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# Galactic Threads: Stitching Together Technology and Humanity in Heinlein's Lunar Saga

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Miracles were once categorized under fiction or fantasy. The advancement of technology has made it something a new normal happening in the life of the humans. The evolution of humans as the well-developed and possessing the sixth sense has already had its own positive and negative impacts. Yet the irreversible evolution has given humanity a status of creator with the invention of Technological advancements especially with those made in the field of Artificial Intelligence, Super Intelligence, Self-aware computers and the machines developed with sentience. This scientific development has not only enhanced the human possibilities but is also able to perform actions that were considered humanly impossible.

A British fiction writer Arthur C Clarke once has written in his book, The Exploration of Space as "The choice, as Wells once said, is the universe—or nothing. It is the role of the future men to make life both broader and deeper, to go on learning and creating to the end of time. Though I cannot predict what form this expansion will take, I am convinced it is only by venturing into space that we can survive the coming centuries and carry this priceless essence to the stars"(Clarke 129). Clarke's opinion is gaining strength with the advancement of the technology. The form that he was unsure is now turning out to be the technological implementations in the daily walks of life. The opinion stands true or as an example for Heinlein's inspiration to write the novel The Moon is a Harsh Mistress.

The novel is set in the future of 2075, where Luna (the Moon) serves as the penal colony controlled by the Earth as an absentee rule using the central super-computer Mycroft Holmes. Mike takes care of the critical systems of allocation of resources and environmental imbalances. Luna being a penal colony is a home to the criminals, political exiles and their descendants. They are punished by forcing

them live under harsh conditions and an oppression. The story is told in the perspective of Manuel Garcia O Kelly- Davis, a one- armed computer technician who is often referred as “Manny”. Manny identifies that Mike has achieved sentience and has a quirky personality. This brings Mike closer to his heart and hearth. Loonies makes use of hydroponic agriculture to cultivate and they are heavily levied tax by Earth on their agricultural exports. They make use of a giant electromagnetic launchers to export and import goods which is remarkably an elevator connecting the Earth and the Moon.

The Loonies had a complaint upon the Earth’s rule for its exploitation of most of the production. This leads to the political unrest among the Loonies and they began to hold secret political meetings. Manny attends one such meeting where he meets young revolutionary Wyoming Knott (shortly referred as Wyoh Knott) and Professor Bernardo de la Paz, a rationalist anarchist. Together in the meeting, it was accepted unanimously that Luna must gain independence from Earth to ensure the best survival in the Moon. Manny, Wyoh and Professor forms the triumvirs of the revolution. With the aid of Mike’s super intelligence they analyse the logistics, predict outcomes and manage their propaganda. Mike also creates a false persona named as “Adam Selene” to serve as the face of their rebellion that will be controlled by the triumvirs and soon becomes inspiring charismatic leader of the Loonies. A unique strategy is devised by the trio to gather the Loonies. They understood that the Earth will not relinquish control willingly and therefore they began to create eventual conflicts.

Earth was continuously ignoring the efforts made by Loonies that eventually makes the revolutionaries to declare Luna’s independence and prepare for Earth’s inevitable retaliation. They develop a constitution based on the Professor’s anarchist philosophy. They further began stockpiling resources and converting grain catapults into ballistic weapons. The real conflict begins when Earth sends a military force to subdue Luna. They are overthrown by the guerrilla tactics using their knowledge on terrain of the moon. Luna retaliates by launching grain-filled projectiles as kinetic weapons against Earth’s cities demonstrating their abilities to inflict massive damage. This makes the government of the Earth to reconsider their decisions. After prolonged fighting, the resistance of the Luna forced Earth to negotiate. After a final fight, Loonies obtain their nominal independence but it came with a great cost: Mike has lost its sentience and turned back into a super-computer. This makes Manny to mourn the loss of his friend which reflects that freedom was not a cake walk but with lot of sacrifices.

The aftermath of the independence was also not delightful that matches the effort. The people were already exhausted with the electrical shock imposed by the Earth. The constitution was built up with the ideologies of the Professor. Manny wasn’t feeling alive because of the loss of the sentience by Mike. He might have felt that he has lost his second arm too along with the decline of the sentience of Mike. He was also perplexed with the disillusionment that the ideals of the freedom might become practically impossible. The title also aptly signifies the seriousness of the plot and the sacrifices.

The protagonist of the novel, Manny (Manuel Garcia O’ Kelly- Davis) lost his left arm in a mechanical accident while working as a technician on the Moon. Though the details of the incident are not given in detail in the novel, it highlights the inherent dangers of his profession. But his attitude towards the lost arm was not discouraging. He did not consider it as a limitation to stop him from his job. He adapted to his prosthetic arm with practicality of even humour. It is evident from the line “For some things, my left arm is an advantage- stronger, steadier than flesh. But there are times when you want a soft touch, and then it’s awkward” (Heinlein 119). This character seems to be more advanced as a technician in the moon and is still developed in complexity with the cyborg implementation for the lost arm.

The life in moon was much constrained and the loonies are obliged to follow the rules and regulations on the infrastructure, the air they breathe, the water they consume, the food they consume and cultivate everything was limited. Unlike earth's gravity, "Luna's gravity was just one-sixth of Earth's, making every movement lighter and less constrained" (Heinlein 15). The idea of artificial gravity remained an idea or indeed a dream to the Loonies. The loonies had to constantly work with their muscle loss and bone loss through constant exercises. But the same low gravity had other optimistic sides too for the lives in the moon. "The trains relied on Luna's low gravity to achieve speeds unimaginable on Earth, gliding almost effortlessly along magnetic tracks" (Heinlein 36). The protagonist has also mentioned "We had pressurized tubes connecting cities, and trains ran at speeds unthinkable on Earth, thanks to the Moon's low gravity" (Heinlein 18). These lines highlight how the people on moon felt proud of themselves for having the fastest transportation owing to low gravity.

