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Scientific Experiment And Its Impact On Society And Environment In Rajat Chaudhuri's *The Butterfly Effect*

Abhishek Kashyap

MPhil Research Scholar, Department of English, Himachal Pradesh University Summer-Hill, Shimla-171005.

Ritesh

PhD Research Scholar, Department of English, Himachal Pradesh University Summer-Hill, Shimla-171005.

Abstract

The research paper investigates complex representation of science and society building dystopian elements in Rajat Chaudhuri's novel *The Butterfly Effect* (2018). Through a critical analysis of the narrative's themes that illustrate the terrible consequences of environmental degradation, it focuses on the collapse of natural ecosystems through scientific advancement, impacting human life. Additionally, the theme of social inequality is explored, showcasing the widening gap among people, intensifying societal tensions and fueling unrest. The characters of the story discover various societal archetypes which also portray a picture of dystopia and they also navigate the challenges of a dystopian world. The paper further examines the Chaudhuri's narrative techniques, including the use of nonlinear timelines, multiple perspectives and metaphorical elements. These techniques enhance the reader's understanding of the complex interplay between individual actions and their collective impact on society. In addition, it focuses on the interaction between human actions and their catastrophic consequences by exploring Chaudhuri's work which serves as an unambiguous warning against the unchecked exploitation of natural resources through scientific advancement and degrading democratic values. Consequently, dystopian setting of the narrative becomes a powerful metaphor for the consequences of contemporary environmental and technological issues, urging individuals to reflect on their own role in shaping the better future. Therefore, this research paper also considers the novel's relevance in contemporary socio-political contexts, emphasising the need for sustainable practices and ethical governance. It draws parallels between the fictional dystopian world and real-world issues, such as environmental changes, scientific advancement and social inequality, highlighting the urgent need for collective action to address these challenges.

Key Words:

Dystopia, Scientific Advancement, Environmental Degradation, Social Inequality.

Introduction

Literature is a representation of human civilisation and mimics human behaviour and their existence. Moreover, it is a reflection of society as it acts as a mirror for individuals to examine themselves and recognise the need for a constructive change. The literature improves individual's understanding of the world. The concepts of empathy, imagination and identification are developed through literature. By investigating into many cultures, morals, and ethics, literature helps readers to develop their capacity to evaluate and debate cultural values and beliefs of a society. Moral and social values are among the important components of life that are taught in literature. These values are essential features of the Utopian world where everyone leads a happy and satisfied life.

Utopia is an ideal imaginary society where everything functions in harmony and everyone experiences true happiness and equality. "Since long before Thomas More's *Utopia* (More, 1516/1965), humans have engaged in utopian thinking, that is, imagining an ideal society" (Fernando et al. 44). More's *Utopia* (1516) is a fascinating exploration of an ideal society, set on an imaginary island where everything is perfectly organised and harmonious. The *Utopia* portrays the themes such as communal ownership, social justice and the flaws of contemporary European society. It is divided into two parts: the first critiques the societal issues of More's time, while the second describes the utopian society in detail. The concept of utopia varies greatly depending on cultural, philosophical and personal viewpoints. Some sees it as a place with absolute equality and communal living, while others envision a society where technological advancements provide unprecedented comfort and convenience. Although such advancements are seen as essential elements for the creation of a utopian society but, due to unfortunate circumstances these advancements sometimes turn utopia into a chaotic or dystopian society.

A dystopia is an imagined society that is frequently characterised by suffering, oppression and injustice. These societies typically depict a future where conditions are bleak, with significant societal and environmental decline, often due to authoritarian governments, technological control or environmental disasters. Unlike utopias, which portray idealised worlds, dystopias serve as a cautionary reflection of present-day flaws and potential future pitfalls. It means, "in contrast to 'utopia,' where society is portrayed as perfect, dystopia emerged as its antithesis—a vision of an imagined society characterized by oppressive social, political, and environmental conditions that forces its citizens to live under a constrict[ion of] any free thought or individuality" (Mostafa 2). The statement clarifies that dystopia is contradictory to utopia and is being represented in literature through various genres. As Meyer Howard Abrams and Geoffrey Galt Harpham in *A Glossary of Literary Terms* states that "the term dystopia has recently come to be applied to works of fiction, including science-fiction, that represent a very unpleasant imaginary world in which ominous tendencies of our present social, political, and technological order are projected into a disastrous future culmination" (413). The science fiction in English literature is rooted in the wider traditions of hypothetical fiction and early works that merged imaginative concepts with emerging scientific ideas. For instance, Mary Shelley's *Frankenstein* (1818) belongs to this tradition and is hailed as the first true science fiction novel in the English literature that explores the consequences of the creation of life through scientific experimentation. The story of the narrative is based on Victor Frankenstein and his monstrous creation, emphasising the ethical and moral dilemmas associated with scientific advancements. It also discovers the danger of unchecked scientific experimentation that prefigures dystopian themes. Another work of Shelly is *The Last Man* (1826), particularly considering its early examination of apocalyptic themes, is one of the first novels to depict a post-apocalyptic world. The story is set in the twenty-first century and follows the life of Lionel Verney, the nominal last man, as he sails across a world devastated by a mysterious plague. The novel is organised as a series of journal entries, providing a personal and introspective view of the unfolding scientific catastrophe.

