SOLASTALGIA AND ALTERITY IN SPACE: AN ECOLINGUISTIC STUDY OF THE SHOW *LOST IN SPACE*

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Candidate of **Master of Philosophy** at the National University of Modern Languages do hereby declare that the thesis **Solastalgia and Alterity in Space: An Ecolinguistic Study of the Show, Lost in Space** submitted by me in partial fulfillment of MPhil degree, is my original work, and has not been submitted or published earlier. I also solemnly declare that it shall not, in future, be submitted by me for obtaining any other degree from this or any other university or institution.

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ABSTRACT

Title: Solastalgia and Alterity in Space: An Ecolinguistic Study of the show *Lost in Space*

This interdisciplinary research falls into the domains of linguistics (precisely ecolinguistics) and semiotics. Streaming Netflix series like "Lost in Space" are capable of shaping and reshaping societal perspectives through their linguistic and visual narratives. This research aims to investigate the way media designs the interaction of human beings with the space environment keeping in mind the themes of solastalgia and alterity. This study aims to analyze this interaction from both a linguistic and semiotic perspective. The study analyzes whether the outer space environment is viable for human beings or not. While the existing body of knowledge has made significant strides in understanding human interaction with regard to the environment of Earth, this study finds a notable gap in the literature concerning the relationship between humans and the outer space environment from a linguistic and semiotic standpoint. This research seeks to address this gap by employing Ming Cheng's framework of Ecological Discourse Analysis (2022) and Thomas Albert Sebeok's Biosemiotic Model (2001). On one hand, through the Transitivity System of EDA, this research underscores the emotional responses triggered by the catastrophes of outer space, while on the other hand, the Mood System of EDA helps understand the relationship between humans and extraterrestrial species, thereby highlighting the themes of solastalgia and alterity respectively. Moreover, the application of Biosemiotics is considered to be instrumental for this research as it helps understand the process of meaning-making with regard to the environment of outer space. The data for this research comprises the closed captions of the series "Lost in Space". The sampling technique is based on purposive sampling with the rationale to include only those episodes that largely reflect the themes of solastalgia and alterity. The research finds that space environment induces distress, discomfort and fear in human beings. Moreover, it also suggests that it is not possible for human beings to co-exist with the alien species. The study recommends that the future researchers must further explore the alternative narratives concerning human beings and space environment as it will help understand this area more comprehensively.

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LIST OF ABBREVIATIONS

NASA: National Aeronautics and Space Administration

EDA: Ecological Discourse Analysis

PTSD: Post-Traumatic Stress Disorder

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This thesis is dedicated to my beloved parents, Dr. Taha and one of my closest friends.

CHAPTER 1
INTRODUCTION

The exploration of outer space and the prospects of colonizing it have become the talk of the town in the 21st century. Popular Netflix sci-fi series of 2018 called *Lost in Space* piques and *amplifies* the curiosity of human beings regarding intergalactic adventures and the discovery of alien life forms. *Lost in Space* not only captures the attention of the audiences with its meticulous depiction of space travel but it also shapes their understanding about the environment of outer space. Within the intriguing narratives of space travel, this show offers an intricate chain of linguistic and semiotic patterns which are useful in understanding the relationship between humans and their environment. These linguistic and semiotic cues also help understand whether or not it is possible for human beings to exist in outer space. It is common knowledge that the space environment comprises extremely harsh space hazards which can pose serious challenges for human beings; therefore, it is crucial to analyze the space environment in the show, *Lost in Space*, from an ecolinguistic point of view. My research aims to analyze this show from a linguistic and biosemiotic standpoint with a focus on the transitivity system as these dimensions help understand the pressing ecological concerns in outer space as well as their impact on human beings. These ecological concerns include harmful radiations, lack of oxygen, extreme temperatures, to name a few. In addition to this, the chance of coming into contact with extraterrestrial life is yet another dimension that helps understand the relationship between humans and aliens.

Lost in Space offers a convincing narrative to explore the linguistic and semiotic dimensions of the existence of human beings in space. The qualitative analysis of linguistic and visual cues reveals the patterns through which language and semiosis shape our understanding of the state of human beings in outer space. Moreover, by employing the variable of transitivity, this research aims to underscore the power dynamics at play and the efforts to preserve human identity in the context of space colonization. Furthermore, this research aims to highlight the process of meaning-making by human beings in the context of outer space through biosemiotics. This variable of my research seeks to uncover the ways through which humans interact with the environment of space, technology and alien life forms. Through the amalgamation of linguistic and semiotic dimensions, my research aims to offer deeper insights into the complex relationships between culture, language and environment. By conducting a thorough analysis of the show, *Lost in Space,* my research

aims to prove that humans cannot exist in outer space with aliens; thereby, challenging the dominant narratives related to space exploration and space colonization.

"Lost in Space" is a dystopian fiction with an engrossing plotline as it contains numerous environmental warnings for humans in space. The fact that there are many things that remain unknown in space is because of its extreme violent environmental conditions. A few of these environmental dangers are caused by natural causes, such as plasma, extreme thermal excursions, meteoroids, and ionizing radiation, while others, including orbital debris and neutral contamination, are caused by the appearance of spacecraft themselves (Pearson & Hardage, 1998). The premise at the heart of this research states that, despite the technical improvements presented in the series, human beings cannot live in space. This study seeks to reveal the underlying ecological concepts buried in the narrative by closely analyzing the language choices made by characters in "Lost in Space." Characters' language, whether expressed in awe, desperation, or adjustment, serves as a representation of humanity's complicated interaction with the environment of space.

The evil and destructive environmental tendencies in space induce the feeling of "Solastalgia" in human beings; thus, demonstrating that life in space for human beings will never be suitable. Beyond the technological hurdles, the series invites us to investigate the emotional and psychological components of space travel, as embodied by the characters' expressions of solastalgia. This study tries to reveal the rich web of feelings weaved into the narrative's linguistic structure by meticulously examining the vocabulary used to describe dread, anxiety, and a sensation of dislocation. Solastalgia, a term coined by Albrecht (2003), is the distress and anxiety caused to human beings by the environment. This feeling of solastalgia can be observed, these days, everywhere around the world because of climate change. According to a groundbreaking study done on climate anxiety, "10,000 young people in over 10 countries" suffer from mental health issues because of climate change (Hansen, 2022). These mental health issues induce feelings of despair, fear, loneliness, grief, isolation, stress and anxiety in a person. The aim of this research is to identify the linguistic choices that reflect solastalgia in the show, "Lost in Space". This concept of solastalgia runs counter with the theories related to the possibility of life on other planets and NASA's exoplanet program which aims to find life on other planets. As with any other dystopian fiction, "Lost in Space", in an intimidating manner, addresses

challenging global issues such as liberty and identity, environmental devastation and impending disaster, questions of individuality, and the increasingly fragile borders between advanced technologies and the self (Basu, Broad & Hintz, 2013). The study of solastalgia in the setting of "Lost in Space" goes beyond language research to address the larger societal ramifications of space travel. As mankind considers expanding beyond Earth's borders, it is critical to understand the possible psychological impact imposed by severance from the familiar and embracing of harsh settings. This research contends that the series' language indicators of solastalgia lead to a more sophisticated understanding of the emotional repercussions of humanity's quest of interstellar residence.

Not only may natural disasters in an ecosystem cause anxiety, dread, and despair in humans, but other living organisms that coexist with humans can also cause eco-anxiety. Therefore, this study also employs the variable "Alterity" to examine the distress produced by the organisms in space usually referred to as extraterrestrial intelligence. As per the definition, alterity generally refers to the quality of being different (“Alterity Definition and Meaning | Collins English Dictionary,” 2023). In the show, “Lost in Space”, human beings come in contact with the aliens in space. Through this research, I intend to analyze the choices through which a binary of self-versus-others is established between human beings and aliens. The recognition that language, as both a reflecting and creative force, plays an important role in forming connections between self-versus- others is at the center of this research. I intend to examine the characters' language exchanges with the extraterrestrial species presented in the series using the thematic grounding of alterity. The human characters' language choices, particularly in their dealings with alien creatures, represent the innate conflicts, anxieties, and biases that emerge when faced with the unexpected.

By studying alterity within the language environment of "Lost in Space," this research aims to add to a more comprehensive understanding of the societal issues involved with inter-species relationships. The study aims to spark critical debates about the ideas of coexistence and harmony between humans and aliens. The thesis seeks to go beyond the fictitious narrative and addresses important issues of humanity's ability to coexist not only on Earth but throughout the enormous expanse of the universe.

The mental distress produced by environmental deterioration, solastalgia, appears as a semiotic phenomenon inside the language landscape of "Lost in Space." The study admits that the characters' solastalgia expressions surpass simple words; they become symbols that represent a greater, sometimes subconscious, link between humans and their

failing surroundings. This research seeks to decipher the visual, auditory, and verbal clues that trigger solastalgia using semiotic analysis, demonstrating how the series reflects the human condition of struggling with an increasingly violent universe beyond Earth. In addition, the analysis of alterity in the semiotic framework reveals a stratum of symbols that describe the intricate connections between human and alien entities. When non-human language such as "it" pronoun is purposefully used to refer to aliens, it serves as a semiotic marker that strengthens the social divide between the self and the other. These language decisions contain signals that serve as indicators of a broader sense of fear and uneasiness related to coming into contact with the unfamiliar. This thesis attempts to provide a thorough lens for evaluating the layers of meaning buried in the characters' language manifestations of alterity and solastalgia through the combination of ecolinguistics and semiotics. In doing so, it offers insights into the diversity of human-environment narratives and the complex interplay of symbols that define our shared comprehension of the interspecies and ecological issues shown in "Lost in Space."

In this study, it is critical to understand the important role that the media plays in actively influencing societal attitudes and views, in addition to reflecting them. The selected series consists of compelling instances that induce a sense of anxiety, dread, fear and wonder; thereby highlighting the media's role in shaping and influencing public opinion regarding the environment of space. The media, a potent storytelling tool, not only disseminates information but also creates stories that help people imagine social problems together. These stories have a significant effect on the audience by forming customs, affecting public sentiment, and creating a common awareness of the possible risks posed by environmental catastrophes in space.

1.1 Statement of the Problem

In *Lost in Space*, the fear of the outer space environment manifests through depictions of environmental hazards and interactions with the "other." However, the psychological and emotional effects of these portrayals, particularly through the lenses of solastalgia and alterity, have not been examined. This study addresses this gap by analyzing how linguistic and semiotic choices shape the narrative of ecological anxiety and human-alien dynamics in *Lost in Space*. By applying these frameworks, the research aims to uncover how environmental challenges in space are represented and their implications for human identity and survival.

1.2 Research Objectives

1. To highlight the lexical choices, the characters in “Lost in Space” employ that convey a sense of solastalgia
2. To identify the lexical choices, the characters in “Lost in Space” use that incite the notion of alterity
3. To explore the use of icons, indexes and symbols by characters in the show “Lost in Space” to depict subjective realities

1.3 Research Questions

1. What lexical choices do the characters in “Lost in Space” make to convey a sense of solastalgia?
2. What lexical choices do humans employ to incite the notion of alterity in the show, “Lost in Space”?
3. How do the characters in “Lost in Space” utilize icons, indexes and symbols to depict subjective realities?

1.4 Significance of the Study

The current study is significant in terms of language, science, education, and society. First and the foremost, this study is important from a linguistic perspective since it examines the types of signifiers connected to the context of space. Secondly, from a scientific perspective, it reveals the characteristics of destructive cosmic processes and the reasons why the environment of space is unsuitable for humans. It aids in understanding astrophysics, the study of space physics. The repercussions that the space environment could have on human existence must be taken into consideration together with the fascination with space travel. It aids in providing a better and more comprehensive image of space, including information on how zero gravity affects the mind and body and how space risks might impair immunity. This study emphasizes how the risks associated with space travel might have an impact on us mentally in addition to physically. The worry and terror that come along with space flight might have a lasting effect on a person's mentality. Thirdly, from an educational standpoint, this study sheds insight on a variety of topics, such as how space dangers lead machinery to malfunction after launch. Space weather, collisions, debris, dust, and internal spacecraft issues are just a few examples of these potential space

risks. Engineers working in space can particularly benefit from all of these aspects. Finally, this research aids in predicting the kind of ecosystem that would exist if humans and aliens coexist on Earth.

1.5 Rationale of the Study

The researcher has several justifications for carrying out this study. First of all, there has been an increase in Ecolinguistics research in recent years, although the field's research focus has been restricted to the Earth's environment and how it interacts with human language. The need to investigate the relationship between the environment of outer space and human language has arisen as a result of growing interest in space travel. This study broadens the purview of the discipline of ecolinguistics as it explores the environment beyond Earth. Second, in the context of Pakistan, this research aids in educating the general public about the importance of studying space settings. Finally, this research enables humans to consider the nature of the ecosystem they would live in if they ever succeed in colonizing space and come into contact with alien intelligence.

1.6 Delimitations of the Study

This research investigates the dystopian sci-fi Netflix original series "Lost in Space," with a particular emphasis on two themes: solastalgia and alterity. This study does not provide any replacements for the emphasized linguistic components; it just emphasizes the constructs of "solastalgia" and the conceptions of "alterity." However, the research has only looked at the first thirteen episodes of the "Lost in Space" season.

1.7 Organization of the Study

- Introduction
  - This chapter provides a comprehensive background for my research along with the statement of the problem, research questions, research objectives, rationale and the delimitations of the study.
- Literature Review
  - This chapter provides a detailed account of all the previous research done in this area along with their connection with my research.
- Research Methodology
  - This chapter underscores the details of the conceptual framework designed for this research. It also provides information about the method through which the data is collected and validated.

- Data Analysis
  - In this chapter, the researcher has analyzed the data keeping in mind the conceptual framework designed for this research.
- Findings, Discussion, Conclusion and Recommendations
  - This chapter concludes my research by providing a holistic discussion about the findings of this research. It also provides recommendations for further research in this area.

CHAPTER 2

LITERATURE REVIEW

This chapter presents an overview of all the variables this research deals with along with the relevant literature. Keeping in mind the title of my research, I have defined all the variables in a chronological order. Firstly, this section deals with the multiple definitions of ***"solastalgia"***, and how it has become a buzzword in today's environmental discourses. Since, my research specifically deals with solastalgia in space; therefore, before delving deeper into the environmental factors of space that induce solastalgia, it gives an account of some of the important terminologies that help understand the environment of space.

These terminologies include ***astronomy, ecology and astro-ecology.*** After discussing these terminologies comprehensively, the researcher has presented, in detail, the factors that cause solastalgia in space. Another main variable of this research is ***"Alterity"***. First, the researcher has mentioned different definitions of alterity, and then the connection of this terminology with this research has been explained, along with the idea of ***space colonization***. The third important and main variable of this research is ***Ecolinguistics***. In addition to this, this portion also defines ***Biosemiotics*** and discusses its application in this research. A brief introduction to Ecolinguistics and some background information is presented, and then a connection has been established between ***Ecolinguistics, Eco-Fiction*** and ***other media genres*** that target environmental awareness and environmental issues. This section also presents some previous relevant research in this field.

2.1 Variables of this Research

The subsequent sections deal with all the variables pertinent to this study. These variables have been arranged in a coherent manner so that it is easy for the reader to keep up with the flow of my research.

2.1.1 Solastalgia

It is only natural for a negative change in climate conditions to cause distress in human beings. Not just physically, but the change in environmental conditions can also cause mental traumas and induce fear in human beings in substantial ways. It has been proven by a research that climate change's increased frequency of catastrophes can cause

symptoms of PTSD, emotional problem, and distress (Padhy et al., 2015). These feelings when caused by the environment in human beings are termed as ‘solastalgia’. There is life on Earth because the environmental conditions of this planet favor human beings. At present though, even the climate of the Earth runs in opposition to the nature and needs of man. This change in climate of Earth has caused eco-anxiety across the globe. According to one of the definitions, eco-anxiety refers to the anxiety linked to climate change, in which people are concerned about their future (Coffey et al., 2021). Another word used for solastalgia is eco-anxiety. Eco-anxiety manifests itself more strongly among children than adults. The subject of my research also aims at examining the extent to which children are traumatized in comparison to adults by the environmental disasters of space. According to Peek (2008), children tend to be the most vulnerable to the harmful consequences of disasters, as their severity and frequency continue to rise globally. Environmental disasters can lead to not only damage but they can also have long- lasting negative psychological effects in children. In addition to the stress and terror that come with disasters, children may also experience psychological harm from things like home and possession damage, relocation, the loss of a family member, witnessing parents or other carers go through difficult times, abandonment or abuse, and disruptions to communities, neighborhoods, and the local economy (Kuosky, 2016). As per one of the researches, children are especially susceptible to the psychological effects of climate change because they have stronger responses to severe weather events such as PTSD, distress, and difficulty sleeping (Coffey et al., 2021). Moreover, our relationship with nature is directly proportional to the amount of stress we experience in case the environment does not act the way it should. A positive relationship with the environment induces positive feelings in a person. Nature interaction is positively connected with an individual's sense of connection to nature, as well as their good views and sentiments towards it (Chang et al., 2024). It is also reported that people who are highly concerned about sustainability, feel attached to the natural environment for cultural or personal reasons, or have an intimate personal connection with nature are more likely to develop eco-anxiety. This notion is evidently reflected in the show, “Lost in Space”, as human beings who are intimately attached to the environment of Earth; when they are to leave it and travel into space, are not in a position to cope with space hazards; and thus, face anxiety and stress.

In my study, I have examined "Lost in Space" from the perspective of solastalgia by focusing on particular scenes such as, when the characters show indications of anguish or

emotional instability because of their displacement. This involves introspective periods, feelings of homesickness for Earth, or difficulties adjusting to the new environment. Combining the words "solace" and "nostalgia," "solastalgia" describes the discomfort or uneasiness people experience when they notice changes in their immediate surroundings. This anxiety is especially pertinent when talking about space exploration because it entails leaving behind the comfortable and known surroundings of Earth. Moreover, in this research, I have underscored the fact that because of the extreme difference between Earth's surroundings and the sometimes harsh, foreign circumstances of space or extraterrestrial worlds, protagonists in "Lost in Space " feel a deep feeling of separation and misery. These psychological and emotional effects of solastalgia are most noticeable when characters from "Lost in Space " are uprooted from their familiar environment. Through the lenses of language and semiotics, I have explored the many levels of this affective encounter in the data analysis section. I have examined how language, a potent instrument for conveying feelings and perceptions, contributes to the solastalgic moods of the characters. The study of signs and symbols known as semiotics has also provided a sophisticated analysis of how the narrative's visual and symbolic components contribute to the characters' feelings of dislocation and emotional distress.

In the recent years, the climate of Earth has become vulnerable in so many ways which has instigated space scientists and physicists to look for life in space. There is an unprecedented climate crisis going on Earth because of several reasons like the use of fossil fuels, industrial revolution, deforestation and the release of carbon dioxide in large amounts. Sea levels are rising, our glaciers are melting, frequency of rains is decreasing, famine and drought are causing destruction at a large scale only because unpredictable and long lasting heat waves are putting the lives of the human beings at risk. In the midst of such an environmental havoc, efforts have begun to look for life in space; on another planet. It is reported that though, right now, there are hardly any planets that look exactly like or close enough to replicate the life of Earth on it, it is only a matter of time before these planets are explored, and the quest for the existence of life beyond our solar system gets serious (Horner, 2013). In the show, “Lost in Space”, it is portrayed how people of Earth lose hope in the climate of the Earth. They are convinced that this planet will get destroyed soon due to its hazardous climate; and therefore, they embark on a space journey in which they look for a planet on which life is possible, in this case, it is “Alpha Centauri”; however, the climate of space is even worse than what they experience on Earth.