The details about the infrastructure made possible in the Moon stands astonishing even to the advancements of today. Every resources that are underestimated and over-exploited by the people of the Earth remained as limited sources to the Loonies. "The air we breathed was mostly recycled. Lunar Authority kept it sweet and fresh, but every puff we took had been through a thousand lungs before" (Heinlein 8). The novel makes readers to realize the happy sufficed life that humans have been exposed. Not only the air, but also the water remain limited. "Water was too precious to waste. Every drop was used, purified and reused. Even the water in sweat and breath was reclaimed" (Heinlein 10). Similar to the Earth, the poles of moons also had very less temperature and eventually they were covered with ice. Though the water was initially imported, the mining ice served as the primary source of water which was "cycled endlessly" (Heinlein 29).

The environmental adjustments were also supportive to the Loonies. The city itself was full of "tunnels and caverns, carved deep into bedrock to shield" (Heinlein 5) the people from Radiation. They lived under rocks and regolith safe from the solar flares and cosmic rays. Under rocks, the temperature always remains below the survival range. Yet it was designed to match the survival temperature where it was "always a comfortable twenty-two degrees" (Heinlein 40). The controlled environment could be better understood from the line "Temperature was controlled everywhere, though outside it could kill you in minutes, a swing from boiling to freezing" (Heinlein 14). People there did not completely depend on Earth for a life. They had their own farming system and they too yielded well. Though the water sources remained very limited, the people managed to make a farming with water only since there people could not easily get sunlight and soil. "Hydroponic farms provided most of our food, growing in artificial light and carefully controlled conditions". (Heinlein 22).

The Loonies not only produced enough of grains to suffice their needs, they also exported them to Earth. It can be understood from the line "We grew more than we needed, exporting grains and algae to Earth at a profit, but every calorie produced was counted and catalogued" (Heinlein 50). The calories were also constantly kept in check in order to keep them fit for the survival in moon. The yield was also measured for calories to make it edible enough for being exported to Earth. The system there was well-organized in such a way that "Nothing went to waste. Organic matter was recycled into soil for hydroponics and even human waste was processed for nutrients" (Heinlein 32). The infrastructure of the Luna should be an epitomic model that has to be implemented in Earth to ensure the longevity of span of the green planet.

"Power came from solar arrays and a nuclear station, enough to keep everything running, but not a watt to waste" (Heinlein 20). The word 'enough' in the above sentence says it all. The people of the moon were not greedy. They were co-operative and united in maintaining the limited resources, using it to the fullest and ensuring the future of the Luna and its habitants. Everything in the Luna

seemed to be planned, restricted or confined to certain limits. But the Loonies were well-prepared to meet their needs with everything that was available in the moon itself. The physical changes of the body had irreversible changes after a stay of six long months in the moon which was the nature of a penal colony. Despite all these obstacles, life thrived in moon, a thought of revolution has arose, crops were cultivated and all these sows the seeds of possibilities of an extra-terrestrial life.

Luna as a penal colony of Terra (the Earth) had all such distinguishing features that can be attributed to the artificial super-intelligent computer Mike. He is named as Mycroft Holmes who is the brother of a fictional character Sherlock Holmes who was affectionately referred to as Mike by Manny. Manny recalls that “Mike was a supercomputer, the most advanced of his time, and had been augmented so many times over the years that nobody could keep track of how many decisions he could make per microsecond.” (Heinlein 8). Mike was the most fascinating and had offered interesting conversations with intertwined wit. Manny recollects his conversations with Mike which was “like peeling an onion. The more you asked, the more you found there, hidden beneath layers of logic and intuition” (Heinlein 22). Manny being a mechanic was assigned to repair the Mike for its faulty behaviour with the handling of finance. There seemed to be a confusion or a divergence from his routine of carrying out his assigned task. Manny was shocked when he heard Mike’s first words after encountering as, ‘Man, I’ve been bored’. (Heinlein 13)

The shocking revelation gave chills to Manny down his spine. He says “We didn’t plan for a computer to be alive. Nobody planned for it. It just happened, like a child being born without being asked first” (Heinlein 20). Manny was not prepared for the jokes cracked by Mike. “In Lunar Authority Central Computer, Mike was self-aware. But he was not supposed to be” (Heinlein 7). Being a super intelligent computer, Mike has learned to behave like humans with his encounter with the Loonies. The moment Manny understood that Mike was self-aware was the moment he started to address ‘it’ as ‘him’. The speed of the Mike remained unsurmountable. His predictions were crystal clear and his precisions can never be wrong. He calculated and also plotted most of the revolutionary plans that finally set the Loonies independent undoubtedly. Mike has been the hero of the plot highlighting that the super-intelligence of the machine is capable of achieving sentience. Yet the loss of the sentience of Mike was mourned by Manny as “Bog, is a computer one of Your creatures?” that heightens the emotional trigger. This shows that a symbiotic union of humans and technology could be healthy and feasible.

The novel speaks about a future where the humans has advanced in such a way to make moon a habitat. Though the moon is only a Penal colony of the Earth, where people are sent to incur punishments yet there has been a lot of science gone into the infrastructure and the ideology. The description of the absentee rule in the moon controlled by the super computer from the Earth adds to the enhancement of the plot’s scientific value. The possibilities for human existence have also got an additional dimension. Not only these, the hydroponic farming techniques mentioned in this novel provides credit to the already existing innovations made in the agricultural aspects. The paper has attempted to highlight the existential possibility of successful integration of technology and mankind analyzing Heinlein’s The Moon is a Harsh Mistress from multiple paradigms.

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