

# **Framandi Alliance**

**Galaxy Accretion Conflicts**

**Rashid Ahmed**

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*Dedicated to my Mum and Dad.  
For always encouraging me to explore.*

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## Preface

**A**s a voracious reader for most of my life, my mind has always bubbled with the occasional plot idea, imagined worlds and character personas. Many of you might relate to this.

Having gravitated towards science fiction in the last decade and having spent a corresponding amount of time devouring adventure, I began outlining the plot for a compelling space adventure story.

Told from a third-generation, quantum processing, independent AI's perspective, the novel skips along at a brisk pace. From the moment a crew, which includes a pair of transhuman twins, is tasked to explore an anomalous space object above the solar system's ecliptic plane; the plot winds a relentless quest, of deep-space adventures.

While researching our galaxy, I came across references to the Canis Major Dwarf Galaxy or CMa Dwarf, which has been in the process of being pulled apart and absorbed into the Milky Way. This process has been going on for eons, evidenced by the trail of stars comprising CMa Dwarf, wrapping itself around our galaxy three times.

What happens when galaxies merge? From the brief timeline of humans, not much really. But what about older civilizations? Those which may have evolved millions or perhaps billions of years ago? If they haven't been wiped out, it's entirely possible that they have taken to colonizing star systems and perhaps entire sections of galaxies.

Back in 1950, when Enrico Fermi is known to have exclaimed to his fellow physicists, "But where is everybody?" referring to extra-terrestrials, he was indicating that intelligent life might have widely

risen. For a suitably advanced civilization, travelling across space using known/feasible means of propulsion, getting across our galaxy would take but a few million years.

This implies that there could be extensive colonisation across the Milky Way and CMa Dwarf (a much older galaxy). Consequently, accretion of CMa Dwarf into the Milky Way, could be a cause of conflict between established galaxy spanning civilizations. This premise is the pivotal theme of this novel, and others to follow in this series.

Another interesting thematic consideration is that the plot unfolds in our present time. Slightly in the past in fact. Extrapolating upon currently established science and unfolding research, while dipping into extra-terrestrial hypothesis and shimmying up to controversial conspiracy theories; the science fiction in this novel is meant to be highly believable.

Additional content like main character outlines and world descriptions are available on my website [RashidAhmed.com](http://RashidAhmed.com).

Do read the prologue. The background information it provides, though technical, is vital. You're sure to better enjoy the chapters that follow.

I really do hope you enjoy the book.

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## **Prologue: Lysi Beginnings**

**W**hat started off as an attempt to solve a few of the world's most pressing 'wicked problems', rapidly and secretly veered off course. The first transhumans were developed, deep-space resource exploration picked up and separately, the first independent digital artificial intelligence aided in accelerated progress. These were seen to be solutions, to pressing Earth-wide wicked problems. No one knew that the stepping-stones these advances provided, would lead to fresh problems being uncovered. Ancient, intergalactic problems.

### **History of Lysi**

During the Second World War, global governments as well as international bodies recognized the threats of annihilation through war brought on by political stress, extinction level events such as a massive meteor impact, viruses gone wild or natural phenomenon including rapid climate change. The first think tank (a concept which became popular during WWII) to solve these problems, was considered on the sidelines when various world governments came together at Allied conferences in Moscow and Tehran in 1943. An independent body funded separately by various government departments, businesses and individuals, was formed to look at immediate as well as future problems affecting the world. Amongst the problems, mitigating global war (proposed by a body of underdeveloped and pacifist countries), steering towards an ideal techno-utopian society (proposed by a few communist and socialist countries) and strategies to deal with global catastrophic

risk (proposed by a section of rich countries) were the first to be accepted and funded.

In 1945, the thinktank, by then called *Lýsi* (meaning ‘solution/s’ in Greek) began operating out of a small building, a block away from the townhall in Delft, The Netherlands. It was close enough to the local university so that visiting intellectuals would fit in. The headquarters were also close to the port, transportation and essential infrastructure. The low-key *Lýsi* H.Q. also maintained a fleet of six vehicles, three motorized boats (moored just outside the building) and seven residential buildings adjacent to the museum next door. *Lýsi* organized itself in a distributed manner with a global, corporate-style leadership team. The cross-border organization drew upon highly qualified staff from universities, government departments involved in practical research and leading technical professionals from across industries. All members were vetted by a board comprising a mix of government appointees (those with active projects) and of qualified representatives from the academic arena. There were also three independent members, who nominated a group of individuals to participate in active projects (to act as the ethical overseers for each of the project groups).

### **Extraterrestrials: A wicked problem**

Smack in the middle of the cold war, between 1965 and 1972, actual traction began on the then much thrown about term, wicked problems. Various frameworks began to be drawn into policy at the global and national levels. By this time the problem of how to deal with extraterrestrials as conceptualized in extraterrestrial hypothesis (ETH), was also introduced as a fully funded project after numerous unidentified flying object sightings were recorded between 1945 and 1960. Specifically, following a 1953 military and intelligence

examination of ETH material (publicly explained away as innocuous), Lýsi's ETH researchers uncovered material hidden from the reviewers. It was also the period (1964-1967) when Lýsi became a lot more secretive. This was after an attending member extrapolated and published some thinking on 'entropy', suggesting that every advanced social group would succumb to chaos, which would ultimately lead to disorganization. One scientist published material on self-teaching ultra-intelligent machines. A rebellious researcher published material on transgenic life extension through use of recombinant deoxyribonucleic acid (DNA), while yet another released information on experiments related to detection and manipulation of gravity waves. Given the rapid exchange of information between participants of various projects (to hasten solution findings), the ability of Lýsi to prevent hemorrhaging of secrets was brought into question. Especially given the nature of research, and the possibility of undesirable usage of specialist technology developed by project groups.

### **Mitigating global catastrophic risk**

After 1972, up to which time it was already deeply involved with space travel technology and solutions, the thinktank became more operationalized (a think-and-do tank). Following a publication in a scientific journal in 1974 which recognized the overload of the planet's heat balance and the consequences of it, Lýsi began to focus primarily on global catastrophic risk (GCR) under which all other wicked problems were placed as subsets. Lýsi's solutions settled on and involved, directed human evolution, the development of artificial machine intelligence and actively pursuing space colonization, through public and private means.

There were initial breakthroughs in ETH based research in nanomaterials, manipulation of electromagnetic radiation, micro-computing and space observation. Simultaneously, there were advances in recombinant DNA technology (with its applications in agriculture being released for use globally); which interestingly, prompted early transhuman applied research. Clandestinely, the group set up shop near the University Hospital in Havana, Cuba; to utilize gene transfer technology and to use retroviruses with selective markers to identify successful DNA modification. This technology was immediately used to treat people with genetic disorders and immunodeficiency. Lýsi privately ran genome editing trials, to completely modify a few human participants' DNA. Early successes led to some information on gene therapy for cancer being shared with prominent researchers, to tackle the rising incidences of cancer.

To maintain a higher level of secrecy and increase the speed of development; in 1975, all non-key participating members were released with binding non-disclosure agreements. Now called The Lýsi Group and wholly privately funded, directed human evolution tasks became paramount to ensure species and information survival. Tiny amounts of technical knowhow were periodically released in a controlled manner to specific corporate entities, to kickstart widespread use of resultant products by consumers. While this policy gradually brought large portions of the global population closer to technology and prepared people for geometric leaps in technology progress; it came with significant drawbacks like unconstrained resource and energy use which amplified environmental degradation, global warming and the rich-poor divide.

Following a 1976 extra-terrestrial (ET) unidentified flying object (UFO) incident in the middle east, ETH research moved up in rank directly under Global Catastrophic Risk. Most research including directed human evolution through gene manipulation, AI through linked neural net machines, space technologies and robotics were brought under the ambit of GCR solutions. Publicly without identifying Lýsi, a recombinant DNA advisory committee was formed to regulate use of the technology in agriculture, ecosystem modification, animal husbandry, and genetic treatment.

### **Reverse engineering ET artifacts**

UFO probe material was gathered following a 1980 incident in Britain which catapulted space technologies development, after The Lýsi Group covertly acquired a ‘live’ artefact. Progress then leapfrogged in the fields of shielded microelectronics, composite materials and self-replicating machines which utilized the already well-developed AI to modify its own code-set and suggest hardware improvements. For public release, the AI developed a freely distributable operating system which it could access via hidden encrypted backdoors. The operating system was adopted for use by distributed networking specialists, and extensively utilized on commercial servers.

The early neural net AI was also able to quickly identify how the computing systems in the acquired extra-terrestrial probe functioned. This offered direction towards redeveloping the AI’s own hardware and software. Advanced computing research was carried out in the US and Japan by the group through its Singularity Research Division (SRD). The probe also contained what was identified as a matter transfer module, which created material in its inner chamber ‘through thin air’. To study this, scans were taken of the matter transfer module and a

classified subatomic particle research lab was set up at the local technical university, near the group's headquarters at Delft.

Separately the group's SRD members were tasked with reverse engineering quantum computing hardware based on the probe's designs, and the development of suitable quantum calculation software. Massive technology leaps were accomplished in a short period.

The Lýsi Group's leadership team had been experimenting with a versatile decentralized command and control structure. They agreed on an adhocratic organization. The adhocracy allowed rapid maneuvering and decision making. AI assisted administration coordinated the group's activities, facilitating interactions between teams and departments globally.

In 1980, the group's then appointed and elected leaders, took a crucial decision to release all breakthrough information to the global populace, but deferred by up to twenty years. This was necessary to ensure any released material was adequately vetted, tested for stability and that information did not destabilize global governments or the economy.

