Impact of Artificial Intelligence, Bio Terrorism and Corporate Culture in Society: A Post-Modernist Critique on ‘Windup Girl’

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Abstract—Bio Terrorism is a form of terrorism in which biological agents such as pathogens, fungi, viruses, and toxins are deliberately unleashed onto the world in order to kill a wide range of humans. Bio punk theory investigates the ramifications that are most commonly associative to the rapid advances made in the field of biotechnology, synthetic biology, and agricultural biotechnology. Bio Punk is the futuristic derivative of cyberpunk theory, subgenre of science fiction. Paolo Bacigalupi's “Windup Girl” depicts the impact of corporate culture and how an advance in biotechnology eventually leads to bioterrorism. This article delves into the topic of Artificial Intelligence, bioterrorism, corporate culture, and its impact on people and society.

Index Terms—bioterrorism, corporate culture, Windup Girl, impact, society

I. INTRODUCTION

Bioterrorism is a heinous crime against humanity. There are numerous scientists working in the field of biotechnology in the modern world. Infectious elements found in nature include viruses, bacteria, and fungi. Nature is the main source of living that humans are primarily dependent on. Nature bestows both good fortune and calamity on to trivial human being. "The bacteria or infections that directly affect people's lives must be killed" is the objective that it commonly follows. In reality, the world is split into numerous separatist nations firmly enclosed within their respective borders. Each country has its own political government ruling its set number of resident such as democratic, republican, autocratic, communist, and so on.

In today's world, even though the government is officially in charge of ruling the respective nations, decisions regarding the nation are extremely dependent on the moods and muses of various corporates and super powers belonging to that nation. On top of which each and every country is not in unity with the other bordering nations. They are most often trying to assert their dominance over the other nations. Within these nations as well, there is not much peace to be found. Most often, the private organisations and mega corporations are always thirsting to make more money and grow into as invincible supreme entity. In order to accomplish this, they are willing to go to any extent. They are ready to buy anything they want in the hopes of reaching their respective end goals.

Mega corporations and private supreme factions utilise biotechnology as a tool to genetically mutate and generate new types of viruses that may be marketed or unleashed as a biological weapon to threaten the government and demonstrate their inbuilt strength in order to make money. Agricultural biotechnology, often known as Agri tech, is a branch of biotechnology that uses scientific tools and techniques to modify tissue culture, genetic engineering, and vaccinations in crops, plants, microbes, and animals. Seeds can be experimentally mutated and genetically modified. Hybrid varieties of crops and plants can be invented and disseminated to farmers at a high cost using Agri tech. This eventually pollutes the various food and water sources which consequently lead to a slew of adverse effects and diseases to spring forth amongst the human population who inadvertently begin consuming the food sources. This type of activity is most often prohibited. Yet there are certain instances within history where certain group of individuals have utilised these biotechnological experimentations as weapon to create a commotion and collapse the very power of the government that is meant to govern a nation. These kinds of advances in agricultural science have been depicted within Paolo Bacigalupi's Windup Girl.

II. REVIEW OF LITERATURE

"Windup Girl" is a novel which was written and published in 2009 by the American novelist Paolo Bacigalupi. This book has been known worldwide for the many awards that it has won so far, namely the Hugo Award, the John W Campbell Memorial Award, the Nebula Award, the Seiun Award, the Compton Crook Award, and the Locus Award. This tale is set in Thailand in the 23rd century. Thailand closes all of its borders and isolates itself from other countries in order to avoid the ‘calorie corporations.’ Calorie firms are those that mutate and create hybrid varieties of crops that...
can be sold to farmers. Global warming impacts the entire world in the twenty-first century, causing sea levels to rise and major cities to be destroyed. Thailand is one such country that has been affected by this phenomenon. It was constantly under the stress of facing imminent floods due to its surface being below sea level. To save its people and the economy, a high-rise wall and dam were being constructed. Furthermore, the supplies for producing carbon fuel were being rapidly depleted, causing a slew of new issues to spring forth. Natural resources were being depleted as a result of nature’s collapse, particularly in the field of producing naturally developed organic seeds, which are entirely worn out. As a result, the field of Agri tech becomes a crucial field of great importance. Food is the most basic requirement for human survival. In agricultural research, mutant pests are also being developed as a source of food using ‘genetically hacked seeds.’ Due to a lack of alternative sources, private organisations such as calorie companies force farmers to purchase such crops, which in turn give rise to more complicated diseases and sudden deaths. Thailand, on the other hand, chooses to close its borders and carefully regulates calorie enterprises operating within the country.

