

Maker of Men

Jack English

PART I

Chapter One: Bombardment

Niels Bohr City, Rutherford Territory, Mars

Alarms sounded and the room was bathed by a rotating red light. “Stop what you are doing and proceed directly to the nearest shelter. Take nothing with you, just go.” The message had been pre-recorded as part of an asteroid defense. More than a century earlier, an atmosphere had been wrapped around Mars. Most of it came from melting polar ice caps and volcanic outgassing, but a substantial fraction of the atmosphere had come from asteroids. Rutherford Engineering had sent fleets of ships to the asteroid belt, carefully selecting asteroids rich in water and organic compounds, and deflected them onto Mars. Much of the volcanic outgassing was triggered by Rutherford’s strategy of directing asteroid impacts to the same dozen or so locations. That led to deep fractures in the crust, which in turn led to volcanic outgassing.

The trick was to find asteroids big enough to contribute to the atmosphere, but not so big their impact would devastate the planet. A handful of people had already colonized Mars and the first

domed cities were being built. Rutherford had to make sure none of the asteroid impacts injured those colonists. It was a delicate balancing act.

Nevertheless, from time to time, an asteroid got away from the asteroid chasers. Or it would split unexpectedly, or something else happened and it went off course. The shelters were built for just such a contingency. Now they were being put to another use.

A fleet of United Government ships appeared over Niels Bohr City and started slicing up communication and transportation systems with a combination of particle beams, lasers and smart bombs. The attack was not meant to kill. It was strategic. It was meant to terrify and neutralize any potential resistance. The United Government wanted to capture Alexander Stoneheart and his lieutenants and return them to earth in chains. They didn't want to make martyrs out of them.

A century and a half earlier, Alexander Stoneheart had been hired by Rutherford Engineering as an atmospheric physicist. He was the mastermind behind wrapping a warm and cozy atmosphere around the planet. Eventually, he rose to the head of Rutherford Engineering.

Rutherford Engineering had been hired by the Colonial Bureau, the agency in charge of Martian colonization to build domed cities. Rutherford got paid for every square klick they made habitable. The domed cities were never meant to be more than a symbolic gesture to ease earth's

overcrowding. At the time the contract was let, earth's population was pushing thirty-nine billion.

Rather than making a few dozen square clicks habitable by building domed cities, Rutherford made the whole planet habitable. Of course, the Colonial Bureau couldn't pay, so they granted Rutherford Engineering half the planet as payment. For a century, Rutherford's ownership of territory outside the control of the United Government had caused no end of envy, lies and conflict. United Government forces had come to take back what they considered theirs.

A massive explosion shook the building. The fuel depot had been hit and a quarter million tons of rocket fuel was going up in flames. Light from the blaze bathed the ceiling of Stoneheart's office with a reddish orange glow.

A ship parked on the roof of Stoneheart's building was waiting to take him beyond the reach of the United Government. He just had one last duty to perform. His fate, and that of twelve thousand of his people, depended on the information in a single data cube. If left behind, that information would ruin everything. If recovered, the research on it would put Rutherford Engineering and its people a hundred years ahead of the United Government. He was not ready to give that up. He grabbed the data cube just as United Government soldiers spotted him.

“Dr. Stoneheart?” one of them yelled. “Stop!”

Stoneheart ran to the roof and jumped into the ship. It was small, barely thirty meters long. He slid into the seat next to the pilot.

“Ready, dad?” she asked.

“Just go, Porsche, go!”

Her fingertips gently caressed the controls. The ship rose quietly in the air. Its landing gear folded up into its body and she punched it, sending the ship plunging down toward the surface before pulling up just above the treetops.

Alexander Stoneheart was thrown back in his seat *hard*. He glanced at the instrument console. She was pushing four Gs of acceleration and making twists and turns as she went to prevent U.G. ships from getting a target lock on her. Getting a target lock was hard because she was piloting a black ship. A black ship emits no electromagnetic radiation, reflects no sunlight, no radar and no laser light. On the other hand, you can't reach four Gs of acceleration without leaving a heat trail. So, by plotting the black ship's heat plume, the United Government knew where it had just been. It just wasn't there anymore.

