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Genetic Engineering in the Age of Anthropocene/Capitalocene and Beyond: An Ecocritical Study of *Oryx and Crake*

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Abstract:

Margaret Atwood's *Oryx and Crake* (2003), the first novel in the *MaddAddam* series, is a speculative fiction which presents a dystopian future where few humans survive in a world dominated by genetically engineered posthumans and hybrid animals. This post-pandemic world is presented to us through the experience of one human survivor, Jimmy/Snowman. Jimmy used to be the friend of Crake, the scientist, who planned the pandemic and wiped out almost all of human race. The present paper discusses the practices of genetic engineering funded by corporate houses and tries to place it in the context of Anthropocene and its associated concept Capitalocene. In the pre-pandemic world, experiments in genetics were made with obvious anthropocentric goals combined with the push for profit by the corporate houses. Crake, a kind of idealist scientist, attempts to destabilize the practice by creating the Crakers, the genetically programmed humanoids and planning the annihilation of natural human race through his act of bioterrorism. The ethics of genetic engineering, practised both by the corporate houses and Crake is discussed here along with Crake's misdirected idealism/egotism to play God and reverse the natural order. The ecocritical reading highlights the fact that despite all attempts of genetic pre-programming, it is not possible to reverse the natural order altogether; nature, always finds ways to exert itself.

Keywords:

Anthropocene, Capitalocene, genetic engineering, pandemic, population control, posthumans.

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There is no denying the fact that Margaret Atwood is one of the major postmodern writers who have foregrounded environmental issues in her works and continues to do so with considerable degree of assurance. She finds no disjunction between deconstructive postmodernism with the usual instinct of a conscientious writer to expose the inequities prevalent in our social, political and environmental order. Since *Surfacing* (1979), her works, (not only novels but also poems, essays and lectures) foreground the convergence of postmodern discourses with environmental issues. Her attempts can be seen as defiance to the negative views of realist ecocritics like Glen A. Love, Lawrence Buell, Laurence Coupe et al who consider postmodernism is "at best disconnected from green issues, and at worst anti-environmentalist" (Addis 5). Among her more recent works, the eco-dystopian *Madd Addam* trilogy which contains *Oryx and Crake* (2003), *The Year of the Flood* (2009) and *Madd Addam* (2013) highlights her environmental concern with no uncertain terms. The novels present a dystopian

post-pandemic world peopled by few human survivors, genetically engineered posthumans and hybrid animals with frequent flashbacks of the pre-pandemic world.

The generic identities of these novels pose a problem as Atwood refuses to label her works either as dystopian or as science-fiction. Referring specifically to *Oryx and Crake*, but which surely takes the next two novels under the sweep, Atwood declared that "it is not a classic dystopia. Though it has obvious dystopian elements, we don't really get an overview of the structure of the society in it, like the one provided in the epilogue of *The Handmaid's Tale*". (Atwood "Aliens have taken the Place of Angels" 517). She rather considers *Oryx and Crake* as "an adventure romance — that is, the hero goes on a quest — coupled with a Menippean satire, the literary form that deals in intellectual obsession" ("Aliens" 517). Atwood is much more resistant to the popular proclivity of identifying *Oryx and Crake* as a science fiction novel. She rather prefers to label the work as a kind of "speculative fiction". It is quite obvious that she tries to distance her work with the reductionist association of a science-fiction narrative. She rather wants to make the readers believe that the premise of her work is not entirely fanciful. Her works rather foreground a serious vision — that of one possible future that could result from the trajectory of human endeavour and thus making it a challenging space for ethical discussion. Atwood declares that she had "put nothing in it that does not have its corresponding clipping in the ominous brown research box in the cellar. That is, nothing is pure invention though I have to admit I cranked a few things up a bit" (Atwood, "Oryx and Crake Revealed"). Though she is not specific about it, it is not difficult to infer that the one research area she really takes under consideration is that of genetic engineering. In fact, since the seminal "discoveries" regarding DNA structure made by James Watson and Francis Crick, experiments in genetic engineering and genetic mutation have progressed in rapid strides so much so that the praxis of genetics has become an integral part of our academia, not only in science but also in fields of humanities and creative literature. As Taylor Evans asserts that genetic engineering "has become mainstream (or mundane) enough that it can be deployed heavily in a novel, even in a speculative manner, and that novel can still maintain a reasonable claim against science fiction" (136).[1] Atwood, in a way, tries to remind the readers that the threat of genetic engineering gone horribly wrong is certainly a possibility; if not now then the near future may well witness the catastrophic result of unethical and unregulated genetic experimentation.