Within the novel, Thailand is being ruled by a young queen. Somdet Chaopraya acts as the Queen’s regent because the child queen is too young. Akkarat is the Trade Minister, and General Pracha is the Environment Minister, both are significant figures in the country. Anderson represents the Agri gen-calorie company in Thailand even though genetically modified seeds are still forbidden in Thailand. As a result of which, he believes that the factory he is charge of is consequently producing the internal combustion engine, which is meant to replace the production of energy resources in the absence of petroleum. Purcal and Red Star are two additional major companies that are active within Thailand as well. Hock Seng is Anderson’s helper, a Chinese man with the ‘yellow card,’ which signifies refugee. He is an astute businessman who attempts to steal the King-Spring design, which is the concept for the new revolutionary model that has yet to be developed. However, he fails in his attempt. Jaidee is the Honourable Head of the White Shirts, who strives for the welfare of the Thai monarchy. He frequently combats unlawful smuggling, import and export. He is a strict man, and as a result of which he ends up destroying a slew of illicit products carrying viruses, genetically transformed crops, and so on. As a result, Anderson and his friend Carlyle demand that Akkarat to take action against Jaidee. With his strength, Akkarat kidnapped Jaidee’s wife and threatens him to conceal their flaws and confess as if all the smuggling was being done solely by him. Following which, in the hope of saving his wife, he puts forth a false confession and is subsequently apprehended by the cops. Later, when he discovers the true face of the monsters, he escapes from the jail and attempts to murder Akkarat, but sadly he himself ends up being killed. Meanwhile, when Hock Seng learns of the epidemic spreading in the workplace, he flees. Anderson, who is also aware of this, also chooses to flee the location.

Kanya, who has taken over for Jaidee was once his most notable protege. She finds the new virus and tries to stop it while simultaneously dealing with the psychological guilt of playing the role of Akkarat’s spy and of having betrayed Jaidee. She asks Gibbons, the scientist at the centre of the Thai seedbank, for help, but he turns out to be an Agri Gen defector as well. He figures out what the new disease is and gives Kanya hints that eventually lead her to Anderson’s factory. Anderson meets Akkarat and Somdet Chaopraya, who is the regent for the young Thai Queen and the most powerful person in Thailand. Anderson offers to give the White Shirts a hard time by giving them a new strain of GM rice and a private army from Agri Gen in exchange for access to the seedbank and a lesser form of trade restrictions. To clinch the deal, he takes Somdet Chaopraya to Emiko’s club, knowing her sexual novelty obsessions. Emiko kills Somdet Chaopraya and his group when they make fun of her and move to sexually assaulting her. She runs away and goes to Anderson for help. Akkarat moves on to convey that General Pracha is the one responsible for Somdet Chaopraya’s death, and he uses this as a reason to fight against Pracha and the White shirts. Following which there are various fights brewing between different groups within the capital.

After he failed to steal the plans for the kink-springs, Hock Seng tries to kidnap Emiko for money. On the other hand, Anderson works out a deal with him. Agri Gen moves to support Hock Seng, but Emiko chooses to stay with Anderson. In just a few minutes, Pracha and most of the top men in the Ministry of the environment are then consequently murdered. Now that Akkarat is in charge of everything, he anoints his spy Kanya as the Minister of the Environment. He also gives companies that sell calorie crops complete access to Thailand and gives Anderson and Agri Gen access to the seedbank. Kanya pursues the “calorie men” to the seedbank and proceed to betray and murder the Agri Gen team. She then tells the monks at the seedbank to move the seeds to a safe place which she has already chosen. She plans for the levees around Bangkok to break, which would in turn flood the city. She does this by using the hidden military weapons that most often being kept in the seedbank.

