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Ethical Contemplations in Indian Science Fiction: The Case of Gene Editing

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ABSTRACT

With the unbridled advancement in science and technology, ethical concerns have increasingly occupied the imagination of scientists and thinkers. Science fiction narratives, specifically, engage with the looming questions of morality and ethics in the realm of scientific experimentation. This study offers a critical examination of representations of ethical dilemmas regarding gene editing in Indian science fiction narratives with a special focus on Mohan Sundara Rajan's short story "The Escapades of a Clone,'' Manjula Padmanabhan's *Harvest*, Amitav Ghosh's *The Calcutta Chromosome*, and S.B. Divya's *Machinehood*. The exploration of cloning and genetic manipulation is analysed in these texts within the broader context of contemporary scientific advancements and the associated moral challenges. This research further explores the subtle perspectives these works offer on the potential consequences of unrestrained technological progress. The study foregrounds the tension between scientific curiosity and ethical responsibility, punctuating the relevance of these fictional narratives in contemporary bioethical discussions. Through a detailed analysis of character development, narrative structure, and thematic depth, the research argues that Indian science fiction not only anticipates future technological possibilities but also serves as a critical platform for interrogating the ethical implications of such advancements. While these texts are studied in the purview of Indian philosophical thought they are also studied as valid repositories of ethical discourse.

Keywords: Science Fiction, Gene-editing, Ethics, Indian Philosophical Systems, Indian literature

1. INTRODUCTION

Indian science fiction has a rich and diverse history shaped by the country's unique cultural, political, and scientific landscape. The genre grew alongside India's scientific progress, with writers exploring themes such as space exploration, artificial intelligence, and genetic engineering, often filtered through philosophical ideas like *karma*, *dharma*, and the interplay between tradition and modernity. In recent decades, Indian science fiction has increasingly engaged with global scientific debates, while remaining deeply rooted in local concerns about social justice, environmental ethics, and the consequences of rapid technological change. Anita Desai's essay, *Indian Fiction Today* (1989), covers a comprehensive inquiry into the scenario of contemporary Indian literature as it has evolved from the historical and cultural ethos of the country. Desai believes that Indian fiction is an intricate fabric woven with the threads of tradition and modernity, going deep into the never-absent fray of the past and present. It is in this wide literary environment that science fiction has been able to find its place, very often directly concerned with the moral dilemmas of rapid technological development. An important aspect of scientific and technological development and its representation in science fiction narratives is the question of morality and the ethical purview of its intervention in civilisational expansion. Examining Indian Science fiction stories, we find that the ethical aspects of genetic manipulation are deeply integrated into the cultural and

societal framework of the nation. Indian science fiction has emerged as a significant genre that explicates the ethical, social, and cultural dilemmas that accompany advancement of modern technologies. As a revolutionary scientific invention, gene editing finds a complex representation in this genre, illuminating the tensions between progress and tradition.

The concern of science fiction with narrative intersections between science fiction and postcolonial critique opens rich ground for speculation in how historical and future trajectories are reimagined. Given the rich cultural diversity and heritage of India, it is imperative to explore how Indian fictional narratives incorporate ethical contemplations in the context of gene editing. This paper examines the ethical dimensions of gene editing as portrayed in three significant Indian science fiction novels and one short story: Manjula Padmanabhan's *Harvest* (1997), Amitav Ghosh's *The Calcutta Chromosome* (1995), S.B. Divya's *Machinehood* (2021), and Mohan Sundara Rajan's 'The 'The Escapades of a Clone'' (2000). Each of these works provides a unique lens through which the complexities of gene editing are interrogated, offering critical insights into the potential risks and societal impacts of these technologies.

Padmanabhan's *Harvest* presents a dystopian world where the bodies of the poor are commodified for the benefit of wealthy foreigners, raising profound questions about exploitation, consent, and the ethics of human enhancement. Ghosh's *The Calcutta Chromosome* explores the shadowy realms of alternative science and genetic manipulation, challenging established scientific narratives and highlighting the ethical dilemmas associated with obscured knowledge and the misuse of genetic technologies. In contrast, Divya's *Machinehood* envisions a future where biotechnological enhancements blur the line between human and machine, prompting reflections on the ethical implications of self-modification, autonomy, and the redefinition of human identity. Rajan's 'The Escapades of a Clone' represents the fusion of ancient spiritual wisdom with contemporary ethical issues in biotechnology. The story posits that integrating these traditional insights with modern advancements can provide a more nuanced and spiritually grounded approach to navigating the profound moral questions posed by biotechnological progress. This research underscores the critical role of literature in examining and shaping public understanding of the ethical landscapes surrounding emerging biotechnological frontiers.

