

Computing Social Change and Sustainability in the Martian Chronicles

Ms. Nikita and Prof. (Dr.) Amrita

Department of English, BPS Women's University, Sonipat, Haryana

DOI: <https://doi.org/10.51584/IJRIAS.2025.10040005>

Received: 11 April 2025; Accepted: 14 April 2025; Published: 27 April 2025

ABSTRACT

Literature has long served as a powerful medium for reflecting and influencing social, economic and environmental change. Science fiction as literary genre serves as a critique on unsustainable practices as well as envisions alternative futures. In the array of SF writers, Ray Bradbury's 'The Martian Chronicles' (1950) is not merely a work of speculative fiction but a literary precursor to contemporary sustainability debates. By investigating this novel about human hubris, this research paper aims to highlight how efforts of sustainability fail leading to environmental degradation, resource exploitation and cultural erasure through post-colonial ecocritical lens. UNESCO also distinguishes between a more sustainable world (sustainability conceptualized as a long-term goal) and sustainable development which is a referent of the various processes and pathways to attain it. In the light of the aforesaid, this research paper examines how this novel presents a nuanced critique of humanity's approach to their home planet, ecological stewardship, ethical responsibilities towards human civilization, disease, the need for preserving forests and rethinking of space colonization policies.

Keywords: Sustainability, Bradbury, Science Fiction, Space Exploration, Cultural Erasure

INTRODUCTION

The inter-generational ethics which cater to the long-term future of a community in which the economic, social and environmental opportunities are present could be understood as 'sustainability'. Therefore, sustainable development is a term used for accommodating the needs of the present as well as the future generations. It also includes accounting for decisions taken with regard to all socio-economic, cultural and environmental considerations. Usubiaga-Liano and Ekins (2021) presents a survey of the literature which propose what is important for maintaining a strong environmental sustainability, ranging from maintaining 'capital' (Goodland, 1995) to maintaining 'harmony with nature' at an appropriate level (Moldan et al., 2012). It is pertinent here to mention that not only the studies in social sciences, but humanities too have a lot to offer regarding the seventeen Sustainable Development Goals (SDGs) framed by the United Nations. English literature, which includes theories and practices pertaining to human phenomenon presents an interesting study as well as contribute towards the drastically affecting scenario of unsustainable practices in the post-modern times. Literature then, certainly, serves as a mirror to our society, our values, our conflicts, and our aspirations, while simultaneously shaping the social, cultural and environmental consciousness. It is rightly quoted by Dr. Uttam R. Patil (2022) in the paper, *Contribution of Literature in Sustainability Development*, "Literature is a purely human phenomenon" (p.19256). It aims to entertain as well as educate readers. It educates people by making them aware about the ongoing and forthcoming global issues by being functional, through its various genres, in raising awareness about sustainability practices and the consequences of ignoring it. SF is one such genre which has long served as a medium through which both utopian possibilities and cautionary tales about unsustainable practices are explored. Its property of speculative extrapolation makes it particularly useful in engaging with pressing issues, including sustainability, ecological crises, and ethical dilemmas related to human expansion and resource consumption.

From early speculative works to contemporary eco-fiction, SF has examined the consequences of unchecked technological expansion. To name a few, *Dune* (1965) by Frank Herbert, Harry Harrison's *Make Room! Make Room!* (1966), John Brunner's *Stand on Zanzibar* (1968), Ursula K. Le Guin's *The Left Hand of Darkness*

(1969), *Oryx and Crake* (2003) by Margaret Atwood, and *The Windup Girl* (2009) by Paolo Bacigalupi are SF novels that explore the consequences of untenable practices by mankind. Besides, issues related to sustainability have been explored by various Indian authors viz. Amitav Ghosh's *The Calcutta Chromosome* (1995), Anil Menon's *The Beast with Nine Billion Feet* (2009), Vandana Singh's *Ambiguity Machines and Other Stories* (2018) and Kirankumar Singh's *The Americans and the Indians Defend the Earth* (2022).