The people of Bangkok and the capital are then move to occupy Ayutthaya. Akkarat’s power is taken away from him, and is compulsorily made to become a monk. Anderson contracts the infection that started at his factory while in hiding with Emiko. Gibbons finds Emiko and promises to use her DNA to create a new race of fertile individuals, allowing her to live among her own kind. The Windup Girl is a unique and beautiful creature whose name is Emiko. Emiko is not a real person. She is in fact artificial being that has been raised and programmed to fulfill the hedonistic desires of a Kyoto tycoon. Alas she is left abandoned on the streets of Bangkok with no one to care for her. According to the plot of the novel, the rich use the New People as slaves, soldiers, and playthings. Calorie businesses run the world, the oil age is over, and the side effects of bio-engineered plagues are wreaking havoc all over the planet.

III. DISCUSSION
A. Corporate Culture

"Corporate culture matters. How management chooses to treat its people impacts everything - for better or for worse”
- Simon Sinek

An organization’s corporate culture is a mix of sociability and unity. It can be defined as a company’s employees’ shared ethics, values, perceptions, atmosphere, practises, attitudes, and beliefs in order to achieve organisational goals and objectives.

The significant aspects, as an individual persona who leads a business stream is to provide the employees complete freedom to speak and make them take responsibilities that help in cherishing their inborn capabilities. In corporate culture, complete guidance and support from the higher authorities like supervisor, manager etc. is very much important which motivates the employees to complete their work in a full fletched way on time in order to accomplish their objectives. The complete organization, irrespective of anyone, including the Management and all level of employees must be goal-oriented and it hardly focuses on their work in order to achieve desired results. Open communication system must be an important aspect which provides more comfort to the employees to express their criticism and disagreement regarding the workspace or organization which helps the authorities in management to solve many problems. The organisational structure of a corporation relates to its level of centralization or decentralization. The work culture of companies is well designed accordingly to fulfill the expectations and futuristic goal. In order to attain it there is a need to enforce very strict monitoring protocol and gain complete control over the employees in a positive way. The strength of the employees must be handled with a degree of patience in ordered to not topple over the already established work culture in the hopes of leading the company onto a more successful path. Each and every employee in an organization must be recognised for their efforts and hard work towards the completion of work that has been allotted to them. Norms and beliefs of the company must be people oriented. The action taken by the management must not affect the employees in any way. An organization should reward their employees with an appreciative note and monetary rewards should also be awarded most often. In exchange for which the employee will remain loyal towards the organization that they are working for. This in turn creates bigger impact on corporate culture.

In Bacigalupi’s windup girl, Mercenary type of corporate culture is being followed where within the needs to fulfil company’s objective is set as the primary task of action and the concern of the employees goes unnoticed and unwanted. Anderson’s objective is to invent inorganic hybrid variety of seed though rapid innovative experimentation. Such seeds have already been recognised as the leading factor behind the many bio wars that are being fought many other countries which further leads to a global crisis where the basic food and water that they most commonly consume becomes completely hazardous. He expects all his employees to remain loyal to him even if it means the employees end up back stabbing each other. In today’s life all the basic needs of human beings are being provided by the private organizations and megacorporation in order to cultivate a chain of needy customers. Most of the corporate elites play politics to fulfil their own wishes by competing with the market and playing strategies successfully to earn more money and so the whole human community become a victim to their schemes and propagandas. Thus, corporate culture acts as a bringer of danger to the human society.

