set himself to the task of working out the details of the plan that he was formulating in his mind. Step by step, he went through the details of the moves he would make. He considered every angle and thought of solutions and options for every potential hurdle. He realized that there could always be the unexpected circumstance that would trip him up, but with careful planning and flawless execution, and a bit of luck, he could pull it off. So, he spent the day packing all of the essentials for his mission.

First he packed two suitcases of personal items and effects. The most dear to him were Cleo's Hope Diamond and a bottle containing Johnny's baby teeth, but he diverted his mind from thinking about them by focusing his thoughts on his plan. The most crucial elements of his plan were contained in a lead-lined vault in a closet with a door disguised as a wall panel. Using a powerful magnet, he unlocked the mechanism that held the door shut. Then, punching a code into the keypad of the vault, he swung the vault door open. On the floor of the vault were three large, heavily reinforced, black

backpacks. On the shelves above them were numerous electronic devices, several lead containers, and stacks of gold coins.

He pulled one of the 80 pound backpacks out. He unzipped the main compartment and lifted out the device inside it and set it on his work table. It was John's version of what was referred to as suitcase nuclear bombs or backpack nukes. It was loosely based on the W54 warhead manufactured by the United States, or the RA-115s submersible nuclear device manufactured by the Soviet Union. And, like the RA-115s, which was rumored to have been secretly deployed on US soil to take out critical targets in the event of nuclear war, they could be easily hidden and remotely controlled by satellite or radio. Each of John's three atomic warheads had a 1,000 ton TNT equivalent yield.

He had secretly constructed them at God Fire Industries using radioactive materials acquired for the electro-nuclear generators that they were manufacturing for the lunar and Mars colonies. He thought that he might eventually use them to kick off World War III, but was never fully committed to their deployment. After he met Cleo and had his change of heart about starting World War III, he moved them to Erie City to keep them out of the wrong hands and to possibly give them to the Erie City military for use against hostile forces when they returned to the surface. But, in his present state of mind he was determined to use them.

His plan was to plant the bombs in three major cities and set them off at the right times, with the intension of making it appear to be a coordinated terrorist attack by Islam against the West. With Pakistan's recent nuclear attack, he thought that such a scheme should not be too difficult to pull off. But, the isotopic makeup of his bomb would not match the expected makeup of the lower technological capabilities of the nations of Islam. To make the isotopic makeup more representative of their technology, he would pack lead containers holding the appropriate radioactive materials with the bombs. The analysts who would investigate the fallout would be led to believe that the bombs were consistent with an Islamic origin. In addition, he would upload to the internet a video of Islamic terrorists claiming responsibility for the attacks.

John carefully installed the warhead trigger mechanism in each bomb, and then wired up the remote satellite receivers that would allow him to set them off from anywhere in the world. He realized that he might die or be discovered before he could plant all three bombs or could orchestrate his plan's execution. So, he would include a countdown timer that would ensure that his logical solution would unfold no matter what happened to him. With this setup, the bombs would go off in a logical sequence if he were no longer able to reset the countdown timer that would initiate each atomic bombs trigger.

'I shall have my empire, even if I create it from beyond the grave.' John said to himself with an evil laugh as he finished assembling the bombs.

Early the following morning, John set out on his great mission of conquest. He piled his luggage on the electric cart and headed for the elevators. On the way, he saw a cart approaching from the opposite direction and noticed who was driving it.

'John!' Elon hailed him. 'I heard a rumor that you had arrived. How are Cleo and Johnny?' Elon inquired.

'I'm afraid I was too late. The campus was overrun and they were killed.' John answered.

'Oh my God! I'm am so sorry.' Elon said, getting up to console John.

'Thank you, Elon. There isn't anything I can do about it. But, it is so hard to accept. I just need time to work it out.' John replied.

'Is there anything at all that I can do to help you through this? Do you want to talk?' Elon offered.

'Just take care of things here, Elon. It's what Cleo would have wanted. I'm on my way to the surface. I've got to stay busy. It's the only I will stay sane.' John replied, choking up.

'Okay. I understand. But, please be careful up there, John. Please don't throw your life away in your grief. I've suffered many losses in my long life. You'll get through this. I promise.' Elon advised.

'I'll try Elon. You've always been a good friend. Please give my regards to our partners, and tell them that I wish them the best of luck.' John replied.

'I will. Please stay in touch, John. You, Cleo, and Johnny will be in our prayers.' Elon bade John goodbye, shaking his hand and hugging him, as tears came to his eyes.

Elon watched John drive away, imagining his pain. When John was out of sight, he sat down in his cart and he fully cried as he prayed for them.

John drove away, fighting back the tears. By the time he reached the elevators, he was in control of his mind once again. He drove onto the service elevator for the ride to the surface. As he drove to his helicopter, he hoped that the enormously thick walls and doors at the top and bottom of the elevator shafts would be strong enough to save Erie City. He transferred his luggage to the cargo bay of the helicopter and strapped himself in the pilot seat. Rising above Erie City, he said his final farewells and banked off to the West as the sun broke the horizon behind him.

Chapter 14 A Dastardly Holiday

John returned to the helicopter field near the airport as he had promised. He hitched a ride to his hanger with his baggage. No one bothered to check his baggage as he was not entering the terminal and the Lieutenant in charge of the helicopter field was expecting his arrival. He was nervous when the Airman who was assigned to drive him handled his bags and commented on how heavy they were, but John simply told him that he couldn't talk about it because the contents were classified. In an hour, he was lifting in route Ronald Reagan International Airport in Washington DC.

The Air Force had been tasked with defending and controlling all major airports in the country. The Navy did the same at all major ports, the Army and Marines were protecting vital assets across the country, while the National Guard would try to handle the disorderly in major cities. All branches of the military were recalling veterans and were also conscripting new recruits. The first detainments camps were being formed within and around major cities. In locations where there was no military presence, police forces were quickly being overwhelmed. As a consequence, civilian militia were sprouting up in towns and in sparsely populated ares. Some of these militia were not so civilized. Indeed, the first incidents of genocide were being reported. But, there was little anyone could do to stop them.

When John landed, he showed the MP's his documentation guaranteeing that his plane would not be appropriated. Because there was an especially heavy presence of National Guard troops in the Capitol, it was still safe to use the roads in some locations. So, he rented a small cargo van, bringing only one of the three bombs with him. He hid the others as well as he could in his plane. He drove himself to the Grand Hyatt Washington because of its proximity to high value targets, but did not check in so as to not so easily incriminate himself. Instead, he rolled the bomb onto the receiving dock at the back of the hotel in a technician's cart he had borrowed from Erie City. He made up a story that he needed to access the roof to take some air samples, showing the maintenance man his Department of Preparedness badge. Once there, he busied himself with hiding the bomb in a large air conditioning unit.

The battery that powered the bombs electronics would last for several years. He also installed a mercury switch that would set off the bomb in the event of tampering. He set the remotely resettable countdown timer to seven days and punched in the codes to arm the bomb. He closed the access panel of the air conditioning unit and walked around the perimeter of the roof to estimate the extent of the blast. He knew that severe to moderate damage would take place over an area of nearly one square mile. This meant that the White House would be near enough to experience light to moderate damage. Radioactive particles would be blown over a far greater zone.

'This will surely get their attention.' John snickered.

He then visited the Department of Preparedness to keep up appearances and to make a request. He explained what had happened at the Department of Prepolgy and told them that God Fire Industries would continue their work. He asked for military support to defend the God Fire complexes at several locations throughout the country given the critical work that was being done there, and was granted his request.