One cannot deny the importance of the connection between human beings and their ecosystem. If the ecosystem is healthy, human beings are healthy; however, if the ecosystem deteriorates, human health both physical and mental also deteriorates. It is not just the physical and mental health that a bad environment threatens to harm with regard to human beings, but also human identity has to face consequences as well owing to the climate change. A person gains his identity through the social group one belongs to. It is our relationship with the environment that results in either positive or negative identities. A positive identity is gained through a sense of belonging, security and confidence in one's environment and a negative identity results from the lack of security and safety in one's ecosystem. When it comes to the relationship between one's identity and climate change, it is believed that the way one adapts himself to the changing environmental conditions impacts one's identity. With human beings planning to colonize space, the idea of identity preservation must be considered before anything as they are exposing themselves to extreme environment and positioning themselves against the alien intelligence. Preserving one's identity is also important in responding to climate effects between many groups whose vocational identities are linked to natural resources and management strategies, such as fishers, farmers, ranchers and pastoralists (Barnet et al., 2021). Moreover, adaptation to the changes in environmental conditions shape and reshape the identities of human beings. The ability to make decisions and carry them out is what makes adaptation, in the context of environmental change, possible (Nelson et al., 2007).

In addition to its effects on the emotional and psychological domain, solastalgia has a significant impact on the identity of those who are subjected to environmental changes. In 'Lost in Space,' the protagonists embark on a trip that profoundly alters their identities, serving as metaphors for humans pushed into a harsh and sometimes unfavorable alien environment. Reassessing one's identity and self is prompted by the harsh conditions of space travel and interactions with other planets. The protagonists are forced to confront elements of themselves that may have lain dormant or undetected in the familiar landscapes of Earth by the extremes of their new surroundings. The unfavorable circumstances, individuals encounter play a crucial role in the process of reconstructing who they are. In my research, language and semiotics have been explored beyond affective expressions to reveal how 'Lost in Space' characters navigate their identities in the face of a hostile and unforgiving world. This study attempts to provide light on the dynamic link between the

alien settings shown in the television series and the characters' changing identities by closely examining language adaptations and semiotic transformations.

Despite the protests done by various environmentalists and awareness spread by different climate change activists, many people still believe that climate change is a hoax, let alone the anxiety, fear and distress that come with it. It is also possible that not everyone is entirely oblivious to the notion of climate change yet they seem to be unaffected by it. As stated in a report, most of the people didn't believe in global warming, but none of them appeared to be troubled by what they claimed to know (Sanders, 2019). It is likely that it is because of this climate change denial that human beings are fascinated by space. In the show, “Lost in Space”, it is this denial of climate change and eco-anxiety with which human beings move into space. It is possible that when human beings think about intergalactic travel, they do not take into consideration the hazardous environment of space and their chances of survival in that environment. It is rather irrational of human beings to deny eco-anxiety when time and again it has succeeded to manifest itself in our world.

There are many climate experts, who in recent times, have emphasized the projected effects of climate change on human beings in the coming years. The predictions and findings of these climate experts are based on concrete evidence. For example, according to Sanders (2019), the prevalence of PTSD (Post Traumatic Stress Disorder) among children who witnessed Hurricane Maria, Puerto Rico's deadliest natural disaster on record, increased by 7%. It is not necessary for a person to come in direct contact with natural disasters to experience eco-anxiety. It is believed that even reading news about day to day deteriorating climatic conditions can harm a person psychologically; therefore, it is important to consider the physical as well psychological impacts of environmental changes. According to Van Susteren and Al-Delaimy (2020), there is an emotional cost attached to every loss brought on by climate change, including extreme weather, long-term climatic conditions, terrible physical injuries, diseases, and fatalities, as well as the ensuing disruptions, relocation, and subsequent indirect ripple impacts. The harsh reality of space habitats, as shown in television series such as "Lost in Space," can often be eclipsed by the attraction of exploration and extension into the unknown. This widespread denial could be partially motivated by a want to avoid or minimize the risks and unfavorable circumstances that come with space colonization.

The space environment—as shown in 'Lost in Space' and representative of larger conversations about space exploration—has the potential to elicit eco-anxiety. However, this eco-anxiety is not only a fleeting emotional reaction; it may also lead to more serious psychological effects like PTSD and other stress-related medical disorders. When faced with the brutal realities of their alien world, the characters in "Lost in Space" provide powerful illustrations of the psychological damage that space-related disasters may do to people. Subsequently, the semiotics and linguistic evaluation have been extended to dissect how denial, eco-anxiety, and the psychological effects of space settings are expressed in 'Lost in Space.' This research has shed light on the complicated connection between societal views towards space colonization, individual mental health, and the potential long-term consequences of denial and eco-anxiety in the face of catastrophic space scenarios through an examination of language usage, semiotics, and narrative cues.

2.1.1.1 Astronomy and Space Environment

The vastness of this universe has always piqued the curiosity of human beings. This inquisitive nature of human beings gave birth to a discipline known as astronomy. This universe is filled with numerous planets, asteroids, galaxies, stars and moons. According to Scott (2010), astronomy refers to the study of just about everything outside Earth. The study of space is always coupled with a strenuous search for alien life. The search for alien intelligence in this century appears to be the ultimate goal of space scientists. In 'Lost in Space,' the protagonists represent this innate curiosity of humans as they set off on a dangerous space expedition, motivated by the desire to discover new worlds and come into contact with extraterrestrial life. The series offers a contemplative representation of the general public's obsession with space travel, where the desire for knowledge and curiosity frequently take precedence over the dangers and difficulties that may arise from traveling to a foreign planet. The show "Lost in Space" portrays the harsh reality of space in contrast to curiosity, which begs interesting questions of why humans have attempted to colonize space in the first place. The protagonists' unwavering quest for knowledge and the unanticipated difficulties they face highlight the intricate relationship between human curiosity, the lure of the unknown, and the risks that come with space travel.

Astronomy has engendered a field called “Astrobiology”. It is believed that alien intelligence does not have to exist only outside our solar system; it can also exist within our solar system as well. In this regard, newly surfaced Navy footage of what the US

government now refers to as "unidentified aerial phenomena" has sparked yet another wave of conspiracy theories about extraterrestrial life (Oluseyi, 2021). The organization popularly known as SETI - Search for Extraterrestrial Intelligence has dedicated itself to search for the alien presence in the cosmos. Apart from alien life, one dimension of astronomy deals with the search for exoplanets in the universe. More than 5,000 exoplanets have been discovered, and scientists believe that most stars possess their unique solar systems (*The Planetary Society*, 2023). Alpha Centauri, the planet on which human beings in the show, "Lost in Space" land with the hope of finding life on it is considered to be an exoplanet; however, it is claimed that as of now it is not possible for humans to live on it because of the dangers the space travel come with. The study of the cosmos has proven to be significant for mankind. Its importance lies in the fact that there are many human-life activities that are linked to the study of astronomy.

Astronomy is built upon two disciplines. One is mathematics and the other is philosophy. For example, through algebra and geometry, the distance of the moon from the earth was estimated. As reported by Scott (2010), in 270 BC, a Greek citizen called Aristarchus used these arithmetic abilities and little more to determine how distant the moon was from the Earth. The discipline of philosophy helped Greek philosophers develop a thought pattern. This, in philosophy, is known as 'The Scientific Method' which is an integral part of astronomy. The discussion on astronomy is always incomplete without the name of the famous astronomer, "Galileo Galilei". Apart from his work on the working of a pendulum that resulted in the grandfather clock, Galileo's use of the "Telescope" is a significant event in astronomy. The new theory that the Earth and planets orbit the Sun was supported by observations made with Galileo's telescope, which also revealed a vast number of stars in the Milky Way and other places (*A Cosmic Journey: A History of Scientific Cosmology*, n.d.). Galileo using this telescope unveiled many secrets of the universe. He saw the moon's pocked surface, observed that Venus had moonlike phases, sometimes waxing to a crescent, sometimes declining to a disc, and observed that Jupiter possessed four moons of its own, and later, he noticed flaws in the Sun (Zax, 2013).

Galileo's predictions about the surface of the moon, though not so accurate, were ahead of time. According to (Scott, 2010), Galileo believed he spotted oceans or seas on the Moon's surface and discovered patches on the Sun as well. He made significant predictions about other planets and stars as well; and, he discovered four moons surrounding Jupiter and

determined that Jupiter may be a star with its own solar system along with observing a supernova - the exploding star.

In 'Lost in Space," the protagonists' cosmic voyage serves as a metaphor for humanity's pursuit of knowledge and exploration. Their purpose is based on the conviction that comprehending and navigating space may result in improvements that benefit mankind, despite existing challenges and setbacks. This story follows in the footsteps of historical luminaries like Galileo, whose contributions to astronomy not only deepened our grasp of the cosmos but also paved the way for its practical application in a variety of domains. For traveling into space, it is almost indispensable for human beings to have knowledge about the environment and weather of space. The branch of astronautics and space physics that helps give insight into the weather of space is known as ‘Space Environment’. In this vein, it is reported that the space environment is a part of astronautics, aerospace engineering, and space physics that aims to comprehend and handle circumstances in space that impact spaceship design and operation (Africa, 2024). A closely related field to the space environment is space weather. According to Baker (1998), the dynamic, highly changing circumstances in the geo-space environment, such as those on the sun, in the interstellar medium, and in the magnetosphere-ionosphere-thermosphere systems are referred to as space weather. Space environment can be comprehended and pictured more accurately if the two concepts namely ecology and astro-ecology are properly understood.

2.1.1.1.2 Ecology and Astro-Ecology

For an ecosystem to sustain, there needs to be a healthy connection among the living organisms that inhabit that ecosystem. According to a definition, Ecology is the study of living creatures and how they communicate with each other and are affected by their surroundings at four levels which are the individual organism, the population, the community, and the ecosystem (Lawlor, 2021). One more level that has been recently added to this hierarchy of ecology is the level of the biosphere which according to Libretexts (2022), includes all of Earth's biospheres. Ecology highlights different aspects of nature. Ecology refers to the study of how nature is interrelated, incorporating biotic variables like plants and animals along with abiotic factors like weather and topography.

Figure 2.1 (Libretexts, 2022)

The study of an ecosystem helps determine the chances of life. Astro-ecology is a new discipline through which space scientists and astro-ecologists examine the possibility of life in space. According to (Mautner, 2000), astro-ecology is the study of how life interacts with its environs in space. As of now, ecology appears to be limited to the planet Earth, where there is proof that life exists; however, ecology may and ought to extend beyond (Meurer et al., 2023). The resources used by space ecology differ from those of the resources found on earth. As stated in a research, space ecology may exploit resources from asteroids, meteors, and planets in our solar system and others (Mautner, 2000). These resources themselves and the vacuum in space are considered to be the potential sites for habitability. The core of this study is the careful investigation of life's interactions with the vast and sometimes mysterious domain of outer space, as demonstrated by the television series "Lost in Space." In addition to immersing its viewers in the difficulties and thrills of space travel, the show acts as an intriguing story canvas that invites thoughtful contemplation on the possibility of life beyond Earth. The story of "Lost in Space" becomes a prism through which we consider the possibility of life existing beyond our own solar system as the characters traverse foreign landscapes and come across alien creatures. The series explores the subtleties of this relationship, posing concerns about the circumstances that must exist for life to flourish in space as well as any obstacles or adjustments that may be required. It is important to study space because it is predicted that in the future the existence of human life will, at a large scale, get entangled with the cosmos. It will be space, in the future, that will assist the process of evolution. It is believed that space habitats will influence the

evolutionary process, and life will influence the development of planetary systems, stars, galaxies, and maybe the whole universe.

2.1.1.1.3 Solastalgia in Space

It goes without saying that delving deeper into the atmosphere of space poses numerous psychological threats to human beings. It is claimed that the future space travelers may confront a number of challenging problems, some of which will be psychological (Dingfelder, 2004). The environment of space is filled with extreme monotony and life-threatening risks which often damage the psychological well-being of the astronauts and other cosmonauts. Our solar system is massive and there are vast distances between different planets. Space scientists always talk about landing on other planets, for example Mars, with sheer optimism, but they never talk about the strain a cosmonaut faces because of the environment of space when he journeys for a long time period from one planet to another in his spacecraft. These psychological challenges are reflected in the characters in the show, "Lost in Space" which are examined through their linguistic choices in this research.

The biggest factor that induces anger, frustration and depression in cosmonauts is the extended periods of time that a cosmonaut spends in a spacecraft when he travels from one planet to another. Sending a spacecraft from one planet to another is not a simple task because of the curved trajectory that a spacecraft follows instead of a straight path. According to Planetary Time Travel (n.d.), due to the gravitational attraction of the Sun and other solar system objects, when we launch a spaceship to another planet, it follows a curved course, or trajectory. The fact that the planets are always in motion also influences how long it takes to reach there. When a spacecraft is launched, the target planet may be on the similar side of the Sun as Earth, but by the time it reaches, it may be on the other side (Planetary Time Travel, n.d.). In simple words, NASA states that a round-trip from Earth to Mars and then back takes as long as 21 months (Tillman & Dobrijevic, 2022). This means that anyone who chooses to travel from Earth to Mars and then back, has to go through isolation, confinement, depression and cognitive decline for twenty-one whole months.

There is a group of psychologists who work for NASA and they try to "predict, identify and deal with the behavioral and interpersonal problems that may arise" during space travel as because of the vast distances, there can be a 24-minute communication lag between Earth and Mars (Dingfelder, 2004). The challenges with regard to depression, isolation and

communication breakdown, have been brilliantly demonstrated in the show, “Lost in Space” which are deeply and critically examined in the analysis section. The protagonists' difficult and drawn-out voyage across the wide reaches of space is at the heart of "Lost in Space" storyline. This perpetual state of flux develops into a psychological and emotional journey that is reminiscent of solastalgia, rather than just a physical hardship. The protagonists' feelings as they travel the universe, far from the reassuring familiarity of Earth, vividly mimic the phenomenon of solastalgia, which is usually connected with the misery brought on by modifications to the environment.

Here it is important to mention that safety in space is not guaranteed as the environment of space is quite inhospitable for the health of human beings. Before digging deeper into the impacts that the environment of space has on human health, it is first important to understand the environmental characteristics of space that induce the feeling of solastalgia in human beings. It is too early to assure that space travel at present can be made safer for human beings because the technology, right now, is not too advanced and humans have not succeeded to create a spacecraft that can endure all kinds of environmental pressure. Super advanced technology and a robust spacecraft are the two things that can prove to be the game changers in space science. As per different researchers, strong spacecraft architecture and sophisticated life-support technology are necessary for operating in the unfriendly space environment and are essential for human space travel (Thirsk et al., 2009). One of the things with which the characters in the show, “Lost in Space” struggle with is the logistics used in space. From time to time, the characters are seen questioning and doubting the strength and reliability of the Jupiter 2 spacecraft that the characters use for space travel which indicates that when it comes to the technology required to travel in space, human beings still have a long way to go before they can think of colonizing space in a real sense, let alone space travel.

The research in the space environment is crucial both for space travel and the climate of the Earth. In 1987, it was the NASA satellite data which revealed a terrifying and increasing hole in the ozone layer above the South Pole, igniting public concern and resulting in the Montreal Protocol, the first international accord tackling a worldwide environmental problem (Autry, 2019). For the space environment being pertinent with respect to the climate of Earth, it is on the radar of the space scientists 24/7. Space scientists, all the time, scrutinize the environmental conditions of space from where The International Space

Station is established. The location of the International Space Station is very significant as it helps NASA examine the environmental conditions of space from up close. It is claimed that at a height of more than 300 km, the International Space Station orbits the planet in a hostile environment that includes high vacuum, microgravity, high temperatures, ionized particles, space debris, ionospheric plasma, and UV and radioactive materials (Thirsk et al., 2009). Moreover, the increased research in bioastronautics has also helped understand the environmental factors in space that put the mental and physical health of astronauts at risk.

Different environmental hazards in space have different impacts on the cosmonauts and astronauts. Some of the environmental hazards cause physical damage while others pose a psychological threat to the cosmonauts. The study of these naturally occurring phenomena in space is known as space science. Firstly, the biggest problem in space exploration is the frequent fluctuations of the temperatures. One moment, it is extremely hot and the next the temperature drops down to -100 degrees. Though sci-fi movies would have us believe that space is incredibly cold — even freezing (Lea, 2022). These extreme temperatures cause the structural damage to the components in the space station and also cause physical harm to human beings. It is proven that extreme temperatures can cause deterioration of the space station's structural elements and when it comes to the cosmonauts, the temperatures can cause thermal injuries to the spacewalking astronaut. Thermal injuries are the burns caused by fire.

This study recognizes that comprehending the overall effects of space exploration on human well-being requires an appreciation of the relevance of temperature variations in space. The analysis of 'Lost in Space' reveals the subtle ways in which environmental factors shape the characters' emotional and psychological responses to the challenges of space travel by entwining the investigation of solastalgia with the physical discomfort brought on by temperature variations.

Secondly, the disharmony between the body clock of the astronauts and the light and dark patterns in space result in sleep disorders in astronauts. In space science, this is known as circadian rhythm disorders. According to research, intrinsic sleep-wake cycles (body clock) and the external light-dark cycle diverge in circadian rhythm disorders (desynchronized) (Schwab, 2022). This circadian dyssynchrony, in space occurs because of the intervals at which the sun rises and sets. On a daily basis, there are approximately 16 sunrises and sunsets in space. As stated by a research, in 90 minutes, the International Space Station

(ISS) completes one circle of the planet, and astronauts in orbit can observe sunrise and sunset at intervals of 45 minutes because of this process; as a result, individuals in the ISS can view up to 16 sunsets and sunrises each day (Staff, 2021). These disturbances in the otherwise smooth circadian cycle disrupts the sleep patterns of astronauts and consequently, they become more frustrated and irritable. Good sleep is directly related to a healthy mind.

Moreover, the presence of a high vacuum outside the spacecraft and the International Space Station results in decompression sickness among cosmonauts. The decompression sickness usually harms an astronaut physically (Thirsk et al.,2009). It can cause chest pain, numbness, fatigue, dizziness and breathing problems. The reason that causes the decompression sickness in human beings is that once they are launched into space, there is a rapid decrease in air pressure because of the high vacuum. A rapid decrease in air pressure means a rapid decrease in the supply of oxygen. If immediate 100% oxygen therapy is not provided to the cosmonauts, it can even result in death. There is a symmetrical relationship between our mental and physical health. Our physical health is entangled with our mental well-being and vice versa.

The widespread shortage of oxygen in the vastness of outer space is one of the key environmental aspects that shapes the narrative setting of "Lost in Space." The lack of oxygen becomes a physical hardship for the protagonists as well as a strong cause of solastalgia, exacerbating the general discomfort related to their intergalactic voyage. This study has investigated how solastalgia and oxygen deprivation interact in the context of "Lost in Space." The study has shed light on the subtle ways in which the absence of oxygen exacerbates the characters' overall solastalgic experiences by investigating how the characters deal with the psychological and emotional challenges of breathing in a world devoid of Earth's life-giving atmosphere.

In addition to this, the location of the International Space Station being above the magnetosphere of Earth gives way to countless harmful ionizing radiation. Our planet is surrounded by a magnetic field which is known as magnetosphere. According to a discovery, a "magnetic bubble" of something is created in space surrounding our planet by the magnetic field of the Earth which is given the name magnetosphere (Earth’s Magnetosphere | Center for Science Education, 2012). It is a layer that protects the Earth from the harmful radiations coming from the Sun. These harmful radiations emanate from different sources. There are primary and secondary sources through which these rays are

produced. It is reported that the main radiation sources are galactic cosmic radiation (powerful ions from outside our planetary system), and particles stuck in the magnetic field of earth (the Van Allen Belts), and other powerful solar energetic ions (Thirsk et al., 2009).