B. Artificial Intelligence

"Artificial intelligence will reach human levels by around 2029. Follow that out further to, say, 2045; we will have multiplied the intelligence, the human biological machine intelligence of our civilization a billion-fold.”
-Ray Kurzweil

Artificial Intelligence is the Reincarnation of human intelligence that is most commonly processed by computers using various programming and technological features such as cybernetics, robots or humanoids. Here, In Windup girl Emiko who has been invented by Japanese scientists is a genetically modified creature that has originated with the help of test tubes. This kind of human invention is created and grown within test tubes following which they undergo special training in order to explicitly obey the commands of their owners. Some of the inventions are easy to recognise as biological machines that appears as “ten-hand” workers, who can work in the fields of Japan, for instance. Some of the inventions are dangerous, as they are being equipped with fighting capacities and made to work for the Military. According to the plot, they also involve themselves in the Vietnam War and other windup attacks. And another type of Emiko like beings is created for the sole purpose of eliciting sexual pleasures of the human race. Emiko belongs to this category where she is used to satisfy the sexual pleasure of men. She is genetically encoded with the specifications such as serving and obeying the orders given by the concerned person who owns her. Well-known business men from japan bought and taught her to not be afraid and obey his commands as it is. Later he makes her accompany him on his trip to Thailand. Due to the hike in travel expenses the business man chooses to abandon her in Thailand and return to japan. But, the situation for wind up’s in Thailand is different from japan. Here the perspective of the society is that they are not given due respect and deemed as inferior different from other normal human beings.

Also, in Thailand people explicitly brand and mark the artificial robotic beings as a hybrid variety of humans and ill treat them. Bacigalupi created Emiko, as a sweet girl, who behave nice to everyone. Due to which she is constantly in the fear of the society, always afraid of people misusing and ill-treating her. She finds her survival within in a hotel taking on the role of a prostitute where people especially men pay decent amount of money as they watch her being
raped and beaten by other prostitutes. She is expected to perform the same act every night in Thailand. She is paid more when someone decides to sleep with her.

Even though, Emiko is the genetically modified hybrid variety of human being; she is also encoded with the ability to feel, exert emotions and make use of the five senses which humans also experience. Emiko suffers every day from the way in which she is treated by others and her only wish is to live with the group of people belonging to her same type. When Emiko is manufactured, she is instructed that her body cannot be owned by her and she must obey all the orders given by the person one who own her. Physically she looks alike normal human being. She is programmed genetically as a beautiful girl. Also, she can orgasm and have the ability to indulge in all kind of sexual activity like normal humans. Even then she is forcefully ordered to involve herself in sexual activity onstage in order to satisfy others. She is programmed to feel pain and express her feeling through crying and shedding tears. Her skin looks clear and smooth without any open pores. Hence, due to the absence of any open pores, she never sweats. On the whole, she is similar to human beings who are able to eat, think, feel, shit etc. The people of Thailand believe that Emiko is not similar to normal human being and that she doesn’t have a soul. In spite of all the beliefs, Paolo Bacigalupi in wind up girl, moves to depicting the inner feelings, emotions, thoughts and wants of Emiko as she moves to fight against discriminations. Except for her physical body, nothing differentiates her from normal human being.

It is ambiguous as to whether Emiko represents human form or lesser than human form. She is created by human being as a machine adorning human. She does not have any freedom of action to fall back on. Rather she always tries to express her hidden emotions in order to raise her voice against being treated like a slave and would prefer to live with the community of people who are similar to her. She feels the need to hurt people who hurt others yet the artificial intelligent programming that governs her every single movement restricts her movement and if she moves to break away from the set coding it makes her hurt herself.

Thus, Emiko the Windup girl is a hybrid variety of human being who suffers because of fellow human kind who did not respect her feelings and emotions. The brutal treatment that she faces at their hands is a projection of the discriminative mentality of human being which has the power to bring forth the complete destruction of the entire human community.

C. Bio Punk

“This is what it meant to be you, to have. To be genetically cultivated as a perfect human specimen before birth—vaccinated and fortified, calibrated and optimized.”