The science fiction depicts a possible future, either utopia or dystopia in nature, and provides a base to realise the good and bad aspects of society. "Science fiction, a form of fiction that deals principally with the impact of actual or imagined science upon society or individuals" (Sterling and Bruce). It focuses on incorporation of science and creations of things in everyday life, inspiring a larger curiosity in literature which discovers the connection between human society and science-technology like *Erewhon* (1872) by Samuel Butler where machines are banned because the inhabitants fear that machines might one day evolve to outsmart and dominate humans. It reflects early concerns about the rapid advancement of science and technology, and its potential to control human life. It is significant for its early exploration of themes that later became foundation of dystopian and science fiction literature, such as the fear of

technological control and the critique of societal norms. It uses satire to provoke thought and question the status quo, making it a timeless piece of literature. Butler's novel influenced later works of dystopian fiction and continues to be studied for its insightful critique of science and technology. Hence, literature shows consequences of science and technology in a society which can be bifurcated into dystopian aspects.

Science fictions mostly deal with scientific advancement which is an essential aspect of the dystopian theory. Advanced technology, initially designed to improve human life, can sometimes lead to control and surveillance. For example, in George Orwell's *1984* (1949), the government uses advanced surveillance technology to maintain totalitarian control over society. The novel illustrates the concept of 'Big Brother' in 1984 that represents the omnipresent investigation state, where individuals are constantly watched and controlled with the assistance of technology. This leads to a society where free thought is punished and personal privacy is non-existent. The chilling depiction serves as a warning about the potential misuse of technology and the importance of safeguarding democratic principles and human rights as humans advance scientifically. "Scientific advancement encompasses progress in understanding natural forces, innovations challenging superstitions, and technology's societal impact, while also raising ethical concerns" (www.wisdomlib.org).

Scientific advancements can sometimes lead to environmental degradation too, resulting in dystopian landscapes. "Environment degradation is the deterioration of the environment through depletion of resources such as air, water and soil" (Economic and Social Commission for Western Asia). Such exploitation of natural resources is mainly caused by rapidly developing technology. "Pollution-air, water, heat and noise pollution can all be caused by producing and using technology" ("How Technology Can Harm the Environment"). For example, *Do Androids Dream of Electric Sheep?* "is a 1968 dystopian science fiction novel by American writer Philip K Dick. It is set in a post-apocalyptic San Francisco, where Earth's life has been greatly damaged by a nuclear global war, leaving most animal species endangered or extinct" ("Do Androids Dream of Electric Sheep?"). It inspects the idea of scientific advancement and what it means to be human through the lens of a future where the world is largely uninhabitable and most of the population has immigrated to off-world colonies. The author of the novel skillfully portrays science and technology with the complexities of machinery and its impact on society.

As technology advances, there is often a fear of losing what makes an individual a human. In Kazuo Ishiguro's *Never Let Me Go* (2005), the story revolves around clones created for organ harvesting, exploring themes of identity and morality. It also raises the concern of social inequality. "Social inequality results from a society organized by hierarchies of class, race, and gender that broker access to resources and rights in ways that make their distribution unequal" (Crossman). It means, in a society powerful personalities often dominates the scenario by oppressing weaker class. Likewise, Ishiguro's narrative offers a world where human replicas are formed and elevated for only one resolution of providing their internal organs by supreme the authorities. It educates an insightful question about human life's value and the ethical implications of using one dominating class of people for the benefit of another. The social inequality is starkly depicted through the lives of Kathy, Tommy and Ruth, who despite being genetically identical to humans, are greeted as second-class residents and is deprived of simple human rights. Their existence is entirely controlled and their future is predetermined, highlighting the extreme disparities between their lives and those of the normal humans. Ishiguro's subtle and emotionally resonant storytelling makes the reader reflect deeply on these issues, making *Never Let Me Go* a powerful western observation on social inequality and the ethical dilemmas of scientific advancement.