Next it was back to the airport for the next leg of his dastardly holiday. His next stop was Berlin, Germany. His private jet had an advertised maximum range of 7,500 nautical miles, but because of there was now less oxygen in the atmosphere, he would have to cruise at a lower altitude and through air that was more dense. This meant that his speed and fuel efficiency would be reduced. After calculating the plane's new maximum range, he realized that he would have to stop to refuel either in the continental northeast or Great Britain. He decided that the fewer national borders he would have to cross, the less the likelihood that he would run into new regulatory obstacles or, worse, have his cargo discovered. So, he chose Bangor International Airport in Maine for refueling.

After refueling in Bangor, John set his autopilot for Berlin and got some sleep. On approach to Berlin Brandenburg International Airport, he called the Federal Environment Agency in Berlin to announce that he would pay them a visit to discuss details concerning the Sargasso Project. It was just another cover story, but it would smooth his passage into the city from the airport. John learned to speak fluent German, Russian, and Italian after he had his great epiphany of global conquest as it would help him to achieve his aims. He managed to pull off the same bomb planting, this time on the roof of the Hilton Berlin, and discussed ongoing research at God Fire Industries labs with scientists at the Environment Agency. Aside from research, they told him of conditions in Germany. Apparently, neo-Nazi militia had formed across the country and were

committing genocide. This time they were mostly killing Muslim immigrants. John figured that this would work in his favor, but only said that it was a terrible shame.

With the second part of his mission completed, John was off to Sheremetyevo International Airport in Moscow, Russia. He called the Ministry of Natural Resources and Environment and set up an appointment. He planted his last bomb on the roof of the Ritz-Carlton Moscow, and then proceeded to the environmental agency. The scientists told him of a new communist resurgence. Hungry protestors carrying red flags were demanding an equal redistribution of wealth, especially with regard to food distribution. They were blaming capitalism and the upper class for their woes. He told them that he hoped that the people would not kill their upper crust as they had done in that last communist revolution, and he truly meant it.

Next, he was off to Leonardo da Vinci International Airport in Rome, Italy. He planned to spend a week to two in Rome and visit the Pope in Vatican City. He called to say that he wanted inspect Vatican City's new dome, but he truly wanted to discuss plans for the ELOC. For his dream of a singular empire to form, a core of nations must be linked by a common thread. With Nazism and communism of the rise again, the nations of Europe would be hopelessly divided. And, even if they became allies against a common enemy, they would doubtless turn on each other once that threat was extinguished. John believed that ELOC forces had the potential to become the manifestation of that common thread.

After inspecting the Vatican City dome, John requested an audience with the Pope. He was soon led to the inner chambers of the Pope office.

'Thank you for receiving me on such short notice, your eminence.' John addressed the Pope, shaking his hand.

'Think nothing of it, John. But, please call me Michael. I am actually very happy to see you. I have questions concerning the Sargasso Project. You appear to be carrying a great weight. May I ask what is troubling you?' The Pope asked.

'Well, Michael, many things. But foremost, I have just arrived from a trip that has taken me across Europe and it has become clear to me that the vestiges of Nazism and communism are thriving and growing again in the blood soaked ground of the famine. People are seeking and finding outlets to their frustrations through blame and brutality, and finding excuses to satisfy their needs through plundering. For many, Nazism is justifying genocide, while communism is justifying revolution. And, both ideologies are serving to empower the individual through unification.' John reported.

'I too have been keeping a close eye on the deteriorating conditions across the world through my contacts, and I must admit that I am most concerned by what is happening in Russia and Germany.' The Pope agreed, sitting down in dismay.

'Before long, I think that we can expect the same conditions to arise across Europe that led to the communist revolution near the end of World War I and the NAZI takeover in the time after. What's more, those two ideologies are inherently opposed. I think that we can expect war to breakout between Germany and its allies and Russia if these takeovers materialize. That would mean nuclear Armageddon. To prevent history from repeating itself, and, indeed, the end of our world, you must be prepared to order ELOC forces to seize control of the militaries and the governments of countries on the brink by any means before they are fully claimed by evil forces.' John urged the Pope.

'John, I am a man of God. It is not a part of my faith nor in my moral soul to give orders that could lead to wanton murder. Defending the innocent and the weak in moments of need, I can condone. But, what you are suggesting I do would be collusion in a scheme that would lead to mass murder.' The Pope protested.

'Michael, I understand, and I both admire and agree with your principles on this point. But, if God puts before you a choice of two evils, and no others, would you not choose the lesser of the two? If men of good will had been in a position to stop Hitler or Stalin from rising to power, and to supplant that evil with good, shouldn't they have done so, even if it meant killing thousands of the innocent? I know that you have heard this argument before, but we are on the precipice of that very stage of history. And, we do have the means to stop evil from rising again and to secure good for millions of people.' John argued.

'But, how can we know that we would be doing that? How can we be sure that we would not be misled by our arrogance? That we were playing God and meddling in matters that are beyond our mortal wisdom and vision. Men of such power and will are just as much God's favorites as they are Satan's.' The Pope replied.

'You must be the judge of that. You may indeed have the power, but I guess that you will only find the will through your faith. If you find it, may God give you the wisdom to use it or not.' John concluded, bringing to a close the first topic of their discussion.

Chapter 15 World War III

Since their inception, members of ALOC and ELOC had found their way into all branches of the armed forces of America and Europe. In the spring of the year after the year without a spring, the Nazi uprising in Germany and the communists revolution in Russia began to topple elements their governments and were able to gain control of units of their military forces. In the most soul wrenching and uncertain decision of his life, Pope Michael ordered the ELOC to put down the uprisings in the government and military units that were being infiltrated by whatever means necessary. They were successful, and in so doing, ELOC personnel were most welcomed by the surviving leadership and assimilated at the highest levels.

As the famine worsened in America, rioting increased in intensity. Eventually, neighborhoods in cities clashed on a scale so great that even the military was unable to maintain control. Eventually, a breakdown of government occurred when its resources were overwhelmed to the point that it could no longer operate or protect itself adequately. Then, two types of groups emerged as dominate players. The first, located where ALOC forces decisively secured the upper hand, was the larger and more powerful of the two and was comprised of Christian-based groups mostly residing in larger cities. A larger portion of the former nation's military forces aligned with this group, and helped to achieve internal order and control, and provided protection from outside threats, including the second group.

The second type group was referred to as survivalists and were considered to be any armed group of people that employed any means to survive or exercise control. Among these groups law was the product of chance and whim. The larger of these survivalist groups acquired the lion share of the weapons not controlled by the Christian

forces, enabling them to break some Christian strongholds in bids to acquire food, goods, and land. Some of these engagements followed hit and run tactics, while in others, former Christian strongholds were occupied. Outside Christian territories, living standards and social policy regressed to that of the 1800's. Where survivalists experience starvation, some choose to consume the vanquished. In the South, a sort of Second American Civil War took place. In the West, there were frequent and widespread engagements in a style of warfare that could be described as "Cowboys and Indians meets Mad Max".

The Last Crusade

John sits with the Christian and survivalist leaders at the negotiations over a peace treaty. He observes the direction it is going, All the while he fingers a small object in his pocket. It is the catalyst. If they won't agree, he will make them. The tools, he thinks to himself, if they only knew. Unable to resist, his lips curl up into a smirk. He decides to give them one last chance and rises.