Among the multitude of celebrated authors, Ray Bradbury (1920-2012) is one of the most noted 20th century American writer who has worked across a variety of genres including fantasy, SF, horror, mystery and realistic fiction. His best-known work is *Fahrenheit 451* (1950) and other works include *The Martian Chronicles* (1950), *The Illustrated Man* (1951), *The October Country* (1955) etc. The New York Times (2012) addressed Bradbury as, “the writer most responsible for bringing modern science fiction into the literary mainstream”. He uses allegorical techniques considering science to be incidental to his writing. Besides, his choice of thematic arrangement and narrative technique not only claims his interest in development of science but also using it as a frame for social commentary.

The selected novel, *The Martian Chronicles* (1950) by Ray Bradbury is a fix-up novel chronicling colonization of Mars by humans. It is a collection of about 15 short stories and 11 vignettes spanning from 1999 to 2026. Using third person omniscient narration, the perspective shifts across different human beings and Martian characters. The tone of the stories varies from being lyrical, nostalgic to critical and foreboding. The author has purposefully restrained himself from using jargons and scientific terms in the novel. He, rather, uses formal and archaic language for the Martians, pointing towards an ancient civilization and then contrasts it with the *Earthlings* by using colloquialism and mid-20th century American English. The characters are mainly stereotypes and do not have a round development because they are involved only in one story. “Bradbury is not dealing with individual man, but mankind” (Grimsley, 1970, p. 1239). The novel starts with failed expeditions to Mars and depicts native Martians as an advanced yet declining civilization. Eventually, the *Earthlings* colonize Mars, bringing their culture with them. It includes their march of tech-advancements, disease along with their arrogance which almost made the Martian race extinct. Towns were set up on Mars resembling human colonies on Earth but the settlers were always nostalgic and suffered existential emptiness. In the end, Mars becomes isolated, with only a few survivors, because all the humans are forced to abandon it and leave for Earth owing to a nuclear war taking place on Earth. The novel explores themes of colonialism, environmental destruction, cultural loss, and the psychological effects of displacement.

Conceptual Framework

There are many theories available for examining sustainability and its development. To name a few, the Five Capitals Model, Triple-Bottom line (TBL) model, Sustainable Development Goals (SDGs) model, the Rogue Agent theory, Collective Stewardship theory of Sustainable Development, etc. However, the base line remains that most of the theories are either anthropocentric (human-centered), or bio-centric (life centered) along with using taxonomies like shallow ecology vs deep ecology, techno-centricism vs eco-centricism, imperialism vs democratic approaches. Nonetheless, this research paper shall embark on an Environment, Society and Governance framework (ESG) with focus on eco-criticism aided by interdisciplinary contextualization of sustainable practices arrived at and critiqued through textual analysis of *The Martian Chronicles*. The methodology shall be interdisciplinary taking empirical view of literature in the degree of sustainability between natural capital and other forms of capital. (Cohen et al., 2019). Such an investigation is scarce. If we assume *a priori* that weak environmental sustainability shall affect the welfare of capital, it will generate an aggregation of components involved to call for multi-dimensional diagnostics and low carbon emissions; there is a need for constructing a strong social condition to achieve desirable sustainable goals. Therefore, this research studies *The Martian Chronicles* from the perspective of sustainability as a value addition to both literary and environmental scholarship. By connecting speculative fiction with sustainability and eco-criticism, this triad model integrates humanities, sciences and global issues. In the present times, when projects for space explorations are going on, this work goes a step ahead and warns about the possible issues that the human race might face and the damage that they could do to the foreign environments, consequent to their untenable practices. Given the accelerating pace of space exploration, with SpaceX targeting Mars settlement by the 2030s and NASA's Artemis program laying groundwork for extraterrestrial habitation, these implications are both timely and urgent.

