

**EXPLOITATION AND CONSERVATION:
HUMAN ATTITUDES TOWARDS NATURE IN FRANK HERBERT'S *DUNE***

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Abstract: Employing ecology as the pivotal basis of its narrative, *Dune* by Frank Herbert is regarded as the pioneer of ecological science-fiction novels. This qualitative study intends to examine the exploitation and conservation of nature and how human background influences such behaviours in Frank Herbert's *Dune*. The researcher employs an ecocritical approach to literature to discuss the compiled textual data. Through the thematic analysis technique, this article reveals how *Dune* highlights the issues of the authority party and the indigenous society of Arrakis triggered by the abundance of the spice melange and the absence of water and vegetation, where these two sides of the population have contradictory intentions towards natural resources—exploiting and conserving. Moreover, the study unveils that the extortion attempts of the Galactic Imperium, the Harkonnens, CHOAM, and the Spacing Guild are driven by political and economic motives, and the conservation effort of the Fremmen and the Atreides is the outcome of their ecological awareness.

Keywords: *conservation, ecocriticism, ecology, exploitation, nature*

INTRODUCTION

Dune is a novel that narrates life in a fictional world called Dune or Arrakis, a desert planet enshrouded in an immense amount of sand and decorated with canyons, escarpments, pavements, and frequent raging sand storms. Winning the Best Novel category in the 1966 Hugo Award and Nebula Award, *Dune* reflects the complexity of philosophical and political concerns. However, the most neoteric issue of this novel is its concern about ecology, in which the narrative heavily leans against it to the point that the crisscrossing conflicts on the imaginary planet of Arrakis would fall apart without it. As an environmentalist, Herbert caught the initial idea for *Dune* after his visit

on a project of dunes stabilization in Oregon (Pak, 2016) and needed years to create the whole imaginary ecosystem of Arrakis.

Dune comes about in a distant future where humankind lives in a feudal interstellar society headed by Padishah Emperor Shaddam IV of House Corrino. Unknown to other Houses, the Corrinos maintain a private political affair with House Harkonnen. During the long-haul regime of the Harkonnens, they have roamed around the ruthless sand planet for the most precious commodity in the Known Universe—the spice or melange. At a point, the coalition of Corrino-Harkonnen gives birth to a dirty plot to ruin House Atreides, one of the most wealthy and respected Houses. Manifesting the plan, the Emperor replaces the legit ruler of Arrakis with the Atreides, while the Harkonnens continue their project in secret. The demand and value of melange skyrocketed because of its capability to offer superhuman traits—foresight, long lifespan, psychic—and its difficulty to obtain, which must be harvested from the excretions of giant sandworms that live nowhere else but Arrakis. During their reign on Arrakis, House Atreides affiliates with the Fremen, the indigenous tribe who hold the key to spice production. No one understands these monstrous creatures as deep as the Fremen, who worship them as the embodiment of God with the name “the maker” or “Shai-Hulud”. The Fremen are even capable of riding Shai-Hulud by using a particular Fremen hook, through which they may travel to and fro across the deadly dunes and acknowledge the unnoticed terrain of Arrakis. This alliance later brings the Atreides to join Liet Kynes—the leader of Fremen and the Imperial Planetologist—and the other Fremens to continue the secret project of terraforming Arrakis to make it more hospitable for humans. The idea of terraforming arises from the story of reshaping a foreign planet into an earth-like one in science-fiction literary works. The term terraforming is derived from terra, which means ‘earth’ or ‘land’ in Latin, and the gerund forming that interpreted as the process of adapting a foreign planet by transforming it into an earth-alike world through various methods such as modifying its atmosphere, climate, ecology, and topology (Pak, 2016, p. 1).

Regardless of the complex storyline, *Dune's* attention to ecology is presented majorly through the issue of the human-nature relationship as part of an ecosystem of the imaginary planet Arrakis. As an environmentalist, Frank Herbert needed five years to create the whole ecosystem of Arrakis. *Dune* has brought Herbert to win the

prestigious Hugo Award and Nebula Award for Best Novel, both in 1966. The novel was adapted to the big screen in 1984 and 2021, and a mini-series in 2002.