Apart from this, there are a number of heavy radiations that come from the Sun. Furthermore, secondary particles like protons, neutrons and other powerful ions also exist in space. The amount of radiation doses depends on the time period of a space journey. The longer the space journey, the more and higher radiation doses are likely to be received by the astronauts and cosmonauts. The exposure to these radiations lead to short-term and long-term health risks. Space radiation can modify the cardiovascular system, causing damage to the heart, artery hardening and narrowing, and/or cell death in the blood vessel linings, all of which can result in cardiovascular disease (Mars, 2023). An often-overlooked danger in space, as eloquently shown in 'Lost in Space,' is the constant exposure to solar radiation and hazardous ionization. Far beyond the barrier of Earth's atmosphere, these cosmic perils become more than just physical threats to the protagonists; they turn into powerful causes of both bodily and psychological harm. This environmental element complicates the study of solastalgia by expanding its influence beyond psychological anguish to include real physiological difficulties brought on by sun radiation and ionization.

It is ironic that the contamination in the space environment is, to a great extent, caused by the space missions done by human beings which in turn harm their mental and physical health and also the equipment sent into space. The increased number of space missions results in space contamination spreading space debris all around. Space debris, often known as space trash, is a problem that must be addressed if space is to remain sustainable if space debris collection is not controlled, it may become too risky to use particular orbital trajectories, which might restrict our capacity to explore and exploit space (Yozkalach, 2023). These space missions leave in space particles as big as 10 cm in space. If a spacecraft ever collides with space debris, the results are likely to be extremely dreadful. This disintegration of equipment and the contamination of the space environment at the hands of human beings have been vividly captured in the visuals of the show, “Lost in Space”.

One of the most significant features of the show, “Lost in Space” is its sound effects. In most of the scenes from this show, the sound effects are too loud indicating how the environment in space can prove to be hazardous for human hearing. Space missions create a lot of commotion which can lead to hearing problems in astronauts. Acoustic levels, at the

space station, vary from one area to another. It cannot only cause hearing loss in astronauts, but these loud noises can also disrupt the performance of an astronaut by causing sleep deprivation in them and by causing issues related to concentration and communication.

Harmful noise exposure raises mental workload (MWL), which has a negative impact on cognitive performance in humans (Mohammadi et al., 2023).

Characters in "Lost in Space" are submerged in a world in which the lack of air inhibits sound from dissipating, creating a continuous and sometimes unsettling audio experience. The characters' general sense of vulnerability and uneasiness are heightened by this persistent exposure to loud noise, which becomes a poignant embodiment of the hardships connected with the alien environment. This study investigates how solastalgia and loud noise interact in the context of "Lost in Space." Another big problem that causes physical and psychological issues in cosmonauts is the state of microgravity in space. According to a definition, “micro-" means "extremely small," and microgravity describes a situation in which gravity appears to be very small and every object in microgravity is weightless; and therefore, it floats in space; however, it must be noted here that space is not in a ‘zero gravity’ state as some people might think….it is claimed that there is a little amount of gravity all throughout space (*What Is Microgravity?*, 2012). Here, it is interesting to note that 90 percent of Earth’s gravity can be felt at the International Space Station which is located at an altitude of 200 to 250 miles. This makes a person wonder why astronauts float in space if 90 percent of Earth’s gravity reaches the Space Station. It is believed that it is because they are in free fall. In a vacuum, gravity accelerates all things uniformly, therefore everything falls at the same pace (*Why Do All Objects Fall at the Same Rate in a Vacuum? | TutorChase*, n.d.).

There is a downside to microgravity when it comes to the health of an astronaut. Microgravity can severely harm the bones of an astronaut. According to research, bone loss happens at a rate of 1 to 1.5 percent per month in microgravity, resulting in an escalation of age-related alterations akin to osteoporosis which ultimately leads to the danger of kidney stones and broken bones (“How Does Spending Prolonged Time in Microgravity Affect the Bodies of Astronauts?,” 2005). Muscles are also badly affected by microgravity in space. When astronauts are in a μG environment, they experience decreases in bone density and muscle volume, as well as changes in muscle fiber properties (Moosavi et al., 2021).

Billionaires who go into space and then come back to Earth usually only talk about the vulnerable environment on Earth yet they do not mention the side effects and flipside of going into space. The reality is that it is not easy to adjust for space travelers once they return from space to Earth. Some of the effects of microgravity stay with them even after they land back on Earth. Unusual symptoms that astronauts may have after space travel include elevated heart rate, lowered blood pressure, and even fainting (Cao, 2022). As per an article, some astronauts report reduced orthostatic response on returning to Earth, which indicates that their blood pressure dips astonishingly low when they go from laying down to a sitting or standing posture ("How Does Spending Prolonged Time in Microgravity Affect the Bodies of Astronauts?," 2005). To sum up, the examination of the chosen series reveals the subtleties of how solastalgia is transmitted linguistically and semiotically inside the story. Through an examination of the characters' descriptions of their experiences and the symbolic meanings woven throughout the narrative, this research offers a more comprehensive grasp of the psychological, physiological, and emotional aspects of space-related suffering.

2.1.1.1.1 Alterity

Apart from solastalgia, one dimension of this research deals with the idea of "alterity". The concept of alterity is grounded in philosophy. Different scholars have given different definitions of alterity. The current study deals with the one that is linked to the sociological aspect and individual identity. According to one of the definitions, to mark differences and similarities among people, alterity allows the categorization of groups of individuals into classes such as class, sex, ethnic origin, sexual identity, and ethnic background (Wexler, 2004). Through alterity, human beings establish the binary, "Self Versus Other" for anyone who, according to them, does not belong to their species, community or social group. This binary can be created on the basis of how someone looks, dresses up, behaves and talks. Human beings create this binary in order to defend their identity, maintain their superiority and retain their power over other creatures.

I have added another level to my analysis of space-related anxiety in "Lost in Space" by using the variable of alterity, as demonstrated by the creation of human-alien binary oppositions. The development of boundaries between "self" and "others," or alterity, is a crucial factor in determining how the series' story unfolds. The protagonists' interactions with extraterrestrial life forms become a central theme for comprehending alterity in the

context of space travel as they explore the cosmic unknown. A key element in the individuals' attempts to make sense of their alien environment is the creation of human-alien binary distinctions. The act of 'othering,' which involves portraying the unknown as 'other' in contrast to the familiar, highlights the characters' feelings of dislocation and discomfort when they are around the alien and adds to the overall solastalgia theme.

The concepts “Us Versus Others" and “Exclusion Versus Inclusion” also engender inferiority complexes and a sense of insecurity among the ones who are being colonized. There are many science fictions that establish absolute alterity. One such relation is depicted in the science fiction, “Star Trek” where humans consider the animals and aliens as non-human and categorize them as “Other”. Star Trek, apparently attempts to present a world where a multispecies community can coexist; however, the depiction contains various instances where the creators have marginalized non-human entities from time to time. As in an article, based on enlightened humanism, the series promotes a utopian, mythological picture of species dwelling in harmony, which Rhonda Wilcox describes as the "capacity to accept the Other" as its "fundamental philosophy” (Neuwirth, 2018) but this series fail to keep its promise.

Derrida (1972) expands on the idea of alterity in his Derridian deconstruction. Derrida describes how the first step in deconstruction is to topple the hierarchy in Positions (1972) …To emphasize the "conflictual and subordinating structure of opposition," this is vital……It highlights the superiority of one method of thinking over another, undermines the notion of fixed meaning, exposes the binary's existence, and unsettles previously established understanding of categories (Turner, 2016). These differences in language then help generate meanings. According to The Editors of Encyclopedia Britannica (2023) to define the way meaning is formed via the play of contrasts between words, Derrida devised the term différance, which means both a difference and an act of deferring. Words are dependent for meanings on their opposites. The meaning of a word is never fully present to us; rather, it is endlessly deferred in an unfathomably long series of meanings, every one of which includes the "traces" of the meanings upon which it relies. This is because the meaning of a term is constantly a function of differences with the meanings of some of the other words, and because the meanings of those other words are reliant on contrasts with the meanings of still other words and so forth.

When applied to the cosmic storyline of the show, this idea of alterity offers a critical investigation into the ways in which the language structures of 'Lost in Space' could be interwoven with power relations, maintaining certain hierarchies and bolstering ideas of "self" and "other". The use of alterity in the depiction of human-alien interactions becomes more than just a narrative decision; it also opens up new avenues for delving into more complex socio-cultural issues. By assessing the verbal articulations and semiotic representations, we must critically analyze how the binary oppositions within the narrative may reflect or question current social conventions and beliefs about identity, difference, and the unknown. Furthermore, as Derrida's theory pushes me, as a researcher, to critically examine language, I will also examine the power relationships that are present in linguistic decisions. In what ways do the characters in "Lost in Space" use language to navigate and negotiate alterity, and what does this mean for the larger conversation about space travel? In light of space-related suffering, this critical analysis has driven me to evaluate whether alterity, as it is depicted in the series, supports or contradicts pre-existing socio-cultural norms.

In short, the goal of this research is to advance our knowledge of the complex role that alterity plays in influencing how people react to the cosmic unknown by providing perspectives that go beyond the confines of fiction and encourage critical thinking about our own cultural conceptions and beliefs.

2.1.1.1.1.2 Space Colonization

For a long time now, space scientists have been eyeing Mars as a suitable planet to colonize without taking into consideration the consequences human colonization can have on other planets. The story of space scientists landing on the moon dates back to 1964. According to research, Mariner 4 was the very first spacecraft to explore Mars. On November 28, 1964, the spaceship was launched, and it became the first to speed past the planet on July 14, 1965 (Stein et al., 2022).

With humans launching missions to Mars with an intention of colonizing it, the question of co-existence arises. Can humans co-exist with Martians and other intelligent life without creating the Self Versus Other binary? Moreover, from an ecolinguistic point of view, does the biological make-up of human beings allow them to survive the Martian environment? The answer is negative. The Martian environment is too harsh for a human being to survive. It can kill the necessary microbes on our body that help in digestion, shield

us against various kinds of infections and maintain our reproductive health. According to reports in space research, a large number of bacteria we could unintentionally transfer from Earth would be killed by Mars' severe environment and intense Ultraviolet irradiation (Poppick, 2017). Not just that, scientists have now started to reflect upon the ethical questions related to human behavior as space colonists, and their views are quite bleak. In this regard, Laura Poppick puts forth a scenario presented by Lee who is a space scientist. Upon posing the question, "should humans attack Martians if they settle on Mars and are in some way mortally frightened by them? "Lee, in his judgment, believed the answer is indeed yes.

It can be presumed that the seed of the idea of space colonization was sowed by the Nobel Prize Winner, Enrico Fermi, the famous physicist. He was the first to question the presence of alien life and gave the concept of Fermi Paradox. According to a definition, the Fermi Paradox alludes to the contradiction between the strong chance of intelligent alien life and the lack of proof for such beings (O'Callaghan, 2021). On the basis of the premise given by Fermi, the two possibilities that exist are that either there is a chance of aliens in outer space or human beings are the sole inhabitants of this universe. The most interesting thing about these two scenarios is that both situations propel human beings to explore outer space. In case, alien intelligence exists, then space scientists will have to figure out a way to coexist with them before colonizing other planets. In a situation contrary to this, conquering and colonizing space will become comparatively easier for human beings only if they are able to survive space travel. In examining the constraints and implausibility associated with space travel for human beings, we divert our emphasis towards a framework that dives into the intricacies of communication and meaning inside the cosmic domain - biosemiotics. With this change, the sweeping tales of interstellar colonization are replaced with a more detailed analysis of the semiotic mechanisms underlying human-extraterrestrial relations.

2.1.1.1.1.1 Biosemiotics

Biosemiotics is based on the idea of semiotics. This term was coined by Friedrich S. Rothschild in 1962. Studying the signs and linguistic codes employed in a system is required in order to completely appreciate how living species are arranged in an ecosystem. Hence, the study of meaning-making and its effects in living systems is known as biosemiotics, and a large portion of its attention is devoted to researching and

comprehending pre-linguistic sign processes in both humans and other living things (Kull & Favareau, 2017). Biosemiotics research is important from an ontological and epistemological point of view. Biosemiotics explores the ontogeny and phylogeny of semiosis, analyzes the simultaneity of meaning construction and the emergence of a subjective present within an umwelt, and specifies the approaches for researching various umwelten that are unique to various groups of living things, among other things.

This study includes a section on the signs associated with the outer space. Thomas A. Sebeok's idea of "Conceptual Idealism" has been used by the researcher to examine the subjectivity of meanings created by people in space. My study explores the idea of conceptual idealism, which holds that meanings are created subjectively by people rather than being intrinsic to the objects themselves. When this mental framework is applied to the cosmic world portrayed in "Lost in Space," it becomes very fascinating. As forerunners in space travel, the characters struggle with the difficulties of the alien environment as well as the subjectivity of the interpretations they make of the signals, symbols, and encounters they come across. Subjectivity of meanings is fundamental to the cosmic realm where communication transcends language to include complex semiotic interactions. The protagonists' subjective creations become necessary to interpret extraterrestrial encounters, comprehend cosmic occurrences, and grasp the fundamentals of existence. This is in perfect harmony with the biosemiotic lens, as it compels us to dissect the layers of meaning that are entwined with interspecies interaction. As I navigated the intricate landscape of biosemiotics and engaged with the subjectivity inherent in meaning-making within the cosmic expanse, the focal lens of my study came into sharper focus — ecolinguistics.

2.1.1.1.1.1.1 Ecolinguistics

Though humans may not realize this; but, there is a close relationship between language and environment. This relationship is one to one in nature which means that our language impacts our environment as much as our environment contributes in influencing the way we generate discourses around it. This symmetrical relationship between language and environment is examined under the field of Ecolinguistics.

This deep interconnectedness is especially moving when considering the cosmic voyage portrayed in "Lost in Space." The language used by the protagonists in the series

serves as evidence of the mutual effect between language and the cosmos. Their language, as they struggle with the unknown, not only conveys what they are seeing but also helps them create meaning in the vastness of space. Space is so vast that language activities like identifying celestial entities, articulating environmental concerns, and interpreting encounters with alien life forms reverberate throughout the universe. Ecolinguistics, sometimes known as language and ecology, is an area of language studies that examines how language functions in its physical, social, and ecological context as well as how language and discourse influence the environment and ecology (Stanlaw, 2020). According to another definition published on the site of International Ecolinguistics Association, Ecolinguistics is a discipline that explores the function of language in the life-sustaining relationships of humans, other animals, and the immediate environment. Up until now the analysis of the relationship between the language and the environment has been analyzed with regard to the environment of Earth. Through this research, I have analyzed how language influences the environment of outer space and how the environment of space influences the language of human beings. This is the gap that this study addresses comprehensively and critically.

It was the study of the ecology of language proposed by Einar Haugen in 1972 that birthed the field of Ecolinguistics. According to Haugen, the civilization that employs a language as one of its codes is the language's genuine environment; language only works in attaching its users to one another and to nature, i.e., their social and natural surroundings, and only exists in the thoughts of its users; therefore, its contact with other languages in the brains of bilingual and multilingual speakers is a psychological component of its ecosystem; whereas, sociological interactions with the society in which it serves as a communication tool make up another aspect of its ecosystem; people who learn a language, use it, and pass it on to others have a major role in shaping its environment (Dash, 2019).

In the show, “Lost in Space”, the language of the characters at numerous incidents is full of fear, depression, anxiety and anger which helps shape the environment of space. Not just that, when humans come in contact with the alien intelligence, their language shapes their relationship with those creatures which is based on discrimination and marginalization of those creatures. At the intersection of linguistics, ecology, and environmental studies, the field of ecolinguistics has grown into a vibrant area of research. Prior to exploring my own analysis inside the cosmic story of 'Lost in Space,' it is wise to consider the many and insightful works that have influenced the development of ecolinguistics.

2.1.1.1.1.1.2 Previous Studies: Eco-Fiction and Other Media Genres

The dystopian representation of the world in documentaries, movies, series and books has gendered a relatively new genre in cinema which is known as “Eco-Fiction”. According to a definition, the stories that make up eco-fiction highlight significant relationships, reliances, and exchanges between humans and their natural surroundings (Woodbury, 2022). Eco-fictions are closely related to new scientific discoveries in the environment. The genre is changing as our world evolves, incorporating newer and more widely acknowledged scientific discoveries like climate change. “Lost in Space” is considered to be both a sci-fi and an eco-fiction as it involves research in space science and space environment and it brings forth the potential environmental hazards of space and possible strategies to deal with them.

Many researches have been conducted that create a nexus between different media genres working with environmental awareness and Eco-Linguistics. One such research was conducted by Mliless and Azzouzi (2020) that demonstrates how the language of scientific experts helps raise environmental awareness in the Moroccan Eco-Documentary. The work of Mliless and Azzouzi is a fundamental addition to the field of eco-documentaries, especially when it comes to their examination of fear and danger appeals via the prisms of perceived severity and sensitivity. Their analysis of the genre has yielded insightful information on how ecological issues are portrayed in films, illuminating the clever ways in which these affective appeals are used to compel viewers to act. Comparatively, my research takes a distinctive turn in the field of speculative fiction, namely in the cosmic story of "Lost in Space," where solastalgia and alterity are major themes.

Although Mliless and Azzouzi explored the affective aspects of dread in the context of eco-documentaries, my research expands on this investigation by exploring solastalgia and alterity. I have examined the characters' emotional reactions to the alien world through the sensitive lens of solastalgia which captures the misery brought on by environmental changes. Furthermore, the idea of alterity—drawing distinctions between humans and aliens—adds a special layer of anxiety and unpredictability to the cosmic unknown.

Moreover, I depart from the norm by including Ecological Discourse Analysis and Biosemiotics into my paradigm. Unlike Mliless and Azzouzi's perceptual models, my work uses language and semiotics to decipher 'Lost in Space's' complex ecological discourse. In my research, the language expressions, interactions, and symbolic representations of the

characters become crucial components that enable a detailed examination of the biosemiotic nuances involved in their cosmic voyage. Essentially, my work adds new dimensions and perspectives to the conversation about the relationship between speculative fiction, language, and environment at the cosmic frontier, even as I acknowledge the relevance of this study.

It is not just the language that the field of Ecolinguistics takes into consideration when examining the discourses that revolve around the environment, but this field also has the potential to analyze the semiotic aspect of eco-fictions along with the use of language. Sania (2020) conducted research that analyzed the elements of erasure of environmental issues and salience in the superhero movies, more specifically the Marvel Movies. This research employs a multimodal discourse analysis of the chosen movies along with the Thematic Analysis keeping in mind the pointers given by Braun and Clark. This research is an amalgamation of both qualitative and quantitative research design.

My research, situated in the cosmic storyline of "Lost in Space," aligns with Sania's findings in several aspects. Though they focus on different genres, both studies are dedicated to deciphering the semiotic complexities present in speculative fiction. While Sania examined Marvel films, my focus is the cosmic journey depicted in 'Lost in Space,' exploring the semiotic manifestations of alterity and solastalgia. My work presents a novel investigation of environmental discomfort and the formation of binaries between humans and alien entities in this cosmic environment. Furthermore, the methodological similarity becomes clear when I compare my multimodal discourse analysis to Sania's. My approach centers on the visual and linguistic aspects of "Lost in Space," much like Sania's study of Marvel films. The distinct thematic lenses of solastalgia and alterity, as well as the addition of Ecological Discourse Analysis and Biosemiotics as supplementary frameworks, are where we diverge, nevertheless. Another thing that is common between my research and the one under discussion is its method of data collection. The qualitative aspect of Sania (2020) research deals with the Thematic Analysis of the movies for which the scripts of the movies are accessed online. Sania (2020) gathered the data from the website www.scripts.com ; whereas I have gathered the data online through www.happyscribe.com .

The multimodality with regards to environmental discourses is not just restricted to movies and documentaries, but it can also be applied to examine the environmental

discourses in print media. Research conducted by Nasir, Habib and Yousaf (2022) demonstrates the application of multimodal discourse analysis on print media. Their research is a noteworthy contribution to the study of environmental discourses, especially their multi-modal examination of harmful environmental discourses in print media. Their research illuminates the ways in which media narratives both reflect and contribute to harmful environmental discourses by analyzing textual and visual components. There is a clear similarity between the two researches in that they both aim to dissect environmental narratives using a multi modal lens. Although Nasir, Habib, and Yousaf (2022) concentrated on the discourses in print media, my research turns to the cosmos and

examines the semiotic manifestations of alterity and solastalgia in "Lost in Space".