Similar to the west, in India dystopian writers emerged on the literary landscape during the late twentieth century. As Sanjana Ramdas in *Dystopia and Indianness in Post-Millennial Indian Fiction* (2019) says, "Dystopian fiction has been a relatively new genre in the standard of Indian English writings. It caught on in the Indian market around the late 1980s with the arrival of Penguin and the other five giants of the publishing world." It means that the establishment of major publishing houses in India served a crucial role in making dystopian literature more reachable to Indian readers. This period marked the foundation of better exposure to global literary trends like dystopian fiction especially in India that explores issues such as political repression, social inequality, scientific advancement and environmental degradation.

Among the initial Indian writers who reflect these issues in their literary works include Manjula Padmanabhan, who, in her play *Harvest* (1997), ventures into bleak and dark futures. The narrative is set in a future Bombay where human beings are commoditised and their organs are sold to mysterious people of the Western world who surveil their donors in their one-room area. Another Indian dystopian writer of the time is Neel Mukherjee, who, in *The Lives of Others* (2014), discovers the impact of political upheaval on individual lives, reflecting dystopian themes of surveillance and control. The novel is set in 1967 Calcutta and follows the story of the Ghosh family, who are struggling to maintain their status and unity in a rapidly changing world. The story contrasts the lives of different family members, particularly focusing on the youngest son, Supratik, who becomes involved in the Naxalite movement—a radical communist insurgency that depicts the narratives of dystopia.

Like these Indian dystopian writers, Rajat Chaudhuri in his fictional works highlights social injustice and environmental degradation. He lives in Kolkata and joined school at Ramakrishna Mission School and later he studied in University of Calcutta. He writes in two languages: Bengali and English. His initial texts comprise the narratives like *Amber Dusk* (2007), the short story cycle includes *Hotel Calcutta* (2013) and *Calculus* (2014) a collection of Bengali short stories. He sets a benchmark in the field of dystopian studies by emphasising major aspects like scientific advancement, social inequality and environment degradation in his narrative *The Butterfly Effect* (2018). The story of the novel is located in a future world where a series of ecological disasters and scientific experiments gone wrong lead to the formation of a dystopia. The narrative follows multiple characters. At the middle of future world, post-apocalyptic place is situated name the Darkland, a disordered city of Calcutta.

Although Rajat Chaudhuri is a young and contemporary writer, his works are remarkable in the field of dystopian studies. A lot of research studies have been done on dystopian literature across the globe but a little research is conducted on Indian dystopian perspective. Therefore, in this field Rajat Chaudhuri is one such Indian writer, who in his work *The Butterfly Effect*, portrays a modern-day dystopia. Priyadarshi Basu's "How Horribly Wrong Can Experiments in Science Go?", a study based on Chaudhuri's this seminal text, discusses that its story is about a futuristic dystopian world called Darkland. It has always been a prime motive of humans to struggle for progress. Errors occur along the way of progress and there are countless examples of this throughout history when everything goes so terribly wrong that the future inevitably devolves into a dismal, apparently never-ending dystopia. And it is the main tenet of science fiction, novels and other speculative writings. Basu concentrates on the dystopian consequences of the text, but it does not describe the environmental degradation as well as societal injustice in detail. Hence, this logically creates a research gap for future studies.

Another work is "Climate Change and Ideological Denialism: Critiquing Misdiagnosis and Limited Actions in Rajat Chaudhuri's *The Butterfly Effect*" by Anjan Saikia argues that in a society different forms of ideological dilemma like economical fundamentalism, technological hopefulness and the persistence of the materialistic society have dissatisfied efforts to reach at anticipated and required after solution to climatic disaster. Chaudhuri's novel talks about these tenacious concerns of the time in a captivating manner. The author stresses that Chaudhuri in this story retells everybody that it is a time to take climate transformation seriously and to do better things for a better future. In the framework of quickly changing climate around the world, the author argues how philosophical abjurations have incomplete effective actions in talking about the root and real causers of environment change built on the reading of Chaudhuri's narrative. Saikia opposes through examples derived from this story that economic fundamentalism and technology-optimism have prohibited the detection of the real causers of environment change and protected the persistence of growth centered government. Saikia's work makes it clear that this study bothers about the climate change in the contemporary world and ignores the dystopian aspect present in the novel. Thus, it creates an urgency to understand the dystopia and Chaudhuri's representation of dystopian elements in this narrative.