Frank Herbert's detailed presentation of the ecological awareness and the foretelling of humanity's future dilemma regarding exploitation and conservation of nature has incited many writers, including the writer of this research, to dig deeper into the issue. Encircling the lack and abundance of natural resources, the writer attempts to discuss the contradictory behaviours of humans towards the environment portrayed in the book using the theory of ecocriticism.

REVIEW OF LITERATURE

Ecocriticism

The concept of ecology has crossed beyond science to other fields, including literature. Drawn into literature, ecology gives birth to narratives that are centred on nature. The elements that originated eco-centric literature may be traced back to the eighteenth century following the emergence of Romantic poets that are identic with the presentation of the allure of nature in their writings. Among these poets, William Wordsworth is considered the most popular figure of British nature writing (Brian, 2007, p. 16). Being a naturalist writer who embeds his adoration for nature in many of his works, Wordsworth places confidence that nature is a forceful device to enhance human character by purging one's soul and enriching one's thoughts (Zhang, 2018). Though Romantic poems are widely associated with the delicacy of nature, their initial theme is emphasizing human detachment from nature as an insinuation against Industrial Revolution that regarded nature as a resource that is worth to be depleted (Ramazani & Bazregarzadeh, 2014).

However, eco-consciousness was more thrived among American writers compared to Europe. One of the crucial figures of American nature writing is Henry David Thoreau, who delivers the importance of changing view from ego-consciousness to eco-consciousness through *Walden; or, Life in the Woods*. Thoreau accounts that wilderness is the form of world preservation, humans are experts in world devastation, and nature is the absolute provider of tranquillity. Different from British nature writing which highlighted the threats of Industrialisations to the environment, American nature writing had a deep root in celebrating the beauty of nature (Mishra, 2016).

The American and British eco-centric movements later fused into one universal perspective upon perceiving ecological issues around the globe as the root of present-day ecocriticism. The term ecocriticism was brought to existence by William Rueckert in an essay entitled *Literature and Ecology: An Experiment in Ecocriticism* (1978) (Hojjat & Daronkolae, 2013). Pioneering the emergence of ecocriticism, Rueckert interprets it as the appliance of ecology and ecological notions to literary study. In the late twentieth century, Cheryll Glotfelty reintroduced the concept of ecocriticism to literature in *The Ecocriticism Reader: Landmarks in Literary Ecology* (1996). She conveys that an ecocritic study is constructed upon the premise that culture and nature have an inseparable connection that binds and affects each other, supporting Rueckert's argument that the universal value conveyed by ecocritical works is the aftereffects of human behaviours toward the environment (Glotfelty & Fromm, 1996). Concerning ecology in the ecocritical field, Lawrence Buell argues that it extends to environmental imagination, a collection of artistic preferences that are not necessarily limited to nature writing and ecological realism and is particularly mindful of the works of fiction and non-fiction that emphasize nature and the elements of nature as stand-alone instruments, rather than supporting agents for human (Huggan & Tiffin, 2009, p. 13). Nevertheless, at the conceptual and practical level, the concern of ecology in environmental criticism is to reveal the foundation upon which humans and nature may exist, develop and cooperate side by side in the ecosystem (Glotfelty & Fromm, 1996).

Exploitation

Albeit popularly associated with Marxism, exploitation is broadly defined as an act of gaining benefits at the expense of others (Christman, 2002). Specifically to environmental resources management, exploitation refers to the usage of natural resources urged by the demand of that resource, without an attempt to maintain its availability in nature or renew it for the future. In history, the early ecocritical movement delivered a critique against nature extortion in the name of the development of industry and technology, sparked by the arrival of the Industrial Revolution. Henceforth, the theory of ecocriticism itself was established as an indirect result of nature exploitation by humans who contributed to the depletion and even the loss of natural resources.

Several researchers had discussed environmental exploitation in literary works, one of whom was Abhra Paul. His discussion of Samarez Mamzudar's works of fiction reveals that humans continually compete with wildlife for space and resources through the practice of land clearing and exploitation, which triggers the loss of both habitat and inhabitants, including humans themselves. By portraying violations and investigations regarding the uncontrollable anthropogenic activities, such as smuggling, poaching, extorting, and disrupting biodiversity, Mamzudar reminds the readers that humanity is graced with the highest intelligence of all creatures, which should have made them bond a decent relationship with nature instead of degrading it like what occurs nowadays (Paul, 2018).