2. MATERIAL AND METHODOLOGY

This research investigates the ethical implications of gene editing as portrayed in Indian science fiction novels, focusing on three significant works and one short story: Manjula Padmanabhan's *Harvest*, Amitav Ghosh's *The Calcutta Chromosome*, and S.B. Divya's *Machinehood* and Mohan Sundara Rajan's 'The Escapades of a Clone'. The study undertakes textual analysis, thematic analysis, and ethical critique to understand how these narratives reflect, critique, and speculate on the future of gene editing and its moral consequences. It further attempts to examine the ethical dimensions of gene editing as presented in the selected texts. The choice of *Harvest*, *The Calcutta Chromosome*, *Machinehood*, and 'The Escapades of a Clone' is deliberate, as these novels provide diverse yet interconnected perspectives on the socio-ethical ramifications of biotechnological advancements in the Indian context. The focus remains on the exploration of how Indian authors engage with gene editing, offering both cultural and philosophical critiques.

2.1. Bioethics

The analysis is guided by bioethical theories and frameworks, particularly those relating to the ethics of gene editing, such as the principles of autonomy, beneficence, non-maleficence, and justice. Autonomy emphasises the right of individuals to make informed decisions about their own bodies and medical treatments, underscoring the importance of consent and respect

for personal choices. Beneficence involves the obligation to act in the best interest of individuals and society, promoting well-being and striving to do good. Non-maleficence, often summarised by the maxim "do no harm," obligates healthcare providers and researchers to avoid causing unnecessary harm or suffering. Justice focuses on fairness and equity in the distribution of healthcare resources, ensuring that benefits and risks are shared without discrimination or exploitation.

A thematic analysis is conducted to identify and categorise ethical concerns expressed in the novels. The ethical critique focuses on how the novels question the moral implications of gene editing technologies. By analysing character motivations, plot developments, and narrative strategies, the research evaluates the ethical tensions that arise from gene editing scenarios. The critique also engages with current ethical debates, drawing parallels between the fictional representations and real-world concerns, such as the regulation of genetic technologies and the potential for bioethical transgressions.

2.2. Anthropocene

This term reflects the profound alterations humans have caused, including climate change, biodiversity loss, deforestation, and pollution, which have collectively reshaped the planet's systems on a scale comparable to major geological events (Crutzen, 2006). The Anthropocene concept highlights the extent to which anthropogenic actions, such as industrialisation, urbanisation, and the widespread use of fossil fuels, have driven environmental changes with long-lasting implications for the Earth's future.

Scholars argue that the Anthropocene is not only a scientific term but also a socio-political construct that prompts critical reflection on human responsibility for environmental degradation (Steffen et al., 2011). The epoch challenges existing environmental governance frameworks and calls for urgent and transformative actions to mitigate human impacts. The Anthropocene also raises ethical questions about intergenerational justice and the equitable distribution of environmental burdens and benefits across global populations (Lewis & Maslin, 2015).

2.3. Fourth Industrial Revolution

In an era defined by rapid technological advancements, the concept of the Fourth Industrial Revolution (4IR) presents a significant paradigm shift, as outlined in the works of Thomas Philbeck and Nicholas Davis (2019). The 4IR encapsulates the convergence of digital, physical, and biological systems, fundamentally altering industries and societal structures; central to this revolution are transformative technologies such as artificial intelligence, robotics, and genetic engineering. These innovations are not only revolutionising traditional sectors but are also permeating cultural expressions, including science fiction. At the core of 4IR is the integration of powerful machine learning algorithms, advanced sensors, and actuators into the physical world, coupled with innovations in fields like gene editing and neurotechnology. These advancements not only enhance our technological capabilities but also bring about fundamental shifts in human identity and societal structures.

This research paper aims to synthesise insights from the 4IR framework and the thematic explorations in Indian science fiction, particularly focusing on gene editing. By examining key literary works and critical perspectives, the study will elucidate how Indian science fiction serves as a vital medium for interrogating the promises and perils of genetic engineering within the broader context of 4IR. This synthesis will contribute to a deeper understanding of how cultural narratives and ethical considerations shape and are shaped by technological advancements in contemporary India.

