"Dread of the Masses": Infertility in Science Fiction Due to Off-Planet Population Control and as an Occupational Requirement

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INFERTILITY IS COMMON, and it is estimated that the number of couples in developed countries with infertility will double within a decade, from one in seven today to one in three in ten years' time. The reasons for this increase are legion and the most important include rising age at first attempt at pregnancy when fertility has already naturally declined, an increase in sexually transmitted diseases which damage the reproductive organs, a substantial increase in the general population's level of obesity, which is known to adversely affect fertility, and a declining level of male sperm count and overall sperm quality (Ledger).

Infertility in SF is too vast a subject to tackle in any reasonable length, and therefore this paper will focus on the intersection of infertility imposed on spaceships and extraterrestrial bases and infertility as an occupational requirement. This paper will attempt a comprehensive reading of such narratives and all narrative forms will be entertained. Limitations of space will therefore preclude any more than a brief synopsis of each narrative. This study will also have an interdisciplinary slant as the author is a medical doctor who will also highlight scientific implausibilities that exceed acceptable poetic license since SF "was, or should be, integral to scientific thought and research, [...] judged on those grounds, and not on merely literary ones: or, one might say, not on literary grounds at all" (James 23).

Narratives

Issues of Population Control

A spaceship is a claustrophobic environment which does not permit any sort of overpopulation, and in Anderson's Einsteinian novel *Tau Zero* (1976), contraception is enforced by the ship's medic. The issue is exacerbated when the spaceship, a Bussard ramjet, malfunctions irreparably, progressively accelerating until relativistic time dilation allows the crew to witness the contraction and collapse of the space-time, and technically therefore achieving immortality, having lived to and witnessed the end of the universe, along with the subsequent explosion of the primal monobloc in another big-bang.

A Bussard ramjet is a theoretical propulsion method that would utilise a huge (around 50,000 kilometres in diameter) magnetic scoop to charge hydrogen atoms in front of it from the interstellar medium, and use this charge to funnel atoms into an onboard fusion reactor. The reactor would use a stellar type of fusion reaction to convert hydrogen into helium and the energy thus released would accelerate the remaining reaction products to produce thrust (Bussard).

A comparable dilemma faces Captain Janeway in the *Star Trek Voyager* series (1995), set in the 24th century. The starship *Voyager* finds itself stranded 70,000 light years away from Earth, with an estimated 75 year return trip back to Earth. Janeway expresses her concerns thus:

I continue to wonder about the issue of procreation aboard the ship. Certainly, it's wrong to interfere with the private lives and decisions of the crew, yet I remain concerned about the environment we could provide for any child born here (Kolbe).

Similarly in Panshin's "Rite of Passage" (1968), spaceship crew families may only have children with the approval of the ships' councils and infraction results in exile to a colony planet.

Varley's "Titan" (1979) empowers both astronaut genders with contraceptive methods, with females taking monthly implants and also having ever-wear diaphragms, and men having 'valves' implying control as to whether an orgasm actually contains sperm in the resulting ejaculate or not. Contraception for spaceship crews is also outlined in Bradley's "The Wind People" (1959) wherein artificial gravity conditions completely preclude female crew conception but have no effect on libido or potency, and this effect wears off after approximately three months. Automatic contraception is naturally a desired side effect of interstellar travel and on long planet layovers between trips, spaceship crews are routinely administered a contraceptive drug called "anticeptin" to further continue to prevent pregnancies. This narrative prefigures the actual development of long-acting implantable contraceptive agents, such as Norplant (developed in 1991 with a pregnancy rate of

<1% over a five-year period). Some American states are actually attempting to persuade certain sectors of the populace to implant such agents in order to curb the population growth of the underprivileged (Moseley and Beard).

Likewise, in Taves' "Luna One" (1973), women who form part of the first moon colony are given a contraceptive pill called 'P-C pill'. This is in sharp contrast to the eagerly awaited first birth on the moon in Clarke's, "Out of the Cradle, Endlessly Orbiting" (1962).