Conservation

The term conservation, in general, is associated with the preservation and protection of the environment to safeguard it from the detrimental effects of needless excessive interactions with living things. The modern definition of conservation, according to David Kemp, also comprises management and enhancement of the quality of environmental resources for the use of present and future generations, employing both ecological science and principles (D. Kemp, 1998). In addition, E.O. Wilson states that human's most fundamental trait is the insight of interrelation with nature, which is reflected in many works of literature. Nowadays, the literary works that highlight ecocritical themes have evolved along with the improvement of the human mind in depicting, perceiving, and handling nature, from what was a critique to a satire (Wali et al., 2017).

Concerning eco-consciousness as a piece of knowledge, to bring out the effectiveness of the long-term pedagogy, the influential movement seems better than the radical, one of which is implementing ecological sense in the culture. Kouakou argues that indigenous doctrine is a precise way to pass environmental value across generations (Kouakou, 2020). His study on *The Revolutionaries* unveils that ecological concern in African culture is handed down to generations as seen in the oral folklore and spiritual ritual performances, which have proven to prevent environmental abuse for quite a long time. Nevertheless, the expansion of the Western Industrial Age that conducted ecological misuse swayed the Africans from their eco-centric value. It can be concluded

from Kouakou's study the that radical behaviour of humans against nature may spawn in the perishing of traditional culture and the dropping of environmental sustainability.

METHOD

In conducting this research, the writer applies the qualitative method, where the data is gathered from text examination, behaviours investigation, or interviewees (Creswell & Creswell, 2018). After the data is examined, the result is presented in a descriptive written text (Tarigan et al., 2021). Applying thematic analysis, the researcher uncovers the connection between humans and the environment and the influencing factors behind their attitudes. This study focuses only on the environmental issues narrowed down to nature exploitation and nature conservation as the form of the entanglement between the environment of Arrakis and its inhabitants to prevent overabundant analysis.

The writer undertakes this research in several steps, beginning with reading Frank Herbert's *Dune* to gain a deeper comprehension of the content and obtain a precise topic, then finding a fit theory for the issues in the literary work. The next step is collecting the raw data by highlighting the monologues and dialogues relevant to exploitation and conservation. Lastly, the writer analyses the collected data using the ecocriticism approach developed by Cheryl Glotfelty, which she defines as an eco-centric study regarding the relationship between literature and nature (Glotfelty & Fromm, 1996). Although Glotfelty's idea of ecocriticism concerning the association of literature and nature remains substantial, she accepts the broadening of her approach, reaching the discourse of environmental ethics and philosophy. Thus, several supplementary theories are also involved in helping the researcher study the topic.

FINDINGS AND DISCUSSION

Findings

The Government Party and Exploitation

Politic is a common issue used as the foundation of science fiction writings. The presence of an omnipotent authority system is prevalent to depict a centralized order in such literary works. The power of the spice over the condition of the universe brings melange as the source of both knowledge and force, which agree with Michel Foucault's

argument that knowledge is in line with power (Viberg, 2019). Adam Stock argues that dystopian fiction is often purposely written as political and politicized works and expected to provoke the readers' train of thought (Stock, 2019). The friction between the future civilization of humankind and its disreputable government is one of the pedestals that construct Frank Herbert's *Dune*. Similar to most science fiction works of literature, economy and machinery also have their portion in shaping the narrative of *Dune*, precisely concerning the government and its factions.

“We have a three-point civilization: the Imperial Household balanced against the Federated Great Houses of the Landsraad, and between them, the Guild with its damnable monopoly on interstellar transport. In politics, the tripod is the most unstable of all structures.” (Herbert, 1965, p. 32)

The quotation above discloses that politics is an influential pillar in the storyline of *Dune*, with the role of the Padishah Emperor as a supreme ruler representing the authoritarian regime of the Known Universe. Nevertheless, the Galactic Padishah Empire hosts a tortuous political scheme built up by several parties who aim to earn profit and own power in Arrakis. *Dune*'s unstable political tripod stands upon the desire of these three institutions to deplete the natural resource of melange. Liet Kynes himself eyewitness that anyone assigned by the Imperium on this desert planet is either merciless gunmen or melange pursuers who spare no attention to the population of Arrakis (Herbert, 1965, p. 320). Injustice and inequality are common issues pictured in the troubled world of dystopian tales, where reality presents the contrasting condition of a dreamed ideal society (Clarke, 2020). *Dune* supports that idea with its imperialist world where the proletariat is oppressed by the iron-hand government and used as a mere tool to accomplish their purpose. Looking at how *Dune*'s governmental force considers natural resources as a money tree, not only the people of Arrakis get traumatised but also the environment.