'I tell you, if you do not go on this Crusade you are not only illogical... you are cowards!' John bellowed as he pounded the table with his fist. How bad will things have to get before you face the truth? When you are too weak...or disbanded? This is the final moment, our last chance!

John sat down and waited. What would the fools choose? He knew he would do it if he had to. A more demented side of him even wished that they would make him, but he would rather have a clear conscious. It was just a matter of logic after all. If they made him, he would have no problem with it. As they walked away in disgust, he burst out laughing. 'So be it!'

In Washington, DC, a computer chip processed John's logic. A second later, the atomic bomb exploded!

'Lets see how long it takes for them to get the news.' He said to himself with quiet dispassion.

Moments later, he could hear a commotion building. He knew them. It would be enough. Faced with the prospect of battling each other to the bitter end, eventually a peace treaty between the Christians and survivalist forces resulted in a concord. Because of what was perceived as renewed terrorism, the lands of the nations of Islam seemingly offered themselves up as the logical source of America's requirements. The battle hardened and desperate survivors deemed what would have been unthinkable before the collapse, a necessity. The survivalist units joined the Christian forces and launched an expeditionary force that embarked on what many of them would believe to be a mission from God. Some cited national security or revenge. For others, it was simply a means of survival and plundering.

John thought that Germany and Russia might decide to join America on the Last Crusade, as the war with the nations of Islam would be called, given that ELOC had risen to power there and shared a brotherhood with ALOC. For Germany and Russia, it might simply be a question of national security, both in the sense of potential terrorist attacks on their soil, and concern about America becoming too powerful. Of course, the spoils of war were great incentives as well. But, John decided to set off his bombs in

Berlin and Moscow to insure that they were committed to the cause with as much fervor as America, and so that they would share a common bond. Also, he feared that they might discover his bombs as they would likely search all rooftops in their capitols. Then he uploaded a video to the internet in which he was disguised as a typical Islamic terrorist.

'I bring death to those who have done most to destroy the Earth. America, I kill you! Germany, I kill you! Russia, I kill you! I make holy war on all Christians.' John proclaimed, with his voice translated and altered.

The Big Three, as they were called in the news, divided up the nations of Islam in equal shares and made conventional war upon them so as to not irradiate the spoils. It required two years to complete the invasion. In working together as partners in a holy war, the Last Crusade helped to consolidate a Christian Empire.

The East-West Nuclear Showdown

H.G. Wells

"The World Set Free" (excerpts)

"Hitherto Power had come to men by chance, but now there were these seekers seeking, seeking among rare and curious and perplexing objects, sometimes finding some odd utilizable thing, sometimes deceiving themselves with fancied discovery, sometimes pretending to find. The world of every day laughed at these eccentric beings, or found them annoying and ill-treated them, or was seized with fear and made saints and sorcerers and warlocks of them, or with covetousness and entertained them hopefully; but for the greater part heeded them not at all. Yet they were of the blood of him who had first dreamt of attacking the mammoth; every one of them was of his blood and descent; and the thing they sought, all unwittingly, was the snare that will some day catch the sun."

During the Last Crusade, other wars waged around the globe. As far as Asia is concerned during the Last Crusade, China consumed India and a unified Korea and Japan worked together to consume Southeast Asia. The Chinese did not attack the new Christian Empire because of its nuclear advantage. In fact, large numbers of desperate Chinese crossed into Russia only to be falsely led to slaughter. China allowed this to happen to keep Russia from attacking. China was trying to feed most of its people, but there were priority considerations, and so, sacrifices were made.

World War III could not end until non-human derived food production was adequate to support the remaining populations. This resulted in the Christian Empire's need to attack East Asia. Likewise, once East Asia had consumed India and Southeast Asia, they too began to look elsewhere for resources. Some Chinese held a grudge against Japan because of the atrocities Japan committed against the Chinese in the period leading up to and during World War II. This desire for vengeance and the need of further resources led China to attack Japan. China's invasion of Japan was unsuccessful and both nations were seriously weakened. The Christian Empire saw that

the time was ripe to invade East Asia. Because the Christian Empire had the nuclear advantage, East Asia was at a serious disadvantage even though they had built up their arsenals as quickly as they could in the years leading up to the famine.

A surprise attack on the East Asians rendered them incapable of retaliation on a massive scale, but many missiles and warheads remained hidden for future use in battle zones, mainly on Chinese territory. Before the Great Culling, as World War III was referred to, star wars type technology developed by countries in the West during the lead up to the famine prevented most intercontinental ballistic missiles from reaching their targets in the Christian Empire. However, short range nuclear weapons and tactical nuclear weapons that operated below the umbrella of star wars defenses, were used in abundance, especially during the war between the Christian Empire and East Asia. But ultimately, the dream of the Christian Empire to create of a single World Empire was realized.

As forces crossed the globe and consumed all in their way, some of these forces stayed behind in conquered territories as colonists to a new land, arriving to stay and consume whatever may still be grown there. After World War III the only players to survive in any modern form were the Christians, although much reduced in population. Relatively smaller populations of non-Christians did survive. The jungles of the Amazon became Native American's last safe haven. In South Africa, much of the white population either escaped or was eaten, an outcome that compared to the French colonist in Haiti. In response, the Commonwealth allies invaded sub-Saharan Africa and the Congo became the last refuge of Black Africans.

The Christian Empire's hope was that the remaining peoples finally had depopulated to the point that the environment could begin to recover with the help of environmental remediation technologies. Then they would endeavor to repopulate the biosphere. Looking ahead, they would work to develop the technologies to isolate their populations from future environmental disasters. They also banned all but a few nuclear weapons for emergencies, which would be controlled by a New World government. They believed that in the end, all would be well, although at a great cost. But, it was not to be.

Chapter 16 Snowball Earth

They poisoned the oceans. They poisoned the air. They annihilated themselves with nuclear weapons. They destroyed the very vessel of life from which they had sprung. They cast their precious world into a death of ice. They were so close to evolving far enough to save it all, but, not quite enough. Amongst them were scientists and artists of great genius. Amongst them were people of deep love for their kind and for their world. But, it was not enough.

Like so many other examples of emerging intelligences in the galaxy that did not pass their test of cosmic birth because of the self-destructive circumstance of their technological advances exceeding their wisdom, the Earth was also seemingly doomed. The Earth would end by the fall of three dominoes. Stemming from excess and war, first, ocean acidification destabilized the fragile peace of the nations of humans. Then, war of the worst kind resulted in a nuclear winter. Finally, the ocean currents, having

become destabilized by global warming as ice in the polar regions melted and flooded the salty seas with freshwater, reached a tipping point as they maladjusted in a most fatal way that no one had predicted to the sudden shock of the nuclear winter. As had happened more than once to the Earth in her ancient past, certain shifts of ocean currents caused the planet to be plunged irrevocably into global freezes that lasted millions of years. The humans referred to such past Earthly states as “Snowball Earths”.

The previous icy calamities resulted in the mass extinctions of relatively simple biospheres. But, life had since evolved through a great history of multitudes of fascinatingly complex and varied biospheres that had graced Earth to become her grand history of life. Now they had made a Snowball Earth that would end the majesty. By comparison, this mass extinction would be like the loss of Beethoven or Mozart to an amateur composer. For, the dominoes had fallen, and the currents had swung, and no power on Earth could stop the inevitable and total victory of the unceasing winter that had befallen their entire world.