Out of the three novels in the *Madd Addam* series, genetic engineering is foregrounded primarily in *Oryx and Crake*. The novel begins in a post-apocalyptic world where a single human survivor oddly called Abominable Snowman lives along with genetically created humanoids, known as Crakers, and several hybrid animal species that were slowly emerging as potential threats to both the human and the humanoids. The cause of the apocalypse lies in a human-planned pandemic which is explained through the snippets of memories of the human survivor. In the pre-pandemic world he used to be known as Jimmy, a high-society boy of average intellect. It is

through the memories of Jimmy/Snowman that the practices of genetic engineering are introduced to us. Jimmy's memory offers us an outsider's view of the corporate-sponsored genetic experimentation intent on creating hybrid animals. These were potentially money-spinning projects, with a lot of competition, secrecy and threat involved. More radical are the genetic experimentations conducted by Jimmy's genius friend Crake which led to the creation of the posthuman Crakers. Their creator planned them as a genetically superior version of the imperfect human race. Simultaneously, he also produced a destructive virus JUVE and transmitted it across the globe to wipe out the imperfect human race. He wanted the Crakers to take over the world aided by Jimmy who has been made immune to the deadly virus through inoculation. Even though Crake's highly expensive project was funded by a corporate house; he took their goals and turned it upside down. This entire practice of corporate-funded genetic engineering, conducted both by Crake and others before him, can be read in the context of Anthropocene and its related concept of Capitalocene. Before coming to a detailed discussion on this aspect, we must be initiated to the dual concepts of Anthropocene and Capitalocene.

In recent times, the one environmental term which is being widely used and discussed in academia is that of Anthropocene. It was Paul Crutzen, a Nobel Prize laureate in chemistry, and his collaborator Eugene F. Stoermer who popularized the term Anthropocene around the year 2000 to designate a new geological epoch which is human dominated and in which the world environment is severely violated primarily due to human actions, intentional as well as unintentional. In this new geological epoch, which can be dated since late eighteenth century, "humans — thanks to [their] numbers, the burning of fossil fuel, and other related activities . . . act as a main determinant of the environment of the planet" (Chakrabarty "The Climate of History" 209). Humans have always been biological agents, but it is only in the last few centuries that humans have emerged as major geological agents responsible for significant changes to the environment of this planet. To be more temporally specific, the human influence on environment and climate has escalated in a rapid scale since the middle of twentieth century to the present time which is designated as the period of The Great Acceleration. It is a time frame "when global figures for population, real GDPs, foreign direct investment, damning of rivers, water use, fertilizer consumption, urban population, paper consumption, transport motor vehicles, telephones, international tourism . . . all began to increase dramatically in an exponential fashion" (Chakrabarty "Climate and Capital" 15).

The concern on global warming over the last few decades has been directly linked to that of Anthropocene. Global warming is indeed considered as one of the irrefutable examples of human-induced climate change. According to Crutzen (23), fossil fuel burning and agriculture have been among the most instrumental forces in increasing the emission of carbon dioxide by 30%, and of methane by more than 100%. Such increases are responsible for the great acceleration of global warming. The active

role played by the humans in the global climate change, signals the replacement of the previous geologic era of Holocene with that of Anthropocene.

Environmental historians like Dipesh Chakrabarty, Donna Haraway, Jason W. Moore and others have directly linked the emergence of Anthropocene with that of capitalism. In the post-World War II scenario, capitalism witnessed an unprecedented growth which later converged in globalization. Chakrabarty aptly pointed out that it was also the time when the process of decolonization was taking place across the globe and the newly independent third-world countries were quick to adopt the culture of consumption. In the wake of globalization, consumerism emerged as a pan-world phenomenon. The human world view has always been more or less anthropocentric. But, the degree of exploitation of nature and non-human lives (which must also include poor, underprivileged humans) multiplied with the emergence of capitalism and consumerism. It is of course unfair to blame the entire human race in equal measure for the violation of environment and consequent global climate change. The difference of per capita emissions of greenhouse gases by the people of developed and developing countries is quite significant. Sha Zukang, Under-Secretary General for economic and social affairs of the United Nations is specific about the onus of the developed countries:

> The climate crisis is the result of the very uneven pattern of economic development that evolved over the past two centuries, which allowed today's rich countries to attain their current levels of income, in part through not having to account for the environmental damage now threatening the lives and livelihoods of others. (qtd. in Chakrabarty "Climate and Capital" 10).