“But the important thing is to consider all the Houses that depend on CHOAM profits. And think of the enormous proportion of those profits dependent upon a single product—the spice. Imagine what would happen if something should reduce spice production.” (Herbert, 1965, p. 61)

Adding the intricacy of the Imperium's household, the economic tasks across the universe within *Dune* are in charge of CHOAM (The Combine Honnete Ober Advancer

Mercantiles), a company under the patronage of the Emperor and the Great Houses, in which the directorships reflect the political power in the Empire and the economic prosperity of the Great Houses. Albeit CHOAM controls the whole market of various products around the Imperium, the focus remains on melange due to its high demand and immense value. The company possesses the mining contract of melange that indirectly gives them total control of the spice, indicating that the government's errand in Arrakis is under the shadow of business. The particular case of melange as a luxurious matter that reflects high status in the Dune universe is observed to retain a similar position with the spices in the Age of Discovery (Kennedy, 2021), where in this story, the Harkonnens act as the coloniser and CHOAM as the party that monopolise. Being relied upon by many, it is undoubtedly impossible for CHOAM to let the spice production halt. The situation makes them willing to do anything to maintain the stability of spice production. The company even spares a bonus for whoever reports a worm-sign warning as an attempt to obtain maximum income (Herbert, 1965, p. 172). Although the low-class workers play a significant part in developing the manufacturing, the small benefit they gain does not match the danger they must face. By occupying both human and natural resources, the company continuously milks power and money for them to stay in the safe zone.

“Whoever had stockpiled melange could make a killing,” Paul said. The Duke [. . .] nodded “The Harkonnens have been stockpiling for more than twenty years.” (Herbert, 1965, p. 61)

With House Corrinos ruling over the Imperium for thousands of years and the Harkonnens wandering around Arrakis for almost a century, they desire to be the greatest of all the houses by endlessly pursuing the spice. The redeployment of Duke Leto to Arrakis is a part of the dirty plot of the Imperium, along with the Harkonnens, to destroy House Atreides in the name of CHOAM's share. Vladimir Harkonnen, the Baron of House Harkonnen, explicitly declares in a conversation with his nephew that two things he chases from Arrakis are profit and ruthless reign (Herbert, 1965, p. 345). Heather I. Sullivan, in her paper discussing oil cultures in text, views that melange as an up-for-grabs substance that acts as a surrogate for oil (Sullivan, 2019). Thus, the Harkonnens' dirty mission of hoarding wealth through predominating the production of melange signifies petroleum capitalism with a destructive impact on nature. Taking a

case in Industrialisation, humans tend to acquire profit as much as possible and avoid loss at all costs by exploiting natural resources (Hojjat & Daronkolae, 2013). Embodying this phenomenon in *Dune*, the Harkonnens' need turns into greed, which grows them closer to anthropocentricity and leads them to sacrifice environmental wellbeing only to feed their ego. The way Arrakis barely changes during the Harkonnens' eighty years of rule speaks the truth about them caring for nothing but the spice.

“Arrakis is crawling with Guild agents. They’re buying spice as though it were the most precious thing in the universe.”

“It is the most precious thing in the universe,” Paul said. “To them.” (Herbert, 1965, p. 611)

The previous conversation shows that the Spacing Guild profoundly appeals to the spice, which the reason is linked to its monopoly on interstellar transportation. Guild's cosmic travel is undertaken by enhancing the foreknowledge of its starship's steersperson, known as Guild navigators, to help them fly across the space fast and safe. These Guildsmen achieve a certain level of prescience by consuming an excessive dose of melange. Thus, the Guild develops a mutual affiliation with CHOAM by being both the transporter and the loyal customer of CHOAM's product. However, the Guild's involvement in the spice business is as dirty as the other. As nothing comes free, the spice gives but also takes a toll on them. They unobtrusively attempt to seek more melange with less effort due to the spice's long-term effect, which leaves the Guildsmen in an incurable addiction. Seeing that the spice consumption is physically and physiologically transforming them, the consequence is between sticking to the drug habit or death. The Spacing Guild within the universe of *Dune* mirrors human civilization in history, which has utilized various narcotics to endure and rule (Fitzpatrick, 2018). Due to the cruciality of spice, they interfere in creating a political scheme to ensure the steadiness of the spice supply. Besides charging a heavy price on its transportation service, the Guild also rates an expensive payment for the limitation of the space station. Therefore, the Fremen have no choice but to bribe the Guild with a dreadful amount of melange to clear satellites and watchers away from the sky of Arrakis (Herbert, 1965, p. 419).