3. RESULTS AND DISCUSSION

3.1. Indian Science Fiction: Overview

Sukrita Paul Kumar's editorial (2024) in *Indian Literature* highlights how Indian science fiction uniquely intertwines the speculative and imaginative with deep-rooted cultural and mythological narratives (pp. 8-10). This genre, though often perceived as a Western phenomenon, has found a distinctive expression in India, influenced by the country's rich legacy of mythology, legends, and supernatural tales**.** The confluence of these elements with Western sci-fi traditions creates a hybrid narrative landscape that reflects India's diverse linguistic and cultural milieu. In this context, Indian science fiction authors leverage the backdrop of 4IR technologies to explore ethical, social, and philosophical questions. For instance, stories in various Indian languages dive into themes such as the tension between the natural and the artificial, the moral implications of advanced technologies, and the potential dystopian outcomes of unchecked technological progress. These narratives not only entertain but also provoke critical reflections on the future trajectory of technological integration in society.

In *Ruptured Bodies and Invaded Grains: Biotechnology as Bioviolence in Indian Science Fiction*, Suparno Banerjee (2015) reflects on how posthumanist identities and biotechnological imageries come to be represented within Indian science fiction, especially within contexts of bioviolence. In this paper, Banerjee investigates how posthumanist concepts, like cyborgs or genetically modified beings, function as oppressors in third-world contexts when placed against the emancipatory narratives of the West. The two massive works the essay covers are Manjula Padmanabhan's play *Harvest* (1999) and Anil Menon's novel *The Beast with Nine Billion Feet* (2009).

3.2. Speaking from the MARGINS

Indian science fiction texts consider critically ethical and post-colonial critiques that open up the legacy of colonialism and begin addressing the impacts of technological progress and questions of identity. Challenging power structures in place and envisioning the transformative, they help deepen an understanding of how science fiction, ethics, and socio-political realities come together. These works underline the role of speculative fiction in technological and scientific ethics through thought-provoking stories that challenge hegemonic bets, fold in subaltern voices, and create alternative visions that open toward a future infused with equity. Through their engagement with biotechnology, genetic engineering, and human augmentation, Indian science fiction adds unique culturally grounded insights that may be applied right through the global debate on the ethical implications of scientific advancement.

S.B. Divya's *Machinehood* is an optimistic vision of posthuman identities where genetic enhancement is a vehicle to further empower already marginalised communities. Set in a future where humans, artificial intelligence, and enhanced humans coexist, the novel critically engages with difficult ethical decisions related to gene editing, biotechnology, and the enhancement of human capabilities. Gene editing could therefore be considered as having a double edge within the context of *Machinehood* itself. It has some potential for extraordinary breakthroughs in science—for instance, curing genetically transferred diseases and making humans more capable—but also raises profound ethical questions. One of the most serious problems is that of consent and autonomy. Will it be a free choice if there is such a gap in economic equality when it comes to wanting gene editing? The novel questions the global capitalism system, which commercialises human bodies, and it takes a step further to possibly question the commercialisation of human genetics.

3.3. Gene Editing: Ethical Dilemmas

As we examine these narratives, it becomes clear that the exploration of ethical considerations in gene editing has gained prominence in recent years due to the rapid advancements in genetics and genomics. As the applications of *CRISP[1]R/Cas9 technology* expand to the human germline[2] and *pluripotent stem cells*[3], the ethical implications of such interventions have become a subject of intense debate. In his article *Gene Editing: New Technology, Old Moral Questions,* Brendan (2016) talks about how the new genetic tool, CRISPR stands out for its ability to target specific DNA sequences using custom-designed RNA, a significant improvement over previous methods which required different enzymes for different genetic targets. He discusses various applications of CRISPR, from removing *retroviral* sequences in pig genomes to potential human gene therapy.

Despite its revolutionary potential, CRISPR's use in human genetics remains fraught with ethical dilemmas. The technology has spurred debates on whether it should be used to design human embryos and what ethical boundaries should guide its application. The distinction between somatic and germline gene therapies is particularly contentious. Somatic therapies[4], which do not affect future generations, are generally accepted, while germline modifications, which are inheritable, raise concerns about long-term implications and consent from future generations.

(a) Subjectivity

Amitav Ghosh's *The Calcutta Chromosome* (1995) digs into the themes of genetic engineering, raising ethical questions about the implications of manipulating the fundamental building blocks of life. Amitav Ghosh's novel envisions an ethically grounded reality that imagines new forms of community and subjectivity. This ethico-political construction is built upon reciprocal relationships and the principles of interpersonal ethics, which challenge the dominant position of discursively constructed frameworks.