Baxter's "Space" (2000) is yet another narrative dealing with importance of population control on a lunar colony. An implausible approach to sexuality on board the restricted confines of a spaceship is seen in Bova's "Mars" (1992). Individuals who are unable to remain abstinent on the nine month trip to Mars amidst the mixed sex crew are dosed with sexuality repressing drugs by the ship's medic and even more remarkably, contraception is never mentioned.

On a different tack, in the interest of cementing friendship between the various branches of the armed forces, in St. Clair's "Short in the Chest" (1954), sex between men and women is by roster, with women taking an "oestric" drug in order to increase libido, and men take the equivalent "priapic", with contraception ensured through women also taking an "anti-concipient."

Even structures that are literally city-sized, such as entire cities that are launched from Earth to roam the stars, are not exempt from such strictures, and in Blish's "A Life for the Stars" (1962), the city's (New York) Chief of Police and his wife are not allowed to have children due to population constraints as the citizens of the city are immortal.

A greater level of detail with regard to population control in the closed environment that constitutes a spaceship is given by Le Guin in "Paradises Lost" (2002), where "conshots" are given to both genders by the medical staff, and individuals who fail to show up for their shots are tracked down by the ship's authorities. Exempt individuals include postmenopausal females, sterilised crew and those who are strict homosexuals or who have taken a pledge of strict chastity. The intention to conceive must be formally declared beforehand by both partners, and each individual is only allowed to have one child. Irregular or extra pregnancies are stopped by a morning after drug or by forcible termination and indeed, in Aldiss' "White Mars" (1999), the perils of inadequate contraception are shown when stranded colonists run out of contraceptives.

Contraceptive failure is not uncommon in SF television series, and in Watson's *Farscape* episode "Natural Election" (2002), one of the protagonists, a military peacekeeper, becomes pregnant, and the only positive aspect is that the possibility of an arrested pregnancy is mentioned, implying that pregnancy may be temporarily suspended and gestation later resumed. However, the nature of any contraception used in this society is not discussed. The scenario posed in Brooks's *Star Trek: Deep Space Nine* episode "The Dogs of War" (1999) is even more implausible as one of the protagonists finds herself pregnant since her partner forgot to take his birth control injection, and yet both are meant to be taking their injections.

Infertility as an Occupational Requirement

The state may enforce infertility as a necessary qualification for a job and this may be presented, often unrealistically, as a form of celibacy, as already alluded to above. Celibacy, that is, abstention from sex for religious or spiritual reasons, is a concept found in several religions, and has been a Christian ideal since early times. The situation is similar in Buddhism and Sufism and also for Hindus who follow the Vedic way, in the final stages. Conversely, Islam is generally hostile to celibacy and Judaism does not generally advocate celibacy (Brown). Interestingly, in Bova's "Winds of Altair" (1972), both genders of a terraforming crew take voluntary vows of celibacy as part of their obedience to a multidenominational church.

In Brin's "Foundation's Triumph," members of the "order of meritocracy" and of the "order of eccentricity" are discouraged from breeding, and even more strongly, in Leinster's "Med Ship Man," the protagonists (Med Ship Men) are not allowed to marry, in the vein of knight hospitallers, somewhat naively implying that this will ensure their celibacy. Med Ship Men are portrayed as volunteer doctors, similar to *Médecins Sans Frontières International* (Hakewill), who travel from world to world with no actual enforcement powers but are so esteemed that their medical advice is strictly adhered to. It must be noted at this point that the trope of leaving it all in the hands of the male hero was not uncommon in SF, particularly in the 1950s, and especially in Leinster's works, and for a typical example wherein sweethearts are left

behind while intrepid men gallop off to high adventure, see "Space Platform" (1953).

Likewise, in the *Star Wars* universe, in Lucas's "Attack of the Clones," the "Jedi," a monastic order that utilise the "light" side of the "Force", are also celibate, as are "Life Witches" (Macbride). Equally, in Silverberg's "Nightwings" (1969), the occupation of 'Watcher' carries with it a self-imposed vow of celibacy. An inverse eugenic principle is applied in Asimov's "The Currents of Space" (1952), an all-human story where the planet Sark exploits the planet Florina, treating the Sarkites as inferiors. Intelligent Florinians are trained on Sark, and some are returned to Florina to rule over their fellows while others are retained as civil serveants. Both groups are not allowed to breed, thus reducing the overall intelligence of the Florinian populace.