For those who cared, and especially for those who could fully understand the tragedy that was playing out before them in their own lifetimes, it was more than many could bear. But, deeper and higher than the surface of this tragedy there was yet another perspective that gave relief to some from the anguish of this unforgivable tragedy in the form of a dream of a cosmic salvation. And, unknown to them, this dream formed the philosophical basis that divided the Galaxy by opinion and war.

An entry in John's journal:

The Suffering

As I drove back from a walk, I was possessed by thoughts of justifiable carnage to save a world on the brink of extinction. Justifiable carnage meant to enhance the fostering of the germination of the essential solutions that would be based on the science and the engineering of geniuses, and, to most efficiently empower the execution of the required terraforming plans, executed by an A-class force, by force, including the elimination of the burdens of the obsolete and the second rate.

Most fundamentally, the petroleum utilized in the production of petroleum-based products such as fertilizer and pesticides would be redirected to the Earth's terraforming efforts. The result being that the already declining food production would drop drastically further. Then, what is to be done with the starving masses that must be sacrificed? To let them run amok would impair societal function and reduce the efficiency of the “machine”. To barricade them within “zones of sacrifice” would mean the worst kind of carnage that starvation brings. To painlessly cull them would be a mercy!

Then a beautiful sunset spoke to my mind and heart. I recalled all the joy nature has brought me in spirit and adoration and how I had become divorced from the glory of nature and had become endlessly troubled in a life in the city where I was constantly reminded of the battle at hand. The anger and desperation was replaced by a longing to escape the madness, and by a great sadness at the thought of the extinction of what I have come to love more dearly than the spoken word can tell.

Then a voice spoke within my mind. It said: John, there is no hope in saving it. It will all end. All of this will be buried in ice and the Earth will never recover. It said that alien archeologists and paleontologist had reconstructed the history of the Earth millions of years hence the timeline of my present (of the simulation I was engaged in). That I was part of a program to study and become enlightened as to the nature of life as Humans and the nature of Darwinian Carnage as concerns natural life, in general. I wondered if it had arisen from my imagination, or was communicated to me from an outside consciousness. I then came to believe that this prediction was in fact a recital of history and that I should stop trying to save it and to enjoy the last of the Earth's glory and my life (in the simulation) while I still lived.

The voice suggested that I temper my suffering at the thought of the death of the Earth with the realization of the great imperfection of Humanity and natural life - the suffering. The suffering of people at the hands of nature and people. To imagine the worst sort of torment. The living hells humans experience due to their own flawed minds and the flawed minds of others. Of the suffering of semi-intelligent beasts. And, how even if beings of the natural world labored to bring compassion to reality, that there would always be cases of defective minds and the associated suffering. And even if planetary biospheres were engineered without omnivores and carnivores, of life evolving back to a state of bloody Darwinian Carnage.

The voice continued: shouldn't this imperfect invention of reality be extinguished? Shouldn't it be replaced with something more divine? Isn't it a grace, a mercy, a blessing that it was extinguished? Would it not be cruel to resurrect a reality so pervaded by suffering? Why not just experience a facsimile of it, as a simulation within a simulation? It could be appreciated and enjoyed, honored and glorified as a creation of God, resurrected in heaven where suffering need not be. That that is why you are suffering in your present simulation — to better decide this greatest and most profound of questions. That you willingly entered this simulation as a non-human entity to gain the wisdom you sought. That when you die in this, as with countless others, you will awaken and be your true self once again.

Chapter 17 The Mind Bearing Technologies of the Aliens

“The mind-field is the 5th dimension and the 6th sense.”

The science of the “sixth sense” progressed along as all sciences do among many alien civilizations. One of the most applicable spinoffs of six sense research is the discovery that consciousness that naturally evolves does not wholly reside within organics. On the Earth, consciousness was originally “discovered” by evolution and first made use of by early mammals, birds, and perhaps dinosaurs. It was an invention that gave survival advantages by allowing an animal to access a dynamic and real-time “intelligence field” known as consciousness.

Simple animals that do not have consciousness can only react to external stimuli through hardwired response options. These are naturally limited to instinct level behaviors, and, as such, are inferior to conscious level behaviors. Nature's first stabs at

a conscious intelligence were based purely in the organic realm -- it was limited to the physical constructs of neural connections. But, a breakthrough occurred when evolution stumbled upon the mind-field phenomenon of consciousness, which became controllable through organics -- that is, the evolution of the trans-dimensional capacity of the organ that is the brain.

In a kind of “fuzzy” logic processor-type function, an animal’s brain could interact with the intelligence field to establish a consciousness capable of more than the pre-programmed responses of instinct. With the help of the intelligence field, an animal could then perceive “reality” as a four dimensional realm of space and time, and so respond to stimuli on a more sophisticated level of perception. Whereas the most advanced computer can only process data, being without consciousness, even a semi-intelligent beast is “aware” of reality.

The phenomenon of consciousness was “naturally discovered” first by evolution, which, of course, is not conscious itself. It could then be “philosophically discovered” by adequately evolved beings, through their experience, as expressed by the musing - “I think, therefore I am”. And then, with the aid of science, conscious beings may come to understand consciousness as a phenomenon of the universe that is independent of life.

It turns out that consciousness in life forms has to do with the “fields” generated by the brain. Imagine all the electrical goings-on of the brain. Now imagine that a complex electromagnetic field, generated by billions of neurons (the cells of the brain) and trillions of neural connections (the intercellular wiring of the brain), can itself generate a field of consciousness. If so, then consciousness is not precisely, intrinsically, or necessarily limited to flesh or even any physical device - it exists as a field.

It was discovered that animals can communicate with each other at a distance through the interactions of these fields. Though this type of communication is very crude, it explains some animal behaviors that are not easily explained by traditional means. Another popular example is the “sense” that someone is looking at you. Early scientific work in “mind-field” research included the statistical analysis of data collected during tests conducted on volunteers. It was proven that certain individuals can consistently beat the odds by no explainable means. It was concluded that non-traditional information pathways must exist.

A combination of steady scientific progress and intuitive leaps enabled intelligent beings to understand and then control the mind-field phenomenon. A time came when the mind of an individual could be duplicated in a mind-field generator. It was discovered that, although a consciousness was indeed generated, it was an isolated consciousness. It wasn't until these artificially generated mind-fields were interfaced or synced with the Universal Mind-Field (UMF) that it became possible to communicate with them.

Chapter 18 The Angels and the Faithful

Some of the intelligent aliens of the Milky Way Galaxy designed technologies to protect their consciousness for eternity in networks of “mind vessels”, and hid themselves from perils at the centers of planets or deep in intergalactic space. Being

what they had become, they had lost all “natural” connection to the cosmos, but they thought it an ideal evolution beyond what nature had wrought. Others longed to be natural once again and chose to immerse themselves in simulations in which they knew not what they had become, and so believed that their artificial realities were real. But, other disembodied spirits that wished to stay connected to reality chose instead to travel the cosmos in ships to find more realities to explore. Some were guided by environmental and compassion derived ideologies, while others cared not for anything but their own purposes.

Two particular “species” of intelligent beings that inhabited the galaxy found themselves divided over the point of existence, such as that being played out so perfectly on the Earth. Some recognized the legacy, grandeur, and beauty of such biospheres, and the gifts and potential of the pinnacle of natural evolution that emerging intelligences represent, so typified by Humans. They believed that planets so bestowed with the fruits of the universe, and species that so nearly survive the test of cosmic birth, deserve a second chance -- a cosmic resurrection. Others, while agreeing that planets like the Earth were great and worthy and the very best of what the cosmos could conjure, believed that they deserved a more compassionate resurrection -- a heavenly resurrection.