Colonial medical history in the novel is intertwined with the delineation of a secret group or, precisely, a cult led by a semi-god, Mangala. The cult acts in silence and manipulates scientific research to achieve a new mode of being. This silent group exists outside of linguistic representation, yet it still influences the discursive dimension. Combining gene technology and the Buddhist concept of interconnectedness, Ghosh crafts a multifaceted subjectivity encompassing biological and socially constructed traits. This subjectivity also offers an alternative perspective on the history of malaria research conducted by Ronald Ross in Calcutta a century ago. While the narrative explores colonial medical history through various discourses, the alterity of the silent group is conveyed through the use of images and vision, which serve as ethical alternatives to the power dynamics of language.

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1 This is a tool used in genetics to edit genes. CRISPR acts like molecular scissors that can cut DNA at specific spots. Scientists can then add or remove parts of the DNA, making it possible to correct genetic defects or study genes in more detail.

2 The human germline consists of the cells (like sperm and eggs) that pass on genetic information to future generations. Changes made to the germline will be inherited by all future offspring.

3 These are special cells that can turn into almost any type of cell in the body. They are crucial for medical research because they can help scientists understand how diseases develop or potentially regenerate damaged tissues.

4 This refers to medical treatment that involves changing the genes in the body's somatic (non-reproductive) cells to treat diseases. Unlike germline editing, the changes are not passed down to future generations.

Mangala's group combines deities, humans, and animals, exhibiting a sense of transcendence. This enigmatic figure of Mangala is addressed as a deity, yet they walk the earth in different incarnations, accumulating personality traits with each new embodiment. Through the chromosome, Mangala aims to create a new type of being that is based on interpersonal connections rather than distinct individuality. In a way, socially acquired and individual personality traits are passed down alongside genetic material. The socio-political implications of the chromosome are described as follows:

> What we have here is a biological expression of human traits that is neither inherited from the immediate gene pool nor transmitted into it. It's exactly the kind of entity that would be hardest for a conventional scientist to accept. Biologists are under so much pressure to bring their findings into line with politics: right-wing politicians sit on them to find genes for everything, from poverty to terrorism, so they'll have an alibi for castrating the poor or nuking the Middle East. The left goes ballistic if they say anything at all about the biological expression of human traits: it's all consciousness and soul at the end of that spectrum (1995).

The chromosome appears to transcend political divides and the divide between biology and the social sciences. On an epistemological level, the chromosome suggests a transcendence of the discursive and cognitive self, orienting towards connection with other human beings. Though the group's quest for immortality is framed as the ultimate transcendence of nature, it seems more like a transcendence of typical humanity: a transcendence of an internal and humankind. Here, Ghosh crafts a complex subjectivity that blurs the boundaries between biological and socially constructed attributes, embodying posthumanist ideals. The cult's practices and the concept of the chromosome demonstrate this blending of human and non-human components, as the chromosome transcends conventional genetic inheritance by incorporating socially acquired traits ('O Connell, 2012).

Despite the science-fiction elements in the novel, what really occurs is the transfer of personality traits, which represents a transcendence of the traditional notion of self, aligning with posthumanist thought. However, the outcome of this transcendence is still a human being functioning within human society, not a divine or supernatural entity. The narrative suggests that life transcends language, existing in realms beyond discourse. It depicts two concurrent realities: one dominated by language, the other characterised by non-discursive silence. Drawing an analogy to the cinematic world, the discursive reality functions just as *Matrix*, entrapping individuals who believe it constitutes the sole existing reality. However, the narrative implies that the 'true' reality lies beyond this textual construct. The elusiveness of Mangala and her goals is emphasised by the fact that the moment of transfer to another body is not shown in the novel. Additionally, it is unclear which characters embody Mangala at different times. Mangala, just like God, provides no definitive answers or meanings; instead, she operates in a way that transcends answers or definitions.

(b) Corporeal Margins: The Third-World Body

Manjula Padmanabhan's *Harvest* (1999) and S.B. Divya's *Machinehood* (2021) expands upon the themes of genetic manipulation and its sociopolitical impact explored in *The Calcutta Chromosome*, exploring the realms of organ harvesting and artificial intelligence respectively. In Padmanabhan's dystopian futuristic play, the human body takes centre stage. The play explores the distinctions between the impoverished but healthy bodies of the Third World, serving as organ donors, and the wealthy but ill bodies of the First World. The narrative also explores the varied distinctions between different types of bodies, such as those between male and female bodies, young and old bodies, as well as real and virtual bodies. The