The Fremen and Conservation

Justine Wells addresses that modern academic and popular discourse develops an innovative ecological perspective viewing that nature weaves with culture, relating with the culture of the natives discussed in this research (Wells, 2019). Engaging ecology as the cornerstone of Fremen's culture makes the change in ecological condition risks the existence of their culture. However, the strong willingness of living in a proper ecosystem leads the Fremen to be consistent in recovering the land and building a paradise, albeit more or less, the transformation of nature will also reform the existing culture.

“You must cultivate ecological literacy among people.” (Herbert, 1965, p. 393)
“...teaching them ecological literacy, creating a new language with symbols that arm the mind to manipulate an entire landscape, its climate, seasonal limits, and finally to break through all ideas of force into the dazzling awareness of order.” (Herbert, 1965, p. 710)

Above is a piece of environmental advice for Liet Kynes, from Pardot Kynes, father and the forefather of the terraformation on Arrakis and the first Imperial Planetologist assigned to the planet. Accounting that the most necessary instrument to reconstruct an ecosystem is human beings (Herbert, 1965, p. 393), Pardot encourages the Fremen to reshape the face of Arrakis into a paradise by postulating ecological knowledge and drawing a biosphere manipulation on them. The Fremen, who is a highly spiritual tribe, seize Pardot's tenet and vision as a prophetic revelation and grant him the epithet of an umma—a prophet, in which his eco-centric idea and value are implemented in their manner of living and passed down to generation (Herbert, 1965, p. 500). Throughout the novel, the Atreides also express ecological awareness while ruling over Arrakis. The part when Lady Jessica discovers the Imperium's hidden conservatory filled with a vast quantity of water, then she and the Duke decide to manage it to water the local community, reflects the attempt at water restoration. Adding to that, Paul Atreides pledges to follow Kynes' footprints turning Arrakis into a better planet for humans.

As characters, both the Fremen and the Atreides personifying environmental conservation with the limelight in their virtuous purpose of greening the drought. The notion of being eco-centric in mind is alluded as a faithful activism, in which the

intention to modify existing circumstances is reflected by action and point-of-view (Nabulya, 2018). In sum, the like-mind of the Fremen and the Atrides in perceiving human role in the ecosystem proves to be the factor in the ensuing alliance between them.

With a Fremen suit in good working order, you won't lose more than a thimbleful of moisture a day—even if you're caught in the Great Erg." (Herbert, 1965, p. 159)

Living in a complex environment with overlapping problems has driven the Fremen to adjust in any possible way, one of which is wearing a still suit to cope with the water issue. A stillsuit is a full body-and-feet suit constructed in the layers of a salt precipitator and a heat exchanger to recycle the body water, also thigh pads to process urine and feces, and completed with a nose tube and a mouth filter to support respiration. Boots are mandatory, while gloves are optional to avoid perspiration, but Fremen's rather stroke their palms with a creosote bush (Herbert, 1965, p. 161). Stillsuit is one of the most significant technological discoveries in Arrakis, considering its contribution to the individual water conservation of the Fremen. Wearing such a suit, they may wander across the dunes for a long time with no need to carry additional water. With its ability to force an artificial cycle of water, still, the suit has a dominating impact on the ecological system of Dune, making it an irreplaceable life support as long as the environment is still incapable of working a normal water cycle. Referencing Donna Haraway in *A Cyborg Manifesto*, Fremen's dependency on the machine makes them analogous to cyborgs, a machine-organism hybrid where every component cannot function without each other (Larsen, 2019). Since their daily necessity for water relies on stillsuit, they barely take it off except at home, for the doors and windows are sealed by airlocks to hinder indoor moisture from running outside (Herbert, 1965, p. 104). For generations, these indigenous people of Arrakis have evolved to be independent of individual water needs. Their generous appreciation of moisture guides them to a point where even the tiniest amount of liquid matters. Seeing it from general view, the Fremen have stepped ahead in eco-friendly life through recycling system, making them a driving force of eco-technology.

