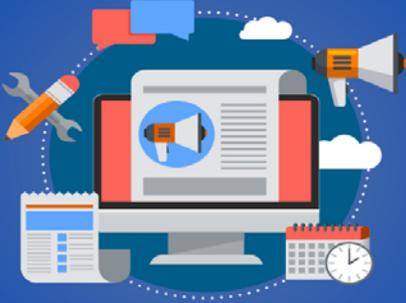


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Science Fiction as a Precursor of Advanced Healthcare Technology: An Analysis of Select Science Fiction Narratives

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Abstract:

“Any sufficiently advanced technology is indistinguishable from magic”. These words by the maverick Arthur C. Clarke portrays the futuristic approach of science fiction and also points out to the merits of labelling the genre as a breeding ground of a myriad of scientific innovations in the days to come. Science fiction has emerged as one of the most prolific areas of research and deliberation in the present times. Due to its wide range and fluidity, science fiction possesses the capacity to explore life in varied forms. The genre’s influence is ostensible in almost all the sectors like climate-change, medicine, culture, sports and politics. In the medical science field, science fiction had a tremendous impact and is popularly regarded as the harbinger of many modern technologies in the healthcare sector. Whether it be the 3-D printing organ which had its first manifestation in the replicator used in Star Trek series or the exosuits which got demonstrated in the movies Elysium and Robocop, modern healthcare inventions owe a lot of its development to science fiction visionaries. Science fiction has utilized both utopian and dystopian visions of the future to depict the advanced health-care techniques. Utopian narratives propelled by themes like anti-ageing techniques and embryonic genetic modifications provide hope to mankind while texts like *Never Let Me Go* by Kazuo Ishiguro draw attention to the despair and apocalypse that comes with the unwarranted use of technology. The paper attempts to decode the immense influence that the genre has on medical technologies and the positive and negative implications of technological expertise through the *Star Trek* series, *The Andromeda Strain* and *Never Let Me Go*.

Keywords: magic, futuristic, harbinger, apocalypse, utopian, dystopian.

Introduction

“Any sufficiently advanced technology is indistinguishable from magic” (Clarke 1982). The words by the maverick Arthur.C. Clarke throw light on the basic foundational premise for the evolution of Science fiction as a genre. Science fiction with all its futuristic ideas and possibilities created an entirely new world where the seemingly impossible things were presented as the future carriers of human civilization. The scientifically inclined community was amused and excited by the new variety of thought processes that widened their mental horizon while the common folks and literature lovers devoured the aesthetic pleasure that those improbable monsters and machines provided.

Star Trek

The first of the subjects for my study on this paper is the *Star Trek* series. It is perhaps the most celebrated TV series in American TV history. Over the years, the content and presentation of the media franchise has impressed the younger generations so much that the franchise has acquired a cult status and the fans of the series commonly referred to as ‘Trekkies’. Created by Gene Roddenberry, the original series which was inspired by the classic movie, *Forbidden Planet* and our very own, *Gulliver’s Travels* attained tremendous popularity. The reach of the series was so enormous that the print publications got converted into numerous reference books, technical manuals, novels and comics. Besides entertaining the audiences to the core, the biggest implication of the series was the kind of cultural influence that it had on the society. There were many ‘firsts’ in television that were shown in the series. The original series included one of television’s first multi-racial cast. In fact, the creators of the very popular technology Google Earth have acknowledged the tricorder used in the series as their inspiration. The Star trek replicator is credited in scientific literature with inspiring the field of diatom nanotechnology. Some critics point out that the Star Trek society resembled communism.

The multiracial cast was at the forefront of all the cultural implications of the series. Nichelle Nichols who played the colored communications officer was about to leave the show but was persuaded by the great Martin Luther king Junior not to do so as her character along with the other colored characters brought about a sense of inter-racial unity amongst all the Americans. Captain Kirk’s and Lieutenant Uhura’s kiss in the show went beyond their physical nature and created a kind of legacy in the United States by becoming the first scripted inter-

racial kiss in American television history. Computer engineer and founder of Apple Inc. Steve Wozniak credited the series to be his foremost inspiration.