One of the dimensions with which my research deals with is how through language human beings heighten and abate the status of other creatures. The previous researches, in this vein, demonstrate the use of the language by human beings with respect to the creatures of the Earth with which they co-exist. This is supported by a study conducted by Malik (2022) that analyzes how the erasure of animals is perpetrated in the show, "MeatEater" through the language used by the hunter, Stiven Rinella. By exposing how humans frequently denigrate animals via linguistic formulations, Malik's work sheds light on anthropomorphic language and its ramifications for the marginalized 'others.' Malik's research, relying on Arran Stibbe's frameworks such as erasure and mask, presents a sophisticated investigation of the power relations encoded in language.

A fundamental issue of both researches is the way language is used to reinforce hierarchical relationships and shape views. My study delves into speculative fiction, examining alterity as a prism through which humans could marginalize and 'other' extraterrestrial life forms, whereas Malik examined the anthropomorphic language directed at animals. In my research, the notion of alterity—which creates distinctions between humans and aliens—becomes a central theme that reveals the linguistic and semiotic techniques that support the marginalization of extraterrestrials.

Malik (2022) takes inspiration for her analytical framework from the conceptual tools of Arran Stibbe, namely from the stories of 'erasure' and 'mask.' These theoretical frameworks offer a prism through which one can view the ways through which humans denigrate animals via the use of anthropomorphic language. Erasure is the process of downplaying the importance of non-human things, so making them invisible in speech; mask,

on the other hand, is the use of anthropomorphic terminology or euphemisms to hide the actual nature of the interaction between people and animals. Malik examines the nuanced ways in which language is used to marginalize non-human species and reinforce hierarchical relationships by utilizing these frameworks.

Conversely, my research using the cosmic story of "Lost in Space" makes use of the frameworks of biosemiotics, Ecological Discourse Analysis (EDA), and alterity. In the context of my research, alterity pertains to the creation of dichotomies between humans and alien entities. This paradigm turns into a crucial analytical instrument for figuring out how semiotics and language affect the marginalization and "othering" of extraterrestrial life forms. By offering perspectives through which to examine the semiotic and ecological aspects of language usage within the cosmic environment, EDA and Biosemiotics supplement the investigation. While Biosemiotics explores the complex network of signals, symbols, and communication mechanisms that regulate life forms in the cosmos, EDA assists in examining the larger ecological discourse.

The application of Arran Stibbe's model can also be seen in the research of Khan and Mustafa (2023) in their analysis of the environmental hazards in climate change reports. Khan and Mustafa (2023) employed discourse analysis techniques to unfold the hidden ideologies related to environmental hazards. In the same way, my research has utilized EDA and biosemiotics to investigate how language reflects ecological beliefs in the environment of outer space. The aim of both these researches is to analyze the ways through which ecological issues are framed and represented except the medium differs. Additionally, Khan and Mustafa (2023) have only dealt with the language of the climate change news report; whereas, my research deals with both linguistic and semiotic representation of ecological issues in outer space. Both these researches employ a comprehensive theoretical framework. For example, Khan and Mustafa (2023) have applied framing, assessment and erasure from Stibbe's model to dissect ecological issues; whereas my research has combined Ming Cheng's Model of EDA and Sebeok's Bio semiotic model to decode the socio-environmental implications disseminated through media.

In addition to this, to analyze the power structures between humans and non-humans, Awny (2023) has applied the story of salience from Stibbe's model which aligns with my research as it also analyzes the interaction between humans and aliens, and their marginalization at the hands of human beings except my research has used The Mood System

from Ming Cheng's EDA Model. By employing the feature of salience, Awny (2023) has highlighted the linguistic features in which non-human beings such as tree, crow and Bongo are given value in our socio-ecological system in the book Wishtree; thus, making it an eco-beneficial discourse. In contrast to this, I have used The Mood System to analyze how humans have foregrounded the concept of "Otherness" regarding aliens; thus, making it an eco-destructive discourse. Both the researches reflect the broader societal and ecological ideologies with regard to non-human creatures in our ecosystem. It is important to understand the ways in which the identity of non-human creatures is established and shaped in our ecosystem. In this regard, Awny (2023) has focused on the linguistic devices such as personalization and imagery; whereas, my research has used a semiotic and linguistic lens to analyze the ways in which aliens are deemed inferior throughout the discourse.

2.1.1.1.1.1.1.1 Conclusion

To sum up, this chapter provides a summary of all the factors this study considers along with the pertinent literature. I specified each variable in order of their definitions, keeping in mind the topic of my study. This section first discusses the many definitions of "solastalgia" and how it has come to be used often in discussions about the environment today. Since my research focuses primarily on solastalgia in space, it first provides an overview of some of the key terms that aid in understanding the space environment before digging further into the environmental variables of space that cause solastalgia. Astro-ecology, ecology, and astronomy are some of these terms. The researcher has described the causes of solastalgia in space in detail after thoroughly examining these terms. "Alterity" is another important study variable. The notion of space colonization and various definitions of alterity were first addressed by the researcher, who then went on to explain how these terms relate to her research. Ecolinguistics is the third significant factor and the key variable in this study. A connection between ecolinguistics, eco-fiction, and other media genres that focus on environmental consciousness and environmental concerns has been made after providing a brief overview of ecolinguistics and some background information. Additionally, some prior pertinent research in this area is included in this section.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Research Design

This research is qualitative in nature as the researcher analyzed the closed captions of the season, “Lost in Space” which are in the form of text. “Lost in Space’ (2018) is a dystopian sci-fi Netflix series that captures the environmental struggles of the Robinson family in outer space. Throughout the series, the Robinson family is seen navigating through the challenging landscape of outer space and their encounters with the alien intelligence. The researcher has examined the "Lost in Space" series' *first thirteen episodes'* closed captioning. In order to comprehend the concepts of "Solastalgia" and "Alterity," this research focused on the language devices used by the characters in the chosen series "Lost in Space." The rationale behind choosing the first thirteen episodes is that the themes of solastalgia and alterity are dominant and recurring in these episodes. As the show progresses, the plot takes a different turn which is not relevant to this study. The researcher watched the first thirteen episodes of the series (each episode of 1 hour) multiple times in order to identify the themes of solastalgia and alterity thoroughly. In addition to this, the researcher gave an extensive reading to the downloaded closed captions (textual data) to ensure the accuracy of the data. After having done an extensive reading of the closed captions, the researcher then categorized the data by themes which are solastalgia and alterity. While doing so, I assigned labels to the segments of data that answered my research questions. For example,

Descriptive Code:

Uncertainty about the nature of the glacier: *“Not sure how stable this glacier is”*

Warning: *“Just follow my lead.”*

Interpretive Code:

“Not sure how stable this glacier is”: Implies a sense of vulnerability/ Reflects John’s fears and apprehension

“Just follow my lead.”: ensuring his son remains safe/reflects his fear about the safety of his son

I retained the data that answered my research questions and remained consistent with the conceptual framework designed for this research. Moreover, I have tried to minimize data redundancy by excluding repetitive similar patterns which did not offer any additional value to my research. Once the data was grouped, the researcher took the screenshots of the images that aligned with the linguistic data. In this regard, the timestamps in closed captions proved to be extremely helpful as I was able to pause the video at the relevant moments to screenshot the images. Once the data was selected, grouped and the images were collected, I considered how these linguistic cues and images contribute to the ecological thinking and the environment of outer space in the show, Lost in Space. At this point, the researcher opted for an eco-critical approach that helped her uncover the hidden ideologies with regard to the environment of outer space. By connecting the linguistic cues of solastalgia and alterity with their visual manifestations, the researcher could assess how both mediums create an ecological world that is extremely distressful for human beings.

3.2 Method of Data Collection

The researcher first went to the website https://subdl.live/yts-subtitles/. This website offers closed captions for a number of seasons. The researcher wrote, “Lost in Space” in the search bar, and it gave a zip file for all the SRT files of the closed captions which were then downloaded. According to Forsey (2021), A plain-text file called an SRT file, sometimes called a SubRip Subtitle file, provides crucial data for subtitles, such as the start and finish timecodes of your text to make sure that your subtitles match your audio and the sequencing number of subtitles. After downloading the SRT files, the researcher used the online tool known as Happy Scribe to convert those SRT files into PDF and Word documents. Once this procedure was complete, the closed-captions for all the seasons of the show were downloaded.

3.2.1 Source of Data Collection

“Lost in Space” is a Netflix series and its closed captions are available on the website, “YTS Subtitles” which is basically the source for collecting the data for this research. The rationale for selecting "YTS-Subtitles" is that it has received favorable evaluations, provides correct subtitles and is regarded by Trend Micro (*yts-subs.com Reviews Visit the Site Is yts-subs.com a Scam or Legit?*, n.d.). The rationale for choosing a Netflix series is the massive audience that Netflix has right now.

According to Truelist (2023), in the first quarter of 2022, there were around 221.64 million Netflix customers. Such a great number of audience indicates that this platform has an unfathomable potential to influence the minds of the audience with the discourses it generates.

3.2.2 Closed Captions

Although the terms closed captions and subtitles are usually used in parallel yet these two are distinct concepts. Closed captions and subtitles are the text form of the audio but they both operate differently. According to Murray (2020), closed captions are in the same language as the audio, as opposed to subtitles, which translate the language of the video into another language. The researcher has analyzed the closed-captions for this research which have been downloaded through the site, “YTS-Subtitles”.

3.2.3 Validity of the Data

To ensure the validity of the data, the closed captions have also been collected from another popular and trusted website called www.opensubtitles.com and the captions have been validated with the subtitles downloaded from “YTS-Subtitles”. Moreover, the closed captions have been matched with the audio of the season, “Lost in Space” to ensure that there is no discrepancy in the collected data.

3.3 Conceptual Framework

This study has used Ming Cheng's (2022) paradigm of ecological discourse analysis to examine the linguistic choices connected to solastalgia and alterity. Published in the book called *New Developments in Ecological Discourse Analysis* in 2022, this book provides readers with a thorough and usable theoretical foundation for Ecological Discourse Analysis, also known as "ecological grammar" (Cheng, 2022). Moreover, using Thomas A. Sebeok’s Biosemiotic Model (2001), this study has also investigated the signs in the series, “Lost in Space”. This model was published in his book *Signs: An Introduction to Semiotics (2nd ed)* in 2001. According to Sebeok (2001) the entire universe... is perfused with signs, if not entirely composed of signs' - is known as idealism, and that of a specific hue, sometimes called 'conceptual idealism,' which maintains that our view of reality, namely, our Umwelt, involves an essential reference to mind (Gemut) in its constitution. In simple words, the universe is made up of signs and ideas rather than physical objects. It specifically

relates to a sort of idealism known as conceptual idealism, which holds that our knowledge of reality is inextricably linked to our minds and thoughts. In other words, our mental processes and perspectives shape our perception of the world around us.

The figure below provides a summary of the conceptual framework that has been created for this study. To establish the validity of the chosen models, the researcher researched their use in other study works. Because Cheng's model is new, it has just a few applications thus far. One of the research projects in which it has been used is the examination of logical resources in news stories about the Sino-American trade war. I picked this paradigm in order to comprehend its broader ramifications. The chosen Biosemiotic Model by Thomas Sebeok, on the other hand, has assimilated the principles of Jakob von Uexkull's (1934) Umwelt' Theory and Charles Sanders Pierce's (1867-1914) sign theory as it advocates the concept of "subjective realities" and divides its sign system into three categories (index, icon, symbols).

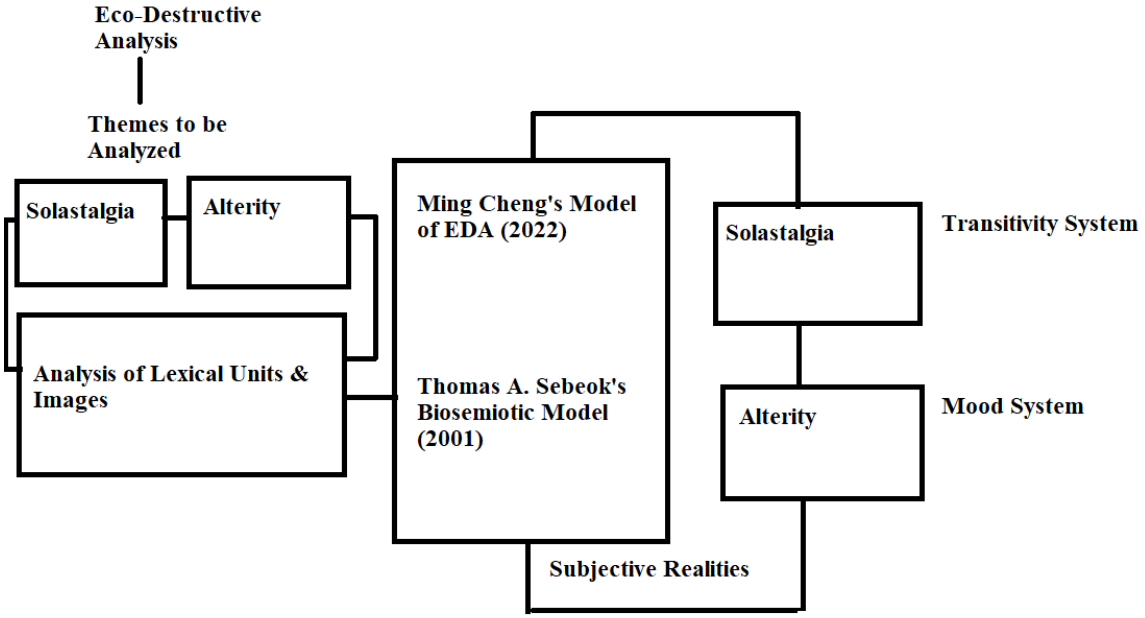

Figure 3.1 Conceptual Framework

To provide a holistic understanding of the verbal and non-verbal cues, I have bridged Ming Cheng's Model of EDA with Thomas Sebeok's Model of Biosemiotics. This interdisciplinary framework also merges the disciplines of biology and linguistics as it underscores an interplay between signs and interpreters in a living system. To comprehensively understand the experiences of an organism in outer space, Ming Cheng's transitivity system has been merged with biosemiotics. The transitivity system of Cheng's

model divides the clauses into participants, processes and circumstances which help in understanding the experiences of the organisms in relation to their environment. By combining these grammatical features with biosemiotics, this research has demonstrated the roles of linguistic and semiotic processes in shaping the understanding of an organism about his environment. The transitivity system along with biosemiotics also help us understand the interaction between an organism and his environment and his overall perception of the world. For example, the transitive relationship between the alien and the characters, (It's not a he, Will. It's an it") signifies their particular perception and understanding of the creatures in outer space. Moreover, the mood system of Ming Cheng's model classifies the behavior and attitude of speakers into imperative and indicative clauses. By combining the mood system with the lens of biosemiotics, this research has revealed the hidden motivations and ideologies of human beings in communication acts that involve extraterrestrial species. Mood system aligns well with biosemiotics as both these systems emphasize the role of emotions in conveying a piece of information and sign interpretation. This part of my conceptual framework underscores a connection between language and emotions. For example, in an interaction between aliens and humans such as ("Get away kids!), the mood system along with biosemiotics reveal the affective tone involved in this communication act which is "fear". The amalgamation of these models have provided a nuanced understanding of the linguistic and semiotic processes involved in outer space in the show, "Lost in Space". The analysis of this research using this conceptual framework extends beyond human language as it also encompasses the experiences of the organisms in their environment.

3.4 Cheng's Paradigm of Ecological Discourse Analysis

This research employed Cheng's (2022) model of Ecological Discourse Analysis from his book, *New Developments of Ecological Discourse Analysis*. This new Ecological paradigm is situated within the Hallaydian approach of Systemic Functional Linguistics. According to Cheng (2022), this model broadens and extends the experiential, interpersonal, textual, and logical metafunctions within the context of Systemic Functional Linguistics based on the guiding concept of the ecosophy, "Diversity and Harmony, Interaction and Co-existence." The model of EDA helps study the relationship between human and nature and it also helps increase the awareness with respect to the environment.

It is also known as “Eco-Grammar”. This EDA model mainly consists of several systems through which an environment discourse can be analyzed. For this research, I have chosen the Transitivity System and Mood System.

3.4.1 Transitivity System and Ecological Orientation of Discourse

Firstly, I have analyzed the eco-destructive nature of the discourse by analyzing the process, the participant role and the circumstantial role. Through this system, the *theme of solastalgia* has been analyzed in this research. According to Cheng (2022), if one of them (process, participant’s role, circumstantial role) is eco-destructive, the discourse is characterized as eco-destructive.

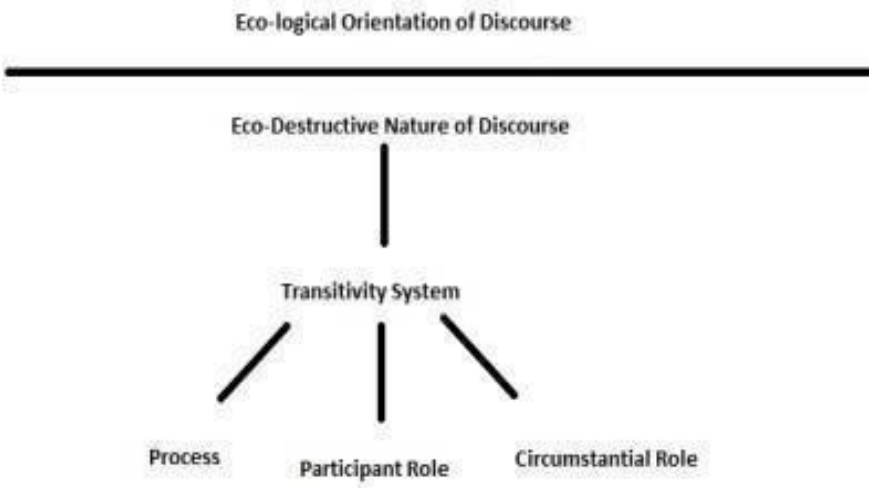

Figure 3.2 Orientation of Discourse

3.4.2 Process/Experiences in Transitivity System

Through the transitivity system, we analyze how the world around us is being constructed. A manageable collection of process types is created from the world of experience via the transitivity system (Cheng, 2022). The transitivity system creates a collection of process types from the world of experience, including physical, social, and mental experiences. These experiences have been analyzed through autonomous and influenced modes, and divided into natural and social parts.

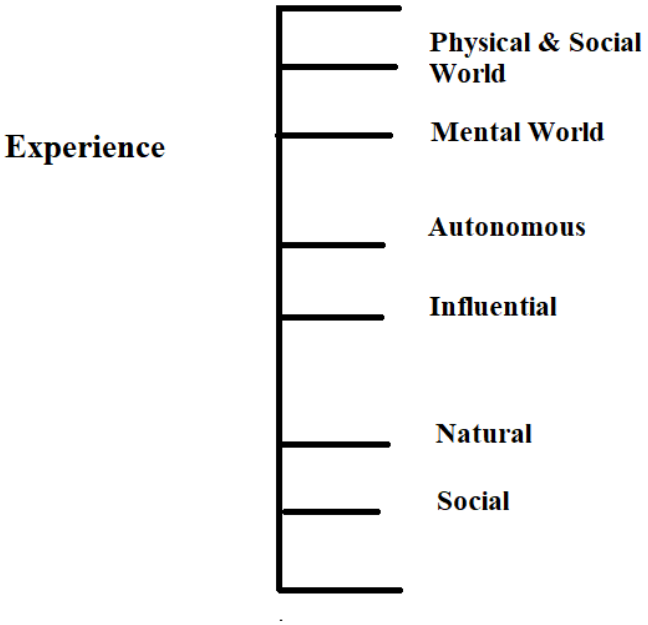

Figure 3.3 Experiential Division in EDA

3.4.3 Participant's Role in Transitivity System

In the transitivity system, the role of participants is also analyzed. Keeping in mind the EDA model of Cheng, I have delimited the participants and their roles. According to Cheng (2022), the participants can be divided into individual/group, human/non-human, life/lifeless and natural/social. The researcher has analyzed the kind of the participants that cause solastalgia in human beings.