text explores how the pervasive influence of cyberculture in the narrative problematizes the notion of corporeality as a representation of identity. It emphasises how the widespread impact of new media blurs the lines between the self and technology, leading to a state of crisis. The plot of *Harvest* deals with the exploitation of poor people for organ harvesting, and it can be further extended as a metaphor for the ethical problems arising from gene editing. Indeed, the play conveys problems relating to the rich-poor divide and highlights how new technology can not only be built but also increase existing inequalities. Gene editing, like organ harvesting, creates similar ethical questions over consent and autonomy, and the likeliness of abuse. Gene editing, with its promise of eradicating hereditary diseases and enhancing human capabilities, presents a tempting yet morally ambiguous solution that challenges these traditional values (Suparno Banerjee, 2015). The cultural emphasis on destiny and the acceptance of one's genetic makeup as part of one's *karma* adds another layer of ethical complexity to the discourse on gene editing. In *Harvest*, however, the focus is on how technological exploitation impacts familial structures and societal norms. The play critiques the global capitalist system that commodifies human bodies and extends this critique to the potential commodification of human genetics. This communal perspective is a unique angle often neglected by critics who primarily analyse Indian science fiction through a Western lens.

This dystopian possibility extends the critique of *Harvest* to a future where genetic purity and superiority could be enforced through biotechnological means, exacerbating social divisions and marginalisation. Furthermore, the philosophical concept of *Ahimsa*[5] or non-violence, central to many Indian ethical frameworks, poses a significant challenge to the justification of gene editing. The potential harm caused by unintended genetic mutations and the ethical responsibility of playing god with human DNA could be seen as fundamentally violating the principle of *ahimsa*. This perspective, rooted in Indian ethical thought, provides a critical counterpoint to the utilitarian arguments often used to justify gene editing.

Padmanabhan's characters wish to overcome the constraints of their physical form and anthropocentricity. The wealthy receivers seek eternal life through technological means that will procure them *"*fresh,*"* replaceable *"*bodies.*"* Simultaneously, the impoverished donors escape the limitations of their physicality by engaging in technology-induced, dreamlike fantasies that entice them to willingly sell their physical bodies and identities to be occupied by the *"*enhanced*"* capitalist buyers of the First World, in an inherently unequal exchange. The play is also a postcolonial and posthumanist critique of a dystopian future where humanity has no place. The "technologised" body seeks to displace the physical self, reshuffling the boundaries between self and other, balance and imbalance, as well as body and consciousness.

Over the past two decades, technology companies across the globe have worked to create humanoid robots that can closely mimic human life, down to our physical attributes and biological functions. The goal is to develop an external entity that can embody the "human" - a simulated person as well as a potential substitute in the digital age to come. The play explores the fading significance of the biological body and its replacement by a technologised, marketable "body" in the contemporary neoliberal capitalist framework.

When comparing Indian science fiction to Western narratives, a key difference lies in the approach to ethical issues. While much of Western science fiction, like Aldous Huxley's *Brave New World* (1932), includes dystopian visions of genetic engineering that focus on the

[5] This is a principle of non-violence and respect for all living beings, central to many Indian philosophical and religious traditions like Hinduism, Buddhism, and Jainism. It promotes doing no harm to others in thought, word, or action.

loss of individuality and totalitarian control, Indian science fiction investigates the moral and spiritual dimensions associated with such technologies while pointing out these risks. For instance, Vandana Singh (2012), in her critique of Indian science fiction, highlights that Indian narratives often focus on the ethical responsibilities towards future generations and the long-term impact of technological advancements. This intergenerational ethic is subtly woven into *"*The Escapades of a Clone*"* (2000), where the unpredictable outcomes of gene editing are a metaphor for the broader consequences that humanity might face in the pursuit of technological progress. Furthermore, Indian science fiction engages with environmental concerns in a more pronounced manner than its Western counterparts. The potential destruction of crop biodiversity due to genetic alterations, in *"*The Escapades of a Clone*,"* serves as a cautionary tale about the ecological risks posed by such technologies. The novel raises fundamental questions about the sanctity of life and the natural order. Clonchi, a cloned chimpanzee, symbolises the controversial practice of creating life through artificial means.

The ethical debate centres around whether humans possess the moral authority to manipulate and create living beings, a theme that resonates with broader concerns about playing God and the unintended consequences of scientific hubris. Rajan also explores the ethical treatment of animals, using Clonchi's experiences as a way to bring out issues relating to animal welfare in scientific research. The novel critiques the utilitarian approach that generally underlies scientific experimentation, advocating for a more humane and ethical treatment towards animals. Such critique brings itself in line with the traditional Indian values that uphold the sanctity of all life forms and the moral duty to protect and respect them. The Yogi in the novel reminds one of those cultural and philosophic roots that question the relentless pursuit of technological advancement without ethical constraint. This cultural scepticism is crucial in understanding the broader social implications of gene editing within the Indian context.