-Cindy Pon, ‘Want’

Biopunk is a subgenre of science fiction that has a lot in common with cyberpunk. It looks at the near-future effects of bio-engineered technological revolution that is seemingly said to have started with the very discovery of the recombinant DNA. Biopunk stories are generally associated with the everyday problematic scenarios faced by people or groups who are often the end results of human experimentations. These stories are most often set in a dystopian world where biotechnologies are widely used for social control and profit. They are often produced by totalitarian governments and mega corporations. It is not based on information technology such as what is being done in cyberpunk; hear everything has to do with biology. Instead of cyber-ware, as in post-cyberpunk fiction, people are often changed and improved as result of subtle manipulations of their inborn genes. A common part of Biopunk fiction is the “black clinic,” a lab, clinic, or hospital where illegal, unregulated, or morally questionable biological engineering and modification procedures are most commonly undertaken. William Gibson’s Neuromancer, commonly recognised as the first cyberpunk novels, can be anointed as the precursor to how a proper Biopunk fiction is to be written.

The main focus of Biopunk is on nova, a concept which is driven by biology, especially genetic engineering. Since the late 1990s, genetics has been the place where science has changed the most, with successes like food genetic manipulation and patenting (like the Flavr Savr tomato in 1994), cloning (like Dolly, the cloned sheep in 1997), transgenic experimentation (like Dr. Vacanti’s “earmouse” in 1995 or Dr. Randy Lewis’ spider/goat splice in 2010), and gene editing (cf. Ness 336, 351). This change in how people talk about science is reflected in biopunk, which is a creative way of looking at not only the technological potential of further progress that can be made in the field of genetics, but also the environmental and social effects that these advances may actually bring forth. For example, genetic engineering and the social cost of transgenic experiments are talked about in Atwood’s Madd Addam trilogy. Paolo Bacigalupi’s book The Windup Girl is also a novel that addresses concepts such as the genetic patenting and the terrible effects of eating foods that are most commonly genetically engineered.

In Bacigalupi’s windup girl, bio punk theory plays a vital role. Here in this book, the latest elements of bio technology is exploited. The formula for the hybrid seed is most commonly referred within the novel as new kink spring seeds are being created which result in the development of a new form of a plague which has the power to eradicate the whole human race. Also windup girl in itself is a human creation with the help of DNA recombination. The government of Thailand tries to ban the manufacturing of genetically created seeds which causes drastic harmful repercussions and it is later deemed toxic to the human body. Even today, in midst of the real world the market sells a wide variety of hybrid fruits and vegetable which could be deemed harmful to the human body. They could create irreversible long lasting effect on the human body. Some of those impacts are known to act against the very immunity that is built within the human race. It is known to have the power to affect certain parts of our body such as the liver or the kidney,
changing the composition of blood cells, affecting the DNA and so on which could result in giving birth to children who are mentally disordered or handicapped.

Bacigalupi builds a fictional storyline showcasing the possible immediate effect that can rise out of consuming genetically modified foods in his novel wind up girl. The government takes appropriate measures to prevent the spread of genetically modified seeds, while private firms and megacorporations serve as a supreme authority with the power to control those within Thailand. The supreme powers manage to manufacture and supply their bio-engineered hybrid products without any form of approval begotten from the local government body. Also due to global warming and climatic change, all the natural resources are erased from existence and in its place more man made or artificially created products are being sold and utilised. These give rise to the origin or establishment of many seed manufacturing conglomerates. These industries believe that by genetically modifying seeds they can prevent certain allergies and diseases from existing. They simply believe that by removing the basic ingredients that cause these diseases and allergies, the society would become completely utopic. They also believe that the growth of these seeds will be faster and easier when compared to naturally grown seeds. Also these seeds can easily grow in any climatic conditions. Generally crops are known to grow in specific climatic conditions but genetically engineered crops have the ability to grow under any climatic conditions and also it gives more productive yield. But these shortcuts that has to do with the production of seeds also contain a lot of side effects and tend to be harmful to human health.