3.4.4 Participant's Role with Respect to Process

The role of the participants has been observed in relation to the process that they are experiencing. Based on the physical and social world, the participant's role can be divided into an agent, affected, created and behaver. Based on the mental world, the participant is divided into the categories such as emoter, desiderator, agent, communicator, perceiver, communicated and cognizant.

3.4.5 Circumstantial Role in Transitivity System

According to Cheng (2022), the circumstantial linguistic features can be divided into four semantic categories which are experiential, interpersonal, textual and logical. This

research has analyzed relation between participants, processes and circumstances, speaker and hearer relationship, and thematic structure of the text.

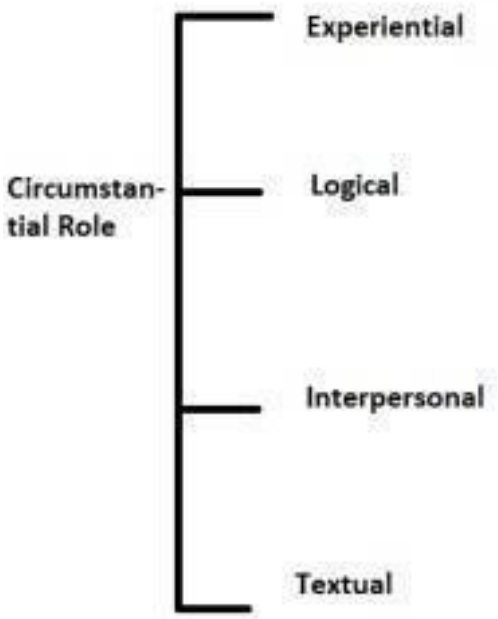

Figure 3.4 CR in EDA

3.4.6 Mood System and Alterity

To analyze the theme of alterity, I have chosen the Mood System from the framework given by Cheng (2022). The mood system of this framework is related to the interpersonal metafunction of language. According to Cheng (2022), when seen through the lens of ecolinguistics, the interpersonal metafunction can serve as a representation of the identity, status, connection, disposition, and evaluation of speech roles in the ecosystem, including both living and dead speakers. The features of interpersonal metafunctions are in link with the ideas prevalent in Ecosophy. As part of the ecosophy of "Diversity and Harmony, Interaction and Co-existence," interpersonal meaning in speech should be blended with experiential meaning (Cheng, 2022). The mood system has taken into consideration the different factors of language. The researcher has analyzed speech roles, motivations and targets grounded in the ecosophy of “Diversity and Harmony, Interaction and Co-existence” (Cheng, 2022).

Through the above mentioned framework both the ideas of solastalgia and alterity have been analyzed comprehensively.

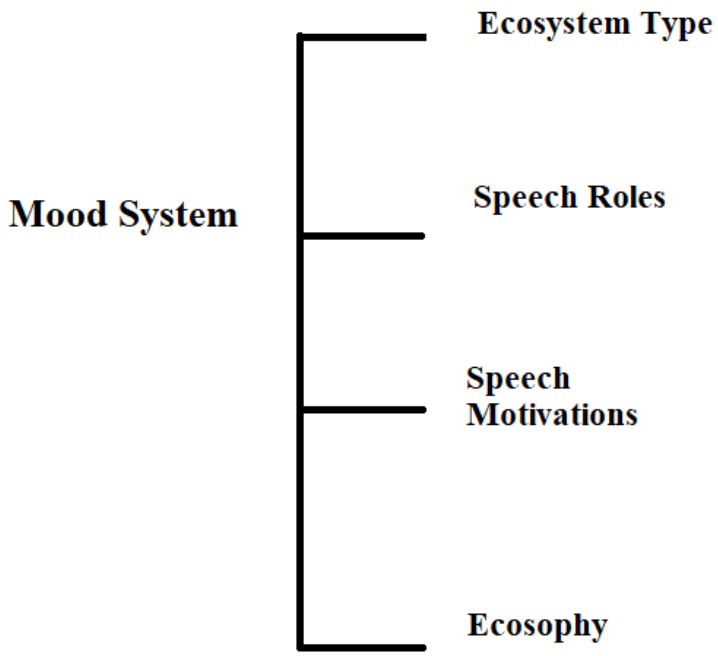

Figure 3.5 Mood System in EDA

3.5 Biosemiotics and Ecolinguistics

In 2001, Thomas A. Sebeok, in his book “Signs: An Introduction to Semiotics' ' proposed an idea of Biosemiotics which is based on Jacob von Uexkull’s concept of Umwelt and Charles Sanders Pierce’s sign theory. Unlike Uexkull, Sebeok has used the term “conceptual idealism” for subjectivity in meaning making instead of using the term, “subjective realities' '. According to Rescher (1995), the constitutive function of mind in nature is thus to be understood hermeneutically (interpreting and understanding), through concept explanation, rather than ontologically or causally. It is not that mind creates nature, but rather that the way we conceptualize nature incorporates mental analogies – that we think of the actual in mind-correlative frames of reference.

As mentioned earlier, Sebeok’s idea of conceptual idealism is based on Jacob Uexkull’s idea of The Umwelt. Umwelt is a German word and it is translated to “subjective universe” and “environment" (Sharov, 2001). Most ecologists believe that every creature in the ecosystem lives in the same habitat, but Uexküll believed that even though an organism lives in the same environment, he may have a distinct subjective experience of it. A living

thing develops meaning by actively interacting with its surroundings. Due to its emphasis on subjective realities and rejection of objective interpretations, this study has opposed the positivist approach. This idea has been applied to Ecolinguistics to investigate how language determines our perception of the world and how our environment influences how we comprehend nature and communicate about it.

In this research, there is a denotative and connotative analysis of the images. According to Sebeok (2001), human signs can encode two types of referents, denotative and connotative, depending on usage and circumstance. Denotation is the original referent that a sign aims to capture, but connotation is when human signs are freely expanded to include various types of referents that appear to have something in common with the denotatum through connection or analogy.

Keeping in mind the concept given by Sebeok, a thorough apparent description of the situation has been provided at the denotative level. At this level, consideration is given to looks, demeanor (expression, eye contact, stance, clothes), and activity (body movement, physical/positional communication, props, and environment). The ideologies supporting the signifiers discovered at the denotative level are examined at the connotative level. To comprehend the deeper meanings, verbal as well as non-verbal codes have been examined. The table below demonstrates how the denotative and connotative analysis of the data has been carried out.

Scene Time	
Conversation	
Denotative Analysis	

Kind of Signs (Icon, Index or Symbol)	
Connotative Analysis	

Table 3.1 Table for the Analysis of the Data

CHAPTER 4

DATA ANALYSIS

The previous section offered complete details of the conceptual framework. This chapter applies the proposed conceptual framework to the data while keeping the research questions from the prior chapter in mind. This chapter is split into two sections: "Solastalgia and Biosemiotics" and "Alterity and Biosemiotics." From a linguistic standpoint, the themes of solastalgia and alterity have been investigated utilizing two systems from Cheng's model, namely the "Transitivity System" and the "Mood System" respectively. From a semiotic viewpoint, the visuals for both the themes have been analyzed side by side.

4.1 Solastalgia and Biosemiotics

Figure 4.1

Figure 4.2

Scene Time	2:53-3:00
Conversation	22 <i>Music off. Atmospheric disturbance detected. 23 Deep breaths. 24 Remember your training. 26 Deep breaths.
Denotative Analysis	The Robinson family is sitting in their Jupiter when a shower of fireballs hits their spacecraft which causes an intense atmosphere in the environment of space and causes their Jupiter or spacecraft to experience extreme vibrations and consequently, the family undergoes distress.
Kind of Signs	**Index**: Meteors (Fireballs)

Connotative Analysis	The Robinson family is terrified and grabs each other's hands as the meteors hit the vessel. When compared to the people in the spacecraft who are older than him, their youngest child named Will, feels the most threatened by this change in the surroundings. The image up top makes this fear of Will apparent. His strained eyebrows, tense eyes, slightly backwards posture, and gaping mouth all communicate the fear that the environment is causing him to feel. However, his father keeps repeating "Deep Breaths" to reassure him that everything would be okay. Children are more susceptible than adults to the harmful consequences of climate change (Sanson & Bellemo, 2021). Will relies on his parents to provide him assurances about their safety because of this. The meteors that strike the spacecraft are a sign of this type of atmospheric disturbance.

Table 4.1 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**

22 <i>Music off. Atmospheric Disturbance detected. 23 Deep breaths. 24 Remember your training. 26 Deep breaths.	**Social**	**Superordinate Level** • Happening **Basic Level** • Autonomous **Subordinate Level** • Natural	**Physical World** • Affected **Mental World** • Perceiver
	Circumstantial Role in Transitivity System		
	Experiential Level		
22 <i>Music off. Atmospheric disturbance detected.	**Agentless Passive with Goal as Subject**		
	Atmospheric Disturbance		Detected
	Goal		Process

Table 4.2 Transitivity Analysis Table

Analysis

Outer-space atmospheric disturbances are a natural and common occurrence. Every disturbance in the internal and/or external driving components manifests in a variety of

ways. The setting being examined for this study illustrates how atmospheric changes in space cause solastalgia in humans as analyzed in Table 4.1. They fear as soon as they see the disruption in space and begin taking "deep breaths." They even recall their space survival training. The repetition of the phrase "deep breaths" demonstrates their tense mental state. It is important to consider the experiences of the characters in relation to their environment because according to Cheng (2022) our experience is represented with a variety of ecological features since it is shaped by diverse ecological variables. In this case, it is the disturbance in the atmospheric pressure that shapes the experience of the characters in outer space. To vividly convey the meaning-making process, this scene employs the element of biosemiotics through a close-up shot of Will's tensed state. In Figure 4.2, it can be seen from the facial expressions and body language of one of the characters (Will) that he is in a state of immense pain and anxiety. Will (the youngest child of the Robinson's family) is seen crying in this scene because of the strong air disturbance which is otherwise perceived as a neutral occurrence in outer space. Will's facial expressions convey a sense of solastalgia which is caused by one of the space hazards. Moreover, he responds to the threat in the environment by sitting still. By remaining motionless, he, in his own way, responds to the external stimuli which is crucial in biosemiotics. It is crucial to consider both the linguistic and non-verbal cues in order to holistically understand the meaning-making process by human beings in outer space. Will's terrified facial expressions along with the linguistic aspect "Deep breaths" effectively convey meaning and emotions in this scenario. According to Sebeok (2001), it is important to consider human communication as a verbal and nonverbal process in its entirety. It is obvious that living things derive meaning from their environment, and that meaning is expressed kinetically in the moving bodies of those organisms.... the body perceives our umwelt while generating a constant stream of consciousness or while producing a continuous stream of movement or stillness (Favareau et al., 2012). Figure 4.1 depicts the cause of the distress. Figure 4.1 consists of a resolute floating in space which serves as a sign of a safe haven for human beings; however, the yellow spots of light (fire) in the outer atmosphere indicate that the environment of the space is inhospitable for human beings. Moreover, the blueish black background adds to the hostile atmosphere of outer space.

This atmospheric disturbance threatens the survival of Robinson's family in outer space and this is consistent with the theme of solastalgia. This atmospheric pressure and the environment of outer space act as a force and an agent in causing solastalgia in human

beings. According to Kiernan (2022), solastalgia, positioned as a literary framing device, offers one method to comprehend how damaged landscapes are themselves agentive—that is, how the health of our planet's inhabitants, including humans, is impacted by the planet's disease on a local or global scale. Moreover, the aggressive tone in which the dialogues, “take deep breaths” and “remember your training” are delivered also highlights the heightened state of nervousness and dread in the characters. According to the conceptual framework, human beings in this scenario are classified as social, influenced, or perceiver, while the experience is happening, natural and autonomous. Furthermore, in Table 4.2 at Circumstantial level, the lexical units that cause solastalgia in the characters are analyzed so that the process and experience of the characters in space may be comprehended. The atmospheric pressure in space is the phenomenon that generates uneasiness in humans. Because the space environment is full of uncertainty, it is nearly hard to predict what causes atmospheric disturbances in space. This ambiguity is mirrored in the syntax as well, as we cannot identify the agent causing this phenomenon. The goal has taken the position of the subject, which is the "atmospheric disturbance", and it is followed by the process that is "detected."

In this context, the theme of solastalgia is emphasized by both the visual cues and lexical choices embodied and employed by the characters in response to the air disturbance. The utilization of verbal and non-verbal cues enhance our understanding of the environment of outer space as well as the idea of solastalgia. The study of signs and symbols in biological systems is the primary subject of Thomas Sebeok's work on Biosemiotics. By applying this to the discourse of this research, we can see that the phrase "atmospheric disturbance detected" points to a possibly important event that is happening in the characters' surroundings. According to conceptual idealism, mental models and conceptual frameworks influence our world. In the context of the show, “Lost in Space”, the characters' understanding of "atmospheric disturbance" as a threat is dictated by their own innate mental models.

Figure 4.3

Scene Time	9:39-9:41
Conversation	118 Mayday, Mayday. This is Jupiter 2. Do you read? Over. 119 *Probably should have read the fine print before I launched into space.*
Denotative Analysis	Penny, one of the daughters of the Robinsons' family, fires a bullet in space to see if there are other human beings present in space apart from her family.
Kind of Signs	**Index**: Shooting a gun

Connotative Analysis	An indexical symbol for Penny's desire to speak with other people like her in space is the firing of a rifle. The image of Penny standing alone on a glacier holding a rifle conveys both the isolation and the immensity of space. Powell (2020) asserts that space is largely empty and that the extent of this emptiness is beyond human knowledge, practically all human imagination, and perhaps even human endurance. Penny's surroundings are completely white, representing the colorless realm of space that people are not accustomed to seeing because of living on Earth.

Table 4.3 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**
118 Mayday, Mayday. This is Jupiter 2. Do you read? Over. 119 Probably should have read the fine print before I launched into space.	**Social**	**<u>Superordinate Level</u>** • Happening • Emotion **<u>Basic Level</u>** • Influenced **<u>Subordinate Level</u>** • Social	**<u>Physical World</u>** • Affected **<u>Mental World</u>** • Perceiver • Emoter
	Circumstantial Role in Transitivity System		
	Interpersonal Level		

119 Probably should have read the fine print before I launched into space.	**Subjunctive Mood - Hypothetical/Doubt**

Table 4.4 Transitivity Analysis Table

Analysis

The data in Table 4.3 describes a scenario in which one of the characters, Penny, feels lonely in space. In the series, a lot of individuals travel for space on Jupiters, or spacecraft, with the purpose of colonizing it, but only a few manage to land safely due to the severe weather of space. Space is enormous, and being alone in it is terrifying. The section above emphasizes the subject of loneliness in space by showing the character's desire to be with other humans and speak with them. According to Cheng (2022), human experiences can be divided and analyzed on three levels which are superordinate, basic and subordinate levels. Penny's experience of the space can be analyzed on a superordinate level where the experiences of human beings are classified into broad domains such as physical, social, mental and abstract world. On a mental level, Penny feels lonely, isolated and disconnected; whereas, on a social level, she craves human interaction in outer space. The lexical unit "should have" suggests a hypothetical situation. She tells herself that she should have understood the parameters and rules of space travel before arriving there. The distress cry "May Day" adds to the sense of aloofness or distress by implying a feeling of urgency and perhaps dire situations. Penny's emotional cry "May Day" adds an element of desperation for human contact. Her regret and contemplation on not reading the small print convey a sense of loneliness that she feels in the vastness of space. This indicates that Penny does not have a healthy relationship with her environment and that becomes a source of solastalgia for her. This example highlights that the environment in which people live is important in understanding the theme of solastalgia. According to Kiernan (2022), people-place relationships are essential to the current investigation of the links between environmental change and human health and wellness, and place is the key component of solastalgia.

“May Day" is a commonly used phrase that symbolizes a need for communication in times of crisis. Moreover, in Figure 4.3, the application of the model of biosemiotics can be seen in the aerial shot of the environment of outer space. This shot shows Penny standing alone in the colorless empty space. The orange color in Figure 4.3 is the spark or signal that Penny sends in outer space in order to communicate with other human beings. This shooting indicates that non-verbal communication precedes verbal aspect for survival in the harsh environment of outer space. This form of non-verbal communication is assumed to be understood by other human beings in outer space. According to Sebeok (2001), verbal signing is less essential to life than nonverbal signing from a phylogenetically and ontogenetically perspective. Moreover, the orange spark also illustrates that this non-verbal gesture is standard and Penny assumes that it will be understood by any human being present in space which ensures its reliability. According to Bambaeeroo and Shokrpour (2017), when it comes to communicating, nonverbal cues are extremely reliable. This emptiness combined with the loneliness that Penny feels in space reiterates the idea that human beings are interconnected; and therefore, cannot survive alone. The concept of interconnectedness in biosemiotics has been supported by many bio-semioticians. According to Favareau et al. (2012), being so tied is descriptively similar to what Hoffmeyer refers to as "our swarming body-brain" (1996: 122) ...in each case, "a web of complex relations" is evident: dynamic interconnectivity arises at all levels of existence.

Figure 4.4

Scene Time	11:57-12:00
Conversation	163 In six hours, the sun's gonna go down, and indications are, it will drop to 60 degrees below zero, at which point, our power cells will die... 166 And so will we.
Denotative Analysis	The Robinson family is warning their children about the limited time they have until their power cells run out of batteries, which could result in the death of the entire family as there is snow all around them. The sun setting is what will cause the temperature to decrease even further.
Kind of Signs	**Icon:** Sun
Connotative Analysis	Outer Space is extremely cold. According to Haynes (2020), even the coldest locations on Earth are not as chilly as deep space. It is as a result of the absence of heat transfer in space. The Robinson family is seen coping with the steadily dropping temperature in space in this particular scene. Their eskimo jackets and the surrounding whiteness serve as visual cues to how chilly the environment is in space. Here, they are informing their youngsters that the sun setting will result in their demise. When they tell their kids, they feel disappointed and distressed. Their father's posture displays his hopelessness. He tells them about it while stooping. He even avoids their faces.