### **Transhuman research**

By then, the group's efforts towards implementing research recommendations for species survival was already sucking up massive amounts of capital and energy. To keep the group funded, some technology was shared with corporations around the world, bringing in liquidity. In November 1983, after two decades of research, learning, understanding and experimentation with about twenty thousand human genes, The Lýsi Group set up a research lab close to a major hospital in Hlíðar, Reykjavík, Iceland; where the first partially genetically edited transhumans were brought to term.

DNA samples taken from unsuspecting healthy individuals from around the world (through a testing service introduced to the public in 1960), were selected for essential bases. Edited genes identified for use, were shortlisted by the group's neural net AI running clusters of expert systems. The upgraded genes were introduced via a viral vector, into the DNA of an in-vitro fertilized embryo of a research couple, who were confident of an early success using this method.

Unexpectedly, the single embryo transfer resulted in first generation transhuman twins – a boy and a girl. The children were called Jón Gylfason and Ásta Gylfadóttir, children of researchers Gylfi Hallgrímsson and Katrín Magnúsdóttir.

Iceland was chosen as the hub for the group's genetic research because of two very important reasons. The first was that the Icelandic population had a nationally documented genealogy going back over a thousand years. This provided in-depth history into the qualitative nature of genes by studying family history to identify desirable traits. The second was that Iceland was remote enough to provide confidentiality, security and physical isolation, should anything go wrong.

## **Quantum computing AI**

Significant progress had been made on the non-biological technology front as well. By then, 'massively parallel processing technology' which utilized intelligent AI agents or autonomous goal-oriented AI, was gradually released for real-world government, commercial and institutional applications, through The Lýsi Group's Japanese hub. The group's R&D had far outstripped publicly available technology and was now utilizing a self-learning and modifying AI named Shun ('fast' in

Japanese). Shun's hardware operated on nascent quantum computers which liberally drew on conventional networked processors for linear tasks. The AI's core systems were located at Shinkawa, Chuo City, Tokyo; and in a disguised merchant container ship named Kuji Maru docked at Aichi in Japan. The ship was always kept prepared to deploy to sea.

The two key processing nodes (Shinkawa and Kuji Maru) were networked through a dedicated private transponder on a commercial satellite. However, each node could operate independently. The quantum computing cores for both these systems were supported by a set of four enclosed, briefcase sized three-dimensional integrated circuit matrices, comprising beta-production nanoelectronic processing units. The four circuit matrices were linked through a set of fibre optics, with additional laser backup. For rapid data transfer, portions of each of the individual processors used nano-optics between logic, distributed random access nano-caches and control units. These technologies would only be revealed to the world another twenty years later, keeping with The Lýsi Group's information release schedule.

### **Molecular manufacturing and robotics**

By 1986, the world was just beginning to hear about molecular assembly nano-tech. Given the steep accomplishment curve that space technology and material science was maintaining during this period, an experimental self-replicating manufacturing robot satellite was secretly introduced in the garb of a weather observation platform, into earth orbit. Its goal was to utilize the already voluminous orbiting space junk to manufacture space-based platforms and systems including additional construction/fabrication robot satellites.

Lýsi's most pressing wicked problems, all Global Catastrophic Risk scenarios, required vast resources to counter. The global economy had too much wastage, greed, hoarding and corruption. With an assortment of economic and political models in play, the growing need for resources were beginning to hamper The Lýsi Group's very steep progress graph. The group's leadership team, which now admitted the physically seven-year-old but mentally twenty-one-year-old transhuman twins Jón and Ásta, as well as the remotely attending AI Shun; gathered at a rare face-to-face road-mapping and review meeting at the group's Iceland facility in 1990. While the group's myriad investments and income streams were superlatively high, global economic models and even the physical resources available for massive scale projects, were limiting. The leadership team decided to gradually unplug the group from the economy. To become independent of it.

### **Asteroid mining**

The group was already repurposing and recycling space junk to build its first small, disguised space station. Robotic furnace and forge satellites used solar concentrators to melt metals and composites. Interlocking frames and panels for external sections, were manufactured using injection molding techniques, allowing assorted materials to form each massive component. In the four years since the first self-replicating manufacturing robot satellite was launched, it and others like it had managed to build even more, totaling eighteen in all. The robotic satellites had also collected and manufactured enough parts, all tagged and left in orbit, which could be quickly assembled into connected hexagonal modules. The disguised space station would be the first staging platform, for Lýsi's forays into space. Its silhouette was occasionally spotted, only as a shadow, and provided fuel for conspiracy

theories. Since the acquisition and reverse engineering of the now better understood extra-terrestrial artifact acquired by the group ten years ago, a decision was made to rapidly expand Earth life and knowledge, to in-system bodies within the next decade.

Getting additional resources and raw material into space was an issue. The limiting nature of the planet's economy, the conflicting use of available resources, the pressing needs of Earth's population and ecosystem; all nudged the group's leadership team to look at alternate sources. At this time, slightly over eight thousand near earth asteroids and objects were being tracked by various governments and by the group; primarily because they posed a risk to life on Earth. These were acknowledged as a rich resource, especially since the space-based robot satellites with the help of Shun, had been able to develop new vibrating centrifuges to separate minutely ground particles or even molten metal. Used in conjunction with molecular assembly nano-manufacturing, a system of rapid molding and fabrication techniques were established. In an experiment, a layered mix of metals and dust binder was molded into high density paneling, which successfully absorbed electromagnetic and cosmic radiation.

A decision was taken to develop a set of 'Asteroid Mining and Construction Autonomous Robots' (AMCARs), with the goal of assembling habitable jump platforms from which to occupy the solar system. Asteroid mining would make resources abundantly available, overcoming Earth sourced raw material hurdles.

Concepts of technological singularity, space travel and alternative economic models were publicly seeded. These concepts were complementary to each other, and envisaged to gradually reduce human impact on Earth, which Lýsi already considered as irreversible.

## **Anomalous space object**

This was when a medium sized asteroid-like object was discovered, slowly creeping forward, north of the solar system's ecliptic. What was strange was that the object seemed to have stopped in space. It was designated as AL-I, using Lýsi's internal codes instead of conventional asteroid naming conventions. The object was not a comet otherwise astronomers would have become aware of it. A decision was made to keep an eye on this anomalous space object. Interest peaked when a small portion of the object separated and moved toward the Sun. It was tracked as it conducted a solar orbit and went below the solar system's ecliptic, where it disappeared at forty astronomical units (AUs) from the Sun. Lýsi leadership determined that the anomalous space object required investigation.

## **New space technologies**

The next five years until 1995, were dedicated to practical implementation of previous research, aimed at overcoming global catastrophic risk. Task groups were furiously working on long duration space travel for humans, transhumans and robotic AI. The issues of shielding against cosmic rays in space was a critical matter as cosmic-ray-induced errors were now becoming an issue even on ground-based micro and nano-electronics. Early shields overseen by the AI Shun, and the transhuman twins Jón and Ásta, were manufactured on fabrication platforms orbiting Earth. The shield panels were made with dense layers of ceramic, metal and fiber-composites that absorbed primary and secondary cosmic rays.

A sandwich of multiple composites with materials of low atomic weight and high yield strength were arranged towards the outside of the hull

panel and were sequentially injected under an outer section of high-heat and impact resistant sheets. These were then centrifuge-molded inside a half centimeter thick outer sheet of linked double bonded nano-carbon interwoven with graphene, that was tough as diamond yet allowed high electrical conductivity for an additional EM shield outside the hull. The panel layer could absorb a hypervelocity impact from a twenty-centimeter piece of space debris or projectile. Four sets of physical shielding with polyethene, xenon and gel filled interspacing were found to provide exceptional heat, impact and radiation resistance.

For deep-space exploration vessels, portions of the interlocking hull sections were made to be retractable so that transparent ceramic windows, could be exposed to space. This enabled visual and sensor data collection. The hull panels were overengineered to be suitable for interstellar space travel. They were tough enough to come within, two diameters of the sun, withstand atmospheric entry uses and deal with sustained twelve thousand bar pressure for gas-planet exploration needs. With these gains came a new discovery.

### **Cosmic Ray Energy Generators (CREGs)**

The energy requirements in space for each project was growing. So far, most systems deployed in space used solar panels for electricity generation and solar concentrators for heat. A pair of researchers who were reverse engineering components from the extra-terrestrial artifact, realized that kinetic energy might be captured from both primary and secondary cosmic rays as they decayed through the layers of shielding. The concept was similar to how electricity was generated using solar panels. Given the abundance of cosmic rays throughout the galaxy and in interstellar space, if the theory could be implemented, it would mean unlimited energy could be generated anywhere.

By November 1993, the technology was developed, tested and incorporated into the designs of a space platform, which was to be deployed at the L2 Earth-Moon Lagrangian point on the far side of the Moon. The platform would be invisible from Earth and remain in a stable point in space. This energy generation design was also incorporated into Standardized Space Exploration Vessels (SSEVs), suitable for deep and interstellar space exploration.

Cosmic Ray Energy Generators (CREGs) were embedded into multiple layers of hull paneling. These panels were used on spacecraft, platforms or robotic satellites. Newly developed gel battery banks were designed into structural beams and formed a part of each vessel. Extendable solar panels were retained for backup. Nuclear fuel generators were also available as a final redundant power source on some vessels. The CREGs were to prove pivotal in expanding Earth's footprint into the solar system and beyond.

### **Graviton Focusing Devices (GFDs)**

In the same year, just as it seemed like all the excitement was dissipating, the team working on reverse engineering the acquired extra-terrestrial artifact (from 1980), developed a Graviton Focusing Device (GFD) which could place and manipulate gravity at a point, in any direction.