"They're going to render Arkie down for his water," (Herbert, 1965, p. 309)

"They're recovering Jamis' water," (Herbert, 1965, p. 448)

Apart from the advanced technology, the Fremen have a traditional norm that when one dies, the body belongs to oneself, while the water belongs to the tribe. In this novel, nothing is explained about the ritual further than "rendering" and "recovering" the water from the dead body. Frank Herbert later elaborates in *Children of Dune* that they utilize a machine called a deathstill for the extraction process (Herbert, 1976, p. 68). Such manner seems immoral, yet they have been accustomed to that manner of living.

The Fremen's tenacity to accumulate a sufficient water supply is also pictured in their way of gathering the dew from the narrow fields they have planted before. Duke Leto witnesses that the dew gatherers sweep the plantation with an unknown tool similar to a scythe (Herbert, 1965, p. 147). This procedure not only implies a conservation attempt but also emphasizes the water shortage in Arrakis.

Another depiction of water management is through the establishment of a wind trap, a facility built to steal the moisture of the wind. Through funnels, the outcome of air condensation flows to the catchbasin, an underground depository to store water processed from the death still, and the wind trap for the Fremen to use later. Stilgar, the Fremen's vice leader, reveals that not everyone identifies the location of all the thousands of catch basins around the planet to maintain their secrecy from the enemy. For them, water is more valuable than any other treasure, yet no one even dares to dip their hands into the pool, where the water is measured accurately and intended for terraforming the land (Herbert, 1965, p. 459). Simon C. Estok noted in his book that whoever deals with the environment has to face natural obstacles and disasters, in which the way to overcome that is by using innovative strategies and creative technology (Haji Mola Hosein & Pourgivi, 2020). Referring to that idea, the instrument which allows the Fremen to cope with the state of Arrakis is their environmental intellectual. They merge mind and machine to construct eclectic devices supporting their everyday life and reaching their dream.

“A certain amount of plant cover had to be set aside to hold dunes in place; a certain amount for foodstuffs (both human and animal); a certain amount to lock moisture in root systems and to feed water out into surrounding parched areas.” (Herbert, 1965, p. 719)

B. D. Fath asserted that to work on an ecosystem, we must be knowledgeable of ecology as a system, consisting of autecology, an ecological study concerning the individual organisms, and synecology, which focuses on the interconnection of biotic and abiotic elements (Jorgensen, 2009, p. 6). Pardot Kynes also appoints that ecology works on a system adhering to an ordered pattern with intertwining elements that occupy a domino effect in which a small miss-step may lead to a total collapse. Hence, to recreate a brand-new environment, the Fremen develop a chart concerning the suitable climate, the water cycle, the plantation model, and the animal types for a complete food web to focus on micro-ecology. What is interesting about Fremen's mega project is how they spare a massive open cage of dunes for Shai-Hulud in the diagram plan, even though the monster is the actual reason why Arrakis is a waterless world. Water kills the worm. Besides Shai-Hulud's role in producing melange and oxygen (Herbert, 1965, p. 719), the Fremen has reached consciousness that ecology is a system where everything is connected and codependent on each other. Stilgar, Liet's second-in-command, addresses that the forthcoming Arrakis will be a water-world that hosts the sandworms in the deep desert, the melting ice-plates in the poles, the fresh lakes amidst the subtropic forest, and the people who walk around with no stillsuit that the forthcoming Arrakis will be a water-world that hosts the sandworms in the deep desert, the melting ice-plates in the poles, the fresh lakes amidst the subtropic forest, and the people who walk around with no stillsuit (Herbert, 1965, p. 460). The complete goal is to create two ecosystems—grassland and dessert—separated by a gate made of numerous types of grass. The natural gate is aimed to stabilize the dune, lock underground moisture, and establish giant seifs as a barrier. Before sowing the first seed on Arrakis, the Fremen have mapped out the surrounding terrains, air movements, planting seasons, and the growing techniques to manipulate the climate condition and soil nutrients. After the ground is steady enough, they slowly but surely plant another species of vegetation, such as flowering plants and fruit-bearing trees (Herbert, 1965, p. 717). The fascinating trait of the Fremen is the eco-consciousness that encourages them to initiate a change though pursuing their noble dream is far from brief and effortless. Herbert explains in the novel that the whole terraformation project on Arrakis requires hundreds of years, yet the Fremen remain persistent in the plan.