Table 4.5 Scene Analysis Table

<table>
<tr><td>Eco Destructive
Nature of Discourse</td><td colspan="4">Participant Role in Transitivity System</td></tr>
<tr><td>Data</td><td>Participant Type</td><td>Participant Role w.r.t Experience</td><td colspan="2">Participant Role
w.r.t Process</td></tr>
<tr><td>163
In six hours, the sun's gonna go down, and indications are, it will drop to 60 degrees below zero, at which point, our power cells will die...</td><td>Social</td><td><u>Superordinate Level</u>
• Happening
• Emotion

<u>Basic Level</u></td><td colspan="2"><u>Physical World</u>

 Affected</td></tr>
<tr><td>166
And so will we.</td><td></td><td>• Autonomous

<u>Subordinate Level</u>
• Natural</td><td colspan="2"><u>Mental World</u>

• Perceiver
• Emoter</td></tr>
<tr><td></td><td colspan="4">Circumstantial Role in Transitivity System</td></tr>
<tr><td></td><td colspan="4">Experiential Level</td></tr>
<tr><td></td><td>In six hours</td><td>the sun’s</td><td>gonna go</td><td>down</td></tr>
<tr><td></td><td>Circumstance</td><td>Participant</td><td>Process</td><td>Goal</td></tr>
<tr><td></td><td colspan="4">Interpersonal Level</td></tr>
</table>

163 In six hours, the sun's gonna go down, and indications are, it will drop to 60 degrees below zero, at which point, our power cells will die... 166 And so will we.	**Indicative - Stating Facts**

Table 4.6 Transitivity Analysis Table

Analysis

Temperatures in space may fluctuate from hundreds of degrees below freezing to hundreds of degrees above - especially when a spacecraft travels near to the Sun (*Surviving Extreme Conditions in Space*, n.d.). The data in Table 4.5 illustrates the identical scenario in which the characters discuss temperature swings in space. As soon as the Sun sets, the weather in space becomes extremely harsh and frigid, causing the power in their spaceship to fail, and if they are unable to keep themselves warm, they may perish. The frequent variations in the temperature of space induce solastalgia in the characters in this instance. They acquire a dread of death as a result of the freezing environment of space. In Ecological Discourse Analysis, it is the Theme clause that informs about the experience in an environment. According to Cheng (2022), the ecological aspect in the theme clause is the primary focus of the ecological property, which is further divided into three categories: simple theme, multiple theme, and conflated theme. The experiential theme, which is realized via PR or process, makes up the simple theme. For example, in the given scene, it is the theme clause that becomes a source of solastalgia for Robinson's family. The dialogue, "In six hours, the sun's gonna go down", the setting of the Sun is the experiential theme that causes distress in the characters. This experience is spontaneous and natural. As per the circumstantial level in Table 4.6, the agency is the sun, which acts on humans and causes solastalgia. Within the framework of biosemiotics, this example shows how the characters comprehend and interpret the setting of the sun as a sign. As shown in the Figure 4.4, the Robinson family looks distressed because of this natural phenomenon as it will cause their power cells to die. John (the father of Will, Judy and Penny) is seen bowing down towards

their mother in order to discuss this matter secretly so that their children will not get terrified. In biosemiotics, the effect produced by the sign is considered to be the interpretant; whereas, the characters are considered to be the interpreters….an interpretant is the result of a sign's influence on an interpreter; a sign is anything that stands for something else (its object) in a way that ultimately creates a third relational entity (Queiroz et al., 2011). In this scene, the characters are the interpreters; whereas, the distress caused by the phenomena of the setting of the sun is considered to be an interpretant. Human beings construct meanings especially with respect to their environment, according to their biological make up and mental models. Their biological make-up conducts the meaning-making process through its cognitive abilities and sensory organs; whereas, their mental models hold the concepts related to time and space. In this scene, they perceive the setting of the Sun as a sign of threat because of their concept of time and biological needs. The setting of the Sun will take away the warmth that their bodies need to survive in space. According to Sebeok (2001), an organism's perception of an item is based on a certain type of pre-existing mental modeling system that enables it to understand the universe of entities, and events in a way that is predetermined by biology…. this system is based on the body of the organism, which constantly transforms the experience of the outside world into an internal representational reality.

A distressed tone is created by the language's urgency, especially when John talks about the temperature falling to 60 degrees below zero and the approaching power cell breakdown. The language conveys the emotional effect of the scenario as the protagonists are facing an imminent peril. The environmental hazard—the sharp drop in temperature—and the anguish are strongly related. This is consistent with solastalgia, the idea that describes how changes in the environment can cause emotional suffering. The first line highlights the urgency of the problem by introducing a time-dependent procedure. "In six hours, the sun's gonna go down" emphasizes how quickly the weather will be changing. The sentence "indications are, it will drop to 60 degrees below zero" begins the temperature indication phase, signifying a noteworthy and maybe dangerous alteration in the surrounding conditions. The phrase "at which point, our power cells will die" highlights the possible repercussions of the temperature change while indicating a procedure pertaining to the state of power cells. Characters illustrate eco-anxiety as they consider the repercussions of the temperature decrease and power cell failure.

Figure 4.5

Scene Time	24:37-24:40
Conversation	326 Just follow my lead. Not sure how stable this glacier is. Don’t wanna fall down a crevasse. 328
	Wait, that could happen?
Denotative Analysis	Will and his father can be seen in this image strolling over a space glacier. On the glacier, Will's father is strolling with a stick. They are moving across it as they look for magnesium. Will's father is leading the way and he follows him.
Kind of Signs	**Icon**: Glacier

Connotative Analysis	Glaciers are risky and hard to tread. There is too much of a chance of slipping on the ice and falling into an exposed crevasse or of breaking through and plunging into a concealed crevasse (Billhauer, 2023). Will and his father must cross a glacier in this scene in order to search for magnesium in space. Because of the erratic weather in space, glaciers could melt at any time, so Will's father cautions him and advises him to proceed with caution. Will finds it distressing that anything like this is possible. The difficulty of walking on a glacier is underscored by the difficulty with which Will's father navigates it while using a staff. To protect and guide his son, he leads the way.

Table 4.7 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**
326 Just follow my lead. Not sure how stable this glacier is.Don't wanna fall down a crevasse. 328	**Social**	**Superordinate Level** • Happening **Basic Level** • Autonomous	**Physical World** Affected **Mental World**
Wait, that could happen?		**Subordinate Level** Natural	• Perceiver • Emoter

	Circumstantial Role in Transitivity System
	Interpersonal Level
Wait, that could happen?	**Declarative Sentence Used as a Question** • Casting a doubt on the assertion • For affirmation

Table 4.8 Transitivity Analysis Table

Analysis

The data in Table 4.7 discusses glaciers in space and their instability. There are many different types of ice and glaciers in the solar system, among which are the methane and nitrogen glaciers discovered on Pluto (Travers, 2022); nonetheless, these glaciers are considered "unstable," which implies that even little temperature fluctuations can cause them to melt. In the given data, the character exemplifies the subject of solastalgia by expressing his dread of slipping down a glacier. In Ecological Discourse Analysis, the intensity of a discourse being eco-beneficial or eco-destructive depends upon how the discourse has been structured. According to Cheng (2022), “weak ecological property" denotes that the ecological element in the phrase is backgrounded; "strong ecological property" indicates that the ecological element is foregrounded; in other words, the basis for evaluating the ecological property of speech is interpersonal and experiential meanings. In the dialogue,” Just follow my lead. Not sure how stable this glacier is. Don't wanna fall down a crevasse”, John employs a few linguistic cues to foreground the ecological information which indicate that this text has a “strong ecological property”. The use of the cautionary phrases such as, “follow my lead” and “Don’t wanna fall down a crevasse” foreground his fears about the instability of the glacier; thus, causing solastalgia in him and his son. "Crevasse" refers to a crack, fissure, or break in a glacier that leads it to collapse. Furthermore, Will Robinson, a twelve-year-old child, expresses astonishment and dread upon learning about the fragile nature of the glaciers, adding to the topic of solastalgia. His use of the expression, "wait, could that happen?" is a query to request confirmation of the information being presented to him, while also throwing doubt on the assumption. This experience is autonomous and these linguistic cues comprise a strong ecological property.

In Figure 4.5, the low angle shot for this scene is deliberate as the creators want the audience to focus on the glacier and its potential to cause danger to Will and his father. The ambiguous and uncertain expressions such as, “wait that could happen?” and “not sure how stable this glacier is” indicate that this glacier has the “potential” to cause harm. This means that the glacier has the potential to produce an effect but it has not been realized in this scene. Within the framework of biosemiotics, this is known as “potential semiosis”. According to Peirce, a sign establishes an interpretant in a person's "actual" or "potential" mind. It is feasible to distinguish between "effective" and "potential" semiosis…. Potential semiosis is a term used to describe a triadically organized process that is not yet occurring but has the potential to do so at any time given the right circumstances (Queiroz et al., 2011). It shows that John’s mind interprets the potential threat (not sure how stable the glacier is) and his body reacts accordingly (walking carefully). In Figure 4.5, it can be seen that he is walking with a stick on a glacier because he senses the threat; and therefore, is treading carefully. This reflects his cognitive assessment of the perceived danger and his decision making process to mitigate the risks. Our mind is always in a close connection with our body whenever it interacts with an environment. According to Sebeok (2001), the mind and body work together to create signals, messages, thoughts, and, in the end, cultural behaviors.

There is a sense of unease and possible danger due to the ambiguity around the glacier's stability and the clear declaration that one does not want to tumble into a crevasse. "Just follow my lead" exudes confidence and leadership, yet considering the possible risks. It could also imply a degree of caution. In this context, it is evident that John is aware of the potential hazards that are present in space and yet he still decided to explore it. His awareness about the potential risks in outer space is shown in his discussion about the unstable glacier and their chances of falling into the crevasse with his son, Will. The dialogue, “Don’t wanna fall down a crevasse” indicates that it is not only the psychological harm that the space hazards can induce but they can also cause physical injuries. This means that solastalgia impacts not just mental well-being…. It is my opinion that solastalgia should be viewed as having an effect on one's physical health in tandem with, or in addition to, the physical desolation of one's home environment (Kiernan, 2022). The question, "Wait, that could happen?" asked by Will shows his lack of knowledge about the environment of space and thus it becomes a source of solastalgia for him. In this context, there is a danger before Will’s eyes which he did not anticipate before landing into outer space. The lexicon,

“Wait” shows a surprise on the part of Will whereas “that could happen?” expresses an error in his judgment about survival in outer space.

Figure 4.6

Scene Time	32:42-32:45
Conversation	422 Dad! Dad! 423 Will, do you read me? Will. 424 Yeah. Yeah, I'm here. 425 Are you hurt? 426 No. 427 Thank God. Okay, where are you? What do you see? Are you safe?

	432 There's vegetation all over the place. So there's bound to be things that eat the vegetation...and things that eat those things. 435 Okay. Just... Just don't touch anything. Yeah. Just get down here soon. Okay?
Denotative Analysis	Will tumbles down the magnesium glacier and settles in a lonely green forest. He is lonely and terrified. He interacts with his father, telling him where he is and pleading for his assistance. Will is wary of the location. He suspects that there are creatures in this area that eat this grass as well, but he is unaware of them. His father instructs him to remain calm and avoid touching anything.

Kind of Signs	**Icon:** Vegetation **Index:** Things (for Living Creatures of Space)
Connotative Analysis	The process of photosynthesis is required for the existence of life in outer space. Alpha Centauri is the exoplanet where the Robinsons settle. It is not a fictional world, but it does exist in real life. According to Sessions & Gonzaga (2023) Alpha Centauri is the third brightest star in our night sky, technically a trio of stars, and the closest star system to our sun. Plants may be able to grow on an exoplanet like Alpha Centauri, according to space scientists and astrobiologists, however their nature may differ from that of Earth. Antgona Segura of the Universidad Nacional Autónoma de México kicked off the second session on "Prospects for Life at Alpha Centauri" by discussing how light emitted by a star may affect plant photosynthesis on an exoplanet and not just that plants on other worlds may not even be green—a variety of colors are imaginable (Schulze- Makuch, 2021). Will is concerned about his surroundings when he arrives in a forest in this scene. He gets the creeps from the foliage all around him. Sobbing, he notifies his father of the possible presence of space aliens who eat this vegetation. He perceives this vegetation as a sign of danger, based on his own particular knowledge and experience. Furthermore, he refers to living creatures in space as "things" which illustrates an act of alterity.

Table 4.9 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**

422 Dad! Dad! 423 Will, do you read me? Will. 424 Yeah. Yeah, I'm here. 425 Are you hurt? 426 No. 427 Thank God. Okay, where are you? What do you see? Are you safe? 432 There's vegetation all over the place. So there's bound to be things that eat the vegetation...and things that eat those things.	**Social**	**Superordinate Level** • Happening **Basic Level** • Autonomous **Subordinate Level** • Natural	**Physical World** • Affected **Mental World** • Perceiver • Emoter
435 Okay. Just... Just don't touch anything. 436 Yeah. Just get down here soon. Okay?			
	Circumstantial Role in Transitivity System		
	Interpersonal Level		

Are you hurt? Okay, where are you? What do you see? Are you safe?	**Illocutionary Act** • Clarification • Confirmation
	Textual Level
There's vegetation all over the place. So there's bound to be things that eat the vegetation...and things that eat those things.	**Cohesion** • Cause and Effect Conjunction (So) • Ellipsis • Demonstratives (there) • Additive Conjunction (and)

Table 4.10 Transitivity Analysis Table

Analysis

The data shown in Table 4.9 depicts a scenario in which Will Robinson falls from a magnesium glacier in space after it explodes, and his father attempts to contact him via a communication device. His father exhibits the subject of solastalgia by becoming concerned for him as soon as they are able to contact each other via the gadget. It is shown by the questions he asks his kid, such as "Are you hurt?" "What do you see?" and "Are you safe?" Will, on the other hand, lands in a lush green environment. Not just his father, but he himself exhibits solastalgia by being afraid of the situation he finds himself in. He is afraid of both the surroundings and the things that inhabit it. According to Cheng (2022), the classification of Adjunct divides the Circumstantial roles into four types based on the roles of semantic categories: textual, interpersonal, experiential, and logical. Time, place, manner, state, comparison, and degree are the classifications for the experiencing type; validity, emotion, politeness, confirmation-seeking tag, perspective, and speaking style are the classifications for the interpersonal type. In the data presented above, Will's description of his surroundings demonstrates his experience in outer space. The statement, "There's vegetation all over the place. So there's bound to be things that eat the vegetation...and things that eat those things" gives a description of the place (There a vegetation) he is stuck in along with the manner in

which the vegetation is present (all over the place). Moreover, the adjuncts, “Are you safe?” and “Are you hurt?” are interpersonal in nature. These adjuncts serve multiple functions. They can be categorized as a polite way of showing concern for someone as well confirmation-seeking tags. Their anxiety and terror, in this scene induce solastalgia. In Figure 4.6, the vegetation indicates an ecological aspect which is the presence of plant life in outer space; however, Will’s anxiousness towards the vegetation highlights an unhealthy relationship between him and nature. The color scheme in this scene is crucial as there are meanings connected to certain hues (Kauppinen-Räisänen & Jauffret, 2018). Although usually green color indicates life; yet ironically Will worries about his life sitting amidst the green vegetation in outer space. He cautiously places both his hands on his knees to make sure that his skin does not come in contact with the greenery in space as he considers it lethal and a sign of threat as shown in Figure 4.6. This instance depicts the manner in which human signs expand freely. On Earth, green signifies life; whereas, in outer space, it signifies death. According to Sebeok (2001), a sign in human semiosis can be flexibly expanded to include different types of referents that seem to share characteristics with the denotatum by connection or analogy. This illustrates the process of adaptation in linguistic and semiotic systems. This instance also runs in contradiction to the argument that we interpret signs based on our previous mental models or cognition. Will’s perception of the vegetation as “dangerous” in outer space also illustrates Pierce’s concept of “infinite semiosis”. According to Boyd and Heney (2017), Pierce defines “intuition” as "a cognition not determined by a previous cognition of the same object"; and this supports the idea of infinite semiosis.

Although this scene mainly focuses on Will’s safety in outer space, yet in a subtle manner, it brings forth the ecological issues that may be present in outer space. By connecting ecology with semiotics, this research emphasizes the physical aspect or the materiality of the environment which is often overlooked. Working on solutions to the current ecological crises requires integrating questions of materiality, resources, and biological corporeality into the humanities, which semiotics and ecology help to do (Maran, 2020). It means that this connection between ecology and semiotics not only highlights the ecological concerns but it can also prove to be the first step towards finding solutions to these environmental problems in space. Will's father's interrogation has been examined on an interpersonal level in Table 4.10. He asks him a series of questions to assure his safety.

Furthermore, the response of Will to his father's queries has been analyzed in terms of the coherent techniques employed. Will uses demonstratives like "there" to describe the scenario, and as far as the conjunctions are concerned, Will utilizes the conjunction "so" to express the influence of the plants surrounding him. The addition of the conjunction "and" shows that Will is trying to make a sense of the place he is stuck in and he wants to draw a clear picture to his father. The ellipsis at the end of the dialogue demonstrates his confusion about the place and consequently it induces anxiety and fear in him. In this context, Will and his father are desperately trying to establish a connection with each other.

The dialogues, "Dad!" and "Will, do you read me?" indicate a painful situation in which a father has been separated from his son because of the dangers posed by the environment of space. Since Will is a child, therefore, John (his father) poses a series of questions to him. These queries include, "Where are you?" and "Are you hurt?" "What do you see?". These interrogative statements indicate John's worry about his son and his requirement for Will to exactly tell him where he is so that he could fetch him. Moreover, the statements "No. Thank God. "and "Alright, where are you?" is John's way of expressing relief at the thought that his son is safe. From here onwards, John's tone becomes cautious and he warns Will against touching anything. John's frantic questions and advice of safety to his son are consistent with the theme of solastalgia. His questions reflect an intense state of fear that he feels for his son.

Figure 4.7

Figure 4.8

Scene Time	47:55-48:00
Conversation	598 Dad. Dad, come in.
	Dad, there's a fire and... and I can't get out. Dad. Dad, come in.
Denotative Analysis	On Alpha Centauri, a wild forest fire has erupted. Will finds himself alone in the wilderness and chooses to climb a tree to save himself. He almost begs his father for assistance but receives no response.
Kind of Signs	**Icon:** Fire

Connotative Analysis	The nature of fire in space is unpredictable. Recent tests aboard the International Space Station have revealed that fire in space can be more unpredictable and possibly more deadly than on Earth and there have been experiments where we noticed fires that we didn't anticipate could exist, but did (Than, 2012). Will gets caught in the middle of a devastating forest fire in this scenario. He sobs as he climbs a tree and sits in wonder. He asks his father for assistance. He calls him repeatedly but receives no response. The misery in this case is produced by space fires.

Table 4.11 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**
598 Dad. Dad, come in. Dad, there's a fire and... and I can't get out. Dad. Dad, come in.	**Social**	**<u>Superordinate Level</u>** • Happening **<u>Basic Level</u>** • Autonomous	**<u>Mental World</u>** • Perceiver • Emoter
		<u>Subordinate Level</u> • Natural	

	Circumstantial Role in Transitivity System
	Interpersonal Level
Dad. Dad, come in. Dad. Dad, come in	**Imperative Construction** • Need to communicate • A plea for help
	Textual Level
Dad. Dad, come in. Dad. Dad, come in	**Cohesion** **Repetition** • Panic and Anxiety • Fear • Frustration

Table 4.12 Transitivity Analysis Table

Analysis

The data shown in Table 4.11 presents a scenario in which Will Robinson, a twelve-year-old child, observes an unexpected and terrible forest fire on the planet, the origin of which is unknown. He screams for aid as he tries to contact his father via the communication equipment. The recurrence of demanding remarks like "Dad. Dad, come in" demonstrates his need for assistance. It also demonstrates Will's desire to speak with his father. The concept of solastalgia is caused in this case by a rapid forest fire on an extraterrestrial planet. According to Cheng (2022), starting and continuing clauses have the same grammatical status when they are in coordination taxis. In this instance, the dialogue, “Dad, there's a fire and and I can't get out”, we have a starting clause (Dad, there’s a fire) and a continuing clause (and I can’t get out) and these are joined by a coordinating conjunction “and”. Since, it is coordination taxis; therefore, both these clauses have the same grammatical status. In the light of the analysis for this study, this means that both the pieces of information

regarding fire and Will's inability to get out of it are equally important in causing solastalgia. The rapid fire and Will being in a dangerous environment is not just a source of distress for Will himself but also for his father.

Moreover, this scene depicts Will's understanding of his reality in which he perceives fire as a sign of threat. Figure 4.7 shows that Will's surroundings are illuminated because of the intense forest fire. This rapid forest fire signifies the power of nature in outer space. On the other hand, Figure 4.8 shows the helplessness in Will's eyes. His expressions (tears and open mouth) are the indicators of the emotional distress that he is going through. The tears represent his innocence and his open mouth serves as a metaphor of shock and astonishment. He perceives fire as a threat. This perception of fire as a hazard makes it a perceptual sign. His repeated cries for help transform this sign into an operational one as it causes his father to take some action. This shows that our perception of reality comes together through an interaction between perceptual and operational signs as well as our own subjective experience. The phenomenal world (Umwelt), or the subjective realm that each creature creates out of its "true" surroundings ("reality"), which discloses itself only via signs, and Jakob von Uexkiill's private world of fundamental sensations ("perceptual signs") coupled to their meaningful converts into action impulses ("operation signs") are the two factors that collaborate to produce our intuition of reality (Sebeok, 2001).