The division was over the cosmic and the heavenly. The cosmos, a realm of Darwinian carnage and suffering, thought of as “reality” and God’s creation, and Heaven, an artificial reality devised to simulate all the good in the cosmos and more, but without the suffering. The “Faithful” believed that reality was the creation of God and was therefore not to be judged, and worked to save and restore all naturally evolved life that they encountered. The Angels dedicated their existence to the extermination of all intelligent and semi-intelligent beings and biospheres they encountered to eliminate and prevent the suffering intrinsic to reality and resurrect all conscious life into artificial realities -- Heaven.

The Angels believed that if God had made them intelligent enough to alter reality that they should do just that, as a gardener or a painter creates magnificence and perfection from natural elements. The Angels also believed that because the origin of life was in doubt, it could not be assumed that God had created life. All around the Milky Way life was to be found, and all life was fairly related by DNA and a common chemistry. What’s more, no precursors of life of significant complexity had never been found. Further, no being or computer had ever managed to simulate the evolution of life starting from scratch, with only natural elements and the laws of the cosmos. So that, for life, the galaxies of the cosmos are essentially spectacular petri dishes, but not wombs of origin. Evidently then, life had been introduced to the cosmos. But, from where?

Some believed that God had introduced the seeds of life in the form of bacteria, the simplest of self-replicating life, and that more complex life in the universe had arisen from bacteria through the process of natural evolution. Still others believed that life, or an intelligence that had created life, had arrived by worm holes from other universes where life might naturally be able to evolve from scratch.

The possibility of a non-Godly origin of life led many to wonder whether life had been created by God at all. It was possible, they argued, that life in the galaxy might simply be the result of a scientist’s experiment run amok, like a deadly pathogen

mistakenly released from a military biological warfare base, spreading by wormholes from universe to universe. Given this possibility, the Angels argued that the Faithful were illogical in their views because they could not prove the true purpose of life and its connection to God.

Chapter 19 The Interface

“Each mind, a neuron in a brain.”

The Angels traveled with nearly indestructible ships in which they could survive all but the most determined attack or the more destructive of natural hazards. With their technology they could control what they wished. Once upon a time, a ship of the Angels and a ship of the Faithful clashed over prime real estate and the “Nucleus” of the ship of the Angels was ejected in the nick of time. It was what they called the small ships on which they preserved their “minds” final back up copies on each mother ship. This Nucleus contained the entire community of the mother ship in its vessel. With limited capability and vulnerable to attack, the Nucleus propelled itself away from the battle and in the direction the community of Angels chose to navigate.

What the Angels sought was to restore their power and continue what had been their way of life -- to bring death to life. However, they had the knowledge, but not the means with the limitations of the Nucleus. The problem was that they were the sole remaining Angels in the Galaxy, and so they could not simply contact nearby Angel ships to be rescued, being that their nearest compatriots were in what Humans called the Andromeda Galaxy. Without traveling through wormholes, they could not travel beyond the speed of light. Wormholes were rare in the cosmos and none were practically located for a rescue in anything less than millions of years. So, they would need help in the Milky Way galaxy, if they could get it.

In debating their course, they realized that if they contacted a more advanced intelligence compared to themselves, they would risk becoming specimens. If they contacted an advanced intelligence less than their own, yet capable enough to detect, capture, and control the Nucleus, they would risk becoming slaves to be milked of knowledge. Thus, they sought the even less intelligent emerging intelligences that they could control through deception. The Nucleus scanned the planets in the Milky Way to look for the telltale signs of emerging civilization. These were the particular signatures of gasses that were unnatural and typically associated with planets inhabited by organic lifeforms and the semi-intelligent beings that utilized fossil fuels during early technological evolution.

One such emerging intelligence was eventually chosen, Humankind of planet Earth, as it was determined to offer the best combination of desirable traits. Desperation was one such primary trait. The Angels could present themselves to the Humans in nearly any fashion they could conjure. They studied the Human’s literature and media to learn of their psychology and base of knowledge and imagination. The Angels considered adopting the good cop-bad cop arrangement utilized by the aliens in the story “The Day the Earth Stood Still”, but thought it might be too heavy handed an approach that would result in dissension and paranoia instigated by the fear it would

inspire in the minds of the humans. To ease these human's fears, the Angels also considered using the equivalent of a whimsical Willy Wonka-like character who might charm the gullible humans, yet they thought that might raise doubts as to the sanity of the intelligence presenting itself to them. Finally, it was agreed to use something like the Einsteinian/Robin Williams animated character in Spielberg's "Artificial Intelligence", called Dr. Know.

One day an emissary of the Nucleus, the small interface ship that was built into the Nucleus called the Interface, which was designed for remote interaction, landed at a secret location chosen by John. The goal of the Angels was to barter with the Christian Empire to each others profit. Thus, the Angels presented themselves to the Christian Empire of the planet Earth as a single entity calling itself Eru. But, because the information pathway between the Nucleus and the interface was inter-dimensional and beyond Human knowledge, they knew not of the Nucleus.

The Christian Empire wanted any and all knowledge, especially that needed to save the Earth. So, although the Angels mission was to destroy all life in the cosmos, they agreed to provide the humans with the technology to restore the biosphere of the Earth. By the time the Interface landed on the Earth it had nearly half frozen over as the phenomenon of "Snowball Earth" irrevocably progressed. The Angels realized that returning the ocean currents to their pre-nuclear winter pattern was beyond the technical capacity of the humans in the near term, even with the science and technology of the Angels. So, instead, they would offer the knowledge that would allow the humans to warm the Earth in other ways. In addition, they would provide the knowledge needed to restore the atmosphere and the oceans.

The science and technology provided by the Interface included fusion power, robotic, nano-bot, synthetic life, quantum computer, and the all important mind-field science and technology. The necessary information was transmitted wirelessly in a way similar to that depicted in the movie "Contact". The Interface answered any questions and guided the scientists and engineers so that they would overcome any hurdles they encountered. God Fire Industries was the primary inheritor of this alien knowledge. By leaps and bounds, human scientific and technological evolution was propelled into the future.

Fusion power was intended primarily for the ships of the space armada as it did not really matter much for the environment of the Earth at this point. In fact, fossil fuel use would actually help to warm the Earth through its carbon dioxide emissions. To restore the seas and the atmosphere, synthetic microorganisms and nano-bots would work synergistically on a microscopic level to alter the chemistry of the air and water. In time, this would both warm the Earth through the effects of released super-greenhouse gasses, and would reduce the acidity of the oceans, allowing corals and other calcareous organisms to recover. The land surfaces of the Earth was still mostly covered by plant life where the ice caps had not advanced, but it would be up to humans to restock the wilderness with the animals preserved in zoos.

The Angels wanted a starship armada most of all. Robots would be used to construct the ships of the space armada on the surface of the Earth, which were capable of removing themselves from the surface of planets. Some robots were autonomous, others could be controlled remotely in a first-person sense. With mind-field technology, a mind could seamlessly interact with a robot so that a mind, in a sense,

was the robot itself. This was an important factor in the “manning” and maintenance of the ships of the space armada.