Bacigalupi’s wind up girl is set in a timeline that is yet to come. In this particular timeline, only genetically modified fruits and vegetables are available. Calorie companies are the ones who occupy the food sector all over the world. Due to global warming and various climatic conditions, no organic crops or seed or food is available anywhere. To avoid the scarcity of food, technological enhancements contribute a lot to the increase in the production of artificially engineered crops. Thus, in future being healthy becomes a question mark to everyone.

D. Post Modernism

Postmodernism is a broad term that belongs to the field of social and cultural studies. It is a change in viewpoint that has drastically affected different disciplines such as humanities and social sciences, language and literature, art and architecture, fashion and communication, technology and so on. Most people agree that the shift to a postmodern way of thought process began at the very end of 1950s and is being continued on even in the present contemporary age. Postmodernism has majorly contributed to the major shifts in power and the resultant dehumanising activities that took place at the very end of World War II, not to forget the rise and fall of consumer capitalism. Postmodernism seems to have something to do with Modernism just by its name. Modernism is an earlier style that had been popular in the first few decades of the 20th century. Postmodernism is the expansion of modernism which observes differences and difficulties that were being faced during the particular movement and it enhance them.

Modernism and postmodernism are very much similar in most aspects. Both encounter different schools of literature that disagree with the idea of dissimilarities to be found between maximum and minimum levels of art. Even more, postmodernism becomes chaotic when it collapses in the context of maximum and minimum levels of art, the past literature with the futuristic one, or one genre with another on purpose. Postmodernism uses light hearted parody, which Modernism also did, by putting together things that don’t go together. Pastiche, which is copying someone else’s style, was used by both of these schools. In Modernism and postmodernism, works often belong to the genre of pastiche, parody and self-reflexivity. These significantly mean that literary works that contain parody, pastiche, stress and remind the viewer or reader about the work which is not "real," but made up. Modernist and postmodernist based literary works are all mostly fragmented which makes it difficult for the readers to understand. The writers want their respective works to be vague and open for interpretation. They refuse to fix their works to insinuate a certain fixed meaning or ideology. The characters or subjects shown in these works are often dehumanised and stripped of a central goal or meaning in life. Like Tiresias in “The Waste Land,” the protagonists lose their unique qualities and become a stand-in for an age or civilization.

Modernism and Postmodernism encompasses threat and chaos that majorly contributed to the fragmented reality of the 20th century. In the 20th century, the western world begins to recognise their in-depth feelings of insecurity as it lost its built up alliances in the face of Third World war. It also critically targets the gathered sufferings that tore the lives of those who took part in the two major World Wars.

In postmodernism, being broken up and confused in literature is not seen as an act of sadness and despair. It is not necessarily dreadful. Postmodernism parallelly embraces the way things are shattered. It thinks that being fragmented is the only way to live and doesn't try to get away from these circumstances. From a Derridian point of view, the main focus is always shifting toward the corners, and the corners are always moving toward the important centre. In other words, the main part of focus i.e. centre, where power is being held, is not under the control of humanity. It gradually makes those in power to tumble down, while those who are not in power keep trying to gain some. So, one could say that there is no set reality. It is all interchangeable and that there is always more than one set reality. “Derrida called this delay of the centre becoming powerful or keeping its place “difference”. As a result, Postmodernism commemorates fragmentation which relies on the trust in difference and a notion that integration; intelligibility, progression, and explication are always being put off” [1].

Thus, Bacigalupi’s book the wind up girl is an extract of Post Modernism because it deconstructs the human belief that the new version of human that are being created with the help of technological advancements in bio technology are
superior in many ways. When such creation becomes unacceptable and failure, human beings become the cause behind their own devastations.

IV. CONCLUSION

Thus, in Paolo Bacigalupi’s windup girl, Bio terrorism in corporate culture has been analysed from a postmodern perspective. Human intelligence itself leads to the devastation of the complete human society. Artificial fragmentation of biotechnology becomes a major significant reason behind the sufferings of people. This research article explores many aspects of bioterrorism and defects in the corporate culture from a postmodern perspective in order to create awareness for the sake of humanity.

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