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ENVIRONMENTAL ETHICS IN FRANK HERBERT'S THE GREEN BRAIN: DISCOURSE ANALYSIS

Abstract
This study explores how environmental ethics affect the balance of nature in Frank Herbert's The Green Brain. Using suprasegmental analysis and intertextual analysis as methodological frameworks, this study investigates how narratives sensitize human consciousness towards nature, particularly through the concepts of Barrow's (anthropocentric ethics, ecocentric ethics, biocentric ethics) and Carley and Christie's (technocratic environmental ethics and managerial environmental ethics). The findings emphasize the novel's depiction of ecological interdependence and its role in reshaping environmental consciousness through narrative structure. The research further reveals that literary narratives, particularly speculative fiction, serve as powerful vehicles for challenging dominant anthropocentric paradigms and fostering ecological awareness. By critically examining the symbolic and thematic dimensions of The Green Brain, this study underscores the importance of narrative in cultivating ethical responsibility toward nonhuman life forms. Literature is not merely reflective but also transformative, enabling readers to reconsider moral assumptions about nature. Ultimately, the novel serves as a critique of human environmental domination and a vision of sustainable coexistence grounded in mutual respect, balance, and ecological humility.
Keywords: Discourse analysis, Environmental Ethics, Literature, Novel.

Abstrak
Studi ini mengeksplorasi bagaimana etika lingkungan mempengaruhi keseimbangan alam dalam The Green Brain karya Frank Herbert. Menggunakan analisis suprasegmental dan analisis intertekstual sebagai kerangka metodologis, penelitian ini menyelidiki bagaimana narasi menyadarkan kesadaran manusia terhadap alam, khususnya melalui konsep Barrow (etika antroposentris, etika ekosentris, etika biocentris) and Carley and Christie (etika lingkungan tekhnokratik dan etika lingkungan managerial). Temuan ini menekankan penggambaran novel tentang saling ketergantungan ekologi dan perannya dalam membentuk kembali kesadaran lingkungan melalui struktur naratif. Penelitian ini selanjutnya mengungkap bahwa narasi sastra, khususnya fiksi spekulatif, berfungsi sebagai sarana yang ampuh untuk menantang paradigma antroposentris yang dominan dan menumbuhkan kesadaran ekologis. Dengan mengkaji secara kritis dimensi simbolis dan tematik The Green Brain, penelitian ini menggarisbawahi pentingnya narasi dalam menumbuhkan tanggung jawab etis terhadap bentuk kehidupan nonmanusia. Sastra tidak hanya bersifat reflektif tetapi juga transformatif, yang memungkinkan pembaca untuk mempertimbangkan kembali asumsi moral tentang alam. Pada akhirnya, novel ini berfungsi sebagai kritik terhadap dominasi lingkungan manusia dan visi koeksistensi berkelanjutan yang didasarkan pada rasa saling menghormati, keseimbangan, dan kerendahan hati ekologis.
Kata kunci: Analisa wacana, Etika lingkungan, Literatur, Novel.

BACKGROUND

In the landscape of modern education, literature occupies a critical role, not only as a medium of artistic expression but also as a vehicle for cultural and linguistic enrichment (Mitsigkas, 2015). Building upon Mitsigkas recent research continues to underscore the value of

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literature in language education. Calafato highlights how engaging with literary texts enhances EFL learners' linguistic proficiency and intercultural competence (Calafato & Hunstadbråten, 2024). Similarly, Imamyartha demonstrates that digital literature circles can foster deeper intercultural understanding and critical engagement (Imamyartha et al., 2024). These studies reinforce the notion that novels, with their complex narratives and character developments, provide rich opportunities for students to explore multifaceted social, environmental, and philosophical issues, thereby promoting critical thinking and cultural awareness.