Textual Analysis

The Martian Chronicles projects American society just after the World War II and its devastating, apocalyptic consequences. Structurally, the novel is in linear arrangement where each story makes a chapter with an overall chronological ordering of the novel's plot which includes four US exploratory missions, 16 chapters about human colonization of Mars including the initial human contact with the surviving Martians and three chapters about Martian settlers and the aftermath of global nuclear war on Earth. The chronology is formatted with the date of the story followed by a colon and the title of the story. In the present scope of the paper, selected stories have been extricated from the novel to compute arguments of social change and sustainability:

The Collapse of the Martian Civilization: A Warning on Sustainability

The civilizations that do not adapt to environmental changes and external pressures are bound to collapse. This precedence is set by Bradbury through the decline of the Martian race. The story *The Earth Men*, illustrates that the Martians were so closed to believe any possibility of life outside their planet that when the second expedition from Earth reached Mars, they did not believe the humans. The Martians tend to think that Captain Williams, leader of the expedition, was an insane Martian who has aced his telepathic skills and he was using them to create his team members. The Martians believed that Captain Williams was falsely projecting the fact that they flew in a rocket to come to Mars. The Martian psychologist even calls Captain William “a psychotic genius” (p. 37). The Martians relied heavily on their telepathic abilities which made them less adaptable to unforeseen changes. In the story *The Third Expedition*, the Martians again use telepathy to trap and kill the *Earthlings*. They use the mind, the memories of the Earth men firstly to get them emotional; secondly to lose their sense of reason and finally to murder them. The over-reliance of Martians on telepathy, mirrors the unsustainable human societies that over-exploit the resources without developing ‘resilience strategies’. A real-world instance of this situation can be drawn from the decline of the Mayan civilization. The Mayans relied heavily on agriculture and deforestation, which eventually led to soil depletion. Parallel can be drawn by studying Richard Gill's *The Great Maya Droughts* (2000) which speaks of societal collapse aided by environmental stress.

The resistance of Martians to change is depicted through their act of refusal to acknowledge the presence of humans and their deceptive strategies. It points towards a civilization struggling to cope up with change. The Martians are depicted as an inward-looking society, therefore failing to recognize and prepare for external threats. Biological vulnerability of the Martians to chickenpox reflects the dangers of monocultures and lack of genetic diversity in ecological sustainability. Societies that deny or isolate themselves from change, often fail to sustain themselves. Historian Timothy Brook, in *The Troubled Empire* (2010), discusses the downfall of Ming dynasty because of isolationism. They isolated itself from the world and focused inward, making it unprepared for external pressures like Manchu invasions. “Civilizations die from suicide, not by murder.” (Toynbee, 1934-1961; Aridan, 2006, p. 91)

This relates to modern issues such as denial to climate change and the reluctance to shift to renewable energy sources. In 2024 University of Michigan concluded that nearly 15% of Americans deny that climate change is real. This is fueled by misinformation. According to a study conducted by Geoffrey Supran and Naomi Oreskes (2017), fossil fuel companies like Exxonmobil knew about climate change from as early as 1970s but they still funded campaigns to discredit it. It was an act of resistance against dumping fossil fuels and converting to use of renewable energy sources. Unsustainable practices are continued, at some level, due to high technological optimism—that technology alone will solve climate change, reducing the need for sustainable practices. Jacquelyn Ottman argues in her book *The New Rules of Green Marketing* (2011) that Greenwashing is also responsible for inactivity of public towards unsustainable practices. Green marketing establishes that companies use sustainability as a marketing tool rather than a genuine commitment to environmental and social responsibility, leading to ‘greenwashing’ — a condition where companies claim to be sustainable without making any meaningful changes. In *The Martian Chronicles*, Bradbury suggests that sustainability is not just about ‘resource management’ but also about resilience against unforeseen disasters. He highlights how technological and biological dependencies can make societies vulnerable, reinforcing the idea that sustainable civilizations must anticipate and mitigate external risks rather than assume dominance over their environments.

Psychological and Cultural Sustainability:

The fact that colonization takes its toll on the psychology of the settlers needs no justification. There have been many precedences around us found in human history. This aspect is explored in *The Martian Chronicles*. The 'Earth people' who have come to Mars experience isolation, nostalgia and have existential crisis as demonstrated in the stories *The Settlers* and *The Silent Towns*. It is suggested when Bradbury writes in *The Settlers*, "and the men shuffled forward, only a few at first, a double-score, for most men felt the great illness in them even before the rocket fired into space. And this disease was called The Loneliness" (p. 96).