3.4. The Posthuman Body[6]- Cyberculture and Cyberpunk

Cyberculture offers insights into how globalisation and technology have enabled the First World to dominate transactions with the Third World. In the posthuman world of *Harvest* (1999), the "Contact Module" plays a crucial role in concealing Ginni's physical presence while simultaneously allowing her to monitor the daily activities of Om and his family members. It enables her to maintain distance from the unsanitary conditions of the Prakash family's home, the site of colonisation. Pramod K. Nayar (2010), in his *An Introduction to New Media and Cybercultures*, defines cybercultures as a system that "includes the networked, electronic and wired cultures of the last three decades of the twentieth century." He argues that, in the digital world, issues of race, gender, and identity cannot be ignored just because they exist in the virtual realm. Instead, technology must be studied in the broader context of these social and cultural factors. "Cybercultures," according to him, "are driven by material considerations of profit and power, and affect people in their real lives." Capital is a major factor that shapes and regulates cyberculture. It determines how goods and services are produced, distributed, and consumed in the global marketplace, and also serves as a means of control.

The development of modern technologies like computers, mobile devices, the internet, and wireless communication has further expanded the reach of globalisation. It is generally

[6] Posthumanism is a philosophical perspective that questions the traditional boundaries of what it means to be human, particularly in the context of technological advancements. It explores the merging of humans with machines, artificial intelligence, or biological enhancements, and the impact this has on human identity and ethics. Posthumanism challenges the idea of a fixed human nature and considers how technologies like genetic editing or cybernetic enhancements can transform society and individuals, blurring the line between humans and machines.

assumed that disembodiment provides a superior platform for the rational faculties of humans and overcomes the physical limitations of the body. Conditions like illness, ageing, or degeneration can be transcended through technological enhancements. This gives rise to a superior body: the posthuman. In the play, the character of Jeetu, Om's brother, initially represents a protest against the allure of an "improved", abstract consciousness and a steadfast loyalty to the physical form. Jeetu is introduced as a male sex worker, around the same age as Om, but with a more relaxed demeanour. He is portrayed as being aware of his own body, which contrasts sharply with the description of Om as "nervy and thin" with an "anxious expression." The members of the Prakash family who are donors, including Om's mother (*Ma*), Om's wife Jaya, and Om himself, are all described as malnourished, unkempt, and physically unimpressive. The implicit desire for them, particularly Om and his mother, to be rid of these bodies is evident. Jaya is described as "thin and haggard, she looks older than her nineteen years," while Ma is "stooped, scrawny and crabby." Jeetu's active resistance against Inter Planta and its insidious objectives is evident when he fails to attend the first briefing by the agency's guards for the Prakash family. When Jaya pleads with him to return home and register with the agency, Jeetu clarifies his stance, stating, *"*I don't mind being bought – but I won't be owned." His physical embodiment becomes a site of resistance against the imperialistic order and the pervasive reach of global technological gadgetry that aims to eliminate all obstacles to its rule.

Cyberpunk is a genre that reflects posthumanist ideas, emphasising the belief that the limitations of the human body can be surpassed. It often portrays a future where aspects of human existence, such as ageing, decay, and disability, can be eliminated through technology. In cyberpunk, the idea that the body might become obsolete is a recurring theme. Pramod K. Nayar (2010) suggests that cyberpunk introduces a new understanding of humanity, where being human increasingly means being a cyborg. In her essay *A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century*, Donna Haraway (1991) imagines a future where everyone becomes a cyborg. She critiques Western science and politics for being rooted in "racist, male-dominated capitalism," exploiting nature for cultural purposes, and perpetuating "the reproduction of self from the reflection of the other." In this framework, there has been a long-standing conflict between the organic body and the mechanical machine. Haraway also points out that in a post-gender world, cyborgs do not have traditional ancestry.