Particle beam pulses rained down on where she had been microseconds before, slamming into the ground with such force that dirt and dust exploded skyward.

When she was well and truly above the atmosphere, she went completely dark, killing her engines. Once the heat signature from her massive engines were gone it would be impossible to track

where she had been. She coasted for a few seconds then fired a lateral thruster so U.G. forces couldn't simply extrapolate her position from her last heat signature. The lateral thruster released cold compressed gas. It kicked the ship sideways. There was virtually nothing to suggest she had altered course. Second by second her last known course and her actual course got further apart.

Chapter Two: A Lot of Real Estate Out There

Fifteen Years before the Bombardment

“What?” Alexander Stoneheart looked up from his desk.

Jack Callison and Hans McGinn were standing there. His daughter Porsche stood between them.

“I think it might be possible to build a warp drive,” Callison said. Jack Callison was a mathematician whose favorite pastime was challenging conventional wisdom. He was brilliant but some of the stuff he came up with was so off the wall that no one wanted to deal with him. He was also Alexander Stoneheart's oldest friend.

Stoneheart leaned back in his chair and waved his hand in Callison's direction. “Let's hear it.”

“Two centuries ago, Miguel Alcubierre, a Mexican physicist, said you could effectively travel faster than the speed of light by compressing the space in front of a spaceship and expanding the

space behind it while riding in a sort of warp bubble.”

“It’s all talk and no action. No one has been able to do it.”

“You mean it’s all math and no engineering.”

“Same thing.”

“That’s because people were looking in the wrong end of the telescope. Rather than looking at space as this vast, stretchy thing, they should have looked at the quantum mechanical properties of space.”

Stoneheart waved his hand impatiently.

“At Planck distances empty space is a boiling mass of virtual particles that come into existence for an instant, then cancel each other out and vanish.”

“Quantum foam. So what?”

“The key to building a warp drive is to manipulate the quantum foam.”

“And how are you going to do that?”

Callison stepped back and pointed to Porsche Stoneheart. She was studying astrophysics and was a few months away from getting her PhD. Her research involved quantum foam.

“Classic Alcubierre warp drive compresses and expands space with gravity,” she said. “Gravity comes with mass.”

“And?” Alexander Stoneheart asked.

“Using mass to warp space is like using a hammer to kill an ant. It’s overkill.”

“And you propose?”

“Alcubierre had the right idea, that is to warp space, but got the engineering wrong. We don’t need gravity to warp space, we need to manipulate space at the quantum level. If I throw a steel ball into the air, gravity is going to change the shape of its path, right?”

“Right, so?”

“Is gravity the only thing I can use? Could I use a magnetic field? Could I use an electric field if the ball had a charge on it?” Porsche projected images onto a large screen in her father’s office.

“So how, exactly, are you going to warp space?” Alexander Stoneheart asked.

“Well that’s the tricky part. What I’ve been trying to do... what Hans and I have been trying to do is to use electromagnetic fields to warp space.”

“It’s not any clearer.”

“It’s tough to manipulate space with electromagnetic fields because the virtual particles in the quantum foam have a net zero charge,” Porsche said. “My research shows that if you hit the quantum foam with attosecond laser pulses, you can separate positive and negative charges enough to manipulate quantum foam with electromagnetic fields.”

“Remind me what an attosecond is.”

“An attosecond is one quintillionth of a second.”

“And you think this phenomenon can be scaled up to propel a ship?”

She nodded her head yes.

“Hans, what do you think?”

Hans McGinn had been Alexander Stoneheart’s Chief Engineer for more than a century. He was an imminently practical man and not taken to flights of fancy like Jack Callison.

“I’ve been to Porsche’s lab. I have seen her experiments and reviewed her results. She has been able to compress space, at least a little.”