Besides, cultural sustainability involves respecting and preserving cultures. The story *And The Moon Be Still As Bright* highlights how the archaeologist Mr. Jeff Spender criticizes the *Earthlings* for their disrespect towards the Martian culture and environment while he recognizes the Martians as a sophisticated civilization. Mr. Spender holds himself and his race accountable for the extinction of the Martians. The humans landed on that "immense tomb" (p. 64), and instead of showing some courtesy, the members of the fourth expedition started to disrespect the dead and destroy their legacy. This infuriated Mr. Spender and he took it to himself to preserve whatever was left of the Martians, but he could not survive the attack from his team members. He was concerned that humans would destroy Mars too, just as they wiped out the Earth. It is, time and again, repeated in the stories that humans destroy whatever they touch. The cyclic destructive nature of human beings is presented by Mr. Spender when he says, "We Earth men have a talent for ruining big, beautiful things" (p. 71). Therefore, he made the captain to think and do whatever he can "to restrict tearing this planet apart, at least for fifty years, until the archaeologists have had a decent chance" (p. 90). Stories like *The Musicians* unfold how (human) children play with bones of dead Martians and make them their fife (music instrument), disrespecting the dead. It brings to the forefront the cultural insensitivity of the humans towards Mars.

This is an example of cultural imperialism, where dominant groups erase or marginalize indigenous cultures. It also makes evident Bradbury's implication that sustainability is not just about resources but also about maintaining cultural and psychological well-being. The noted Columbian-american anthropologist, Arturo Escobar argues in *Encountering Development: The Making and Unmaking of the Third World* (1994), how the Western-centric sustainability frameworks often ignore indigenous knowledge and non-Western perspectives, leading to ineffective and harmful solutions. The "development apparatus" of the state or people in power does not coordinate and cohere with the political and cultural ecology of the subaltern and/or the "third world". This echoes in the present novel which expose the failure of human society on Mars reflecting unsustainability of uprooting populations without cultural, psychological or emotional integration. It resonates with the current issue of globalization where social cohesion is disrupted due to rapid urbanization and migration.

Failure of Technological Utopias and Environmental Unsustainability:

Technological utopias are dreams of the future where machines will solve all the disputes and dilemmas lurking over the predicament of mankind, often giving minimal consideration to the challenges that accompany it. Over-reliance on technology for achieving sustainability is criticized by Bradbury in *The Martian Chronicles*. The story *There Will Come Soft Rains*, where an automated house on Earth catches fire but continues to function long after the nuclear war has swept away its residents. However, owing to the shortage of water resulting system failure consumes the house. Though nobody stays in the house, yet the AI house is functioning by itself doing tasks like cooking, filling water for bathing, washing dishes, etc. The text speaks, "The house was an altar with ten thousand attendants, big, small, servicing, attending, in choirs. But the gods had gone away, and the ritual of the religion continued senselessly, uselessly. (p. 223). Therefore, this house is a perfect example of what William Stanley (1865) quotes as Jevons Paradox (improved efficiency can lead to higher resource use)!

The Earth settlers believe that they can terraform Mars but their attempts lead to failure and destruction. *Interim*, *The Green Morning* and *The Locusts* are stories which illustrate the earthlings, terraforming Mars into a copy of Earth only to see the collapse of their own civilization. The novel illustrates the imposition of Earth's environment on Mars by the settlers, leading to the destruction of Martian life. In *The Green Morning*, Benjamin Driscoll is seen planting trees on Mars to create an environment similar to Earth, without realizing that it may disrupt the natural balance of that ecosystem. He is not interested in preserving and adapting rather

he alters the environment destroying any chances of the Martian life to survive. It is clearly stated in the story *Ylla* by the character Yll, “The third planet (Earth) is incapable of supporting life. Our scientists have said there’s far too much oxygen in their atmosphere” (p. 5). In *The Locusts* also, humans alter the new planet. Bradbury writes about the men who came to Mars from Earth, “And from the rockets ran men with hammers in their hands to beat the strange world into a shape that was familiar to the eye” (p. 103). A similar tone is echoed by Rachel Carson, in her book *Silent Spring* (1962), which critiques the unchecked use of technology and its rampage on ecosystems. It establishes that tech-headway often comes at the expense of the environment, undermining the very systems that sustain life.