But perhaps one of the most underrated yet significant impacts of the series was in the healthcare sector. Besides the replicator and the tricorder, the hypospray used in the series helped inspire needle-free injectors. The Visor that the character Geordi used to see has obviously inspired the glasses that beam light to a chip planted in the retina so that it helps the visually impaired to see. The sick bay used in the series gave birth to wireless telemetry. Beyond these technical devices, *Star Trek* promoted the culture of inclusiveness in the medical community with colored doctors working in tandem with the white ones. In the *Star Trek: Discovery* series, there was a gay physician demonstrated on screen uninhibitedly which brought about radical changes in the minds of the developed public who developed a lenient attitude towards the cultural minorities. Bob Picardo who played the emergency medical hologram on the *Voyager* series was of the opinion that it is not impossible that a computer algorithm could entirely replace a physician in the future. He further elaborated that the artificial intelligent physician will be created from the personal experiences of a large group of doctors. The medical advances in the series were shown to have eradicated discrimination and poverty from the earth. By focusing on these two aspects, the futuristic health care technology was shown as a panacea for ameliorating the bane of the present society.

More than the healing devices which are the origin of the present-day MRIs and CT scans, the healing attitude of the persons using those devices act as archetype models for the masses to emulate. The completeness of Starship's flagship vessel's recreation was astounding because of the wholesome medical facilities of 'Enterprise'. Dr. Julian Bashir stationed on Deep space Nine had the dual responsibility to deal with all of the human species ills and affections as well as encounter the most bizarre aliens and determine the best kind of strategy to bring comfort. The other characters Dr. Beverley Crusher, Dr. McCoy, Dr. Zimmerman, or the first alien doctor serving the crew Dr. Phlox, all had human emotions and channeled the workings in an ethical way even in alien conditions. The storyline always concentrated on the eradication of social evils in the face of disarray brought about by cosmic forces. Such a large-scale representation of these had tremendous influence upon the society. In those days where scientific developments had gathered pace, it was intriguing for the audience to envisage the world in the 24th century and also to identify with the changed ethics of the society. But the ulterior motive of the creator was to keep human emotions constant. There was a conscious endeavor on the part of the makers to advance only the technicalities of the working mechanism

of the human crew but not at the expense of their humanistic approach. The way the themes of woman emancipation through collaboration was portrayed or the alien human interaction, the writer was always of the view that the way forward in the future is a mutually inclusive and collaborative society powered by highly developed technical pyrotechnics.

Never Let Me Go

The second book in reference is the popular work, *Never Let Me Go* (2006) by Nobel Laureate, Kazuo Ishiguro. Dealing with the issue of cloning the poignant tale is a great demonstration of the emotionless pragmatic approach of the present-day human. Interwoven within a beautiful story comprising of romance and heartbreak, the hard-hitting commentary on the ethical dynamics of cloning has been presented in a heart wrenching manner. The characters Kathy, Tommy and Ruth all evolve through situations which brutally expose the fraudulent adults and their conspiracies. The indoctrinated students from the Hailsham School are caught unaware in the vicious circle of human greed and insensitivity. The story is of few young boys and girls who are artificially produced through cloning and whose purpose in life is to act as donors to their 'possible' (the original ones). Following in the footsteps of the great Ray Bradbury who synthesized the unknown subjects of science fiction within the canonical domain of mainstream literature to great extent, the Nobel Laureate Ishiguro portrays a tale of conflicts at various levels which established the notorious and unethical desires of human beings as against the innocence of genetically engineered clones. Kazuo Ishiguro, Japanese by birth, lived in England as the perpetual 'other'. In true sense, by his own admission, he was 'homeless' because he neither belonged to England or Japan. The writer documents this feeling of homelessness in most of his novels and in this novel, he has taken the help of clones who are genetically created from original human beings so that they can breed new organs for them, as the carrier of his own feelings and aspirations. The clones are created in such a way that they develop emotions, aspirations, and hopes like human beings. They are put up in a school where they have a fixed set of doctrines on what to do and what not to do. The clones are mentally conditioned in such a way that they can't move beyond the prevalent of what they are told to do and what not. But like human beings, deep inside them the whirlpool of desires and expectations revolve viciously to create a congregation of repressed emotions and mortal wishes. Described as a postmodern gothic novel due to the deliberate portrayal of macabre elements by the author to evoke the tension and darkness of the proceedings, the clones forever suffer from castration anxiety due to the realization of the fact that their ultimate aim is to feed off their organs to the socially dominant human beings.