There is a fire in the situation, highlighting a serious and imminent environmental risk. The constant requests for "Dad" and "Dad, come in" highlight the importance of communication while indicating a need for quick assistance. The dialogue sequence in this scene conveys the dangerous situation in which Will finds himself helpless in the face of this danger. For example, the dialogue, "There's a fire" is Will's way through which he tries to paint a picture of the hazardous situation to his father. Will, in his own way, makes sure that he does not miss out on the details related to the scene. Moreover, the line, "I can't get out" expresses the dire need of help on the part of Will. Will's distressing calls for help from his father reiterate the theme of solastalgia and thus imply that the space environment can be fatal for human beings, especially children. Space environment can especially be dangerous for children as they cannot navigate through potentially dangerous situations. Moreover, it is important to study the impact of environmental crises on children as they are affected the most. According to Hickman (2024), children are especially affected by the severe and pervasive effects of the biodiversity and climate crises on mental health. Will, in this context, cannot get out of this hazardous situation on his own which further adds to

the layers of fear and helplessness. The desperation in Will's tone helps assess the gravity of the threat that is linked to fire. It also helps assess how Will comprehends this brutal environmental change. Fire, in this case, serves as an important hazardous symbol as it shows how destructive it can be for human beings. The lexical items employed by Will in this scenario demand prompt action from his father.

Figure 4.9

Figure 4.10

Scene Time	10:41-10:46
Conversation	98 Put those on. 99 I'm not wearing those. 100 This sand... is sharp as diamonds. 102 It's gonna tear through your soles
Denotative Analysis	The colonizers Don and Tam's Jupiter collides with space-based concrete. To demonstrate how pointy and sharp sand grains are in space and why it is imperative to wear shoes with solid bottoms, Don smashes the sand grains between his fingers.
Kind of Signs	**Icon:** Sand

Connotative Analysis	Black sand is an accumulation of massive, durable mineral particles that are often dark in color and have a density higher than quartz, which is why Don links the word "sand" with the dark deposits in space (The Editors of Encyclopaedia Britannica, 1998). Using his own reasoning, he assesses the danger that this sand can pose. Even though he calls it "sand", he notes that if shoes without solid soles are not worn, its sharp edges can rip holes in the feet. According to Sands (2021) dust is dangerous outside of Earth's atmosphere as it is composed of crushed rock on the Moon and, if inhaled, can harm human lungs, spacesuits, lunar landers, and more. The second shot shows blood between his fingers, which illustrates the sharpness of the sand. This scenario's anxiety and misery are brought on by the sand from outer space.

Table 4.13 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**

98 Put those on. 99 I'm not wearing those. 100 This sand... is sharp as diamonds. 102 It's gonna tear through your soles	**Social**	**Superordinate Level** • Happening • Perception **Basic Level** • Autonomous **Subordinate Level** • Natural	**Physical World** • Affected **Mental World** • Perceiver • Emoter
	Circumstantial Role in Transitivity System		
	Textual Level		
This sand... is sharp as diamonds. *102* *It's gonna tear through your soles*	**Techniques** • Simile • Imagery		

Table 4.14 Transitivity Analysis Table

Analysis

According to the information in Table 4.13, two space colonists named Don and Tam are trapped in a concrete land after their Jupiter crashed. In this case, the sand or sediments in space are what's causing the solastalgia as shown in Figure 4.9. Although it resembles powder, the sand in space is as sharp as glass. Don repeats this metaphor by equating sand with "diamonds". He even demonstrates this by squeezing a small amount of sand between his thumb and index finger, which causes them to bleed. He emphasizes the need of having sturdy footwear in space because otherwise, the glass-like sand may erode

their feet. According to Cheng (2022), the ecological expansion system should take expansion content into account, which is realized by two dimensions: expansion orientation and origination. Expansion orientation describes the speaker's positive or negative position regarding ecological elements. According to discourse analysts, there are two types of expansion origination: nature-based or human-based in discourse related to natural ecosystems. In this example, the statement, “This sand... is sharp as diamonds….It's gonna tear through your soles” indicates the expansion orientation of the speaker which is negative as the speaker demonstrates the harm the sand can have on their feet. In Figure 4.10, the character is seen crushing the concrete between his fingers which causes his fingers to bleed. The concrete symbolizes catastrophe; whereas, the blood serves as a metaphor of human weakness in the face of the environmental hazards in outer space. To reinforce the potential dangers of the sand in outer space he compares it with the sharpness of diamonds. This negative orientation of the character emphasizes the harmful properties of the ecological elements in space. Moreover, this scene comprises both kinds of expansion origination. While describing the nature of the sand (sharp as diamonds), the expansion origination is nature based as the speaker focuses on the attributes of the sand; whereas, while describing its harmful impact on humans (It's gonna tear through your soles), the expansion origination of the speaker is human based as he describes the attributes of sand in relation to human beings. In this scene, Don’s predispositions and past experiences of Earth shape his unique reality about the environment of space or in other words, “his unique Umwelt”. It is his memories of the past and sensory inputs (touching and crushing the sand) that make him compare the sand with the sharpness of the diamonds. Here the refusal of Tam to put on the shoes (I'm not wearing those) is important to consider as her reality of the sand is different from Don’s. She does not consider it as harmful as Don does. The difference in their perceptions of sand can lead to an unintended influence which creates different realities of sand for different people. Every observer has a different interpretation of the world, which is a system of signals composed of a combination of experiences, past events, and hereditary elements, including expectations for the future…. The simple reality of existence is that observation itself involves a residual junction that perturbs the system under observation (Sebeok, 2001).

Solastalgia, in this context, is induced by the environmental shift brought about by the abrasive sand. The characters' reactions to the sand's sharpness, which is distressing, reveal a deep emotional reaction to their dangerous surroundings. “Put those on" is

a directive that starts a procedure that indicates what has to be done based on the situation. "I'm not wearing those" is a reaction that highlights the character's opposition to following the advised course of action. The phrase "This sand... is sharp as diamonds" establishes the nature of the environmental threat and initiates an explanation process. As the characters adjust their views and responses in accordance with their conceptual frameworks, conceptual idealism is at work. The way the characters communicate is indicative of how they interpret environmental cues, such as the sand's hardness. The environment uses the sand as a powerful metaphor to convey a potentially dangerous element that has to be taken seriously.

Figure 4.11

Figure 4.12

Scene Time	46:42-46:56
Conversation	424 - Mom? - Penny! 425 00:46:45,594 --> 00:46:47, 554 - I'm in the Chariot. Coming to get you. 428 I can't track you because of the storm. Where are you? 429 Uh... 430 We're... We're, uh... 431 Look for the light. The light?
Denotative Analysis	In space, a violent storm has formed. In the woods, Will and his parents are stranded. In a chariot, their daughter Penny is on her way to assist them, but the intense storm prevents her from seeing
	anything. Although her mother tells her to follow the light, the storm is so intense that she is unable to even make out the light.
Kind of Signs	**Icon:** Storm

Connotative Analysis	The second image shows a storm forming in outer space due to the dense, black clouds. On a technical level, this is referred to as a space hurricane or storm. It is fascinating to observe that solid rocks fall from the sky during space storms. They might be solid rocks or loose "rubble piles," held together only by gravity (“10 Things: What’s That Space Rock?,” 2022). Will and his parents seek to bury themselves beneath a large rock in an effort to shield themselves from the solid rocks. In spite of this, a rock strikes Will's father. The wound on his hand in the first picture serves as an example of this. He moans in discomfort. On the other side, Penny finds it challenging to go through this storm. Despite her mother's encouragement, she finds it challenging to follow the light.

Table 4.15 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**
424 - Mom? - Penny! 425 - I'm in the Chariot. Coming to get you. 428 I can't track you because of the storm.	**Social**	**<u>Superordinate Level</u>** • Happening • Perception **<u>Basic Level</u>** • Autonomous	**<u>Physical World</u>** Affected **<u>Mental World</u>**

Where are you? 429 Uh... 430 We're... We're, uh... 431 Look for the light. The light?		**Subordinate Level** ▯ Natural	▯ Perceiver ▯ Emoter
	Circumstantial Role in Transitivity System		
	Experiential Level		
I can't track you because of the storm.	**Cause and Effect Relation**		
	Textual Level		
Where are you? *429*	• Use of Filers • Ellipsis • Uncertainty		
Uh... *430* *We're... We're, uh...*	▯ Confusion		

Table 4.16 Transitivity Analysis Table

Analysis

The information in Table 4.15 indicates that the Robinson family's solastalgia is caused by a severe space storm. Penny is unable to find her parents and her mother is unable to provide Penny their precise location as a result of this space storm. The storm is so thick

that it makes it difficult to see in space. Figure 4.12 shows thick grayish black clouds which are engulfing everything that is present in nature. From mountains to water to the leaves present on the side of the picture, the storm is on its way to destroy everything. The grayish black color symbolizes a threat; whereas the storm itself connotes turbulence. Additionally, it hurts Penny's father because due to this storm, tiny asteroids or heavy, black pebbles fall from the sky and strike him in the hand. Figure 4.11 shows a scar on John's hand and on

Maureen's face because of this storm. John's gritted teeth symbolizes his pain. It can be seen from his expressions that he is groaning with pain. Moreover, Maureen's slightly gaping mouth and Will's concerning expressions communicate their deep emotional and mental states. Their expressions convey the anxiety, distress and worry that they feel for John. This storm in space is a natural and independent phenomenon. According to Cheng (2022), from an ecolinguistic standpoint, processes can be classified into two categories within the ecosystem category: natural PRs, which are elements found in nature like rivers and trees, and social PRs, which are elements found in human society like national policy and culture…. additionally, from the viewpoint of the observer, processes can be categorized into autonomous and influential types to identify the process's responsible party. In this example, "storm" is a natural and autonomous process that becomes a source of solastalgia for Penny and her family as she is unable to locate them. Moreover, the presence of "light" is also a natural process as it is dependent on the Sun. As the "light" exists independently of human influence; therefore, it is also an autonomous factor in the environment that is supposed to help Penny navigate through the storm. From the lens of biosemiotics, "light" acts as a signal that will regulate Penny's pathway and will ultimately help rescue her family. Moreover, it also acts as a visual symbol of hope that Penny needs to look for through the storm, and the fillers used by Penny's mother such as "uh" and "we're…we're…uh" demonstrate their inner states such as distress, confusion and anxiety. Therefore, these fillers act as a symptom. Moreover, the close-up shot of John's face depicts his distress which also acts as a symptom. His expressions reflect his painful inner state. According to Buhler, the signal appeals to the destination, whose internal and external conduct it controls; in other words, it functions something like a traffic regulator, provoking or preventing a response and the symptom is related to the source, whose inner conduct it represents (Sebeok, 2001). Additionally, the syntax of the sentence, "I can't track you because of the storm" depicts a cause and effect relationship, and it is the Robinsons' family which is being affected by this process.

In this instance, there is a storm, which makes tracking, interaction and navigation difficult. “Mom?" and "Penny’s first interaction suggests a reunion effort and reveals an emotional bond between the individuals despite difficult circumstances. "I'm in the Chariot,". …. "Coming to get you" initiates a dialogue process that suggests a prompt, determined reaction to the difficult circumstances. "Where are you?" is a symbol of a process of inquiry that emphasizes how difficult it is to find each other during a storm. The storm's mention creates an atmosphere of environmental difficulty that causes feelings of uneasiness and discomfort. Their perception of the storm and the need of seeking light reflect their subjective realities, influencing their behaviors and decisions. The characters are actively deciphering the signals that the storm and the difficult surroundings are sending out. The dialogue in this scene is marked by elliptical structures, parataxis, and deixis, all of which contribute to the urgency and emotional weight of the exchange. The use of short, fragmented sentences such as "Mom?" and "Penny!" creates a sense of immediacy, while the repetition and filler words in "We're... We're, uh..." reflect hesitation and distress. The lack of a subject in "Coming to get you" compresses the language, making the speech sound more urgent. The phrase "Look for the light" is particularly significant as it relies on deixis—its meaning is entirely context-dependent, adding an element of mystery while also serving as a directive in the midst of chaos. The interplay between declaratives and interrogatives, such as "I can't track you because of the storm. Where are you?" balances information-sharing with a plea for clarity, further emphasizing the tension in the scene. Critically, this dialogue encapsulates themes of fear, guidance, and protection. The storm symbolizes external chaos, rendering the characters disoriented and vulnerable, while the mention of "the light" introduces a contrasting force of hope and direction. The relationship dynamics are evident in the way one character takes on the role of protector, as seen in "I'm in the Chariot. Coming to get you," which signals an active effort to ensure safety. he rapid, fragmented exchange mirrors a high-stakes situation, reinforcing the cinematic tension. Moreover, the imperative "Look for the light" extends beyond its literal meaning and carries metaphorical significance—light is often associated with salvation, safety, and clarity, suggesting a deeper emotional or symbolic resonance within the narrative.

Figure 4.13

Figure 4.14

Scene Time	24:50-25:19

Conversation	250 So, new development. Somewhere along the line, we started bleeding fuel. 251 What do we do? How much longer do you think we have? 252 Until we run out of fuel or until the glacier crushes us? 253 Seriously, why don't we all pile into that Chariot and get the hell out of here before it's too late? 254 Maybe one or two people could survive in there for a bit, but not all of us.
Denotative Analysis	The Robinson family's Resolute is running out of fuel for an unidentified reason. They are worried that if a glacier that has enveloped their Resolute breaks, they will all be buried under it.
Kind of Signs	**Icon:** Glacier
Connotative Analysis	This scene depicts an unhealthy relationship of human beings with their environment. The Robinson family is seen struggling with yet another environmental calamity that is getting crushed under the glacier. In this scene, it is the glacier that becomes the cause of solastalgia for human beings as it has the power to crush them.

Table 4.17 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**
250 So, new development. Somewhere along the line, we started bleeding fuel. 251 What do we do? How much longer do you think we have? 252 Until we run out of fuel or until the glacier crushes us? 253 Seriously, why don't we all pile into that Chariot and get the hell out of here before it's too late? 254 Maybe one or two people could survive in there for a bit, but not all of us.	**Social**	**Superordinate Level** • Happening • Perception **Basic Level** • Autonomous **Subordinate Level** • Natural	**Physical World** • Affected **Mental World** • Perceiver • Emoter
	Circumstantial Role in Transitivity System		

	Experiential Level			
252	**Shift in Agency**			
Until we run out of fuel or until the glacier crushes us?	Until	We	Run out of	Fuel
	Preposition	Agent	Verb	Object
	Until	the glacier	crushes	us
	Preposition	Agent	Verb	Object

Table 4.18 Transitivity Analysis Table

Analysis

From the information provided in Table 4.17, it is clear that the melting glacier and the Robinson family spacecraft's fuel shortage are what are causing the eco-anxiety in this scenario. The phrase "bleeding fuel" describes how quickly fuel is escaping the spacecraft. A change in the agency is also highlighted by the question, "Until we run out of fuel, or until the glacier crushes us?" Humans themselves are the agency in the first clause since they have influence over the result, while a glacier that has the power to kill and crush people is the agency in the second clause. This shift in agency illustrates a contrasting scenario where the result of a situation can be decided by two distinct entities (humans and a glacier). According to Cheng (2022), in EDA, the transitivity system's mechanism functions as follows: In order to determine the ecological orientation of discourse, the EDA of the transitivity system should consider the relevant context and culture in addition to determining whether the process type, PR, and CR are all consistent with the ecosophy of "Diversity and Harmony, Interaction and Co-existence". In this scene, the characters are

seen interacting with their environment. The melting of the glacier and the depletion of fuel are the processes that threaten the life of the characters. The participants contemplate the ways through which they can fight and survive this potentially hazardous circumstance. All three factors (process, participants' roles and circumstance) do not go in line with the principles of ecosophy; thereby, making this discourse eco-destructive. The characters, in this scene, are seen fighting against the glacier that has the power and ability to crush them; thereby, proving that humans cannot have a harmonious relationship with the environment of space. As mentioned earlier, the glacier in this scene, is an agent and a force that is acting on human beings. According to Siefkes (2010), power is an inherently semiotic phenomenon. In this case, the glacier is seen as a sign with a "potential power" to decimate the Robinson's family. This "potential power" of the glacier is reflected in the statement, "Until we run out of fuel or until the glacier crushes us?". The term "potential power" only has meaning when used to describe a situation's inherent power potential, which the players may or may not realize (Siefkes, 2010). In Figure 4.13, Tam's emotions in the top photo capture the character's feelings of discomfort and worry. She appears shocked with her eyes wide open, yet her gaping mouth conveys her discontent with the circumstances. Figure 4.14 comprises the image of the glacier that is supposed to crush the Robinson family. Although the glacier seems still in the picture; yet, it is perceived as a "performative sign" by human beings. They perceive it as a sign that has the ability to crush them (until the glacier crushes us). This action oriented nature of the environmental objects is the point where sign-science overlaps with life-science, as per Sebeok. According to Sebeok, the essential quality of existence is the activity of signs..... he developed the additional thesis—which he called "biosemiotics"—that sign-science and life-science are coextensive (Cobley et al., 2011).

The characters' increased awareness and proposed behaviors in this situation highlight how crucial it is for them to survive in their interaction with the environment. Their surroundings become difficult and even dangerous due to the glacier's possible threat, highlighting the precarious equilibrium between human settlement and the dangers around them. "Somewhere along the line, we started bleeding fuel" is a remark that provides information on a recent and perhaps dangerous occurrence. The queries "How do we proceed? "How much longer do you think we have?" are employed to gather information and advice on the fuel problem. In this context, the crew members are seen making important decisions. For example, the suggestion, "Why don't we all pile into that Chariot

and get the hell out of here before it's too late?" depicts both their comprehension of their surroundings and how they are going to counter the dangers associated with it. The possibilities of getting crushed by a glacier and running out of fuel are some of the important metaphors for a hazardous environment in outer space. In this context, fuel serves as an important icon and an important resource in outer space. Its leaking is a metaphor for both a tangible loss and a possible danger to their existence in the immensity of space. Here, the gasoline is a semiotic symbol for the vital energy needed to keep Jupiter running and, by extension, for the survival of people living on it. The approaching glacier serves as a symbol for a dangerous natural disaster. Its presence highlights the characters' struggles with the environment by signaling a possible threat that may smash Jupiter.

Figure 4.15

Figure 4.16

Scene Time	39:17-39:29
Conversation	459 Yeah, that's (eels) going around. They're all around me. I can't move. 460 Oh, my God! 461 It's on my leg! - No! It hurts, Dad.

Denotative Analysis	The Robinson family discovered that their spaceship had a space eel infestation. These strong, snake-like animals are eating the spacecraft's fuel. They choose to murder them in order to save their lives and fuel. Due to a sudden hard shock, Penny is thrown inside one of the engines where these eels are writhing in great numbers when the glacier collapses. As they encircle her leg, Penny is horrified.
Kind of Signs	**Icon:** Space eels
Connotative Analysis	Humans must first learn to get along with other space creatures before they can colonize it. The Robinson family's spaceship is infested by space eels in the incident described above. Despite the fact that they first had no idea what this species was, they eventually connected it to the word "eels" according to their experiences on Earth. This creature's length and snake-like fangs are shown in the opening image. Since it is not quite a snake, the Robinson family refers to it as an eel. The second image shows Penny and her father trapped within the spacecraft's engine, which is where the space eel infestation first appeared.