The handful of nations who are chiefly responsible for fossil-fuel burning and green house emissions are all capitalist countries or in the process of developing capitalism under the veneer of different political ideologies, China being a major example of the latter category. Thus, the alliance between Anthropocene and capitalism is irrefutable.

A group of recent environmentalists prefer the use of the term Capitalocene to that of Anthropocene. The term first publicized by David Ruccio in 2011,[2] became instantly popular. Donna Haraway started to use it from the next year in her lectures. Jason W. Moore offers the following definition of Capitalocene:

> . . . the Capitalocene does not stand for capitalism as an economic and social system. . . . .[T]he Capitalocene signifies capitalism as a way of organizing nature — as a multispecies, situated, capitalist world-ecology. (6)

In a way, Capitalocene can be read as a version of Anthropocene which tries to locate the historical root of human exploitation of nature in capitalist discourse. Moore further elaborates on this idea when he asserts:

> Capitalism is a way of organizing nature as a whole . . . a nature in which human organizations (classes, empires, markets, etc.) not only make environments, but are simultaneously made by the historical flux and flow of the web of life. In this perspective, capitalism is a world-ecology that joins the accumulation of capital, the pursuit of power, and the co-production of nature in successive historical configurations. (7)

The corporate-funded anthropocentric genetic engineering practices which take place in the near-future world of *Oryx and Crake* can well be located in the contexts of Capitalocene and Anthropocene.

The nostalgia of Jimmy takes us back to his childhood when genetic experiments in creating new types of hybrid animals have already been started. In our lifetime, there are indeed real instances where scientists have experimented with animal genomes, most of the experiments being done in the genomes of the livestock animals. All these experiments were anthropocentric in nature as they meant to increase the productivity of the livestock for human use. According to Laible, there is "an assorted range of agricultural livestock applications [for genetic engineering] aimed at improving animal productivity; food quality and disease resistance; and environmental sustainability" (124). Atwood gives more importance to the genetic experiments in creating hybrid animals. The hybrids are unique, not yet created in reality but not without a possibility of them being created in the near future. In *Oryx and Crake*, experiments in creating some of these hybrids like snats (a hybrid of snakes and rats) were discontinued as those were considered too dangerous. But, other hybrids which got the approval for survival include transgenic creatures like rakunks (racoon + skunk), wolvogs (wolf + dog), bobkittens (genetically modified cats) and the more ambitious pigoons (genetically modified pigs). The creation involved, as one of the scientists said, a lot of "fun . . . it made you feel like God." (Atwood *Oryx and Crake* 57). But, there is no denying the fact that the decisions of creating genetically engineered creatures and their consequent survival is taken only with anthropocentric goals. In the age of Anthropocene, holistic environmental goals are deliberately pushed to the margins. As the events unfold, it is seen that the pre-determined anthropocentric goals are not entirely materialized. While the rakunk soon became a favourite pet of the humans but the other hybrids developed into aggressive creatures taking control of the ecosystem in the post-pandemic world.

Atwood gives major importance to the pigoons as examples of human desire to play God gone horrible wrong. Jimmy's geneticist father worked in a corporate house

named Organic Farms, which funded and expected in return huge profit in the project of creating pigoons. As was explained to Jimmy:

> The goal of the pigoon project was to grow an assortment of foolproof human-tissue organs in a transgenic knockout pig host — organs that would transplant smoothly and avoid rejection, but would also be able to fend off attacks by opportunistic microbes and viruses . . . . (25)

With the help of a rapid-maturity gene virus, the pigoon body can create more than one vital organ like kidneys, livers and hearts. When required these organs can be used in human bodies without killing the host pigoon. Jimmy's father also became successful in part of the project where human neurocortex tissues started to develop in the pigoons. This anthropocentric use of genetic engineering is intimately associated with capitalist goals because the investment money came from corporate houses like Organic Farms and NooSkins which expected huge monetary profit in return.