In the midst of the anthropocene epoch, characterized by profound human impact on the environment, literature has emerged as a powerful medium to interrogate ecological crises and promote environmental consciousness. Literary works, particularly speculative fiction, often serve as cognitive maps that explore alternative ecological futures and critique dominant anthropocentric paradigms. In recent years, interdisciplinary studies have increasingly recognized the potential of literary narratives to influence public discourse on sustainability and ethics (Oppermann, 2016; Reyes, 2016). These works not only reflect ecological concerns but also shape ethical orientations toward nature by offering new ways of seeing, feeling, and acting in the world.

Frank Herbert's The Green Brain (1966) exemplifies such literary engagement by presenting a dystopian ecological scenario in which human attempts to dominate nature lead to unforeseen consequences.Within the narrative, Herbert constructs a speculative world where technological interventions, guided by anthropocentric and technocratic ethics, backfire as insects evolve collective intelligence to resist human extermination efforts. Peterson "Anthropocentrism… corresponds to a certain dream image of the world... In this manner we misunderstand not only the world but also our own being" (Peterson, 2020). This allegorical scenario invites critical reflection on environmental ethics and the consequences of disregarding ecological interdependence.

Environmental ethics, as conceptualized by researchers such as Barrow and Christie, provide a foundational lens through which Herbert's narrative. Barrow distinguishes between anthropocentric, ecocentric, and biocentric ethics—each representing different moral standpoints regarding nature (Barrow, 2006). The anthropocentric view, which dominates early human actions in The Green Brain, positions nature as an instrument for human needs, whereas ecocentric and biocentric ethics advocate for the intrinsic value of all living organisms and ecosystems. Christie further introduces technocratic and managerial environmental ethics, reflecting how governance structures and scientific rationalism attempt to manage nature, often with limited ecological sensitivity (Carley & Christie, 1992).

Within this interdisciplinary context, the present study analyzes The Green Brain through the lens of suprasegmental and intertextual analysis, and environmental ethics. It investigates how the novel critiques dominant ecological ideologies and constructs an alternative environmental ethic through its narrative structure, character development, and symbolic representations. The study applies the theoretical frameworks of Gee on discourse (Gee, 2014), Renkema on text structure (Renkema, 2004), as inspired by Kristeva and Gee on intertextual analysis (Kristeva & Roudiez, 1980). It explores how a text's meaning is shaped by its relationship with other texts, including references, allusions, and shared themes, and Mandler & Johnson on narrative grammar (Mandler & Johnson, 1977). These perspectives enable a multilayered examination of how meaning is constructed in the text and how it connects with broader cultural and environmental discourses.

In analyzing Frank Herbert's The Green Brain, the researchers refer to contemporary environmental ethics perspectives, including ideas from authors such as Palmer who emphasizes moral responsibility towards non-human beings (Palmer, 2015), and Attfield who highlights the importance of ecological justice and sustainability (Attfield, 2018). Not only does the novel critique human exploitation of nature, but also shows the ecological intelligence of non-human life forms as partners in the sustainability of the planet. Through this environmental ethics approach, The Green Brain is understood as a warning narrative against extreme anthropocentrism and as a call to build a more ethical and cooperative relationship between humans and nature in the face of the global ecological crisis.

Ultimately, The Green Brain reflects a future condition where ecological imbalance, driven by human arrogance, leads to nature's retaliation—a scenario that aligns closely with contemporary concerns in environmental ethics. The novel invites reflection on moral

obligations toward non-human entities, challenging anthropocentric worldviews that justify exploitation. Through the lens of environmental ethics, this research emphasizes the ethical imperative to recognize the intrinsic value of all forms of life and the interconnectedness of ecological systems. It urges readers not only to reconsider their relationship with the planet but also to advocate for more just and sustainable practices in facing the global environmental crisis.

To navigate these complexities, this research is guided by main objective, namely discovering the theme of the novel and uncovering how should nature be managed in order to be sustainable through environmental ethics concepts.