The weaponry of the ships of the space armada included conventional lasers and fusion rays. With fusion rays, bomb eggs, which were optimized packets of matter, and matter in general could be fused to cause a nuclear explosion using specially shaped and controlled laser beams. A halo-shaped beam could be just so manipulated so as to fuse whatever occurring matter was targeted at the center or nodes of the beam. The energy of nuclear fusion could be released with such ease that targets, such as other spaceships, could be annihilated or otherwise largely disintegrated, and the surfaces of planets could be surgically vaporized to bare ground, as a doctor might use a laser to eradicate skin abnormalities. With fusion rays, the surface of an entire planet could be sterilized in hours.

But, before sterilizing a planet, the Angels would land on a planet and study and capture a significant representation of its biosphere. The biosphere and its inhabitants would be used to generate a near-duplicate simulation in their Heaven. Conscious creatures and any intelligent life that was collected would have their minds duplicated into mind-vessels. The originals would be returned to their planet before its destruction at some point in the future. The creatures would not understand what had happened to them and would simply go on as if nothing had happened, but would experience no suffering. Intelligent beings could be made aware or deceived as to their transformation, depending on how they adjusted to their new mode of existence. Those that could handle the truth would be permitted to explore the simulations of other worlds and beyond. In Heaven, they could experience anything, from the perceptions of animals to the most bizarre of imaginings.

Soon after the Interface was contacted, hope was rekindled in John’s mind and he was able to find himself a “seat” on the command ship of the manmade alien armada.

Chapter 20 The Mind-field Vessels of Eru

The Christian Empire feared the true motives of Eru, and would only construct starships if they would always have control of them. This meant that a contingent of the Christian Empire, known as the “Contingent”, would have to accompany the Eru on its journeys, even if this meant that the Contingent would have to adopt the use of the mind bearing technologies offered by Eru, so duplicating themselves -- one mortal, one immortal. The mortal human would stay behind on his earthy path so as to not limit the capabilities of the ships of the space armada.

Humans that adopted the Angels mode of existence were a class apart. Some stayed on the Earth, as the Avarar, while others joined the Armada as the Contingent. They were the few -- the very best of the Christian Empire. For them, the transfer of their minds to the mind vessels of Eru, as they were called, was as natural as evolution itself. Many had already lived in ivory towers where they sat isolated from the world, communicating with colleagues through technology, cutoff from the outside world. The only connection to a physical world were the mundane tasks still required by those who

lived in a physical society, and the maintenance of their physical form. For most of them, it was a delight to cast away all physical limitations.

They were continuously linked together in realtime through the mind-field by 5th dimensional information pathways, which were not subject to the limit of the speed of light, unlike all things in the realm of the “familiar” reality of the first 4 dimensions (space and time). This peculiarity led many scientists, alien and human, to speculate that reality was a simulation that the mind-field transcended. So that, the Angel's Heaven was, in perhaps, a simulation within a simulation. Humans had just begun to unravel the mysteries of quantum mechanics and sub-atomic particles, which are governed by laws unlike “natural” physics, as it was thought of. It led some to believe that reality was like a computer program, and that the simulation of “reality” broke down at that extreme level of microscopic inspection — like the pixels of an image on a screen.

With the help of Eru and the Interface, sixty mind-field vessels were constructed. Three were installed on each of the ten ships of the space armada for a total of thirty Contingent volunteers. Thirty more would remain on the Earth as the Avarar, who would keep in contact with the Contingent. Having three individuals on each ship would provide for backup in the event of damage or malfunction. But, more importantly, any two could overrule the third in the event of disloyalty or other circumstances. Under normal operation, all three would be equally in charge of the piloting, actions, and the general maintenance through the use of a total of nine robots per ship.

The ship's robots were of three specialized types, and there were three of each on each ship, for a total of thirty of each type, or ninety in total. One type was designed for internal maintenance and repairs. A second was intended for the same external functions. The third was designed for planetary surface study and the capture of specimens, and could be deployed to the surface of a planet via the main ships or from three shuttle craft that each main ship could launch. All three types were capable of functioning autonomously with a fair degree of artificial intelligence controlling them, either remotely from the ships or with the robot's onboard computers. In addition, any member of the Contingent could operate any one of the robots at any given time, with the option of mind-melding with the robot for a total virtual reality and finer control.

The actual duplication of the volunteer's mind into a mind-field vessel was a carefully controlled procedure that could last for several days, depending on the individual mind, to achieve the most faithful replication. This was in part because an individual's mind can experience many states and moods over the course of time. Also, the memories of an individual would have to be recalled for storage on memory banks. Without the memory banks, an individual mind would experience total loss of knowledge, including who they were. The technology applied to the task of memory extraction was able to stimulate the human brain in such a way that a person would remember past experiences in such vivid detail so as to seem as if they were in a waking dream. Once stored, the mind within a mind-field vessel could recall their memories in the same detail whenever they wished. This was also an option for the original person in human form, either directly through mind stimulation or via computer display.

As a part of the agreement made between Eru and the humans, the Interface would control the memory duplication procedure. Though the humans could reproduce the technology of the machinery of the mind-field generator, the knowledge to operate it

successfully was contained within the Interface. Eru told the humans that he would provide that knowledge at the completion of the first mission of the space armada. This stipulation would help to ensure that the Contingent would follow through with their appointed mission, and because the community of Angels of the Nucleus did not wish for the humans to have more capability than what was required to achieve their aims. This restriction would limit human expansion into space because of the limitations of organic beings, even with the technology of the ships of the space armada.

Because of all the weaponry built into the ships of the armada, the biggest fear was that the Eru could be planning to destroy the Earth with the help of the Contingent in the most humiliating of ruses. The Christian Empire did all they could to ensure that the Contingent would always remain faithful to the Earth. But, all minds are subject to change, and, of course, there were unknowns. It was the most risky of alliances. In the Interface, the Christian Empire had a genie in a bottle, and they were not aware of the Angels hiding in the Nucleus.

Being connected to the Interface by 5th-dimensional communication, the Angels of the Nucleus received detailed information about the minds of the sixty individuals that were duplicated. They could perceive their thoughts and experience their memories. Through careful study, they isolated one person in particular who might be persuaded to play into their hands. John was a most remarkable human, they realized. His great ego, ambition, and intelligence were only matched by his treachery. In time, they would reach out to John and make an offer that he would most likely not refuse in exchange for loyalty to them and the greatest of betrayals to his kind and the Earth.

Chapter 21 The Earth After Eru

John's "Threats from Alien Intelligences" presentation to the Avalor

Above a symphony of scientific advances catered towards global domination, there exists the higher-level "reality" that could be thought of as survival of the fittest on a galactic scale. For us, the importance of aliens fighting over solar systems boils down to, essentially: what can Humans do to survive extermination by alien intelligences? If intelligence evolves commonly in the galaxy, then, as it is on Earth among kittens, a small percentage of emerging intelligent beings will survive to "adulthood". I can see how territoriality among different intelligences could lead to pre-emptive extermination of emerging intelligences. We may be in for a fight for survival against that which we may have little defense.

What are we to do? For starters, I would reduce our electromagnetic signature and develop and deploy a deep space monitoring and data gathering system. Also, deep space weapons based on the fusion ray should be deployed. Our goal is to be the intelligence they can't easily stamp out, or better still, the one they figure isn't worth the trouble. Maybe we'll be able to handle some of the potential threats. The better prepared we are the better the chance we have. I do not agree that we would have no chance if threatened by other alien intelligences. Future encounters may be limited to alien scout ships or small forces that may not have overwhelming capabilities.