Therefore, this research paper has a great scope for the critical study of dystopia and simultaneously it helps in a better understanding of environmental degradation and social problems faced by the modern world. It also adds to the existing reservoir of knowledge based on dystopian literature by analysing the relationship between the fictional dystopian world and the real world.

Methodology

The present study, based on the critical and theoretical setting of dystopian studies, unfolds the causes and evolution of scientific advancement leading to environmental degradation following social unrest which ultimately creates a dystopia in the novel. The current paper applies the qualitative research methodology for the critical examination of Chaudhuri's novel *The Butterfly Effect* (2018). It follows the guidelines and rules of MLA 9th edition and also uses primary and secondary data sources such as books, articles, research papers, and other online resources for the better relevance.

Scientific Experiment: Its Impact on Society and Environment in *The Butterfly Effect*

Chaos can certainly be a breeding ground for dystopia, where societal structures break down, order crumbles, and uncertainty reigns supreme. This chaotic image is also represented by Rajat Chaudhuri in the narrative when he describes a scene of the railway station. He says, "There was chaos. The hordes lunged at the metal doors of the passing carriages which were secured to ward off bandits that waylaid trains and went on rampages, killing passengers, robbing them of whatever..." (*The Butterfly Effect* 16). The statement illustrates a dreadful image of a chaotic world. It describes a situation where large groups of people are desperately trying to get into the metal doors of passing train carriages. These carriages are reinforced to protect against bandits who attack the trains. These bandits go on violent rampages like killing passengers and stealing their belongings. This scene highlights a dystopian environment where lawlessness and violence prevail and where survival is a constant struggle. The sense of desperation and urgency is palpable, emphasis the harsh and unforgivable nature of societies. "Dystopian societies, whether in novels, books, or video games, are fictional settings characterized by oppressive or dehumanizing conditions, totalitarian control, and a lack of personal freedom" (Mostafa 1). Through literature, writers frequently depicts about such societies where greed, control, power, hunger and other elements associated to dystopia are prevalent. This depiction of chaotic world by Chaudhuri is considered as a dystopian picture. In the chaotic world or in a dystopia, social unrest plays a significant role because societies of such world with governing authorities impose extreme restrictions to its citizens which create social anxiety and instability.

In dystopian societies inequality plays a significant role for contrary to women, men are represented as key figures for all faults and women are kept aside. It is suggested by the novelist in the novel when he writes, "Women hardly travelled and, if they did, they would count themselves lucky if they didn't get raped by the dacoits or molested by fellow travellers" (17). It emphasises the fact that women are often marginalised and oppressed, reflecting broader themes of control and inequality. Women are assigned specific roles that limit their freedom and autonomy. These roles can include domestic duties, childbearing, or other tasks deemed appropriate to them by the ruling government or leader. Despite the oppressive conditions, women in dystopian narratives often become symbols of resistance and strength. Their stories of disobedience and resilience serve as powerful accounts of hope and change. For instance, Margaret Atwood's *The Handmaid's Tale* (1998), females are abridged to their generative purposes and neglected their rights, but they also become symbols of protest. Such portrayal of women characters reflects the key notions of dystopia. "Dystopian literature often depicts societies where gender roles are constructed along binary lines, with men and women assigned distinct social roles and responsibilities. These roles are typically hierarchical, with men occupying positions of power and authority while women are relegated to subordinate roles, such as caregivers, homemakers, or reproductive vessels" (Dash 7). Especially, gender roles are very specific in terms of dystopia, at the beginning of the narrative Chaudhuri represents its female characters according to the binary notions of gender which are still prevalent in society. It is only male who holds and rules Darkland. The supreme guide with reference to the text lives in the capital city of Darkland. It is a place where moral and societal decay have become the order of the day. The concept of Darkland in dystopian fiction serves as a powerful metaphor for the depiction of darker and negative aspects of biased society. In Darkland, atmosphere is usually one of despair and hopelessness. Female are not allowed to hold powerful positions in dystopian world that causes social inequality and social unrest.