METHOD

This research was conducted at the Department of English Education, Nurul Jadid University, utilizing a qualitative, interpretive approach centered on discourse analysis to examine Frank Herbert's The Green Brain. The study aims to uncover how meaning is constructed and circulated within and across cultural and ideological discourses through language use in the novel. Drawing on the theoretical frameworks of Gee on discourse (Gee, 2014), Renkema on textual structure (Renkema, 2004), Kristeva on intertextuality and the ideology of the sign (Kristeva & Roudiez, 1980) and Mandler on narrative grammar, the research integrates suprasegmental and intertextual analysis to interpret both internal textual structures and their external social references (Mandler & Johnson, 1977). The primary data source was the novel itself, while analytical tools included manual annotation, theory-application matrices, and visual displays such as synopses and story grammar. Data were collected through close reading of the text to identify narrative components, followed by a process of data reduction that classified relevant discourse elements aligned with the theoretical frameworks. These were organized in structured displays for deeper analysis. The analytical procedure included mapping the novel's narrative structure, identifying suprasegmental features (paragraphing, cohesion, thematic flow), and conducting intertextual analysis to connect the text with broader social and historical discourses, particularly ecological and political ideologies. A comparative matrix was developed to document and synthesize theoretical matches with text examples, allowing for a layered understanding of discourse presence and function. This multi-phase analysis was visualized in a linear flowchart beginning with reading and reduction, followed by structural identification, suprasegmental and intertextual examination, and culminating in theoretical synthesis, thus ensuring a comprehensive exploration of the novel's discourse dynamics.

FINDINGS AND DISCUSSION

To effectively address the research questions, the researchers encounter several challenges. The first involves employing and analyzing the theoretical frameworks of Kristeva and Renkema to identify and interpret the thematic structure of Frank Herbert's The Green Brain. Through these approaches, the study seeks to examine how various textual elements such as the synopsis, simple story, and psycholinguistic diagrams serve analogous functions in shaping the narrative's overarching meaning and structural coherence. As aforementioned, here is the theme of The Green Brain:

> **[Setting]**
> Insect extermination scientists have delineated two distinct territories: the Red Zone, inhabited by insects, and the Green Zone, designated as human territory following insect extermination efforts. Driven by the belief that insects consume vital resources from the forest and pose health risks to humans through disease transmission, the scientists aim to expand the Green Zone further. However, their efforts face a covert threat as certain insects, camouflaged to resemble humans—referred to as "the-million-in-one man"—attempt to infiltrate the Green Zone, blurring the boundaries between the two domains and challenging the presumed safety of human-controlled spaces. [p.9]
> **[Beginninng]**
> Using their mimicry abilities, the insects attempt to infiltrate the human territory by disguising themselves as indigenous people under the name "Antonio Raposo Tavares." They successfully deceive the officers stationed at the Bandairante guard

post and continue their journey toward the human-inhabited area. Within the human domain, especially among members of the International Environment Organization (IEO), rumors begin to circulate about insects mutating into giant forms. This sparks a mix of suspicion, concern, and disbelief. While Martinho and his men take the rumors seriously, others like Dr. Rhin Kelly and Chen-Lu remain skeptical. Determined to uncover the truth, Martinho and his group conduct an investigation at the Plaza, where the rumors first emerged. There, a crowd gathers to witness a strange phenomenon—grass drying up exactly 50 meters from the center of the fountain, allegedly caused by a mysterious insect secretion. Suddenly, a swarm of insects sprays a sparkling acid from the fountain area, extending beyond the yard. Reacting swiftly, Martinho commands his team to capture the creature and instructs Vierho to bring specialized equipment, including a magma glass shield, a modified sprayrifle, and a large specimen bottle. However, their attempt fails as the creature escapes through a hole and disappears. Martinho and his team then withdraw from the crowd, departing in their vehicle.