Of course, in Capitalocene, the question of ethics is sidetracked conveniently. Genetic engineering has always been represented as unnatural and sacrilegious — a violation against natural order. But when combined with corporate driven monomania for profit, as it does here, it takes a sinister turn. Jimmy's microbiologist mother advances her reservation against the pigoon development project in no uncertain terms:

> What you're doing − this pig brain thing. You're interfering with the building blocks of life. It's immoral. It's . . . sacrilegious. (64)

She considers the entire project a kind of "moral cesspool" (64) and registers her unequivocal protest against such types of genetic experimentation which is meant to be beneficial only for the rich people. In times, the pigoons developed into quasi-intelligent hybrid creatures. Jimmy/Snowman is aware of the threat from these "brainy and omnivorous animal[s]" (276). He finds himself cornered by a group of pigoons in the deserted corporate compound and was lucky enough to survive their potential fatal attack. In the third novel, *MaddAddam*, the pigoons join the Crakers and human survivors to fight against the dangerous human criminal group Painballers. This fantastic (and unsatisfactory) alliance is not at all anticipated in *Oryx and Crake*. It rather places the hybrid animals, especially in the post-apocalyptic world in a state of conflict with the human survivors as well as the genetically engineered humanoids.

The threat that these hybrid animals can pose in the future had already been anticipated by Jimmy, a person of average IQ. While talking about wolvogs to Crake, he expresses his doubts:

> What if they get out? Go on the rampage? Start breeding, then the population spirals out of control − like those big green rabbits? (241)

The egoistic Crake brushes aside his concern but the coming times will prove Jimmy to be smarter than his genius friend.

Crake's real genius is manifested in the creation of the genetically engineered humanoids known as Crakers.[3] Crakers are both similar and dissimilar to the pigoons. Both are hybrids created through the process of hybridity of human and animal genes; and both of these challenge the nature/human binary. However, while the pigoons unintentionally developed into aggressive creatures; the plan regarding the Crakers elicited much more success. Crake developed them as a kind of posthumans — genetically better human-like creatures without the imperfection of the human beings. These genetically programmed creatures are beautiful, docile, non-hierarchical, and uniformly healthy as they are resistant to microbe attack. J. Brooks Bouson advances that "with their altered ancient primate brains, the Crakers lack the destructive features of racism, hierarchy and territoriality" (qtd. in Evans 144). As they are herbivorous and capable of recycling the food, they can ensure environmental sustainability. They don't understand the concepts of war and rape; in the post-Anthropocene world they (apparently) recreate an idyllic space where environment is revered and communal healing is practised. But, as Wilson doesn't fail reminding that "these advantages exist because of genetic pre-programming and thus makes the Crakers seem less free than the human beings who precede them" (50).

One interesting aspect of these Crakers is their programmed sexuality. Crake roots the main cause of violence in the world to misplaced sexual energy as well as sexual jealousy. In the Crakers, sex is programmed in such a way that a female will get sexually aroused after every three years. There would be visible changes in her body when she is in heat. The interested males will offer her floral tributes and the female has the right to choose her four partners out of all the interested males. After this selection, the mating will start with four males and the female and it will continue until the female gets pregnant. There is no anger, no jealousy, no competition involved:

> Sex is no longer a mysterious rite, viewed with ambivalence or downright loathing, conducted in the dark and inspiring suicides and murders. Now it's more like an athletic demonstration, a free-spirited romp. (195)

As sex is regulated in the post-pandemic world; the population of the humanoids will always be under control. Moreover, none of these Crakers will survive after the age of thirty as they will naturally die as soon as they reach that age.

Overpopulation has always been an important parameter of Anthropocene. Thomas Malthus in his *Essay on the Principle of Population* (1798) used the apocalypse motif to forewarn us of the ecological crises which is imminent due to the hiatus between exponential progression involved in population growth and arithmetic

progression of agricultural growth. As he categorically states that "the power of population is indefinitely greater than the power in the earth to produce subsistence for man" (qtd. in Garrard 94). During the Great Acceleration of the Anthropocene, the rate of human population increased manifold. The world population in 1999 was estimated to be around six billion which was six times of the world population back in 1850. Within 2011, the world population increased to seven billion; i.e an increase of one billion within just 12 years. This unprecedented growth of population has led to renewed use of apocalypse motif in works like Paul Ehrlich's *The Population Bomb* (1972). Crake echoes Malthus and Ehrlich when he says:

> As a species, we're in deep trouble, worse than anyone's saying. . . .Demand for resources has exceeded supply for decades in marginal geopolitical areas, hence the famines and droughts; but very soon, demand is going to exceed supply *for everyone*. (347)

The solution he advocates lies in a pill, named Blyss-Pluss Pill. Advertised as a drug to provide "unlimited supply of libido and sexual prowess" (346), it will act as a "sure-fire one-time-does-it-all-birth-control pill" (347) for both the sexes thereby reducing the population level gradually. Though the process is reversible, but the entire process of mass sterilization without the consent of the concerned people is highly problematic and flouts ethics.[4] Jimmy raises the question but Crake dismisses his ethical question with supercilious disdain.

Crake's intention was much more sinister than he disclosed to Jimmy. Within the Blyss-Pluss Pill, he inserted the hemorrhagic JUVE virus and through the aid of Oryx made it transmitted across the globe. The resultant pandemic wiped out majority of the human race. Oryx was mercy-killed by Crake who in turn was killed by Jimmy. Crake's intention is not clearly stated in the novel. But, it is most probable that he considered the human beings as the potential threat to the ecosystem and by trying to end the existing human race, he attempted to end the existing age of Anthropocene. He believed that only the genetically engineered posthumans and hybrid animals can ensure survival of the world. Crake's extreme act of genetic terrorism is a validation of his desire to emerge as an eco-crusader. His act can also be seen as defiance against the corporate power which was responsible for killing his father for knowing too much about the unethical practice of creating diseases and related antidotes for mercenary gains. Crake uses the identical technique of spreading disease through putting secret bioforms into pills and creating the necessary antidote, the major difference being he destroys the antidote and ensures that the disease culminates into an apocalyptic pandemic. This extreme act also brings Capitalocene to a closure in the novel.

As a creator of the humanoids, Crake wanted to ensure that every thought, every act of the humanoids will be predestined. In the post-Anthropocene/Capitalocene age planned by him, he wanted his creatures to realize his vision. He took care to

expunge from the Crakers all impulses to develop art, civilization or technology. But, as genetic programming related to the hybrid animals went wrong, the Crakers too didn't behave exactly in the expected pattern. The indication was there even when Crake was alive. He was convinced that he had edited out the emotion of curiosity from these humanoids. But to his surprise, Oryx informed that they had asked about their creator. In the post-pandemic world, they develop many features which were not pre-programmed. They dream, sing, build images and select few grow leadership qualities. Crake wanted to ensure that their lives led in violence-free innocence will lead to their prolonged survival but "there is no assurance that they will not eventually develop the self-destructive characteristics that lead human culture to death" (Wilson 50). The Children of Crake along with the Children of Oryx build a world which is not at all a pristine, idyllic world. It is a recycled world where humans and nonhumans reenact the same conflict. Though the highly unsatisfactory third novel *Maddaddam* presents an unconvincing threefold alliance between the Crakers, pigoons and human survivors, *Oryx and Crake* has a very ambivalent message to offer. It critiques anthropocentrism, corporate funded unethical genetic engineering but also implicitly reaffirms the faith that nature will reclaim what is lost to human endeavours. Now, whether that is the better thing, and if yes, then better for whom, those questions hang in precarious balance.

NOTES

1. The Master degree thesis of University of Central Florida student Taylor Evans titled "Genetic Engineering as Literary Praxis: A Study in Contemporary Literature" is one of the few well-researched works on the representation of genetic engineering in contemporary fiction in general and *Oryx and Crake* in particular.

2. Jason W. Moore informs that he had heard the term Capitalocene for the first time from Andreas Malm in 2009.

3. Crake's act of creation alludes to many mythical and literary figures like the Christian God, Prometheus, Faust, Lucifer and most importantly Dr. Frankenstein. But while Shelley's scientist unintentionally creates the monster; in Atwood, the monster manifests in the actions of the creator, not the created. To read more about this, consult Wilson 42-51.

4. In Dan Brown's eco-thriller *Inferno* (2013), a transhumanist scientist, Bertrand Zobrist, releases a vector virus which randomly sterilized 1/3 of human population. His intention was also similar — to cure the threat of over-population by extreme measures.

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BIO-NOTE

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