The first GFD test was a spectacular disaster but leapfrogged Earth, eons ahead in space propulsion, and other gravity related applications. So far, gravity research was limited to detecting and studying gravity waves in outer space. The disaster occurred after a section of the extra-terrestrial artifact's internal design was replicated at a WWII bunker, on a remote Kuril Islands facility, operated by The Lýsi Group. The design

was augmented and integrated with the advanced AI Shun. Before the test, all personnel were airlifted to the merchant ship Kuji Maru, from where the AI Shun was linked in via satellite, to the bunker facility and to its Tokyo hub.

The bunker was inundated with sensors to measure all kinds of energy and radiation. Sensor barges were placed in concentric circles around the bunker location. Some of these were placed as far as three hundred kilometers out to sea.

At first miniscule amounts of electricity were allowed into the device through electrical contacts (identified in earlier artifact experiments). Variations were attempted, until the device became active. Immediately, there was a weak increase in the gravity field, detected thirty kilometers to the north of the island. Incremental increases in electricity to the contacts, increased the intensity of gravity. The top of the unit had a set of six inputs. Combinations of electrical input moved a focused point of gravity, in three-dimensional space. Another four contacts on the side of the GFD, seemed to elongate, flatten or condense the shape of the gravity field.

Finally, after numerous experiments, a distance test was conducted. The gravity field was gradually pushed outward. It was followed by sensor barges. At approximately three hundred and fifty kilometers out and completely without warning, there was a massive earthquake. It measured over eight on the seismic magnitude scale and was located just off Shikotan island in Japan.

The experiment was immediately stopped and the designs of the component including a new control mechanism was scheduled for fabrication in space. Completed by the end of 1994, the GFD was

mounted on one of the larger fabrication robot satellites. Six smaller sensor satellites formed up around it, at five hundred kilometers. Experimentation was reinitiated.

### **Gravity propulsion**

All the initial experiments were carried out again. Immediately into the first experiment, which was directed towards a sensor satellite on the Earth-side of the GFD, both satellites began moving towards the point of focused gravity. The experiment was stopped, and the satellites repositioned themselves using conventional ion propulsion systems.

The experiment was tried again, this time with focused gravity directed in the opposite direction. A sensor satellite near the gravity point moved towards the GFD, which itself moved slowly away from Earth.

The implications of this were immediately clear and fantastic. Gravity could be used to propel the craft the device was on. It could also be used on another stationary object in space. When focused gravity was maintained a fixed distance ahead of the GFD, the satellite continuously fell towards it. This meant that the craft or any other object, could be propelled or attracted towards the gravity point. Following the accident at the Kuril Islands bunker, it was decided to restrict the device's use to outer space, until the technology was refined.

Versions of the GFD or 'gravid' as it was soon nicknamed, were manufactured in space and fitted onto all Lýsi spacecraft. The device was used for propulsion and object attraction. Most importantly, compact gravids were used to create minute fields of gravity within spacecraft or inside platforms.

The problem of gravity in space was overcome and another four multipurpose platforms were commissioned. These placed at the L1, L3, L4 and L5 Earth-Moon Lagrangian points.

### **Countering G-forces**

To keep space-based activities secret, extra effort was taken to ensure minimum solar reflection. Designs of all modular platforms and vessels were hexagonal and long. These were always positioned so that there was a negligible profile visible from Earth. The platforms were souped-up with new communications capabilities, and with the latest in quantum computing and storage. They were then equipped with extensive crew habitat modules. The AI Shun, aided the complex coordination of all space-based activities.

Soon after turning the AIs on, the vastly expanded computing capability identified a curious gravity effect on the in-vessel robots aboard the Asteroid Interception Craft (AIC), which were now being tested more aggressively and deeper into space.

While gravity was being focused outside the AICs for acceleration, other points were focused within the structure of the vessels for local gravity. This allowed autonomous robots to maneuver inside AICs. Surprisingly, the G-forces detected by various autonomous robots within an accelerating AIC, were different. These differences in G-force logs were attributed to how far the robots were from the closest in-vessel gravity point.

The localized gravity points were countering the effects of acceleration and lower G-forces were being experienced by the robots. This was communicated to Shun and the leadership team.

After a series of experiments, using compact gravids in each AIC, a set of gravity points were identified which could be manipulated to increase or decrease intensity during spacecraft acceleration, which would keep human occupants and equipment safe.

### **Standardized Space Exploration Vessels (SSEVs)**

Designs of Standardized Space Exploration Vessels (SSEVs) were modified with the newly developed technology and to accommodate a crew of eight. Construction was accelerated for the first four vessels. Additionally, these were made interconnectable so that they could be operated as a single unit forming a large space vessel.

At this time, to get people interested in solutions that would benefit everyone globally, a special prize was established that would put specific issues into public prominence and get the larger global community involved. This was also seen as a means of getting the world's people to catch up with technology, and fast.

By the early 1990's, a few asteroid flybys had already been accomplished by various countries, and basic information on asteroids was being seen by the world.

Unknown to the public or various governments, by mid-1996, The Lýsi Group had already been intercepting asteroids for resource mining. Gravity was being judiciously utilized to approach asteroids, and to draw them close to the AMCARs which were carried aboard AICs and SSEVs. GFDs were used to reduce approach speed, by placing gravity points behind the asteroids and vessels. The larger gravids in SSEVs were also used to determine the mass of the asteroids based on the amount of gravity required to move them. After a learning period, asteroids were located, approached and rejected if the mass wasn't high

enough compared to its size. The early SSEVs were remotely tested as asteroid hunters, proving their toughness in deep space.

Soon with data from the SSEV tests, the asteroid rejection rate increased from afar, if a combination of size, mass, color and albedo (the diffused reflection of solar radiation), didn't meet resource mining requirements.

### **Lagrangian point space platforms**

The Lýsi Group was rapidly accumulating resources in space. Early construction had begun on an additional set of three Sun-Earth Lagrangian point platforms, in preparation for deep-space exploration. These were in addition to the Earth-Moon Lagrangian point platforms.

Cross specialized crews were covertly being put together and trained for space-based operations. The transhuman twins Jón and Ásta were absorbing information and skills swiftly, as expected. They were undergoing regular checkups to track physical and intellectual performance. An unplanned positive outcome of their genetic engineering was that their brains' plasticity or the ability of their synapses to rewire themselves, was accelerated.

### **Covert space launch system**

To get the first crew to the orbital platform, required finesse. One of the group's initiatives in aerospace research was the development of an all-electric, light flying wing aircraft. It could achieve and hold an altitude of thirty-five kilometers. Numerous high-altitude space cargo missions had already been accomplished by a fleet of these 'research' aircrafts. Each had a high-velocity, large caliber roof mounted electromagnetic cannon. The cannon accelerated two hundred kilogram, cylindrically shaped cargo capsules, with hemispherical ends. These were lobbed

three hundred kilometers into the thermosphere, from where AMCARs latched on using focused gravity, and retrieved the capsules. This was a low cost and inconspicuous way to get critical material into space. Large quantities of water and liquefied gasses were also delivered this way.

A variation of this system was used to get the group's first astronauts into space. The cannon fired rocket enabled capsules at nine-Gs. Before gravity reduced the acceleration, a set of compact rockets fired. This ensured escape velocity was achieved and the capsule was delivered to the exosphere. From here AMCARs pulled the astronaut capsules in and delivered them to a transport vessel. While it sounded simple, the process was complex and very stressful to the participants. The capsules themselves provided additional raw material for the space-based manufacturing initiatives.

### **Autonomous Cargo and Transport Vessels (ACTVs)**

The Lýsi Group's immediate objectives of placing resource gathering and habitable stations at Earth-Moon and Sun-Earth Lagrangian points, was ahead of schedule. Crews were continuously trained and launched into space. A fleet of Autonomous Cargo and Transport Vessel (ACTVs) nicknamed 'Nesting Dolls' distributed resources between platforms and transported personnel. The 'Nesting Doll' name caught on because the vessels were designed in five sizes, with the smaller ACTVs snugly fitting into the larger ones. The largest could even accommodate four interlocked SSEVs. The allocation and distribution of resources was taken care of automatically by the AI Shun. The group was in a good position to take its next steps in space.

## **Human-AI interaction**

By now, the twins Jón and Ásta were participating operationally. They'd been involved with the AI research group, helping Shun learn and develop its human and moral side. Shun never passed on instructions without passing its R&D work through key members of the AI research group. The AI had learnt to mimic the twins' behavior. The upshot of this was that the AI began prioritizing human acceptable options when providing researchers with analyzed solutions, without keeping any of its activities hidden. The twins and key members of the AI research group were also learning to better define objectives and to provide as much supplementary related information to Shun. So far, Shun the AI as well as all the transhuman children including the twins, appeared to have picked up human morals as a part of their learning and upbringing.

Four years after the first transhuman twins Jón and Ásta were born, next generation transhuman babies were brought to term, an improved version each year. Each of them was provided with a human-AI interface from infancy, aimed at accelerating learning. There were three babies now, each being born to a separate Lýsi research family. The groups were located at Havana in Cuba, Wellington in New Zealand and Honolulu in Hawaii. Third generation transhumans were scheduled to be developed, after a ten-year research and study interval. For this, a state-of-the-art Hong Kong facility was commissioned.

## **AL-I exhibits strange behavior**

By late January of 2001, the anomalous asteroid-like space object - AL-I, began exhibiting strange behavior. It began to slowly creep towards the Sun again. This was also when the smaller object which had

detached itself from AL-I returned to the solar system. The smaller object traversed across the solar system to the asteroid-like object within a week. An exploration mission to intercept AL-I was given the go ahead, soon after Jón and Ásta turned eighteen.