[Complex Reaction]

In the cave, the Brain continued to observe human behavior through radios, books, and various other sources. Meanwhile, Joao and his father, the Prefect, were engaged in a heated argument about the existence of giant insects when, suddenly, a swarm of insects approached them. Using a flashlight, Joao and the Prefect attempted to follow the insects, hoping to locate their nest and eventually bring them to the laboratory for research. However, disaster struck when the insects swarmed their house. In response, Joao urged his father to escape with him using a four-wheeled vehicle. Their escape plan failed when Joao, deceived by the insects, was lured into taking his father to the hospital—only for the swarm to abduct the Prefect and carry him off to the forest, deep into the Red Zone. [Simple Reaction]

Joao managed to flee, leaving his father behind in a desperate bid to save himself. During his escape through the forest, Joao encountered Vierho and the IEO team, who were on a mission to investigate the strange phenomena occurring in the area. Together, they continued the investigation, but were soon attacked by a swarm of insects that sprayed acid, destroying their vehicles and killing eight members of Dr. Rhin Kelly's team. Days passed, and the group's food supplies reached a critical low. With their tank severely damaged, they made the difficult decision to escape using a small boat that could only carry three people. [Goal]

[Goal Path]

Meanwhile, the Brain continued to observe the humans, gathering vast amounts of information that could be used to paralyze or even destroy them. However, despite having the capability, the Brain had no desire to kill; instead, it sought peaceful communication between humans and insects, free from fear on either side. To better understand them, the Brain ordered its subordinates to follow and monitor the humans as they journeyed down the river. [Attempt]

About an hour into their river journey, the escapees spotted insects mimicking both giant creatures and the indigenous figures who had previously abducted Joao's father. As Joao raised his spray gun to shoot, Rhin stopped him, believing the figure might be a friend. Their escape continued, but the group was soon trapped by insect-woven nets. Gasping for breath, they managed to break free, only to be ensnared again as they neared the coastline. Despite the renewed assault, the humans escaped once more, dragging their damaged boat to the shore. On the beach, with only a firearm left as their final resource, they attempted to confront the Brain. At this critical moment, Joao was attacked by insects, and at his desperate request, Rhin shot him—striking his hand. In a semi-conscious state, Joao experienced a vision of his father, suspecting it was merely another illusion created by the insects' mimicry. Overwhelmed, Joao took the gun and pointed it at his own heart. Just as he was about to pull the trigger, he entered another dimension—a surreal, imaginative space beyond the boundaries of reality. [Outcome]

[Ending]

> In the imaginative dimension, Joao encountered the Brain and repeatedly saw the figure of his father, though he remained uncertain whether it was truly him or another illusion. Driven by anger and suspicion, Joao prepared to kill the Brain, who stood just behind his father. However, before he could act, his father's words stopped him—reminding Joao that there was once a time when humans and insects coexisted in mutual dependence within a greenhouse. Struck by the memory, Joao fell silent, a realization dawning upon him. He then engaged in a dialogue with the Brain, who proposed the idea of reestablishing a balanced relationship between humans, nature, and all living beings. Joao interpreted this offer through the lens of dominance, seeing it as a negotiation between slave and master. Yet, the Brain rejected this interpretation and continued to persuade Joao with sincerity and patience. Gradually, Joao's anger subsided, and in response, the Brain chose not to retaliate, allowing the humans to continue their lives as before, but with the possibility of a new understanding between species.

However, the narratives presented in the data above are simple stories, meaning they do not use the authentic text of the novel. These simple story data points serve to link various narrative elements, facilitating an examination of how situations, conditions, and other components are portrayed within the text. According to Renkema, a text operates on multiple levels—it not only illustrates how an object is represented but also reveals the relationships between objects, thereby contributing to their meaning.

After knowing the theme in Frank Herbert's The Green Brain through these approaches, to answer the second research question, how should nature be managed in order to be sustainable through environmental ethics concepts, the researchers use The Green Brain's novel and Environmental Ethics theory to be used as an intertextual between the novel and theory.

How will environmental management achieve its policy goals? Probably through a mix of moral pressure and the spread of appropriate ethics. Environmental management will need to make use of education and the media to alter social attitudes so that there is awareness of environmental issues and an acceptance of a new ethics (Barrow, 2006). Many environmental problems stem from the anthropocentric and consumerist mindset and lifestyle of humans. Without a change in the way society views nature—from an exploitable resource to an entity with intrinsic value—environmental policies tend to be reactive and short-term. Barrow asserts that ethics is not only normative, but also strategic: by shaping public morals that support sustainability, environmental policies can gain legitimacy and active public participation.