3.5. The Indian Philosophical Purview

(a) The Human, Half-human, Non-human, Super-human and Post-human

The concept of "beyond human" or "hybrid human" is not new to India as it can be traced to the Indian mythological characters of half human and half animal like *Nandi, Ganesha, Narasimha, Hanuman,* etc. These characters are noted to have peacefully coexisted with humans. This hybridity, though new for the wester audiences, has been a part of Indian narratives for centuries and hence are not unfamiliar or alien to us. Technological advancements have reshaped various realms of knowledge and power, leading to the convergence of sociocultural, political, and environmental practices. S.B. Divya's work, *Machinehood* (2021), explores this complex convergence from an Indian perspective, clarifying our ongoing process of transformation. She has infused her work with a heightened sense of realism, creating a familiar world that grapples with issues of privacy, bodily autonomy, religious beliefs, and economic inequality, which we are already confronting. Her novel also counters the idea of post gendered world as it recognises the continued relevance of gender in the posthuman landscape (Johny, 2024). *Machinehood* explores the plight of humans, represented by characters Welga Ramirez and Nitya Ramachandran, who rely on pills to compete with artificial intelligence. A group called "Machinehood" demands an end

to pill production and fights for machine rights to achieve equality with all other elements. The story follows Welga and Nitya as they attempt to address these issues. In this technological age, advanced capitalism and posthuman capitalism have emerged as new trends shaping the working class and production. Despite the fear that technology will replace human jobs, the author of Machinehood suggests that certain occupations remain exclusive to people. The novel also explores how information capitalism and surveillance capitalism have transformed knowledge, data, and technology into new forms of capital.

In the posthuman world, consumers are pressured to embrace "strongly recommended" products, falling prey to these new capitalist models. As rightfully stated by a critic, "The symbiotic relationship of flesh and machine in the cyber universe and the question of identities have an ideal space in *Machinehood*." Towards the end, Welga transforms into a 'Dakini,' a hybrid of human, AI and bot coexisting in one body. Ao Tara, the neo-Buddhist leader comments, "The Western way of thinking embraces duality. Good and evil. Man and woman. Mind and body. Human and machine. We reject these false dichotomies. Science has shown that our universe works across a range of possibilities. It embraces the infinite" (pp. 546). Gene editing could therefore be considered as having a double edge within the context of *Machinehood* itself (Johny, 2024). It has some potential for extraordinary breakthroughs in science—for instance, curing genetically transferred diseases and making humans more capable—but also raises profound ethical questions. What does it *really* mean to be "human?"

In the profound existence such as that of Dakini or other hybrid beings in the novel, the conventional boundaries of human and non-human, body and technology are blurred, challenging the very foundations of what we consider human. Where does the "human" start and where does it end? Or, in the case of *The Calcutta Chromosome*, does it make Mangala, a superlative being? What if this technology to inanimate life is accessible to all, or worse, just accumulated in the hands of a few? What does it mean to play God, if we have not already?

(b) Finding Futures through Ancient Wisdom

In *"*The Escapades of a Clone," the character of the Yogi acts as a link between the modern world struggling with the ethical challenges of biotechnology and the timeless spiritual wisdom found in the *Vedas* and *Puranas*. This proximity emphasises the limitations of contemporary science and suggests that the wisdom rooted in Indian spiritual heritage may provide solutions to the moral perplexity posed by emerging technologies. The Yogi is not merely a character but a symbolic figure representing the deep spiritual knowledge embedded in Indian culture. While the scientists in the story represent the pinnacle of modern intellectual achievement, Yogi embodies a different kind of wisdom—one that is not derived from empirical observation or technological innovation but from introspection, meditation, and spiritual practice. His insights challenge the notion that scientific knowledge alone is sufficient to navigate the complex ethical terrain of cloning and genetic manipulation. He suggests that true understanding emerges from aligning modern practices with the ethical and spiritual principles laid out in ancient texts.

The Puranas, a genre of ancient Indian literature, have played a pivotal role in shaping the ethical framework of Indian civilisation. These texts, composed between 300 CE and 1500 CE, are encyclopaedic in scope, covering a wide array of topics from cosmology and mythology to philosophy and ethics. The ethical teachings embedded within the *Puranas* have influenced not only religious practices but also social and moral conduct. Their narratives and moral stories continue to resonate in contemporary ethical discourse, particularly in the context of debates surrounding modern scientific advancements, such as genetic engineering and cloning. The article *Ecological Consciousness in Puranas: A Comprehensive Review*, (Kumar et al., 2023) advocates that the *Puranas*, "convey a deep reverence for the

environment, reflecting the symbiotic relationship between humanity and nature." This is evident in "The Escapades of the Clone" in which the character of Yogi serves as the moral compass in the narrative, embodying and advocating for adherence to dharma even in the face of modern scientific advancements. The ancient texts contain timeless truths that remain relevant in the modern world, especially when it comes to understanding the ethical implications of actions with far-reaching consequences, such as cloning; here, Yogi serves as a bridge between ancient spiritual wisdom and contemporary ethical dilemmas, particularly those arising from advances in biotechnology.