The clones are entrusted with the task of creating art which are then presented in the gallery for exhibition. Amongst the clones, Tommy has a knack for football but is not allowed to pursue his interest and instead compelled to create art. Thus, human beings act as constraints to the complete development of the clones' aptitudes that restricts their social mobility and outlook. By limiting the scope of their activities human beings ensure that the key to social order remain in their hands and the clones merely act as the puppets. This also symbolizes the unacceptance of human beings towards the all-round growth of the clone's personality and the restriction on them to increase their participation in all spheres of life. Moving to other aspects, in one of the key moments of the novel Kathy faces an identity crisis with Madame of the Hailsham School looking at her as if she was some kind of monster. Although they are created from human beings, there are apprehensions on the part of the human beings to acknowledge them as one of their kind. Jacques Lacan's mirror stage of development finds manifestation here and in this poignant situation, Kathy loses her own self-identity in such a way that it turns into an existential predicament much like what Ishiguro experienced in his own life. Ishiguro's curiosity about subjective identity and his narration of it becomes more intense as Madame bursts into tears on one occasion when she sees the eight-year-old Kathy singing a song of "Never Let Me Go" (Ishiguro 70). Kathy is holding a pillow as a stand-in for a baby and imagining herself as a lady who is unable to have a baby, exactly as what Hailsham has told her before. Although she has long been aware that Madame regards her as a different person, this time Kathy "froze in shock" (Ishiguro 71) at the moment when she catches sight of Madame framed in the doorway crying and Kathy feels "a new kind of alarm" and "something strange about the situation" (Ishiguro 71). For the first time, this straight face-to-face contact between a person and a clone stirs up an uncanny feeling: Madame was "seeing something that gave her the creeps" (Ishiguro 72). From the perspective of Madame, she knows that the person in front of her is an unreal double, a mere copy of some originally real human. The fact that Kathy yearned for affection and acceptance from the human beings and instead she gets a whole lot of circumspect and terrified glances create a negative feeling of her own self in her psyche. Donna Haraway has famously talked about cyborg development and these clones are in fact a very good demonstration of that post human cyborg world. (That the clones are more capable and mobile than their originals create apprehensions for the human beings who believe that they are the sole users of free will. Allowing the use of free will by the clones would result in complete dominance of the clones that are far more physically superior.

The novel also brings up the issue of the privileged economic class having access to all the highly developed healthcare technology including organ transplantations and artificial breeding of off-springs. Bound by a blinded vision of achieving greater health and near immortality, the upper economic strata neglect the natural dynamics of the world and also the interests of the human beings. In the post human world where modern man thrives on genetically induced growth and estrangement, we are all clones. Thus, each one of us is bound to go through the pangs of identity crisis sooner or later. It should call for self-introspection as to what kind of identity we are going to set for ourselves and how much we are comfortable with the hybridized version of ourselves. In a very significant scene in the novel, Kathy complains that if provided an equal opportunity to lead their lives as normal human beings, the clones could have enjoyed a complete human life as against the manipulated lives they were leading. There was a word which had spread amongst the clones that if a couple could maintain a true relationship between them they would be relieved of their duties as feeders and then later donors. The message was nonetheless created by human beings who displayed callousness in understanding the warmth of love. But the beautiful romances of the clones inside the novel proved the fact that clones did understand a 'transplanted' emotion better than human beings who are born with it. These sheds doubt on the emotional balance of the post human world where human beings are increasingly absorbed in blatant consumerism. The emotional fabric of the society in the post human world is likely to remain disturbed and it is certainly going to be interesting if the post humans do attain the center stage in the future when it comes to controlling the social and cultural paradigm of the society. The novel proposes all these strong questions before the society and deconstructs the relative position of humans and post humans in this cyborg world.

The Andromeda Strain

The next novel in reference is *The Andromeda Strain* (1995) by the celebrated writer, Michael Crichton. It is a techno-thriller novel documenting the efforts of a team of scientists investigating the outbreak of a deadly extra-terrestrial microorganism in Arizona. Written against the backdrop of the Cold war, where the American military developed two secret unrelated programs- One was, Project Scoop whose aim was to carefully harvest new and deadly pathogens from space for future use in the war and the other, Project Wildlife which was created with the intention of using it as an antidote to harmful extra-terrestrial organisms should they make it to the earth. The satellite which landed back on the earth killed all in the closest town but two. The two survivors were an old man and a baby, both biologically poles