Humans disregard Martian ecology which is congruent to the real world colonial histories where indigenous ecosystems were disrupted in favour of unsustainable development. Precedence can be taken from the British colonizers when they forced the Indian farmers to cultivate Indigo despite of its harmful effects on the fertility of the soil. Bradbury seems to echo this plight in his novel that true sustainability requires ethical scrutiny before the march of technological progress. Vanessa Levesque states in her book *Sustainability Methods and Perspectives* (2019), “using ethics to help solve sustainability problems is one way to ensure that all of these voices are heard, including ones that may be more difficult to take into account, such as those of plants, animals, and future generations” (Ch.10).

Sustainable Existence:

Although the primary focus of the book is on unsustainability of space colonization, Bradbury still manage to insert some glimpses of sustainable existence. In the *Night Meeting*, Pop, the owner of a gas station on Mars, describes the true essence of migrating to a new planet. He believes in maintaining the strangeness of the new place. He says, “If you can’t take Mars for what she is, you might as well go back to earth” (p. 105). In the story, *The Million-Year Picnic*, Thomas family seeks refuge on Mars escaping the nuclear war befalling Earth. The members of that family did not try to alter the ecosystem rather plan on living in harmony with it. They have come without any supplies which is in contradistinction to earlier settlers who even brought their own wood from earth to make furniture. They are found waiting for some other families to join them so that they can start afresh. The father burns the map of the Earth, symbolizing adaptation to Mars and its environment living with harmony sustainably. This exhibits that if humans do not try to exploit the planet but preserve it, they themselves can adapt according to their new home, fostering a sense of belonging and respect, which is crucial for long-term sustainability. The adaptation of Thomas family prioritizing integration over domination offers an optimistic vision for space exploration that respects the planet’s natural state.

FINDINGS

Several lessons for ‘Human Sustainability’ could be drawn from *The Martian Chronicles* — the Martians’ downfall warns humanity that their civilization might be awaiting the same fate if they fail to address unsustainable practices. Bradbury clearly voices this issue in the story *The Million Year Picnic*, where the father hints that humans might repeat the same mistakes which they did on Earth and lead to its destruction too.

Bradbury's depiction of Mars raises apprehensions about the cyclical nature of unsustainable behaviour. He suggests that a civilization must balance technological progress with environmental responsibility to ensure long-term survival. Through the destruction of both Martian and human civilizations, the novel suggests that true survival depends not on conquest but on ethical stewardship of resources and respect for existing ecosystems. In the story *Night Meeting*, the transient nature of a civilization is reiterated through the echoes of the past Martian society. Therefore, one of the most profound messages conveyed in the novel is — No civilization can survive if it does not live sustainably, no matter how advanced they are! Bradbury

warns against unchecked pace of unsustainable resource consumption and contemporary fears of climate change inducing societal collapse. The destruction of Earth warns about the consequences of unsustainable choices such as war for both humanity and the planet. It also aligns with UNESCO's distinction between a sustainable world (long-term goal) and sustainable development (processes to attain it). The environmental aspect is evident in the necessity to preserve Martian ecosystems; the social dimension in respecting Martian culture; and the economic dimension in ensuring that colonization does not exploit resources unsustainably. It

urges readers to reconsider humanity's relationship with ecology, cultural heritage and human well-being. Besides, in terms of policy implementation, the expected outcomes can be stated. To be candid, with an increasing interest in Mars colonization by NASA, SpaceX and other space agencies, Bradbury's work can help form international guidelines for planetary colonization, emphasizing respect for environment and culture. Regulations to check environmental mismanagement can be accounted from this paper presenting a case study of how Mars became another site of human exploitation. This study underscores to regulate rules for planetary exploration, resource extraction and ensuring future space missions. Policy makers can gain insight through the delineation of speculative themes provided by SF writers.