In such dystopian world, science and technology have overwhelmed and transformed every aspect of life in negative and dehumanising ways. Advanced technology can create artificial realities that trap or control the populace, blurring the lines between what is real and what is manufactured. It can be seen in the novel when Captain Old "took out the chunk of lab-grown meat wrapped in cellophane and placed it

on the counter top” (30). It highlights the extreme usage of technology through artificially generating meat in a controlled environment which is called ‘in vitro-meat’(IVM). The term “*in-vitro meat* (sometimes referred to as cultured, synthetic, or cell-cultured meat), involves injecting muscle tissue from an animal into a cell culture, allowing cells to ‘grow’ outside the animal’s body” (“What Is in Vitro Meat”). The concept of artificial meat or ‘in vitro meat’ indicates the advancement in technology and science. In Chaudhuri’s narrative the IVM throws lights on the future of farming, the role of technology in food and the societal impact of such technological shifts. The earliest example of this scientific advancement is seen in *The Island of Doctor Moreau* (1896) of H.G. Wells where the writer explores themes of biological manipulation, which can be seen as a precursor to modern discussions about lab-grown meat followed by *The Butterfly Effect* of Rajat Chaudhuri. This dependency of human on technology suggests an idea of a dystopian society which can be termed as technological dystopia. “A technological dystopia is a hypothetical or future humanity in which negative effects of modern technology rule, including social damage, loss of personal freedom, and degradation of moral principles” (Numan et al 68). In such dystopian world, the scientific advancements, initially considered as beneficial, sometimes spiral out of control, leading to societal oppression and loss of individual freedoms. The same picture is depicted in Chaudhuri’s narrative. Along with the scientific advancement, environment degradation is a key feature for the making of a dystopia.

Environmental degradation brings to mind stark images of a world where the natural balance is thrown into chaos. Picture of decaying landscapes, cracked earth, withered trees, polluted skies blocking the sunlight, and desolate wastelands stretching as far as the eye can see characterise dystopian world. This devastating transformation in itself is a dystopian vision, where the future of a planet stands gravely compromised. This deterioration of environment has been portrayed by the novelist in the novel through the character of Tanmoy who knows the consequences of advancing technology and visualise that in future world food scarcity can become a big problem. Chaudhuri writes, “Tanmoy had been doing the crucial splicing work, selecting and inserting genes from alien species into paddy” (201). He works day and night for achieving his life-long dream of “fuelling SuperRice” (209). According to Tanmoy, this species of rice can feed millions of people and grow under the extreme weather conditions. This can alleviate hunger and malnutrition. The development of SuperRice represents a significant scientific achievement, showcasing the potential of scientific advancement to solve global challenges. But simultaneously, it also indicates that such scientific advancement is capable of disturbing natural environment and can cause serious environmental issues leading to the degradation of soil and depletion of other natural resources. The genetic modification of crops for the long-term can have serious impact on human health as well as the environment. It showcases that relying heavily on genetically altered harvests can result to a loss of old-style farming practices and biodiversity. This dependency can make farmers vulnerable to monopolies of biotech companies by controlling the food supply and exerting significant power over populations. Such practices can lead to social exploitation and inequality which are the main features of dystopia. As, “the common characteristics of dystopian worlds are authoritarian control, suppression of freedoms, and extreme inequality” (Rebecca). Hence, Tanmoy’s dream can lead to a future world where all the aspects of dystopia are prevalent whether it is scientific failure, environment degradation, or social unrest.

In addition, Tanmoy’s friend Jia during her interrogations speaks about Tanmoy’s revolutionary works. She says, “His work has the potential to benefit millions around the world. It’s easy to speak of saving the planet sitting and enjoying the good life of a highly advanced capitalist economy, but do you know how millions live in abject hunger and poverty? Have you seen men roasting rats or chewing up dragonflies to escape starvation” (214). The last line of her statement captures dystopian crux and this imagery highlights extreme desperation. It indicates a breakdown of social order where people are driven to extreme measures to survive. This scenario also highlights a severe scarcity of resources, which is a common theme in dystopian narratives, for instance, *The Road* (2006) by Cormac McCarthy narrates story of a father and son stressed to survive in a dystopian world where food is scarce and people resort to extreme measures to stay alive. It reflects the harsh reality that, in a world turned dystopian, basic human needs and instincts override all else.

Conclusion

The Butterfly Effect of Rajat Chaudhuri is a new dystopian novel with multiple characters following a non-linear story line which deals with the theme of how human's action can go horribly wrong with their experiments with nature. The study briefly describes the various archetypes and aspects of the dystopia that are presented in this narrative. It describes that it is the basic nature of humans to strive for progress in order to attain personal profit. However, sometimes mistakes happen in the process and lead to the creation of dystopian world. This phenomenon is also highlighted in the novel, where human's experiments with the nature and desires for a better world go wrong. The result of such experiments and desires is the creation of a dystopian society. Thus, scientific advancement and degradation of environment cause chaos and social inequality in the world. The primary objective of this research is to address these issues caused by the intertwined scientific advancement, environment degradation and social inequality as portrayed in dystopian narrative *The Butterfly Effect* (2018).