Carley and Cristhie states that the technocratic ethic emphasizes the exploitation of natural resources and the belief that technology can solve environmental problems (Carley & Christie, 1992). In The Green Brain, this ethic is explicitly represented through the human project of trying to eradicate insects completely with advanced technologies such as gas pesticides. Leaders such as Dr. Chen-Lhu argue that ecological realignment is a rational and technological solution to all ecological problems:

> **We've nothing but the mutated bees now, Johnny -- not a single creature to spread disease or eat food intended for humans. p. 44**
>
> **Fuming blue gas puffed out the bag around him, and he inhaled a sharp, gasping breath through the mask, astonished at that unanimous demand for poison-free air. Agony! The gas drove through every multiple linkage of his being with needles of pain. p. 5**

However, Herbert shows that this ethic ignores the complexity of the ecosystem. Insects, previously considered "nuisances," actually form a conscious collectivity (Brain) as an evolutionary response to human aggression. Thus, the novel critiques technocratic ethics as a form of human arrogance toward nature that ultimately fails to control a system far more complex than technology can predict.

In the context of this quote, the use of fuming blue gas symbolizes humanity's confidence in using destructive technology to ensure the environment is sterile from foreign biological elements—an action that is assumed to be a rational step in maintaining a "clean" ecosystem. ...astonished at that unanimous demand for poison-free air. This statement implies that the system was designed with a collective human agreement to reject the presence of any nonhuman life that was incompatible with their artificial ecological order. This reflects what

Barrow calls the: resource-exploitative, growth-oriented logic of the technocratic ethic, in which human stability and progress are placed above the value of other life.

> **Martinho said "We must not forget why we run this risk." p.34**
>
> **We will get only one shot," Martinho said. "I must not damage the specimen. The Doctor wishes a whole specimen." p. 36**

According to Carley, managerial ethics is a form of compromise between exploitation and conservation, trying to manage resources carefully for sustainability. This ethic appears in characters like Martinho, who despite working in a technocratic system, shows caution and a desire to understand living things before destroying them. When he decides to capture giant insects alive as specimens. This sentence shows a desire to understand new living things (mutant insects) scientifically through intact capture, not extermination. This is in line with Carley and Cristhie's definition of managerial environmental ethics: resource-conservationist, oriented to sustainable growth. Martinho represents a shift from a technocratic ethic to a managerial ethic—recognizing that managing nature requires a more careful understanding and attitude. Barrow suggests that the managerial approach has potential, but remains fragile if not accompanied by a more holistic ecocentric view (Barrow, 2006).

> **The extermination engineers had erected barriers between the Red and the Green zones. In the Green, the men had done their work well-no useless insects survived. But they still had to clear the way in the Red zone, to destroy insect life there-a lower form of life which was presenting a threat to mankind. p. 1**
>
> **We've nothing but the mutated bees now, Johnny -- not a single creature to spread disease or eat food intended for humans. p. 44**

This statement is in line with Barrow's idea of anthropocentrism, placing humans as the center of interest and morality, while nature is only valued insofar as it benefits humans. In The Green Brain, almost all political and technological power structures are built on this assumption. Insects are considered a threat because they do not support human life; they are exterminated for the sake of health, and development. Not a single creature to spread disease or eat food intended for humans, this shows human satisfaction with the loss of other living things, as if the existence of insects or other organisms were only valid insofar as they did not harm humans. This view is a pure form of extreme anthropocentrism. This view exemplifies what Pojman and McShane describe as strong anthropocentrism, where moral considerability is granted exclusively to human beings, and the natural world is seen merely as a resource for human use (Pojman, 2019). Many of us sense that we have moral obligations toward nonhumans... This intuition suggests the need for a new ethic—one that recognizes the value of nonhuman nature and our duties toward it (Smith, 2018). Therefore, the question of how nature should be managed sustainably cannot be adequately answered if we remain within an anthropocentric framework.