A political reason for enforced celibacy is highlighted in Blish's "Earthman Come Home" (1955), where a space-roaming city's Mayor is not permitted to have children by the city's controlling artificial intelligences in order to prevent the potential foundation of dynasties. Medics and their equine transport are also said to be infertile due to treatments designed to strengthen their immune systems in the ravaged Earth portrayed in McIntyre's "Dreamsnake" (1978), such that these immune systems do not recognise gametes and destroy them as they are formed.

Intriguingly, the Vulcan race in *Star Trek* only have sex once every seven years, and males are particularly affected as during this period, they experience a "blood fever" (*pon farr*) due to a neurochemical hormonal imbalance, a combination of menstrual mood problems and premenstrual syndrome. This may cause problems during long voyages in space, and in the *Voyager* episodes "Blood Fever" (Robinson 1997) and "Body and Soul" (McNeill 2000), the *Starship Voyager* crew's two Vulcans both eventually enter pon farr and face limited options: actual mating which is naturally impossible on this voyage as no Vulcan females are available, intensive meditation, participating in a ritual combat or dying of unconsummated lust. In the former episode, meditation solves the problem while in the latter, a 3-dimensional holographic simulation is used to defuse the situation.

Also in the *Star Trek* universe, the Deltans are highly sexually evolved humanoids, sexually irresistible to humans. Hence, before serving in Starfleet, they are obligated to take an oath of celibacy ensuring that they would not take sexual advantage of any non-Deltan crew (Wise).

Chastity exactly modeled on the traditional Roman-Catholic Church's priesthood is seen in Simmon's "Endymion" (1995) in a future where the power is based on the literal ability to grant immortality, along with complete control of the military, including military starships, with many priests being starship officers. Yet another Roman-Catholic order is depicted in Marley's "The Child Goddess" (2004) wherein the 23rd century "Magdalenes," a celibate order of women priests, tour the galaxy as anthropological investigators. Non-catholic vows of celibacy are also taken by the all-male inhabitants of a prison plant in Fincher's "Alien 3" (1992).

Religious castration is depicted in Brent's "Plastic Man" (1974) where a religious sect that worships a sentient computer advocates voluntary castration. Meaney's "Paradox" (2000) portrays surgically-altered gender neutral singers and Card's "Songmaster" (1980) shows promising young children who are removed from society, trained to sing and given drugs to delay puberty for five years, with the known side-effect of rendering them sterile. In like fashion, Varley's "The Barbie Murders" (1978) envisions a group of individuals who voluntarily surgically convert themselves into identical individuals that resemble the Barbie doll, and are female but sexless.

Simak's "Enchanted Pilgrimage" (1983) is a pastiche of SF and fantasy. In this story, one of the protagonists (a female virgin) is only allowed to ride on a unicorn, an animal that is essential to the protagonists' quest. The mythological unicorn was a symbol of chivalry, purity, chastity and virginity and was supposed to be a proud and untameable creature. According to lore, it was believed that a virgin who sat naked beneath a tree would be irresistible to a unicorn, which would be drawn to lie down with his head in the virgin's lap (White). Similarly, in Tiptree's "Faithful to Thee Terra, in Our Fashion" (1969), we are told that the sacred female warriors from the planet Myria are required to be virgin. And in Lovering's "The Inevitable Conflict" (1932), a future matriarchal dictatorship is enforced by 'Amazons' who are sterilised.

Discussion

These stories reinforce the contention that "SF is distinctly formulaic, but its formulas are multiple

and various, ranging from myth to mathematics" (Samuelson 191).