Discussion

The research on the human-nature interconnection discussed by other scholars does enrich the writer's comprehension of ecological issues and helps the writer to accomplish this study. While numerous studies have looked into either human beings' attempt at environmental preservation or destruction, very few studies have examined two contradictory attitudes of humans towards nature in a literary work. Hence, using Frank Herbert's *Dune*, this study attempts to fill the research gap by exploring the grey side of human nature, particularly the complexities of human affairs when facing the dilemma of exploiting natural resources for material wealth or conserving them for the future generations. This research reveals that Frank Herbert, in *Dune*, serves two different faces of humanity, revolving around the copiousness of one resource and the shortage of another. Furthermore, the general community may take this study as a reminder that ecology is a complex system that needs to be appropriately understood and wisely operated for it to function and provide decent feedback.

The portrayal of the authoritarian regime in *Dune* parallels William Rueckert's argument that the real power in the current era refers to the circumstances of economy, politics, and technology (Glotfelty & Fromm, 1996). The all-powerful government and its cunning parties have succeeded in dominating those aspects, leading them to sit on the Imperium's throne for millennia. Nevertheless, it does not necessarily mean that society supports such wealthy authority. The interest of the Imperium's stakeholders in Arrakis is solely for its valuable natural resource of melange. The manufacturing of raw-material which produces profitable byproducts is an absolute economic function, but once it involves an over-extortion of natural resources, it is also a political play. These motives in *Dune* are imaging anthropocentrism to satisfy oneself.

In contrast, the Fremen and the Atrides have devoted their eco-conscious body and mind to the land of Arrakis. According to Klassen, the interconnection between ecological knowledge, ecological identity, and the feeling of association with the environment perform the role of constructing human's eco-centric insight and rooting a solicitude towards the existence and preservation of nature (Restall & Conrad, 2015). The previous argument is actualized by the Fremen, who implement ecology in the tribe's cultural teachings, making them adhere to eco-centricity in daily routine. Moreover, the numerous conservation practices in Arrakis are the outcome of the

Fremen's eco-mindedness, guiding them in designing techno-centrism innovations. Their long-run project will barely work without such a wit since they need devotion and persistence to reach the final destination.

CONCLUSIONS AND SUGGESTIONS

Conclusions

More than a half-century ago, Frank Herbert devoted his heart and mind to what is later a universally praised eco-centred science fiction portraying an environmental crisis alongside societal and political facets. The vivid depiction of the issues of the yet-to-come society and its surroundings has brought the writer to conduct eco-critic research on the book. Based on the data analysis, the writer reveals that *Dune* delivers a duality of human behaviours towards nature through the scarcity of water and vegetation and the affluence of melange, namely, exploitation and conservation. In exploitation, Herbert presents melange as the source of knowledge, power, and wealth that drives the government factions to pursue it for self-benefits. Herbert explicitly shows in the book that the Imperium seeks the narcotic substance for maintaining dominance, CHOAM and the Harkonnens for money, and the Spacing Guild for feeding their drug addiction and maintaining the monopoly of space travel. In conservation, Herbert delivers that the Fremen and the Atreides regenerate the shortage and damage of water and vegetation purely for future significance. The high-level water management of the Fremen is depicted by still suits, air-sealed houses, dew gatherers, wind traps, and catchbasins. Fremen's ecological comprehension allows them to manipulate the climate, calculate the plantation, animal types, and stages for the artificial food web, and construct a whole chart of a new ecosystem to map the long-term terraforming plan. Moreover, the different backgrounds of these two sides of Arrakis inhabitants play a massive role in determining such attitudes to the environment. The anthropocentricity of CHOAM, the Harkonnens, and the Spacing Guild was encouraged by political and economic behalf. On the other hand, the preservation master plan of the Fremen and the Atreides was the result of their selflessness and eco-consciousness.

Suggestions

This paper expects the readers to raise awareness concerning the danger of long-term anthropocentric activities with no attention to ecosystem welfare. At last, the writer suggests future research to dig deeper into the related fields, such as environmental ethics and cultural ecology.

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