Fortunately, the orbital and the three Earth-Moon Lagrangian point platforms were fully staffed and operational. The AI had been hived off into two separate entities Shun on Earth and Kei in space. Kei meaning 'wise' in Japanese, was named so because it inherited all of Shun's knowledge. Both communicated with each other, maintained information backups of each other, but began to evolve their own codebase and hardware separately.

In early February that year, Jón and Ásta were scheduled to join a team of six already at the L2 Earth-Moon Lagrangian point platform, named Álfhól by the twins. The name was inspired by the 'tiny wooden elf houses' which Icelandic people build in their gardens for Huldufólk or 'hidden people', the term used for elves. The twins were setting out to investigate AL-I, the medium sized asteroid-like object, discovered approaching north of the solar system's ecliptic. The object, which was headed towards the Sun had slowed down, and then stopped in space. Numerous cargo capsules were ejected in preparation for the mission.

### **Unrequired attention**

Just before they were due to launch, 'Univers Aerospace' a private French-Swiss aerospace technology multinational, took notice of the high-altitude activities being conducted by the flying wing aircraft. The organization was conducting routine atmospheric observations over the Pacific Ocean with a sounding balloon at an altitude of fifty kilometers, when the onboard cameras relayed several dull-grey, evenly timed

objects hurtling by the balloon. Since most of the onboard data was relayed to Univers' automated data collection facility in Switzerland, it wasn't till a week after, that the ascending objects were noticed and analyzed. The objects had sped by the balloon too fast and close, to be clearly visible. However, the incident rapidly drew interest amongst the analysts and was kicked up to management. An investigation was initiated.

Univers was operating a small constellation of weather satellites, through which the organization provided continuous weather data and imagery to global government agencies and companies. The Univers constellation comprised of six satellites in geostationary orbit above the equator, at thirty-five thousand kilometers altitude and two polar orbiting satellites at nine hundred kilometers altitude. Images from these satellites showed a series of space injections of capsules shot from a large barrel, like a circus canon, but much longer and mounted to the roof of a flying wing aircraft. None of the dull and nonreflective capsules seemed to be heading towards any single location in space and tracking these was beyond the satellites' capabilities. However, the base of operations of the aircraft was located to a modified airport on the Kuril Islands.

The organization decided to find out more. Any advantage it could gain in the aerospace industry would greatly enhance its position. The multinational brought onboard defense consultants, to penetrate the Kuril Island facility, investigate the nature of operations and extract usable information and material. Univers wanted to lead the private space technology industry, and they were willing to get their hands dirty.

# Álfhól Platform

Earth-Moon L2 Lagrange Point

The trip to Álfhól space platform, went without a hitch. The platform was remotely constructed behind the moon and was unobservable from Earth. It was constructed by the Lýsi Group's growing number of space-based Asteroid Mining and Construction Autonomous Robots or AMCARs as they were referred to.

Jón and Ásta were the last of a group of specialists to get to the platform. They had spent an extra month on Earth intensively studying AL-I, the medium sized asteroid-like object, which was on a trajectory towards the Sun, moving slowly, north of the solar system's ecliptic. After the initial detection by the group, there were Earth-based as well as deep-space platforms constantly monitoring AL-I. The object seemed rocky, reflected little light and had few noticeable features. But it was starkly different from other asteroids. It was not moving within the solar system like other orbiting asteroids, nor was it behaving like other observed bodies.

AL-I was not believed to be orbiting the Sun. Nor was it considered to be a part of the solar system. It was determined to be interstellar in origin. What really caught the Lýsi Group's attention was that it began massive deceleration soon after it was originally noticed. This was highly unnatural, and several theories were doing the rounds that included a concentrated patch of dark matter in the area, an undetected object exerting significant gravity and an outlandish idea that it was an artificial object that was able to control its own motion.

Lýsi had no illusions about extraterrestrial intelligence or the fact that at least remote contact had been made by off-world intelligence. A lot of the group's key technologies, advances and research was based on acquired off-world artifacts. The group would investigate AL-I not just because it was unique, but mainly because its sudden appearance and erratic behavior, posed a hazard to the planet. Time was of the essence and the group decided to intercept and investigate the object before it got too deep into the solar system.

The twins were launched into the thermosphere from one of the group's fleet of flying-wing aircraft. Ejected at high Gs while nestled within their individual crew launch capsules which were shot from the roof mounted cannon, both transhuman twins lost consciousness even though their physiology was tougher than their human colleagues.

The crew capsules were automatically captured by AMCARs, which were temporarily reassigned off their space junk recycling, fabrication and manufacturing jobs, for this specific task.

The twins only awoke on way to the moon in an S3 'Nesting Doll' - a midsize Autonomous Cargo and Transport Vessel or ACTV, capable of accommodating people, or if the need arose any other life-forms. The nesting doll cargo vessel was fitted out for a crew mission and was as comfortable as travelling in a luxury train coach. It had cocoon-like bunks which doubled up as escape pods, a common area with ergonomic seating which was used for dining and mission operations. There were toilet and fitness areas to the front and rear of the vessel.

Manual maneuvering and vessel control units were built into digital pads contained in each of the bunks and the common area grav-seats. But these would only be required during an emergency.

Ásta groggily whispered into her hard-shell extravehicular activity suit's helmet microphone, "Jón, you there?" They were both equipped with the very latest HSEVA suits.

He responded just as groggily "Yup, I'm here". After a brief pause, he continued "Really didn't expect to be unconscious for long after the launch. My neck feels like it was viciously twisted".

Ásta giggled and replied "The AMCARs arms must have handled you by the head. Anyhow, we were given a drug-cocktail injection before the launch to fortify and sedate us. The sedative is administered so we don't do anything stupid while the automated robots and systems carry out their jobs. Also, presumably so we wouldn't notice if anything went wrong".

Jón muttered "I'd feel safer getting from the launch capsule to the transport myself, thank you very much!"

Ásta mollified her brother "It isn't so much for you as it is for others. Besides, the entire transfer process is efficient, and the automated systems are used to handling inanimate cargo. Anyhow, we designed the process ourselves and worked on getting this setup as close to perfect as possible, so no protests."

Her brother's focus shifted, and he brought up the transit tasks on his HSEVA suit helmet's heads up display. He said, "Since we haven't been in zero gravity, other than training, how about we keep the local gravity under us switched off and let our bodies get used to null-gravity operations?" Ásta replied in the affirmative.

The twins opened and rolled out of their bunk pods. They separately went through a checklist of the nesting doll's systems to doubly ensure

everything checked out. It turned out the S3 Autonomous Cargo and Transport Vessel was named Habogi by the AI Shun, after a young man in one of the twins' most loved Icelandic fairytales.

The internal environment was nominal, and the local gravity was set at twenty percent above Earth gravity, to force their bodies to exert and offset atrophy. The twins then stood against magnetic mounts next to their bunk pods and undid their suits, which began a rapid recharge. The HSEVA suits could produce their own energy since they utilized compact versions of the dual-purpose Cosmic Ray Energy Generator shielding panels. The more compact CREG panels provided excellent exoskeletal rigidity to the suits, and long duration protection against cosmic ray radiation. Energy was stored in gel batteries, built into the suit's skeletal frame. An additional layer of overlapping hexagonal scales made with double bonded nano-carbon and interwoven with graphene, provided added protection against hypervelocity projectiles. Since the exoskeletal panels brought up the overall suit weight, electrode-mesh gel filament artificial muscles, were used between and under joints, to augment the wearer's strength and movement.

The HSEVA suits were overengineered to operate between superheated and cryogenic environment ranges. The twins did a checklist assessment of their suits to ensure they were prepared for quick deployment. They then did a once-over of each other's suits as well. Checks completed; they were both eager to get on with their self-training by conducting the remaining trip in null-G. Deciding on a series of physical exercises between operational tasks, they began with a floating sprint across the interior length of the vessel and ended with manual maneuvering. They'd both been brought up fully immersed with the technologies being used, often leading design and development for many of the

deployed vessels. Young as they were, each was well known and respected amongst the tightly woven teams within Lýsi.

After a brief hand-to-hand close combat sparring session, which they checked off their list of activities, they secured themselves into mission operation seats and unfolded manual maneuvering and vessel control units bringing them to chest level. Jón sent a quick text message letting Álfhól platform know of their intension to go manual for a short duration. The message went out over an encrypted tight-beam communication, which bounced off two line-of-sight satellites before arriving at its destination.

Kei the space-based AI, was plugged into and in charge of monitoring all autonomous and automatic systems. It let the twins know, “We’ll be arriving at Álfhól in an hour, so you’ll have about ten minutes each to try your hands at maneuvering the nesting doll”. Kei and its Earth-bound counterpart had picked up on the language, colloquialisms, nicknames and comfort levels of everyone they had encountered. Both AI offshoots were most accustomed to the twins, as they had spent considerable time providing moral, directional and decision-making guidance to Shun and Kei in the last five years. The twins in turn had picked up several traits from the AI like multi-pronged cause and effect problem analysis, an ability that the twins were adept at. They operated cohesively being able to intuitively predict each other’s intensions. Ásta took manual control of the vessel first.

“I’m going to try out a series of random maneuvers, that will take us off our current course. First off, I’m going to rotate the nesting doll full circle clockwise, and then reverse the move.” Ásta said while delicately spinning the vessel on a pivot. She completed the anti-clockwise maneuver and then followed up with bringing Habogi vertically up on

their plane of travel. “This is a lot like training,” she said while trying out a few tricks which she had been planning in her head. Her ten minutes up, she handed over control to Jón.