Darwinian carnage, in the broadest sense, as the fight for territory and control, should apply to spacefaring intelligences in the universe as it has on the Earth in the form of war and other strategies. For instance, a peaceful alliance of alien intelligences without the means of self defense would be ultimately doomed to subservience or extermination. Assuming that this sort of cosmic Darwinian carnage universally applies, the lifespans of intelligent lines are probably governed, in part, by a kind of cosmic evolution.

So, how long will the Human line last and what can we and our descendants do to extend its lifespan? Ironically, warfare between factions of our descendants should help to increase the lifespan of the whole as war can foster innovations and increase levels of preparedness that would allow them to better defend against alien threats and to expand territory and control (think of Von Braun and the V-2 rocket and the Saturn rocket). Yet, the cold war has resulted in many innovations, as well. Perhaps we could use our computer-based realities where space wars could be waged.

Imagine a scenario where human descendants reach a planet where a peaceful intelligent civilization is present. They could eliminate them or they could offer them the chance at an alliance. They could construct bases or claim territory on their home planet and solar system. Reasons to not eliminate them might be because they may be able to provide innovations, or that they might want to send a message to other civilizations of a cooperative empire.

I realize that our attempts at resistance against advanced aliens may be hopelessly futile given the assumption that the technological progress we have seen humans accomplish is such a short time applies to aliens as well. And, that given that aliens are probably thousands or millions of years ahead of us technologically, we haven't a ghost of a chance against them. I would remind people of the infinite reality and that they should use their imagination supercomputer, if they have one, and realize that there may be circumstances in which we may have a chance against an alien threat. I remind scientists that they are expected to think in shade of grey if the wish to be thought of as worth their salt.

Now, if we imagine an alien threat arrives at our solar system that is so advanced and competent and fully equipped to dust us humans off like child's play, then we see the circumstance in which we have little to no chance at survival. But, on the other hand, if we imagine that the vanquished of some alien conflict, whom we might imagine are weak and poorly equipped to exercise control over us, were to arrive in our solar system to establish a new home, we might have a far better chance. And, what if the first efforts of an exploring or expanding intelligence were to arrive, testing the waters for colonization? What if they are robotic devices that are programmed to extinguish life in the universe at some alien's directive to reduce competition, let's say, or to modify the Earth's climate for future habitation, and what if such devices are not unconquerable.

Another point is that survival is not just about effectively fighting off an alien threat in the moment, but can also mean, though less favorably, retaining the chance to bring back what is human at some future date. If the aliens mean to wipe out the legacy of terrestrial life to supplant with their own, or not, survival could mean to then preserve that legacy of life on Earth in whatever way for the future. We might imagine underground human establishments on the Earth, on other bodies, or in space in general as Noah's arks of sorts.

Nature's Half

The environmentalists of the post-apocalyptic Earth, believing that nature is fabulous and priceless, argued that the Christian Empire was obligated to restore it as well to its original scope as humans could in the wake of our destruction of nature. Others argued, being influenced by the anti-suffering philosophies of Eru, and holding that animals are worthy entities, thought that we should offer salvation to nature. They believed that predation in general, and being predated on in particular, are objectionable on grounds of compassion, and that nature naturally supports predation, and is so flawed, and that we should, indeed, restore nature, but a restoration that factors in compassion.

A solution for this kind of salvation for nature is to maintain the predators where they cannot predate. Instead, the predators are fed naturally expired herbivores or where euthanasia of herbivores is warranted on grounds of compassion. This kind of salvation for nature was a task that could never be wholly managed in the pre-apocalyptic era, but given the loss of natural habitats and the birth of large animals, the time had come at which salvation for nature in some form was an option.

Likewise, some said that humans should also not predate for compassion sake. This view appealed to the vegetarian, in part, because they would rather not predate. Alternatively, you could choose to only eat animals that die naturally or by euthanasia, and you could argue for science to find a way to grow flesh without brain, thus satisfying the compassion factor. This question would apply on Earth and potentially on extraterrestrial colonies.

With regard to the views of the Christian Empire, the favored perspective applied to nature was that man should use no more than fifty percent of the land area of the Earth. This would perfectly balance the need for the conservation of nature and for the vital element of human recovery. This "Nature's Half" commitment of the Christian Empire was to be applied to the Earth and beyond. Colonies beyond the Earth would eventually devote one half of climate controlled volume to biospheres, or of land area in the case of the eventual terraforming of Mars.

In the case of the Earth in the present and near future, there was debate over fairness of land use. That is, which recipient, man or nature, receives what land. This debate stemmed from the realization that some of the land is relatively uninhabitable for man or beast, with Antarctica as a virtually uninhabitable and continental example, and the great deserts as relatively uninhabitable and regional examples. So that, counting these land areas as nature's half seemed unfair to nature. What's more, humans would be tempted to claim the most habitable and productive lands. Two popular solutions were most often evoked. The first was to tally up the land areas considered relatively uninhabitable, by whatever standards, and divide equally between man's and nature's halves. The habitable parts of the Earth's land areas would then also be split, resulting in a crude fairness, with habitability being factored into the equation. In addition, logical solutions as to the specifics of the land split could be applied in an effort to maximize overall biodiversity and human agricultural productivity. The second solution was to

simply leave Antarctica to nature, but not count it towards nature's half. This "Antarctica Solution" would largely fulfill nature's claim on the point of the imbalance of fairness even if the great deserts were applied to nature's half.

The End

Afterword

Global Warming, Snowball Earth, and Ocean Acidification

Global warming will have many complicated consequences, including some that are counterintuitive. A most dangerous counterintuitive phenomenon is the process by which increasing ice melt in the northern latitudes could result in the dreaded alteration of ocean currents that could lead to an ice age. This might happen because increasing fresh meltwater that runs off the northern parts of the continents and islands, being of lower density than saltwater, dilutes and reduces the density of the waters in the North Atlantic, potentially effecting the Gulf Stream. This is dangerous because the heat transfer to the North Atlantic by the Gulf Stream actually keeps Europe and North America warmer than what would be expected for those latitudes

The Gulf Stream flows along the surface of the Atlantic on the way to the North Atlantic because, being warm, it is less dense than the water it rides over. The water of the Gulf Stream then gradually grows denser on the way north both because it gradually cools (cold water is denser than warm water), and its salinity increases as moisture is lost to the atmosphere as the relatively warm water evaporates. The Gulf Stream normally sinks after transferring heat and moisture to the northern latitudes when it reaches the north-polar region as part of the global ocean current system. But, if the density of the waters in the North Atlantic become too low because of the runoff of meltwater, the Gulf Stream will sink sooner on its way to the North Atlantic. If the Gulf Stream and the associated heat transfer stops or lessens due to a decrease of the density of surface waters in the North Atlantic, it will probably result in a new ice age. Whats more, the sifting of the Gulf Stream might alter the ocean current system in other unexpected ways that could have other drastic consequences.

If we are lucky, the increasing greenhouse effect related to the CO₂ we continue to add to the atmosphere, which is causing global warming, will offset some of the heat lost to the northern hemisphere that was previously transported by the Gulf Stream. If so, we might expect very mixed results across the globe. Such as a weaker ice age than would otherwise be expected in the northern hemisphere, with really hot conditions nearer the equator and warmer conditions in Antarctica. The sea level would also rise

more slowly if some ice is deposited in the northern polar regions, but compared to the potential ice melt from Antarctica, it may not be enough to stave off the submergence of Florida, for instance.