The narratives mentioned in this paper are rooted in the precepts formulated by John W. Campbell in his paradigmatic editorship of *Astounding Science Fiction* which can be said to represent a golden age of SF, an era which "valorises a particular sort of writing: 'Hard SF', linear narratives, heroes solving problems or countering threats in a space-opera or technological-adventure idiom" (Roberts 195). Campbell's "ideal reader was an engineer, who would bat around ideas in stories with other engineers […] in their search for real solutions" (Edwards 23). Thus, the science became more plausible and reasonable. This approach is not new, and was prefigured by Aristotle who stated that "we ought to postulate any ideal conditions, but nothing impossible" (*Politics* I and II 32).

These formulations are best epitomised by Godwin's "The Cold Equations" (1954) which is particularly relevant to the trope of excessive population on extraterrestrial bases and spaceships. The story takes place on aboard an "Emergency Dispatch Ship" headed for a frontier planet with a load of desperately needed medical supplies. The pilot discovers a stowaway, an eighteen-year-old girl who wishes to meet her brother. However, the ship only just carries sufficient fuel to land with one person on board, and the girl accepts her fate and is jettisoned into space since "the laws of the space frontier must, of necessity, be as hard and relentless as the environment that gave them birth" (Godwin). Such tales therefore reinforce the futility of "society's institutionalized delusions set against the overwhelmingly, absolutely neutral point of view of the universe" (Woodcock). Hence in the setting of closed and limited environments, a dystopia may arise as fertility is deliberately restricted in order to permit the survival of the majority. In some ways, these cautions are extensions of fears of overpopulation on a larger scale, further "[p]roof of the extraordinary influence that the fear of the population explosion had acquired" (Domingo 729).

Controls and restrictions would also apply to much large vehicles, such as generation ships. A generation ship is a theoretical spacecraft that moves slower than the speed of light, and hence would take several thousand years to reach even nearby stars due to the vastness of interstellar space, with many generations born and dying while en-route. Goddard (1882-1945), one of the fathers of rocketry, first conceived of the notion of generation ships, and the concept was explored in further detail and popularised by Shepherd.

This sort of spaceship would have to be huge so as to be self-sustaining and have a sufficiently large crew and relevant supplies for breeding purposes and for genetic biodiversity. Alternatively, a much smaller crew could assure sufficient biodiversity through the use of sperm and ovum banks. An insufficiently large population would tend to experience a process known as mutational meltdown, whereby deleterious mutations accumulate with loss of fitness and decline of the population size, further exacerbating meltdown in a downward spiral that inevitably leads to extinction (Lynch and Gabriel).

Samuelson has argued that "[l]ike science and engineering, however, SF makes plausible models of beings, places, and times nobody has yet encountered […] most SF stories feature a generous assortment of hypotheticals […] hard SF mainly derives these through extensions of reigning scientific theory," (192-3) such that in these stories, SF strives for credence through its allusion to science. Furthermore, plots require "an element of the unknown, into which writers cast a net fashioned of reigning theory.

Yet another facet that is uncovered by these tales is the deliberate imposition of infertility on individuals or on groups of people by the "State […] the coldest of all cold monsters," (Nietzsche 34) inexorably and sometimes draconianly enforcing infertility wherever it deems this necessary, with a "[d]read of the masses […] , a problem for governance-a potential source of subversion […] a product of the population explosion […] dysfunctional and need to be avoided or perhaps even eliminated rather than managed" (Domingo 730-1).

Most of the narratives accept the Aristotlean admonition that "we must presuppose many things that accord with our highest hope, although the existence of none of them must be impossible" (Aristotle "Politics" VII and VIII). It is also simultaneously evident that SF also "prepares readers for the future, and, by offering inspiration to would-be inventors, spurs on technological progress" (James 20), in some ways preparing us for "future shock" which "is the dizzying disorientation brought on by the premature arrival of the future. It may well be the most important disease of tomorrow" (ToffleToffler 14), causing "the

death of permanence" (13). Any help that SF provides in this respect will not only allay our fears, but may also, through *gedankenexperiments*, cautionary tales that help us shy away from paths whose outcomes would be disadvantageous to the individuals or to the race.

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