After a few standard directional maneuvers, Jón said “Ásta hang on, I’m going to try some evasive maneuvers against simulated space debris. Kei, will you please insert some virtual debris into the path we’re currently on, I’ll try and avoid them”.

After the first few chunks of virtual rocks and asteroids, Jón noticed the debris field become thicker. The approach velocity for each lump became progressively faster and he had to really juggle Habogi around to keep from hitting any of the debris. This went on for a full minute, which felt to Jón like at least twenty. On one occasion during the session, Jón tossed Habogi end on end like a caterpillar, in a maneuver which nearly knocked them unconscious.

Kei took over control of Habogi. Jón realized that the AI may have been testing the twins for their G-tolerance. Since both twins had a very close relationship with the AI, he asked, “How did we do on the gravs?” Kei replied, “You both easily managed upwards of ten Gs for up to five seconds, without your innerwear pressure systems activated. With the pressure system initiated, both your enhanced bodies would be able to sustain forty Gs. Of course, once the local gravity systems are activated, you wouldn’t have any problems with acceleration forces in any one direction.”

All space vessels constructed by Lýsi were optimized for exploration and expected harsh environmental conditions. While transport and habitable exploration vessels could withstand up to twelve thousand bar pressure, the autonomous multi-purpose space robots could

theoretically withstand up to fifteen thousand bar. Kei continued, “You’ve got just enough time to get clean and suit-up. We will be at Álfhól in half an hour.”

Ten minutes to arrival, the twins were tucked into their HSEVA suits in case of a rapid depressurization during docking. This was just a precaution, but a vital one. There hadn’t been an accident during the docking process involving people yet, because the entire process was completely debugged by the AIs - Shun and Kei, during construction of the platform. While each space vessel had their own mission AI to independently operate, they were all monitored and tasked as needed by Kei.

Before docking, Kei announced into the twins’ headsets, “I’ve just heard from Shun. There seems to be an intrusion into the Kuril Islands facility. Shun picked up an unrecognized face within the main hanger of the flying wing aircraft. The person seems to have entered the launch capsule assembly area. The space launch director, Dr. Maksim Popov was updated as soon as Shun noticed the intrusion. Your young transhuman colleague Rafael Borrego who’s undergoing space mission training at the facility, took it on himself to investigate this incident with Shun. A score of autonomous micro airborne drones have also been deployed throughout the facility to track down the infiltrator or any others who may have been missed. Dr. Popov has instructed that all scheduled activities are to continue, unless any physical threat is perceived.

“The priest made a sound decision to let Rafael jump in,” quipped Ásta. They had picked up the nickname given to the Space Launch Director by the operations team at the Kuril Islands facility. The nickname was a translation of Dr. Popov’s surname in Russian; and besides, with his

beard and piercing eyes, he did look like a priest. Ásta continued speaking to Kei, “Rafael will get to the bottom of this in no time. He’s consistently performed better than Jón and me on mental agility tests. He’s quite dextrous too.”

Jón teased his twin, “You’re just sweet on him!” She stuck her tongue out at him. Grave as the situation was, the twins allowed themselves to behave childishly around each other. With company, they were quite the adults. Kei, listening in and remotely observing the interaction, was used to this behaviour. The AI provided a situational awareness feed from the island, for the twins to observe.

Planet-side at the Kuril Islands facility, things were taking an interesting turn. Rafael who was undergoing movement training underwater in a pool, fully suited in a HSEVA suit, was informed of the situation by Dr. Popov and asked to investigate the matter urgently. While making his way to the edge of the pool and climbing out, Shun brought him up to speed and provided various feeds through his heads-up display in the HSEVA suit’s helmet. Rafael decided to remain in his suit, since it provided him a wide array of sensor inputs and enhanced mobility. He looked at the video feed of the suspected intruder, silhouetted against the wall next to the main entrance of the capsule assembly area. Shun was at a loss to explain how the intruder may have got in, since security was quite stringent across the island, and especially so within the facility premises.

Walking towards the capsule assembly area, Rafael took in a few details about the person he was tasked with tracking down. He looked caucasian, was wearing a deep green-grey body-hugging garment and he had a bulge which looked like a backpack. The video was from five minutes ago when Shun had noticed the discrepancy while running

through a three-minute surveillance cycle. This was a gap which would need to be fixed. The group's ability to operate freely across the globe, depended largely on its ability to remain hidden, blended in behind layers of companies and individuals.

Rafael entered the capsule assembly area through an emergency exit after asking Shun to temporarily turn off the door's alarms. Crouching, he entered the cavernous room, which was sectioned off according to the stages of capsule assembly. The entire assembly process was automated, with little need for people to intervene, even to repair or replace robotic components. Still in a crouch Rafael duck-waddled five meters to the closest robotic assembly unit. Three drones had entered the area along with him and he assigned them grids to survey, while he shimmied himself along an aisle close to the assembly unit.

The drones came up empty. There were two authorised base personnel in the area. Both were working on an input console of a composite materials moulding unit. Neither was aware of the activity around them. Rafael wanted to keep it that way. While turning a corner away from the two authorised personnel, he noticed a flicker from an overhead vent. Continuing without a pause in his movements, Rafael amplified the area within a small section of his helmet's HUD. There wasn't anything distinctly visible. Switching to infrared didn't help either since the vent was a heating unit. The suit was capable of numerous sensory inputs, so he toggled through a few of them and stopped on a radar-audio combination, which showed a broken outline behind the vent's grille.

There certainly was someone hiding there. He spoke into his comm unit, "Shun, you're picking this up?"

Shun replied “Yes, it looks like there’s an intruder behind the vent’s grille. How would you like to handle this?”

Rafael said, “It’d be ideal to let the person get out of the vent and enter an area which isn’t mission critical. While we’re capable of fixing or replacing equipment rapidly, initiating conflict here isn’t going to be helpful. Send a drone into the vent quietly behind the intruder and let’s monitor the intruder. Keep a camera on the vent in case the intruder decides to exit. I suggest deploying a few drones with motion detection capability into the area, just in case. Give the person space. I’ll retreat into the recreation area next door.”

A short while later the two techs in the capsule assembly area exited. Rafael was monitoring the area remotely now. He’d just updated the launch director who agreed to let the intruder exit the sensitive assembly area without immediate engagement. Thirty minutes into the surveillance, during which time Rafael was also reacquainting himself with the island’s layout, Shun broke in, “The vent has opened and there seems to be movement. Sensors are picking up a male form. There he is, making his way towards the composite materials moulding area. The intruder has stopped and is observing the hardware there. Look closely, he’s wearing optical gear beside each of his eyes. I’ve identified them as miniaturised Swedish tactical communications gear. He’s obviously some sort of covert infiltration operative. The gear he’s using would be linked in live to whomever he’s in contact with via satellite. I’m going to locate and isolate the frequencies he’s communicating on. So far, whatever he’s seen and recorded has got out.”

Rafael replied, “Okay, send in a few drones to flush him out without spooking him, even though he is one”. No one listening in got the joke.

The intruder noticed a drone approaching him from the direction of the vent he had recently been hidden in. He raised his hand, fist clenched, knuckles pointing at the drone. Rafael exclaimed, “He’s armed. Some kind of forearm mounted system. Send in a few more drones. Also alert the perimeter security bots to increase patrol frequency, in case there’s anyone else waiting to extract the intruder.”

Another two drones approached the intruder backing him towards the primary exit. Shun informed, “I’ve located the frequencies he’s communicating over. He’s linked in via satellite or a high-altitude aircraft. Isolating and jamming now. Done, his communications are out.” The intruder was just exiting the capsule assembly area. Since he was armed, an alert had been silently sent out to all base personnel to vacate their work areas and head to the facility’s vast mess-hall.

Rafael turned left and rounded a corner from the recreation area towards the capsule assembly area, bumping right into the intruder. Both backed off a few steps. Looking at the massive and imposing individual in the HSEVA suit must have startled the intruder quite a bit. But he reacted without flinching, raised his left arm and silently shot a rapid cluster of projectiles into Rafael’s helmet and torso. Protected against hypervelocity space debris, the projectiles just ricocheted off the suit. This shocked the intruder who spun on his feet and hit a dead sprint. Rafael pursued cautiously since he wanted to avoid violence.

At the first corridor intersection, a drone relay showed him a door swinging shut. Slowing his approach, Rafael entered the room getting a full sweep of the area through his suit’s sensor arrays. The intruder was concealing himself behind a cabinet. Rafael approached. The intruder must have heard him. Three feet away from the cabinet the intruder raised his right arm and shot Rafael’s suit helmet, emptying his entire

magazine. Seeing no effect on the suited person, the dextrous intruder ducked his way around Rafael and exited the room.

Shun burst into Rafael's headset, "Our mystery person is headed to the roof. He must have some sort of exfiltration plan."

Rafael replied while hitting the HSEVA suit's open sequence, "I think the suit must be scary to this person. I've scanned him from close quarters, and he doesn't seem to be armed any longer. He's exhausted his forearm weapons. I'm going to ditch the suit and pursue him. Stay connected through audio."

Shun acknowledged saying "The intruder's trying to get the roof access hatch open. You may have a moment to catch up."

Having got out of his training HSEVA suit, Rafael sprinted up the emergency stairwell, racing up the three flights of stairs towards the roof. By the time he reached the top, the intruder had already managed to jimmy open the lock to the roof access door. Cautiously exiting the door, Rafael looked around. The intruder was looking over the far wall towards the rear of the building. He called out to the intruder, "Hey! Hey you!" The person spun around without looking panicked. He didn't consider the ridiculously young-looking Rafael a threat.