REFERENCES

1. Aridan, N. (2006). Introduction. In A. Eban, *The Toynbee Heresy* (pp. 91-92). Israel Studies. 11(1). 91-107. <https://doi.org/10.1353/is.2006.0004>
2. Atwood, M. (2003). *Oryx and Crake*. Canada: McClelland and Stewart.
3. Bacigalupi, P. (2009). *The Windup Girl*. United States: Night Shade Books.
4. Bradbury, R. (1953). *Fahrenheit 451*. United States: Ballantine Books.
5. ... (1951). *The Illustrated Man*. United States: Doubleday.
6. ... (1950). *The Martian chronicles*. United States: Doubleday.
7. ... (1955). *The October Country*. United States: Ballantine Books.
8. Brook, T. (2010). *The Troubled Empire*. United States: Harvard University Press.
9. Brunner, J. (1968). *Stand on Zanzibar*. United Kingdom: Doubleday.
10. Burrow, C. (August 22, 2021). "Ray Bradbury 101". The American Writers Museum. <https://americanwritersmuseum.org/ray-bradbury-101/>.
11. Carson, R. (1962). *Silent Spring*. United States: Houghton Mifflin.
12. Cohen, F., Hepburn, C. J. & Teytelboym, A. (2019). Is Natural Capital Really Sustainable. *Annual Review of Environment and Resources*. 44. 425-448. <https://doi.org/10.1146/annurev-environ-101718-033055>
13. Escobar, A. (1994). *Encountering Development: The Making and Unmaking of the Third World*. New Jersey: Princeton University Press.
14. Ghosh, A. (1995). *The Calcutta Chromosome*. India: Picador.
15. Gill, R. B. (2000). *The Great Maya Droughts*. University of New Mexico Press.
16. Goodland, R. (1995). The Concept of Environmental Sustainability. *Annual Review of Ecology and Systematics*. 26. 1-24. <https://doi.org/10.1146/annurev.es.26.110195.000245>.
17. Grimsley, J. (1970). "The Martian Chronicles": A Provocative Study. *The English Journal*. 59(9), 1239-1242. <https://doi.org/10.2307/814148>
18. Harrison, H. (1966). *Make Room! Make Room!* United States: Doubleday.
19. Herbert, F. (1965). *Dune*. United States: Chilton Books.
20. Jevon, W. S. (1865). *The Coal Question*. United Kingdom: Macmillan and Co.
21. Jonas, G. (June 6, 2012). Ray Bradbury, Who Brought Mars to Earth with a Lyrical Mastery, Dies at 91. *The New York Times*. <https://www.nytimes.com/2012/06/07/books/ray-bradbury-popularizer-of-science-fiction-dies-at-91.html>
22. Levesque, V. (2019). *Sustainability Methods and Perspectives*. Canada: Pressbooks
23. Menon, A. (2009). *The Beast with Nine Billion Feet*. India: Young Zubaan.
24. Moldan, B., Janoušková, S. & Hák, T. (2012). How to Understand and Measure Environmental Sustainability: Indicators and Targets. *Ecological Indicators*. 17. 4-13. <https://doi.org/10.1016/j.ecolind.2011.04.033>
25. Mullinix, N. (2024). Nearly 15% of Americans deny climate change, study finds. University of Michigan: The University Record. <https://record.umich.edu/articles/nearly-15-of-americans-deny-climate-change-study-finds/>.
26. Ottman, J. (2011). *The New Rules of Green Marketing*. UK: Greenleaf Publishing.
27. Patil, U. R. (2022). Contribution of Literature in Sustainable Development. *IJFANS International Journal of Food and Nutritional Sciences*. 11(11), 19256-19259. <https://www.ijfans.org/uploads/paper/60e84f78c293e43c0915a6b8bfdb6d7a.pdf>.
28. Singh, K. (2022). *The Americans and The Indians Defend the Earth*. India: Wisdom Words.

29. Singh, V. (2018). *Ambiguity Machines and Other Stories*. United States: Small Beer press.
30. Supran, G. and Naomi O. (2017). Assessing ExxonMobil's climate change communications (1977–2014). *Environmental Research Letters*. 12(8). <https://iopscience.iop.org/article/10.1088/1748-9326/ab89d5>.
31. Toynbee, A. J. (1934-1961). *A Study of History*. United Kingdom: Oxford University Press.
32. Guin, U. K. L. (1969). *The Left Hand of Darkness*. United States: Ace Books.
33. Usubiaga-Liaño, A. and Ekins, P. (2021). Monitoring the Environmental Sustainability of Countries Through the Strong Environmental Sustainability Index. *Ecological Indicators*. 132. <https://doi.org/10.1016/j.ecolind.2021.108281>