apart. A team of scientists are sent to find out the reason behind it and they find that the bizarre deaths are caused by a crystal structured extra-terrestrial microbe transported by a meteor that crashed into the satellite, knocking it from orbit. The apprehension about this kind of disaster was predicted before by a professor in the novel. The microbe named 'Andromeda' had the ability to mutate and hence was too dangerous. The scientists were entrusted to solve the imminent danger inside a secret underground Wildfire Laboratory equipped with every known capacity for protection against microorganisms escaping into the environment, including a nuclear weapon to incinerate the facility if necessary. In the end, the scientists led by Dr. Hall succeed in saving the planet from the deadly microorganism but the repercussions go much deeper than the deadly microorganism which was rendered ineffective in the end. The greatest admirable quality of the book was that the author illustrated and explained the scientific details of the novel including the structure inside the wildlife laboratory yet there was a profound impact on the socio cultural dynamics of the post war society at a time when the ugly head of biological warfare was creeping its head out. The novel established Crichton as a genre writer but the novel was not about man and machines but rather about the men who were using them. For instance, in a significant moment in the novel, when there was a need to disarm the automatic self-destruct mechanism inside the laboratory, only Dr. Hall was entrusted with the task because he was an unmarried male and thus presumed to make the most dispassionate decisions during crises. "SUMMARY OF ODD MAN HYPOTHESIS: First tested as null hypothesis by Wildfire advisory committee. Grew out of tests conducted by USAF (NORAD) to determine reliability of commanders in making life/death decisions" (Crichton 90). He was believed to have the highest "command decision effectiveness index" according to the Odd Man hypothesis but at the end of the novel Mr Stone admitted that the hypothesis was a false document used to justify handing over a nuclear weapon to private individuals and out of government control (Crichton 90). This clearly shows the apathy of power hungry individuals who were ready to defy global security threats just for assuming unhindered control over the power dynamics of the society. The author had a conscious motif to establish the fact that no matter how much advanced it is in terms of efficiency science must remain subservient to mankind. The novel offers up science flawed – the satellite which crashed in the orbit, the center's self-destructive program me, the inept communication devices that hamper their progress and finally, it is left to the human brain whose analysis is the only hope. The novel stands for the naked truth that although scientific inventions could eclipse human beings in performance index, the human brain always has the final capacity in maneuvering them as it is itself responsible for creating them and not the other way round.

The Andromeda Strain does pop up a lot of relevant questions in front of the modern generation. Bio-chemical engineering is gathering tremendous pace and has now spread its tentacles beyond the conventional walls of the laboratory. Just couple of months after the publication of the novel, the Apollo Mission to the moon was accomplished successfully. The possibilities of the interaction between human and other extra-terrestrial bodies had become a reality in no time. The imminent danger as presented in the novel was the perceptible harmful biological organisms that would get immersed into our earth's atmosphere. Till this novel the focus on dangers from the scientific part were on physics and nuclear energy sector but this landmark book gave a blatant demonstration of the myriad apocalyptic possibilities possessed by biological organisms. There was an antibiotic used in the novel called Kalocin which had the capacity to kill all micro-organisms without affecting the human body. But the side-effects of such an organism were so horrible that the popular use of the antibiotic was abandoned. This points out to the fact that although chemicals or microbes do possess the power to deal with certain amount of infections, treating it under different environmental conditions could imply different propositions for humankind and thus should be channelized and used with a moral purpose. Throughout the novel, the scientists were ignorant of the kind of 'enemy' they were fighting against and the amount of repercussions that it could have upon the human civilization. That points out to a pertinent question that although the capitalist forces have utilized the advancement in medicine to give wings to their expansionist ideas, whether the human civilization is tactically and scientifically ready to fight any kind of dire consequences if it arrives along with the intrusion of 'outside forces'.

As seen in the three above discussed literary entities, science fiction can certainly be seen as something which has laid the foundation of most of the modern technologies used in health care system. Whereas *The Star Trek* series presents an optimistic view of the future of the people, the novels *Never Let Me Go* and *The Andromeda Strain* present the darker facets of technology. However, it is noteworthy that in neither of the two novels there was any kind of destructive initiation capabilities possessed by the technologies. In a capitalist world where private business firms and companies are hell bent on using technology to maximize their profits and attain global supremacy the unethical use of modern scientific theories by them is very much plausible. The young science community must be made conscious of the healthy culture that has been practiced since ages which make the men behind the development of these technologies socially and morally responsible. Science fiction is that catalyst which has the unbridled capacity to create a new cultural and educational paradigm where the common

denizens are aware of the implications of both the angelic and devilish use of futuristic technology. There is no doubt that science will continue to inspire many more new technologies in healthcare sector but stringent moral and legal regulations restricting the use of these technologies for the betterment of this society should be implemented. In this improbable world where we all are in a constant state of flux accelerated by the ever-changing technologies it is the human spirit of brotherhood and mutual inclusiveness which will keep our world intact and at the same time keep intact the inherent desire and curiosity of human beings to delve deep into the most unexplained mysteries of the universe in a bid to uplift the human race.

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