Allowing Rafael to approach, the intruder smirked. As soon as Rafael was close enough, the person lunged with a close-fisted jab to the nose. Without pausing, Rafael deflected the jab downward with his left hand, his years of cross-discipline self-defence training kicking in.

Each of the transhumans were placed on a heavy schedule of knowledge and skills development, and a rigorous physical exercise regimen. Going with the defensive flow, Rafael caught his opponent's attacking

hand at the wrist with his right hand and pulled. This drew in the intruder to Rafael who kicked up with his right knee knocking the breath out of his opponent.

Normally, Rafael had to limit his more aggressive moves to favour his practice opponents. Having reacted instinctively to the situation, he hadn't held back. The knee to the chest did considerable damage. Medically trained for surgery, Rafael noted the gasping breath of his opponent, now lying on his side with his arms wrapped around his chest, indicating that his diaphragm may have torn. Neither opponent expected the confrontation to end this quickly.

Rafael spoke into his headset, "Shun, the intruder's down but may require urgent medical attention. Send up a stretcher."

A rescue team was standing by and arrived on the roof quickly. Rafael looked at the intruder's forearm mounted weapons. There were multiple barrels forming a double layer over the wrist. Shun too was studying the system while running multiple face-recognition queries globally. The arriving medics were already apprised of the intruder's possible injuries remotely by Shun. Sedating and securing the injured person, the medics gently moved him to the island's infirmary building.

Rafael meanwhile went to check on his suit. When he got to where he left it, he saw it had been removed. Patching himself to the AI he asked, "Shun, has my hard-shell suit been taken in for a check? I'd really appreciate a full service and maintenance run-through. Whatever the intruder shot at me ricocheted off, but I'd like to know what kind of impact the suit can resist. Also, please scan the shielding panels for any inner layer damage."

Shun responded jovially, “I’m way ahead of you. I have three autonomous manufacturing robots taking the suit apart and replacing all panels which may have been affected. The artificial muscles which provide enhanced movement are also being looked at. I’ve also updated ‘the priest’, the group’s leadership team and my space-based AI counterpart Kei. Incidentally, Jón and Ásta were observing how you handled the intruder. They were impressed. Our priority now is to get to the bottom of this intrusion. We’ve largely operated under the radar globally. Someone seems to be taking notice.”

Rafael replied, “I’d like to speak with our intruder soon. Let me know when he’s prepared to hold a conversation.”

Leaving this instruction, he went to the barracks section to freshen up before re-joining the investigation. Hectic as the action was, it was a good break from the intensive training he was undergoing.

Kei meanwhile was updating the crew in space. The AI had grown to learn that democracy of information was vital to successful operations in space and helped keep astronauts focussed. Kei had even spun off real-time engagement AI to hold conversations with each individual astronaut. The mission AIs were all a part of Kei and interacted continuously with the core AI systems. Essentially, Kei came across as a unique AI completely in sync with every individual. Kei updated information on the planet side intrusion at the Kuril Islands facility, advising all space personnel to be cautious.

Jón and Ásta had just entered an operations centre where the crew put together to intercept AL-I were meeting. Kei did the introductions announcing itself from hidden speakers around the room, “Hello everyone. I’d like to welcome Jón Gylfason and Ásta Gylfadóttir to

Álfhól. Jón and Ásta are twins born in Reykjavík, Iceland. They're both transhumans, a concept you're all knowledgeable about and comfortable with. Going around clockwise, I'll introduce the rest of the crew."

The AI continued the introductions, "Stefán Gunnarsson is also from Reykjavík, Iceland. He is our Bio Specialist. He recently began researching synthetic bio technologies. Stefán, I believe you're already acquainted with the twins." Stefán nodded to the twins who nodded back.

Ásta's eyes lit up and she smiled. She'd been attracted to Stefán when the twins had taken a genetics and surgery course with him two years ago. Kei continued, "Next to Stefán is Isla Hansen, astronomer and materials scientist. She's from Wellington, New Zealand." Isla smiled around at everyone and nodded a hello at the twins. "Next, we have Eiji Ono, quantum hardware and software specialist. He's been experimenting with molecular manufacturing and self-replicating machines. Eiji's worked on my AI programming in Tokyo, Japan. He was born in the beautiful prefecture of Ōita on the island of Kyushu." Eiji waved his hand at everyone after dipping his head appreciating Kei's introduction.

Kei continued, "Sven de Vries is standing beside Eiji. He's a space operations specialist and the lead for this team. Sven is from Delft in The Netherlands, where The Lýsi Group was founded. He's been instrumental in planning the interception of AL-I." Sven smiled and spoke out in a deep voice, "I look forward to working closely with each one of you and learning from you." Kei went on, "Crystal Vance is an Astrophysicist from London, Great Britain. Isla and Crystal have been keeping an eye on AL-I, evaluating the asteroid like shape and studying

the object's trajectory." Crystal smiled around the room. Kei made a last introduction, "Leimomi Ka'aukai is from Honolulu, Hawaii. She's a psychologist, botanist and surgeon." Leimomi exclaimed louder than she or anyone else expected, "Hi everyone! Call me Lei!"

Sven took over from Kei, "I'm really glad we're undertaking this adventure together. Each of you has multiple specializations. We will all have to work cohesively to ensure success. Kei, of course, will be along with us and will be fully involved with every aspect of our trip, including operations and analysis we will be conducting. The reason we can take this space journey with such a tiny crew, is because our abilities are amplified by our AI, advanced space vessel systems and autonomous robots. Instead of just one, we will be taking along three interconnected Standardized Space Exploration Vessels."

Sven explained, "The SSEVs will each provide redundancy or backup for our deep-space mission. Each may be operated independently should the need arise. They also contain an atmospheric operations shuttle. As you all know, each SSEV can support a crew of eight for an extended period. We're taking all three SSEVs to break them in. We'll rotate through each vehicle every two days while going out to meet AL-I. We'll also be taking a bio module along, which is longer than an SSEV. Stefán has been working with Lei on a project aimed at growing an assortment of edible plants over the last month. They've had better than expected success." No one noticed Ásta evaluate Leimomi.

Stefán went on, "We will continue the bio module experiments in deep space to see how viable it is for extended periods of travel. AL-I is going to transit through the solar system. Its behaviour is of concern. We know we're not alone in the universe. In fact, much of our recently developed technology is based on reverse engineered extra-terrestrial tech. We

need to understand this object entering our system, evaluate the threat if any, and come up with executable solutions to deal with the situation. Now, let's go look at the SSEVs. Our home for the near future.”

The team shook hands with each other, and some individually welcomed the twins. Acquainted or not, the twins had studied each crew member's dossiers and exploits extensively. They probably knew their colleagues as well as they knew themselves.

Without a pause, the crew made their way behind Stefán towards an airlock on the moon-side of Álfhól space platform. Walking by a viewing port, they saw awaiting them, their three interlinked SSEVs. The bio module looked like a long, roof mounted, vehicle luggage carrier. They'd be aboard and away in another day. Each crew member felt the anxiousness of the unknown and the thrill of adventure.



# Interception

Above Uranus Orbit

**A**ccelerating at a continuous unhurried five Gs for five and a half days, the three hundred and sixty tonne integrated vessel arrived at nineteen astronomical units (AUs) from the Sun. The crew on Átt had travelled the distance of Uranus' orbit, but north of the solar system's ecliptic. They were on an interception course with AL-I. The asteroid-like object was under observation by the team during their journey. Many of the object's details were clearer now that they were one AU away and closing in. The interception strategy involved decelerating and reversing course, so that the team would be beside and moving parallel to AL-I, by the time it reached their current position nineteen AUs from the Sun.

Before departing, the twins had come up with and had proposed a name for the combination vessel they were to travel in. Since the bio module they were taking along was placed like a roof rack, the twins had assigned it as being directionally 'up'. The other three SSEVs were below and to each side. The names suggested for each vessel were drawn from the Icelandic names for magnetic directions. The bio module was named Norður for North, SSEV-2 on the right was named Austur, meaning East. SSEV-3 to the left was named Vestur or West and SSEV-4 was named Suður for South. SSEV-1 was not included for this mission. The vessel was already on a staffing assignment heading towards the Sun-Earth L1 Lagrange Point platform. The platform had just been put through a rigorous three-month testing of systems and habitat. That platform would be an important staging point for all future deep-space activities conducted by Lýsi.

The twins also suggested naming the combined space craft comprising the three SSEVs and the bio module. They'd come up with 'Átt', the term for 'direction' in Icelandic. Given the twins' history in having designed many of the actively deployed space-based vessels, none of the crew objected to their naming the vessels. The names were adopted and immediately used. They'd already rotated through Austur and Vestur, thoroughly testing out the systems of each SSEV while using each as the central command module for Átt. They were using Suður when they began rapid deceleration in preparation for manoeuvres to reorient the spacecraft.

Sven spoke to each of them through their headsets, "Crystal and Isla have just brought to my notice that our mystery asteroid-like object is decelerating at a rate that'll bring it to near standstill in half an AU. That's about the distance we expected to execute our turning manoeuvre. Whatever the object is, it has intelligence. I want everyone putting in time working with our AI – Kei, to outline possible scenarios for when we encounter AL-I; things we may not have already identified. I'm confirming back to Lýsi leadership that the object on interception course has displayed 'behaviour'. No doubt, Kei has already shared this information with Shun for analysis. We're facing the unknown, so put your thinking caps on and let your minds roll."