Yogi's knowledge, offers an alternative to the modern, often secular, ethical frameworks that dominate discussions about cloning and genetic manipulation. The spiritual traditions emphasise *dharma,* or righteous living, and the interconnectedness of all life, providing a counterpoint to the utilitarian and materialistic approaches that often dominate Western bioethics. The Yogi's knowledge is not limited to abstract principles but is deeply practical, offering guidance on how to live in harmony with the cosmic order. He challenges the reductionist and materialistic approach of modern science, standing in contrast to the modern ethical frameworks employed by scientists. Modern ethics, particularly those grounded in utilitarianism, consequentialism, or deontological reasoning, tend to focus on the immediate, tangible outcomes of actions. These frameworks prioritise efficiency, autonomy, and individual rights, often in a secular context that separates ethics from spirituality.

However, the Yogi, critiques this approach as being incomplete. His character argues that modern ethics often fails to account for the deeper, spiritual consequences of actions, particularly those that disrupt the natural order. This perspective is particularly relevant in the context of biotechnological advancements, where the manipulation of life raises profound ethical questions about the nature of existence, identity, and the soul. Rajan uses him as a means to advocate for a balanced approach to technological advancement—one that is informed by both scientific knowledge and spiritual understanding. This synthesis of modernity and tradition offers a pathway towards a more ethical and spiritually grounded approach to scientific progress.

4. CONCLUSION

In examining the ethical contemplations surrounding gene editing through the lens of Indian science fiction, this article has highlighted how speculative narratives engage with critical debates on technology, subjectivity, and marginality. The selected texts—Mohan Sundara Rajan's *"*The Escapades of a Clone,*"* Manjula Padmanabhan's *Harvest*, Amitav Ghosh's *The Calcutta Chromosome*, and S.B. Divya's *Machinehood*—demonstrate that the ethical stakes of gene editing are not confined to hypothetical futures but are deeply embedded in the socio-political and cultural complexities of our present. These works address the broader anxieties of the Anthropocene (Chakrabarty, 2009) by reflecting on the destabilisation of traditional boundaries between the human, the non-human, and the technological.

By engaging with discourses of the Fourth Industrial Revolution (Schwab, 2016) and posthumanism (Hayles, 1999), these narratives interrogate the consequences of biotechnology on human subjectivity, agency, and life itself. Gene editing, as portrayed in these stories, raises questions about what it means to be human, and whether technological enhancement risks eroding the moral and ontological frameworks that sustain human dignity. This is especially pertinent in the context of *bioethics,* where thinkers like Donna Haraway (1991) and Michel Foucault (1977) argue that the body becomes a site of power struggles, reconfigured by both political and technological discourses.

Drawing on postcolonial theory (Bhabha, 1994; Said, 1978), these stories critically engage with the legacy of colonialism, emphasising that the marginalised and subaltern are frequently excluded from shaping or benefiting from technological advancements. For example, Padmanabhan's *Harvest* underscores the exploitation of bodies from the Global South to sustain privileged lives elsewhere, while Ghosh's *The Calcutta Chromosome* subverts the linear narrative of scientific progress by foregrounding indigenous knowledge systems as counterpoints to Western epistemology.

These narratives also align with the aesthetics of *cyberpunk* by presenting dystopian visions of hyper-capitalism, where technological enhancement becomes both a tool for empowerment and oppression. S.B. Divya's *Machinehood* offers a nuanced exploration of the blurred lines between human and machine, echoing N. Katherine Hayles's (1999) argument that the posthuman subject emerges in the interface between biological and digital systems. Sundara Rajan's *"*The Escapades of a Clone*"* further complicates this discourse by presenting cloning as a technology that destabilises identity, individuality, and moral responsibility, urging readers to rethink ethical frameworks rooted in notions of autonomous human agency.

Indian science fiction offers an invaluable contribution to global bioethical debates by situating gene editing within the philosophical traditions of Indian thought, such as *dharma* and *karma*, which emphasise interconnectedness, responsibility, and harmony across all forms of life. These narratives call for a recalibration of ethics in the age of biotechnology—one that not only considers scientific capability but also attends to questions of justice, inclusion, and ecological balance. In doing so, they offer an alternative to the neoliberal discourse of technological progress, suggesting that ethical approaches to gene editing must be attuned to both historical inequalities and the entangled futures of human and non-human existence.

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