In the contemporary world, modern societies face numerous issues, such as increasing environmental crisis and social catastrophes, occasioned by advancement in technology and science. This novel also warns people about these issues by considering how a single man's action can have far-reaching effects on the planet. It also portrays a gloomy portrait of humanity and makes a dystopian tale on the dangers posed by science and technology. Hence, it illustrates the terrible outcomes of technology and scientific experiments gone tragically wrong, making this earth a gloomy and dystopian land and affecting the lives of humans, animals, and planets alike.

Works Cited and Consulted

Primary Source:

Chaudhuri, Rajat. *The Butterfly Effect*. Niyogi Books, 2018.

Secondary Sources:

Abrams, Meyer Howard and Geoffrey Galt Harpham. *A Glossary of Literary Terms*. 2015.

Admin. "Dystopia - Examples and Definition of Dystopia as a Literary Device." *Literary Devices*, 26 Oct. 2021, literarydevices.net/dystopia/#:~:text=Though%20dystopian%20literature%20often%20portrays%20an%20ideal%20society,by%20power%2C%20greed%2C%20control%2C%20war%2C%20and%20other%20factors.

Crossman, Ashley. *The Sociology of Social Inequality*. 2018, soc37.commons.gc.cuny.edu/wp-content/blogs.dir/17873/files/2021/07/Wk-1-Social-Inequality.pdf.

"Do Androids Dream of Electric Sheep?" *Wikipedia*, 12 Jan. 2025, en.wikipedia.org/wiki/Do_Androids_Dream_of_Electric_Sheep%3F.

Dash, Lingaraj and Kiit. "Gender Representation in Dystopian Literature: A Critical Analysis." *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, Apr. 2024, pp. 07–11. <https://doi.org/10.9790/0837-2904020711>.

Economic and Social commission for Western Asia (ESCWA). "Environmental Degradation." United Nations Economic and Social Commission for Western Asia. 31 Dec. 2015, archive.unescwa.org/environmental-degradation#:~:text=Definition%20English%3A,to%20be%20deleterious%20or%20undesirable.

How Technology Can Harm the Environment. www.exploros.com/summary/how-technology-can-harm-environment#:~:text=Pollution%20%2D%20Air%2C%20water%2C%20heat,the%20electricity%20to%20use%20technology.

Rebecca. "What is Dystopian Literature? Key Features and Examples." *Differentiated Teaching*, 22 Sept. 2024, www.differentiatedteaching.com/what-is-dystopian-literature.

- Fernando, Julian W., et al. "Profiles of an Ideal Society: The Utopian Visions of Ordinary People." *Journal of Cross-Cultural Psychology*, vol. 54, no. 1, Oct. 2022, pp. 43–60. <https://doi.org/10.1177/00220221221126419>.
- Mostafa, Malak. "Comparative Analysis of Dystopian Societies: Power Dynamics, Social Control, and Relevance in Lord of the Flies and The Circle." *RWTH Aachen University*, Aug. 2023, pp. 01-02. <https://doi.org/10.13140/RG.2.2.33603.37920>.
- Numan, Muhammad, Fazila Saeed, Muhammad Anwar and Muhammad Ansar. "Technological Dystopia: A Critical Analysis of Ray Bradbury's There Will Come Soft Rains". *Journal of Namibian Studies History Politics Culture*. 2023, p 67-83.
- Ramdas, Sanjana. "Dystopia and Indianness in Post-Millennial Indian Fiction." *www.academia.edu*, Nov. 2022, www.academia.edu/91674075/Dystopia_and_Indianness_in_Post_Millennial_Indian_Fiction.
- Sterling, and Bruce. "Science Fiction| Definition, Books, Movies, Authors, Examples, and Facts." *Encyclopedia Britannica*, 20 May 2025, www.britannica.com/art/science-fiction.
- "What Is in Vitro Meat?" *Office for Science and Society*, www.mcgill.ca/oss/article/technology-health-and-nutrition/what-vitro-meat.
- www.wisdomlib.org. *Scientific Advancement: Significance and Symbolism*. 17 Feb. 2025, www.wisdomlib.org/concept/scientific-advancement.