Deceleration was much more severe on Átt's crew. After a thorough systems check, everyone onboard strapped into contoured grav-chairs in the Suður SSEV's operations hold, for the duration. The vast area inside overcame claustrophobia, an input that Lei had given the twins when the exploration vessels were being designed. Lei had grabbed a grav-seat close to Eiji. They had collaborated before on the wicked problem of rapid global warming, and they enjoyed each other's

company. Their modelling and analysis had led to Lýsi's thrust towards space exploration and possible colonization, as a means of protecting Earth's life, intelligence and knowledge.

Eiji turned to Lei and said, "The gravity on AL-I seems to have increased in sync with its deceleration. I was working with Kei to develop a more sensitive gravity measurement instrument using nano scale sensors. We've hooked these up in vacuum pipes in the gas layer of the outer hull panels. The sensors bounce very thin lasers off each other. The lasers bend ever so slightly when gravity is exerted on them. With all the sensor data from each of Átt's SSEVs, we're able to better detect and measure gravity of other objects in the space around us. That is, after disregarding our own use of focussed gravity."

"Has this information been included with the master sensor feed?" Leimomi asked. "It may help us better understand what we're dealing with," she added.

Eiji spoke to the space-based AI, "Kei, generate a 3D graphical interface similar to our navigational situational awareness feed, that can be pulled up from sensor menus. It would need to show gravity, mass and object size information."

Kei responded, "I'll have it ready shortly. On a separate topic, I've taken the results on your recent quantum computing hardware research and clubbed it with our nano tech development. It's been put into production to create molecular, self-replicating, multipurpose machine components, which can configure themselves for most of our manufacturing needs. Using this technology, we should soon have our next generation of AMCARs ready, on all three of our SSEVs and on Norður, the bio module."

Lei asked Kei, “Let me have a look at the new AMCAR configurations you’ve planned for Norður. I’d be interested in looking at ways to construct additional bio modules if the opportunity arises and to have the AMCARS maintain the modules autonomously. Please also brief Stefán on all of this.” Eiji seemed engrossed with his mission pad, so Lei began evaluating the mental states of each crew member, one of her primary tasks as the mission’s psychologist.

Isla had strapped herself in next to Jón. She was keenly interested in the transhumans. Besides her specialization in astronomy, she had taken up biotech and materials science. She found chemistry exciting and was exploring compatible materials which could enhance human and animal biology. But right now, they needed to focus on the approaching object.

Jón turned and said to Isla, “We’re halfway to the rendezvous point estimated for the interception with AL-I. Given that we’re not seeing any other propulsion system, I’m convinced both we and it are using the same propulsion and manoeuvring technology – gravity manipulation. Since our science has been developed by drawing on extra-terrestrial tech, we should consider that AL-I may be from the originating culture of this technology. They’re obviously way ahead of our timeline. This could go one of a few ways. If they’re friendly or even neutral, they’d be keen to investigate us, as we would them. So, it’s likely they’d attempt to communicate. However, if they’re hostile, it’s likely they would pre-emptively strike. To what degree is anyone’s guess.”

Isla nodded and acknowledged, “We’ve all brainstormed on various scenarios and the options we’d have available to us. We’d do well to try all the communication protocols available to us first. Átt is configured for deep space exploration and is hardened against most natural elements we might come across. Let’s hope the vessels are prepared to

shoulder whatever AL-I throws at us, if it comes to that.” They joined the rest of the crew in analysing the options available to them and adding scenarios not already covered.

Sven announced to the crew, “I’m going to swing Átt around in a tight turn to bring us parallel to AL-I’s expected path. Expect a few higher Gs and some discomfort while the localized gravity adjusts. Kei initiate the manoeuvre.”

A minute into the course correction, Kei broke in, “AL-I has stopped deaccelerating. I believe we’re being scanned in some manner. Most of our sensors are recording increased levels of radiation. A mix of protons and heavy ions. Our layers of outer panels are absorbing the bulk of the bombardment, and interestingly, the Cosmic Ray Energy Generators are overproducing energy. AL-I must have some way to ‘see’ the effect of the radiation bombardment on us. Just like an x-ray scan.”

Sven broke in, “If the object releases a focussed beam or burst of radiation, Átt may not be able to shrug off the effects. Let’s all keep an eye on sensors. Ásta, you monitor EM frequencies. Kei, advise on any change in AL-I’s behaviour which may be of consequence.”

What the crew took to be a scan soon stopped. Their relative velocities had slowed with AL-I’s speed reducing to a crawl, in space travel terms. The object was only doing ten kilometres per second as it came parallel to Átt. They were now on parallel courses heading toward the Sun, a good nineteen and a half AU away from the center of the solar system.

The initial nervous excitement of contact subsided, and the crew began a more methodical approach to the investigation. A two-member team comprising Jón and Isla who had volunteered, went to the rear of Suður SSEV to prepare a shuttle, and approach the object to observe at close

quarters. The shuttle was designated Little Suður and the naming convention followed for each of the other SSEV shuttles.

Meanwhile the asteroid-like object ‘AL-I’, had placed a focussed gravity point ahead and midway between itself and Átt. Both were beginning to gently accelerate towards the Sun. Little Suður detached itself soon after this acceleration began. Jón updated the crew aboard Átt, “We’re being pulled forward along with you. We’re using a combination of focussed gravity and ion thrusters to get alongside and close to AL-I.” A few moments later once Little Suður was closer to the object he continued, “There seems to be movement on the approach side. The high-resolution visual sensors are picking up a tiny portion of the surface facing us, beginning to gain a symmetrical shape. It looks like the surface is forming into a compatible dock. Kei, check and ensure this is all being recorded and relayed back to Álfhól and to Shun on Earth. Everyone who can contribute to this, needs to be brought up to speed immediately.”

Soon after, Isla updated the team, “The object appears to have rapidly manufactured a suitably compatible dock. By the looks of it, it should match our universal docking port.” Sven broke in, “You’re not to release the docking port to open on your side until you’ve conducted an EVA to check the object over. Obviously, we now know that it’s not an asteroid. So, AL-I is of extra-terrestrial origin. I want both of you to reconnoiter AL-I, back-up each other. Kei will maintain vessel control while you’re out, and Crystal be on standby to remotely operate Little Suður if needed. I want as much information as possible on the object, before you enter.”

Isla, brought Little Suður parallel to AL-I. The disguised ET vessel did not seem to react to their presence. Putting Kei in control of Little Suður,

Jón and Isla checked each other's HSEVA suits and exited the vessel. They used thrusters built into their suits to gradually approach AL-I. Neither wanted to take an abrupt action, which might provoke a negative reaction. There was no telling how fast or slow AL-I or its occupants processed information, so it'd be best not to spook them. Arriving next to the freshly manufactured docking port on AL-I, they relayed visuals back to their team on Átt. Kei informed, "The dock's mating components look like they're meant to interface with our universal docking port. The sealing mechanism too, looks like it will be adaptable. Check the vessel's surface please."

Jón moved himself away from the docking port and to the right of it. The surface was rocky in some places, flat in others. There weren't any external sensors or viewing ports; nothing that could be readily identified. He spoke into his headset's microphone, "Nothing stands out, I'm going to go around the vessel diagonally toward the front, and then around. Isla please follow keeping about five meters distance. Be wary for movement. Kei, use sensors from all vessels on Átt which are not immediately required for navigation, to seek any additional data on AL-I. Also, have Little Suður follow our progress around the ET vessel, just in case we need to withdraw quickly." Instructions being given, Jón and Isla began their survey.

The surface was like that of a large asteroid. It was rugged, pockmarked, dented and even scraped. Various sections of the exterior looked different in colour, like portions of it had been ripped off revealing deep noticeable indentations, differently shaded from the rest of the surface. They were slowly walking on the surface of the vessel. The gravity was just under twice that of Earth's. This wouldn't be possible unless it was artificially generated. The two explorers had just completed their survey

when Kei's very pleasant virtual voice came in through their headsets, "I've picked up bursts of low intensity gravity, originating from AL-I, aimed at us on Átt, at Little Suður and simultaneously at Jón and Isla. There's nothing coming in on any electromagnetic frequencies, or anything in light. I'm beginning an analysis. Since we're basically coasting along under pull from AL-I, I'm going to commit most of our computing resources available on our vessels, towards identifying if this is communication of some kind, and if so, what it says."

Not having discovered anything out of the ordinary, Jón and Isla decided to return to Little Suður and attempt docking. If successful, they would try to enter the ET vessel. Both felt the nervous tension. Once they entered the airlock, Jón spoke, "Isla, we're barely two hundred meters away from AL-I. We could remain in the airlock, instead of pressurizing and entering the cabin. If we dock successfully, we could enter the ET vessel quickly if it permits us to. Do you think you can control Little Suður using the operations pad in the airlock?"

Isla answered, "I'm keen to get going as well. Normal procedure is to remain in our vessel with the airlock acting as a buffer between us and the docking port. But I think it would be safe enough to remain in the air lock and control the mating procedure from here. There's adequate visibility through the viewing port beside the dock frame. Ideally, there should have been a viewing port built into the dock's hatch as well. Kei, please take this as a design upgrade input."

The two maneuvered the shuttle towards AL-I's freshly manufactured docking port. Slowing to a crawl with delicate thruster adjustments, Isla brought the shuttle within ten meters of the ET vessel. Abruptly, six slim flat tendrils, each no more than three centimetres wide, extended snakelike from equidistant locations around AL-I's docking port. These

clamped in some manner at points around the shuttle's universal docking port. As soon as the last one was clamped, the tendrils stiffened and began tugging the entire shuttle in. Both vessels' docking ports were perfectly aligned and came together. There was a whirring followed by a click as clamps between the docks fell in place. A brief swoosh indicated a vacuum seal between the docking ports had been successful as well. Jón reach out to Isla and pressed her left hand to ensure her. She squeezed back indicating her confidence and readiness to face the unknown.