“Let me ask my question again,” Stoneheart said. “Is it possible to scale up these lab experiments to propel a ship?”

McGinn shifted his weight from one foot to the other. He glanced at Callison and then he glanced at Porsche. “Honestly, I don’t know. A lot of things that work great in a lab just don’t cut it in the real world.”

Callison stepped forward. “Alex, I think Porsche’s got something here. I’ve been all over the math and it seems to work. Let’s give her a few bucks and see what she can do.”

“What do you mean a few bucks?”

“I was thinking four billion might be a good start.”

“Four billion with a b? Are you crazy?”

“And a ship. She’ll need a ship as an experimental platform. I was thinking we could give her one of the old asteroid chasers.”

Porsche sat on the corner of the desk. “Come on, dad. It will be a good investment.”

“How long is it going to take and what are you going to do with a warp drive if you can build one?”

“Give her a couple of years,” Callison said. “Hans and I will help as much as we can. It will be great.”

“But what are you going to do with it?”

Callison went to the window and stretched his hand skyward. His eyes glazed over and his voice got low. “There’s a lot of real estate out there, if we can just get to it.”

Chapter Three: The Family of Man

Jack Callison, Hans McGinn and his daughter were trying to pry four billion and a ship out of Alexander Stoneheart when the call came in.

Hayden Kronic’s caller ID appeared on a large screen.

“I better take this,” Stoneheart said. He touched a control and Kronic’s face appeared. “Ambassador Kronic, it’s nice to see you. To what do I owe the pleasure?”

“I’m having dinner with President Alden Singh next week and as the ambassador to Rutherford Territories, I would like to extend an invitation for you to join us.”

“And?”

“There is no and.”

“There’s always an and.”

“And it would be great if we could tell him that Rutherford Territory has decided to join the United Government, to join, as it were, the family of man,” Kronic smiled.

“I would be pleased to have dinner with Alden, but there is no way Rutherford Territory is going to join the United Government.”

“Why?”

“Bureaucracy, stifling regulations, taxes, aggressive prosecutors, did I miss anything?”

“Be reasonable. Every other government on earth, Mars, and Jupiter’s moons have joined. Why won’t you join?”

“What would be the point?”

“Mutual defense.”

“From who?”

“Defense against riots and revolution then.”

“Do you see anything that looks like riots and revolution in the Rutherford Territory?”

“Don’t you see the fundamental unfairness of your being outside the United Government?”

“No.”

“What about the brain drain? Study after study shows that all the top scientists, top industrialists, top financiers and top entrepreneurs are flocking to Rutherford Territory. That’s leaving the U.G. with a brain deficit.”

Stoneheart shifted in his chair and extended his hand toward the monitor. “Why do you think they’re migrating to Rutherford?”

“I don’t know, but there’s a lot of talk that you’re buying them off.”

“Do you really think I pay people to come here?”

“Don’t you?”

“I hire the best people I can find, no matter where they come from. But less than ten percent of the people in the Rutherford Territory work for the company. The rest are just living their lives.”

“And making a fortune.”

“Some are.”

“Then what’s the attraction?” Kronic asked. “You must be doing something.”

“I’m leaving them alone. I’m not trying to regulate their lives. I’m not trying to control everything they do or say.”

“That’s the most ridiculous thing I’ve ever heard. How can you possibly believe that doing nothing is better for people than everything we do for them? Besides, it’s rude to poach top talent from all over the solar system just to make money.”

“Tell the President I’d be honored to have dinner with him, but no more talk of joining the U.G. Understood?”

“It’s got to be your way or no way at all! Doesn’t it?”

“Goodbye, Hayden.”

Stoneheart clicked off the screen. Callison, McGinn and his daughter were still standing there.

“Well, dad, do I get the money or not?”

“The company will invest in your project to the extent of four billion and not a penny more.”

“And a ship,” Callison said.

“And a ship,” Stoneheart said, then shoed them out of his office with the back of his hand. “Tell your mother I’ll be late for dinner.”

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