But, we also have to factor in the sunlight that would be reflected back to space by the spreading ice in the northern regions associated with the new ice age. This will work to cool the Earth because the heat of the solar energy will not be absorbed by the land and oceans. The biggest fear is that the feedback effect of reflected solar energy will lead to a runaway ice age as more heat is lost as more ice covers the surface of the Earth. This is the sort of thing that may have led to the phenomenon of Snowball Earth more than once in the past. What is believed to have finally melted most of the ice was the greenhouse effect caused by carbon dioxide that was released through volcanic activity over millions of years. Carbon dioxide gradually built up to sufficient levels in the atmosphere to break the stranglehold of Snowball Earth. This was only possible because the oceans, which normally absorb carbon dioxide, were capped with ice. The Earth was then flung into extremely warm periods resulting from the extremely high atmospheric concentrations of carbon dioxide.

An effect of carbon dioxide being absorbed by the oceans is that it causes the water to grow more acidic. Let it be known that ocean acidification is global warming's relatively overlooked and potentially more dangerous sibling of human-driven carbon dioxide emission. Ocean acidification should cause a die-off of coccolithophores when the acidity of the oceans drops to some critical range. Acidity-induced stress and die offs of calcite based organisms like oysters and coral are already happening in some areas. Until around 2050, we may not see enough damage to cause ocean acidification to eclipse global warming as the most serious global environmental threat, I'm guessing. This will happen if the oceanic food web collapses and the atmospheric oxygen level begins to drop.

Where are the Precursors to Life?

While relatively simple organic compounds have been generated in labs and have been found outside the Earth, nothing very sophisticated in the realm between life and non-life that can make copies of itself, "the precursors to life" in the form of "pre-life" chemical factories, has yet been discovered. If it is a fact that there are no precursors to life on the Earth, it would imply that exogenesis, a hypothesis that life arrived from elsewhere, which is related to the hypothesis of panspermia, is responsible for the origin of life on Earth. Part of the logic for this argument is that genetic lines of life, or pre-life chemical factories, for that matter, do not simply evolve into something else and necessarily disappear, but rather, they branch off other lines as depicted in a "tree of life", with the parent lines remaining if not somehow experiencing extinction.

Examples of the ongoing existence of parent life include "living fossils" or, really, any of the more primitive life that still exists, but which gave rise to more advanced life. A primary example would be the connections of evolutionary advancements between fish - amphibians - reptiles - mammals. Now, while extinction is often the case, would you expect, given the evolution of a near infinite variety of possible pre-life chemical factories, and the possibility of pre-life re-generation, that pre-life should exist on the Earth

along side life, for all "eternity" in a "tree of pre-life"? The point I'm making is that we can't realistically argue that there are now no precursors of life on the Earth because they all have evolved into life, because evolution does not really work that way — the precursors should still be around. It could be that bacteria are the simplest forms of life that are possible, and that more simple designs simply do to work in the sense of reliable replication. Whereas viruses, being non-life and simpler, possibly being devolved from life, represent a special class of pre-life-like chemical factories that rely on and cannot exist without life.

On the other hand, we might put forth the idea that the precursors to life are not compatible with the current environments of the Earth, and so are not found on the Earth for that reason. But, that at some point in the past, the precursors of life were stable in a prior Earthly environment, at which time they gave rise to life. While the possibility that such special Earthly environments once existed can't be ruled out, a wide range of environments are present on the Earth today. There are anoxic, volcanic, soil, and deep earth to name some. So, wouldn't it be reasonable to see the precursors of life churning away on the Earth, at least in some environment, still? And anyway, why shouldn't the precursors to life be able to adapt to environments as easily or more easily than actual life given its relative chemical and physical simplicity? I would also expect that pre-life should be more common in the universe than life, being its precursor, unless pre-life is not the natural source of life.

Whats more, it is possible that pre-life could act in some way like crude nano-robots that would consume life as if it were fertilizer. I predict that after some time, when enough computer simulations of pre-life/life evolution have been run, that it will be strongly arguable that pre-life and life are incompatible. That pre-life undermines the processes and overwhelms the immune systems of life to the point that life is at hopeless disadvantage to pre-life. Could it be that life cannot evolve naturally anywhere in our universe given an incompatibility of life and pre-life and its "universal" laws of nature? I'm thinking that, if life and pre-life are inherently incompatible, then the laws of nature of our universe do not permit the natural evolution of pre-life, and thus life, yet permits and supports the existence of introduced life. In other words, this universe was designed, or is such by chance, so as to prevent the natural evolution of pre-life, but to support introduced life. Wouldn't that be a zinger!

I'm suggesting the possibility that life in the form of bacteria or other single celled organisms, which could then potentially evolve into multi-celled organisms, were somehow engineered within or outside this universe. Could the answer to this riddle of the origin of life lie in aliens, evolved in universes where the evolution of life can naturally occur, bringing or sending life to our universe via universe to universe wormholes, or God?

Now, what about these return sample missions to return pristine material from comets, asteroids, and Mars to the Earth? If there is life on these bodies and we do not take precautions, such as irradiation of samples, would not life on Earth potentially be petri dishes to such life given the lack of immunity to such alien life? What if we assume that exogenesis is a rarer event given that comets have struck the Earth countless times before and have not transferred new life (that we know of) that has led to mass extinction and a takeover of new alien genetics. This is assuming that life on the Earth has not already developed immunity to outside exposure through having been exposed

to a variety of alien life via a panspermia-style exogenesis, and, as such, represents some kind of “galactic zoo” of genetics.

On the other hand, it could be that exogenesis is extremely rare because life does not survive the environment of space for very long due to the cumulative, damaging effects of cosmic rays. What if exogenesis requires more special circumstances? What if the Mars-sized planet that struck the Earth to form the Moon was the source of all life on the Earth — that life existed on it when it struck the proto-Earth? What if that Mars-sized, Moon-generator called Theia was an inhabited planet of another star system that passed through our young solar system and made a one in a trillion collision with the proto-Earth? Then life on the Earth would be its living legacy, and our Moon, a monument to its sacrifice.

Now, the entire surface the Earth was in a molten state following the Moon-forming collision, with the material that was to coalesce into the Moon distributed in a massive ring around the re-born Earth. So, if life had existed on Theia, it would have had to have survived in a viable frozen state in icy bodies like comets in orbit around the Earth, or somewhere in the solar system, at least, until it could be transferred back to a cooled down Earthly surface at some later time. While your average comet probably does not contain viable life in a frozen state, given that they arise from sterile nebular clouds, some of the material thrown into orbit by the Moon-forming collision might have resulted in life-bearing comets. But, how long would that life remain viable? 10,000 years? 100,000 years? 1,000,000 years? Given such possible life-viability time constraints, could it be true that exogenesis can only happen between planets within a solar system (like the Earth and Mars), or in cases of solar system-on-solar system collisions, as envisioned with the Moon-forming scenario above?

In a less romantic scenario, it is possible that some aliens came to the early Earth to study, acquire some raw materials, make a base, or simple use our beloved planet as a “pit stop”, whereby they deposited bacteria-laden gifts that we should be eternally grateful for. Thinking ahead, it won’t be long before we have the means to send spacecraft to alien solar systems. We might scan these worlds, and, upon detecting suitable bodies, seed them with life of our own design to make them into welcoming future abodes.

by John Arfstrom

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