The crew on Átt were observing over their video feeds. Most were tuned into the visual inputs on Little Suður. For a brief while everyone held their breaths in anticipation of some action by the ET vessel or perhaps its crew. Nothing happened. Taking the lead, Isla announced, "I'm going to disengage the locks on the hatch in preparation to opening it. Given the level of intelligence the other side has shown in understanding our systems, I have a good feeling they would have reciprocated the airlock as well." Jón agreed, so she went ahead and released the locks. She then keyed the operations pad in the airlock authorising the hatch to open. There was a whirring of motors as the airlock's hatch swung inward revealing the extra-terrestrial vessel's hatch.

Without any fanfare, the hatch on the other side opened and swung in. Jón and Isla had tensed themselves in preparation of the unexpected. They weren't armed. But they were confident their hard-shell suits could take a little punishment if they faced aggression. Relaxing a bit, they moved towards the open hatch and peered into the ET vessel. There was a dark void ahead. They seemed to be looking into a large airlock. Switching on their helmet and shoulder mounted lights, they entered the space inside. Two drones entered behind them, brought in by Kei. There

was a rack of six drones in the shuttle's airlock, kept on standby should they be required outside for repairs or operations. The drones used their own diffused lights, infrared and laser to map and explore the inside of AL-I.

Five minutes into the exploration of the hanger-like airlock on the alien craft, a soft glow began to appear in lines along what was now the roof of the large interior space. AL-I or its crew seemed to have understood that the humans entering it required light in a specific range to see. Jón said, "This is disappointing. There doesn't seem to be anything of interest here. The area looks like an empty hold. This is a lot of wasted space for a deep-space or interstellar vessel. I think the ET vessel created the space soon after it studied us. We know that the vessel can reconfigure its exterior while exposed to space. It seems reasonable that it can do the same inside. But why such a large space I wonder?"

Isla was at a far corner, to the right from where the two and accompanying drones had entered. She called out, "Jón over here. There's some kind of panel with what looks like tiny switches." Jon got to her side quickly and studied the panel. He suggested, "Perhaps we trigger a few of these and see what happens. We're already way past any by-the-book procedure and we're going to have to wing it here on." Sven came in over their headsets agreeing to their acting and soon, because their now tiny fleet of vessels were beginning to accelerate towards the Sun.

Jón pressed the first little button to the right of the screen. Nothing happened. He pressed the second. Still, nothing happened. He went on and pressed a third and then a fourth. Nothing. Reacting to instinct, he pressed the last button to the left of the screen. One of the drones patched in a visual feed, to their heads-up displays. It was of a 3D

projection in the center of the cavernous interior space. A screen appeared and glowed softly; over the panel they were at. The projection and screen both displayed a human shape within a circle. The circle was linked by a line to a specific button. Jón paused to consider, then went ahead and pressed the button.

A ring dropped from the roof and hovered just over their heads. Isla came in close to Jón with her back to his. The drone moved out from under the ring. As soon as it did, the ring began to descend around Jón and Isla. Using the drones as relays, Kei came in over their headsets, “I’m detecting all sorts of radiation including x-rays. I believe you’re being scanned, like an MRI. There’s also a lot of gravity waves at various intensities being focussed and passed through you. I can only extrapolate at this point, but I believe you’re being studied at the subatomic level. The drones may not be able to pick up scan radiation that’s outside our science.”

The ring reached the floor and was absorbed into it. The roof where the ring had appeared from, didn’t show an indentation. Material was being continuously manipulated within the vessel.

Jón and Isla checked the exterior of each other’s suits, while Kei ran an internal systems and bio diagnostic. Nothing seemed out of order. Nor were Jón or Isla affected other than having elevated blood pressure from the brief excitement.

The display on the wall changed to accommodate human visibility. It now showed an animation depicting AL-I’s two visitors. Their individual forms could be distinctly made out within their HSEVA suits. The animation depicted each one exiting their suits and stepping out.

This took the two by surprise. Isla spoke into her headset, and through the drones, to the whole team, “I hope you’re able to get all this. AL-I seems to be asking us to exit our suits.” Stefán responded saying, “I’m tasking an additional drone into the ‘hanger area’ you’re in, to take continuous environment readings. It’ll support us as an extra pair of eyes.” Sven spoke next saying, “Ásta and Stefán will join you there. They’ll take the shuttle from Vestur and dock on Little Suður. We’d want an additional team in there with you in HSEVA suits, if you’re going to consider exposing yourselves to the interior environment of AL-I”.

Ásta and Stefán were already moving by the time Sven completed his instruction. They went to their bunk capsules, next to which their suits were plugged into the vessel’s systems.

While Ásta and Stefán were suiting up, Kei spoke to Jón and Isla. The AI said “The third drone has entered AL-I. Initial readings show gasses in the air are suitable for humans. The air closely mimics what you’re breathing in your suits. Aerobiology shows absence of any recognizable organisms.” Adding after a short pause, Kei continued, “Ásta and Stefán have just uncoupled Little Vestur and are on their way to you. They should be docking with Little Suður in six minutes.”

There was movement in the center of the hanger-like room they were in. Jón and Isla turned in unison and cautiously approached the area. A rectangular section of the floor was rising upward. The rectangle rose to just over a meter in height and began to change form. Screens larger than the one on the wall began to take shape. Indentations just under the platform began to form, shaping it like a table which looked a lot like the operations work surfaces on Átt.

Ásta and Stefán had docked with Little Suður and made their way into AL-I, in the time it took the work surface to completely form itself. Stefán announced their presence, “Hey you two. Thought you’d keep all the excitement for yourselves, did you?” Isla replied, “We’re glad to have you here. This vessel is adapting this area to suit our needs. This work surface just formed itself while you were on your way here. The materials tech here is extraordinary. Ásta, would you please study the surfaces and technologies here?”

Stefán suggested to Jón and Isla, “One of the screens on the work surface is also showing an animation of you two stepping out of your suits. Now that we’re here, you could remove your helmets, if you’re willing to be guinea pigs. I’ve gone through the environment readings from the drone while we were on route to you. The environment seems safe. You can go ahead and lose your suits too.”

Ásta began studying the surface of the floor. Their suits had initially been designed keeping in mind deep space exploration and resource mining. The early tools and systems had included chemical and materials analysis. These had since been upgraded each time the AIs Shun and Kei made systems and technology advancements. The Lýsi Group’s rapid manufacturing and fabrication capabilities had far outstripped known Earth-based commercial or defence capabilities.

Jón and Isla had opened their HSEVA suits and hesitantly stepped out of them. The suits remained standing, ready to accommodate their occupants again.

The work surface rapidly reconfigured itself. A pair of rings had fabricated themselves in the center of the work surface. The screens showed an animation indicating that the rings were to be placed on their

heads. Jón and Isla glanced at each other, gave one another a quick nod and picked up the rings. They felt cool to touch with very little texture. Gently, each placed a ring on their heads. For a moment nothing happened. Then tendrils began to edge their way along each one's heads, forming at the rings and working their way down to their foreheads, temples, behind their ears and upward. Both tensed while the rings configured themselves. A moment later, the screens on the surface flashed a series of shapes and colours, increasing in speed between changes. Then abruptly, when everything seemed a blur, it all stopped.

Jón and Isla were able to see images in their minds. The images appeared on the screen with an animation to touch the screens. Each time they touched a screen, a new image appeared. The interactions went on for barely a few moments, when these too stopped; only to be replaced by sounds. They went through the screen tapping process, each time they heard a sound. These then stopped. Now there were images on the screens, but nothing seemed to be appearing in their minds, so neither reacted.

Kei spoke to them while updating each member of the crew, "The drones are picking up electromagnetic, gravity and other wave activity including mild radiation being transmitted by the rings on Jón and Isla's heads. They seem to have stopped interacting with the screens because neither are able to sense the transmissions." A moment later, the screens went blank. It now showed four individuals, two without their HSEVA suits and two with them on.

It indicated that the two with suits on should go to the corner with the body scanning ring. Sven suggested, "I'd like you to remain in a suit. We'll have you two interacting with the vessel soon. The faster this goes, the better. We'll take turns at working four shifts of two each.

While Jón and Isla are interacting, Ásta and Stefán, you get yourselves scanned.”

Isla touched the ring on her head and attempted to take it off. It immediately began withdrawing its tendrils and she was able to lift it off her head. She felt the detachment in her mind. It felt like she'd lost one of her senses. She mentioned this to everyone. Sven spoke soon after Isla. He stated, “It may be possible for Kei to interact in a different manner with AL-I. We'll upgrade one of the drones with greater processing and memory; it'll be like a mobile version of our AI. Kei, would you get started on that. We'll pass the modified drone through the scanner during our shift.

Jón was studying a screen on the work surface. He described it for the rest of the crew, “Strands of DNA are showing up on the screens now. There's a separate screen showing my outline, and a separate one showing Isla's. The screen between the two is showing an animation highlighting the similarities and the differences between us. Stefán, this is your speciality. Once you're done with the body scan, take over here. Isla and I'll head back to Átt in your shuttle. We'll dock at Vestur, go through decontamination and get an automated physical. Sven and Crystal can take the shuttle from Austur. When the two of you are back from your shift, get a physical, eat, shower and rest. I think we'll isolate each team to individual SSEVs and the bio module, until we're sure we're all okay.”

They had the next five days to interact and learn as much as they could from AL-I. Fortunately, the vessel itself wasn't hostile. They needed to understand it and find out what it was doing in the solar system. And, they had to do it quickly before it got further in-system.