> **We are tied to each other by the bond of mutual slavery that cannot be broken. It never could be broken . . . no matter how hard you tried.**
>
> **"It's very simple once you understand the interdependence," Joao's father said. p. 223**

Brain's statement "mutual slavery" is essentially a powerful metaphor for ecological interdependence. In this term, slavery does not mean the domination of one over another, but the absolute dependence of one living thing on another. No single species is truly independent. Humans depend on insects for pollination, bacteria for digestion, and plants for oxygen—and vice versa. In accordance with Barrow's idea, this is a rejection of the anthropocentric ethic that sees humans as the center and other creatures as tools. Instead, this sentence suggests that humans and other creatures are tied together in a symbiotic network that cannot be broken without causing systemic destruction. The sentence "It's very simple once you understand the interdependence." implies that the ecological crisis is not just a technological problem, but a problem of ethics and consciousness. Herbert illustrates that human unawareness of the interdependent relationship between living things has led to destructive efforts such as the total eradication of insects. This is very relevant to the theory of biocentric ethics, as proposed by Barrow (2006), based on the principle that all living things have intrinsic value and should not be judged solely on their benefits to humans. Within this framework, other living things—such as insects, plants, animals, and microbes—have the right to live and contribute to the global ecological system equally. Such as Eva Meijer's ideas emphasizing the need to extend ethical

considerations to non-human beings (including insects, conceptually), by breaking down traditional moral boundaries that only recognize humans (Bovenkerk & Keulartz, 2016).

> **The Brain rumbled. "Sometimes it developed in the poison excrement of other life . . . and then that poison became necessary to it. Without a substance produced by wireworms, that savannah grass out there would die . . . in time". p. 223**
>
> **Without substances produced by . . . insects, and other forms of life, your kind of life would perish.**
>
> **Break the chain and all die. p. 224**

This statement is very relevant with Barrow's theory which states that ecocentric ethics is a value system that: focuses on the conservation of ecosystems as a whole and interdependent unit. This ethic rejects the exploitation of the environment for the benefit of humans alone (anthropocentrism), and rejects technocratic logic that relies on controlling nature through technology. Instead, it places the entire ecosystem as a moral and ecological entity that deserves to be respected, protected, and maintained. The quote "Without substances produced by... insects, and other forms of life, your kind of life would perish" clearly shows that human survival depends entirely on the survival of the wider ecological system, including creatures that are often considered disgusting or unimportant such as insects and worms. The culmination of this message is contained in the dramatic sentence "Break the chain and all die." This is a philosophical statement that reflects the principle of ecocentrism in narrative form—that when one element in the ecosystem is removed, the entire system can collapse.

Through this quote, The Green Brain functions as a manifesto for ecocentric ethics. Herbert emphasizes that environmental sustainability and the sustainability of life cannot be achieved by unilaterally controlling nature, but only through recognizing the fragile but fundamental structure of ecological connectivity. In Barrow's context, this is a moral call to see nature not as a passive backdrop, but as an active and valuable system that must be respected in its entirety. Therefore, truly sustainable management of nature, as Herbert's narrative suggests and Barrow theorizes, must go beyond human interests and move toward a systemic and ethical awareness of the ecosystem as a moral subject.

CONCLUSION

Through story grammar and intertextuality analysis of Frank Herbert's The Green Brain, this study emphasizes the importance of environmental ethics in facing the global ecological crisis. The novel depicts the destructive consequences of anthropocentric and technocratic ethics that seek to dominate nature without understanding the complexity of the ecosystem. In contrast, Herbert presents an alternative narrative that emphasizes the intrinsic value of all living things and the ecological interdependence between humans and nature. Through its characters and strong narrative structure, the novel not only critiques the paradigm of human exploitation but also offers a more ecocentric and biocentric vision of environmental ethics. Thus, The Green Brain becomes a literary work that is able to shift the reader's ecological awareness towards a more ethical and sustainable relationship with the environment. This study recommends the integration of similar literary works in environmental education and public policy as a means to shape ecological awareness and cross-species morality.

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