Table 4.19 Scene Analysis Table

<table>
<tr><td>Eco Destructive
Nature of Discourse</td><td colspan="3">Participant Role in Transitivity System</td></tr>
<tr><td>Data</td><td>Participant
Type</td><td>Participant Role
w.r.t Experience</td><td>Participant
Role
w.r.t Process</td></tr>
<tr><td>Yeah, that's (eels) going around.
They're all around me. I can't move.
Oh, my God!
It's on my leg!
- No! It hurts, Dad.</td><td>Social</td><td><u>Superordinate Level</u>
• Happening
• Perception

<u>Basic Level</u>
• Autonomous

<u>Subordinate Level</u>
• Natural</td><td><u>Physical World</u>
• Affected

<u>Mental World</u>
• Perceiver
• Emoter</td></tr>
<tr><td></td><td colspan="3">Circumstantial Role in Transitivity System</td></tr>
<tr><td></td><td colspan="3">Experiential Level</td></tr>
<tr><td rowspan="3">461
It's on my leg!
- No! It hurts, Dad.</td><td colspan="3">• Agency</td></tr>
<tr><td colspan="2">It (Agent Non-Animate)</td><td>Hurts (action)</td></tr>
<tr><td colspan="3"></td></tr>
</table>

It's on my leg! - No! It hurts, Dad.	**Textual Level** • **Using "it" for a living creature** • **Marginalizing**

Table 4.20 Transitivity Analysis Table

Analysis

The information in Table 4.19 depicts a scenario in which the Robinson family's spaceship has an eel infestation. Penny is trapped in one of the engines where these eels are proliferating and consuming all of the spacecraft's fuel. As soon as she screams out for assistance, her father descends to assist her by eliminating all the eels. Penny is unable to move because these eels are entangling her legs. Figure 4.16 shows that the basement of the spaceship is dark which connotes the mysterious nature of the eels; however, the small light behind Penny symbolizes the possibility of a solution in the darkest of the times. Moreover, the water in the basement symbolizes the pervading nature of the environmental hazards as the eels are spreading everywhere in the resolute. Moreover, Figure 4.15 signifies the curiosity of the Robinson family regarding the nature of eel. They have laid it out on the table and Maureen is seen examining it. Her blue gloves symbolize the feelings of remoteness and detachment that she feels for the creatures of outer space; thereby, violating the principles of ecosophy. The posture of Judy (folded arms) also symbolizes her cautious approach towards the eel. Judy, Maureen and John are seen sharing an experience as they examine the eel in front of them. According to Cheng (2022), the standard used to evaluate the ecological characteristics and discourse direction is called ecosophy……. it directs and guides people's thoughts, conversations, and ecological behavior; these things in turn can affect ecosophy, thus these things work in tandem to create a cycle. According to principles of ecosophy, it is important for human beings to have a healthy relationship with their environment; however, this scene presents an opposite situation. Penny and John are being attacked by eels in space which increases their ecological awareness and this awareness guides their behavior. Penny's screams at the sight of eels reflect her ecosophy and influence her actions which in turn influence the ecosophy. Penny's reaction coupled with the pain caused by the eels give the Robinson family an opportunity to evaluate their relationship with the environment of space. Along with ecological awareness, they are also apprised of

the ecological issues present in space which will help tailor their thoughts and behaviors accordingly; thus, promoting the idea of adaptation. On one hand, when Penny says, *" No! It hurts, Dad."* , she is associating the power and agency with the creatures that exist in space ; while on the other hand, by repeatedly using "it" for the living creatures like eels she deprives them of the power she had bestowed unto them earlier. The living things are effectively being marginalized by Penny's use of "it" for them. This "it" also conveys doubt and ambiguity over the existence of extraterrestrial life, as though humans are unsure of their nature. On one hand, Penny perceives eels as a sign of danger and a source of pain; where, on the other hand, she equates these eels with inanimate objects. In both these perspectives, there are hidden assumptions and ideologies. The term "semiotic ideology" describes people's fundamental presumptions about the nature of signs, their purposes, and potential outcomes (Keane, 2018). Penny's perception of the eels as both a sign of danger and an inanimate object shows that she is involved in an active process of interpreting this sign. It also indicates that her interpretation of signs is significantly influenced by her own reflections; thus, promoting the idea of "reflexivity". In Sebeok's model, these "reflections" are the defined premises or assumptions that make up our mental models. On one hand, from a biological perspective, Penny's ecological interactions (It hurts) formulate her reasoning about the eels; whereas on the other hand, the dehumanization response (use of "it") shows that our cognitive processes and biases (logical operations/assumptions) also influence our biological operations. In this broad meaning, a mental model is a semiotic creation that has explicit assumptions and guidelines for logical and biological processes (Sebeok, 2001).

The struggle to live with unidentified space animals is reflected in the meeting with eels. The anguish and suffering brought on by the eels highlight the difficulties of surviving in a setting where it could be difficult for humans to get along with extraterrestrial species. The usage of "It" and the possible objectification of extraterrestrial life allude to a topic of marginalization, implying that humans may find it difficult to appreciate the complexity or inherent worth of the non-human species they come across throughout their space travels. Though Penny's perception of the eels signifies marginalization; but, it is still helpful in formulating a code system for human beings in outer space. This also shows that the process of producing and interpreting signs can occur anywhere in nature; thereby, confirming the theory of Peirce. According to Wheeler (2014), the contemporary belief that "sign phenomena is occurring everywhere in nature, including those domains where humans

have never set foot... was inspired by Peirce himself." The character's facial expressions strongly suggest a tone of pain and horror, signifying the eels' quick and profound influence on her well-being."Yeah, that's (eels) going around,".... "I can't move" starts the descriptive phase by elaborating on the eels' existence and the danger they provide. The phrase "Oh, my God!" conveys an exclamatory reaction that shows astonishment and anxiety at the sudden contact with the eels. "It's on my leg!" and "No way!" It hurts, Dad" add to the story by narrating the events and emphasizing the eels' negative psychological and physical impacts on human beings; thus, inducing solastalgia.

Figure 4.17

Scene Time	22:38-22:50

Conversation	What the hell was that? - Must be gas, trapped below the surface. They're called cryo geysers. On Mars, they spit CO2. On Triton, it's nitrogen. Heat from the sun... 272 All right, whatever. Is it safe to keep going? 273 As long as we stay up here and don't drive into the field of exploding rocks.
Denotative Analysis	The colonists' Resolute needs petrol to escape an uncharted planet. Only Don is aware of the location of the planet's fuel reserves, so he travels there with a group of colonists. But before they could get there, the planet's surface experienced a number of explosions, which made them all unsure of whether they should keep going or not.
Kind of Signs	**Icon:** Cryo Geysers and Exploding Rocks

Connotative Analysis	As volcanism is a phenomenon that occurs on Earth, cryovolcanism is an activity that occurs on the planetary surfaces of the outer solar system. This kind of exotic volcanism is a possible explanation for some of the volcanic-like structures found on the moons of Jupiter, Saturn, Uranus, and Neptune and it is defined as the eruption of water and other liquid or vapor-phase volatiles onto the icy surfaces of the outer solar system satellites (Scuderi, 2002). Don and his team head out in their chariot to locate fuel reserves for the colonists, but before they can do so, they witness and hear huge explosions erupting from the surface of an unidentified planet. Don and the others are unsure of what that is, but one of them speculates that the explosions could be "cryo geysers". First, "Cryo geysers" are the name given to these explosions, and "exploding rocks" is the second term used to describe them.

Table 4.21 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**
What the hell was that? - Must be gas, trapped below the surface.	**Social**	**Superordinate Level** ▯ Happening	**Physical World**

They're called cryo geysers. On Mars, they spit CO2. On Triton, it's nitrogen. Heat from the sun... 272 All right, whatever. Is it safe to keep going? 273 As long as we stay up here and don't drive into the field of exploding rocks.		• Perception **<u>Basic Level</u>** • Autonomous **<u>Subordinate Level</u>** • Natural	• Affected **<u>Mental World</u>** • Perceiver • Emoter • Cognizant
	Circumstantial Role in Transitivity System		
	Interpersonal Level		
270 On Mars, they spit CO2. 271 On Triton, it's nitrogen. Heat from the sun..	**Indicative- Stating Fact**		

Table 4.22 Transitivity Analysis Table

Analysis

It is clear from the scene depicted in Table 4.21 that the trapped gas under the surface is what causes solastalgia in humans living in space. Unknown hazardous gasses are frequently emitted from the rocks on the surface as shown in Figure 4.17. These cryovolcanic eruptions prevent Don and his troops from moving any further. In Figure 4.17, it can be seen that the vehicle in which all the characters are traveling is trapped amidst the volcanic eruptions. This entrapment of the vehicle symbolizes the vulnerability of human beings in the face of the environmental hazards of outer space. Moreover, the volcanic outbursts metaphorically represent the destructive nature of the environment of outer space. When Don and his team saw these volcanic outbursts, their attitude of "what the hell is that?" reflected their shock and worry. They are all unaware of these cryovolcanic eruptions except for one. She lets the rest of the group know that they have bases on planets and stars like "Triton" and "Mars." She also informs them of the potentially fatal repercussions if they drive directly into these gasses. According to Cheng (2022), “our mental world is distinguished into five sub-categories: emotion, desideration, perception, cognition, and communication”. This scene comprises emotion, perception, cognition and communication. The dialogue, “What the hell was that?” conveys emotions such as fear and shock at the sight of cryo geysers. The statement, “Must be gas, trapped below the surface” formulates the perception of the characters. Through the sensory information of the characters (sight and sound of the volcanic eruptions), the characters are interacting with the environment, and this sensory input influences their perception of reality.

Moreover, the dialogue, “They're called cryo geysers. On Mars, they spit CO2.On Triton, it's nitrogen” demonstrates that one of the characters is cognizant of this phenomena in outer space. The character acquired, processed and retrieved the information regarding how cryo geysers work; and these mental processes shape hers and the experience of others. Lastly, in this scene, there is an exchange of communication between characters not only in the form of verbal messages but also through the emotions they all undergo. This indicates that we formulate signs through our mental and cognitive capacities. According to Wheeler (2014), “signs are the cognitive instruments”. The mental processes (acquiring, processing and retrieving information) employed by the character help shape her experiences along with generating mental models or the representation of the world; and this process in biosemiotics is known as “modeling the world”. This process is facilitated by active cognition and language. According to Sebeok (2001), language is a useful cognitive tool for

world modeling. Although the volcanic explosions on this extraterrestrial world are a natural and autonomous process, they nonetheless cause fear and psychological distress in people.

The characters' heightened emotional tone of bewilderment, worry, and dread is revealed by their first outburst and following question about whether it is safe to continue the voyage. The characters' emotional reaction is a significant factor in solastalgia as they deal with the uncertainty and the risks of the alien surroundings. This instance shows the unpredictable and dynamic nature of the environment of outer space that further adds to the distress and anguish of the characters. This scene depicts the characters' understanding of the threat which is posed by the volcanic activity in space. The characters are trying to judge the extent and intensity of safety risks brought upon by the cryo geysers. The ever changing landscape of space makes it hard for the characters to adapt to its environment that further heightens the theme of solastalgia. These cryo geysers serve as a threat and a warning for the characters. Their comprehension of the cryo geysers influences their views of and responses to the surrounding space environment, which is indicative of conceptual idealism. The description given by the character about cryo geysers indicates that there are some mental operations involved that help elucidate the reality. According to Rescher (1991), a sufficient descriptive classification of the physical world has to implicitly reflect mental processes. By connecting the volcanic events with other celestial planets, the references to Mars and Triton offer a metaphorical dimension that highlights the range of environmental difficulties faced throughout space travel. The dialogue in this exchange blends scientific explanation with pragmatic decision-making under pressure. The initial question, *"What the hell was that?"*, expresses confusion and alarm, prompting an immediate response that provides a scientific rationale: *"Must be gas, trapped below the surface. They're called cryo geysers. On Mars, they spit CO2. On Triton, it's nitrogen. Heat from the sun..."* The detailed yet concise explanation demonstrates expertise while maintaining urgency. However, the abrupt interruption—*"All right, whatever."*—signals impatience or a lack of concern for the technical details, prioritizing immediate safety over scientific curiosity.

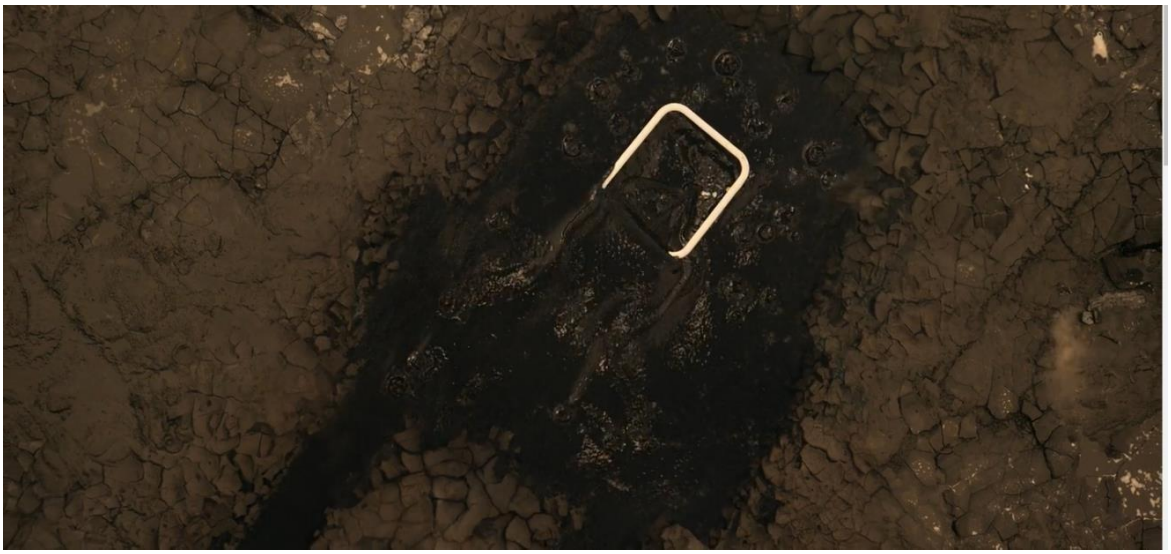

Figure 4.18

Figure 4.19

Scene Time	40:00-40:15

Conversation	427 Maureen, listen to me. How long have we been rebreathing this air? I mean, soon there's gonna be too much carbon dioxide, and then we'll pass out. And if we pass out, we die. 428 - I'll open the hatch and you can get out. 429 If you open the hatch, the Chariot will fill with tar. You won't survive. 430 But you will. 431 - I'm not doing it. - Yeah, you are.
Denotative Analysis	John and Maureen are confined in a tar hole on an unusual planet. Their chariot is firmly embedded in the tar. Due to the chariot's limited size, they are unable to remain inside and breathe. One of
	them will only be able to exit the chariot and the tar pit with the assistance of the one suit in the chariot.
Kind of Signs	**Icon:** Tar Pit

Connotative Analysis	The chariot of Maureen and John is sunk in the first shot, which is a deep, dark hole. Their chariot is depicted as being buried deep inside the tar pit by the white portion, which is the ceiling. John and Maureen are both aware of Tar Pit and the risks it poses. Because of this, Maureen first refers to it as a "tar pit". It is dark in color and smells like tar. In the second picture, John is carrying a suit and pleading with Maureen to put it on in order to rescue herself, leaving him behind in the chariot.

Table 4.23 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**
427 Maureen, listen to me. How long have we been rebreathing this air? I mean, soon there's gonna be too much carbon dioxide, and then we'll pass out. And if we pass out, we die. 428 - I'll open the hatch and you can get out. 429	**Social**	**Superordinate Level** • Happening • Perception **Basic Level** • Autonomous **Subordinate Level** • Natural	**Physical World** • Affected **Mental World** • Perceiver • Emoter • Cognizant

If you open the hatch, the Chariot will fill with tar. You won't survive. 430 But you will. 431 - I'm not doing it. - Yeah, you are.			
	Circumstantial Role in Transitivity System		
	Interpersonal Level		
428 - I'll open the hatch and you can get out. 429 If you open the hatch, the Chariot will fill with tar. You won't survive. 430	**Politeness Strategies** • **Direct Language** • **Politeness Markers (can, will)** • **Positive Politeness** • **Power Dynamics**		

Table 4.24 Transitivity Analysis Table

Analysis

The information presented in Table 4.23 indicates that Maureen and John are trapped on an alien planet in a deep, black pit of tar. In this scenario, a pit of tar that is slowly engulfing their chariot is the source of the solastalgia as shown in Figure 4.18. It shows that only a part of the chariot is visible which is white in color. This symbolizes the struggle of Maureen and John to come out of the brown thick sticky tar. The blackish brown color of the tar expands freely on a connotative level as it symbolizes mystery, decay and death. Moreover, Figure 4.19 effectively captures the feelings of suffocation and distress

inside the chariot through its gloomy and eerie color scheme. For a very long time, they have been confined to their chariot, and now it is beginning to seem stuffy to them. John expresses his concern by saying, “How long have we been rebreathing this air? I mean, soon there's gonna be too much carbon dioxide, and then we'll pass out” and it is obvious that if they pass out they will slowly die. They could not stay in the chariot for very long, so John urges Maureen to put on a suit that can endure tar to protect herself. It is obvious from John's wording that he is employing a tactic of politeness in which he does not give Maureen an option. He uses a tactic of positive politeness, and it also reveals information about the power dynamics in their relationship. Since John has more influence than Maureen, he persuades her to flee the chariot without him. Instead of requesting Maureen to save herself, he is asserting this idea on her. This can be seen in his use of modal verbs like in the expressions, “But you *will* “and “You *can* get out”. According to Cheng (2022), the transitivity system of Ecological Discourse Analysis employs four maxims of ecosophy to determine the nature of the discourse. These four maxims include quantity, quality, diversity and interaction. This scene, in particular, flouts the maxims of quality and interaction. The maxim of quality emphasizes the well-being of human beings with respect to their environment. In this scene, John and Maureen are neither safe inside the chariot because of lack of oxygen nor outside it as they are surrounded by tar present in outer space. This goes against the maxim of quality as the ecological system of outer space fails to prioritize the well-being of its inhabitants. Moreover, this scene flouts the maxim of interaction as because of the environmental challenges in space, the characters are unable to interact with all the essential elements of the ecosystem. There is a lack of interconnectedness in the ecosystem because of space hazards like, “tar” and “limited oxygen” which proves that the outer space environment is not suitable for humans as it fails to maintain an ecological balance. According to the framework of EDA, if even one of the maxims flouts the principles of ecosophy, the discourse is considered to be eco-destructive.

The dialogue, “If you open the hatch, the Chariot will fill with tar. You won't survive. But you will” indicates that Maureen and John perceive tar as a sign of danger and they are seen struggling for survival in this scene. Tar, in this scene, is a kind of a sign that acts as a “predictive guide” for Maureen and John. Though harmful; but it is a sign that prepares John and Maureen for their next move towards survival; thereby, serving multiple functions. Signs have a variety of purposes in human existence.....they function as

exemplars of particular types of events, they help people see patterns in things, they serve as predicted guides or blueprints for activities, and the list goes on and on (Sebeok, 2001).

In addition to this, this scene depicts how the meaning of a sign is generated in relation to other signs. For example, the series of dialogue, “How long have we been rebreathing this air? I mean, soon there's gonna be too much carbon dioxide. I'll open the hatch and you can get out… If you open the hatch, the Chariot will fill with tar” indicates that the meanings of signs cannot be understood in isolation. Opening the hatchet will lower the levels of carbon dioxide but it will fill the chariot with tar; thereby demonstrating the relative positions of signs. On one hand, opening the hatchet is an immediate solution for the problem of excessive carbon dioxide; whereas on the other hand, its relative position with respect to the presence of tar in space makes it a risky decision. Therefore, the way that signs work is determined by their relative position rather than by their inherent worth (*Ferdinand De Saussure Quotes*, n.d.). The presence of carbon dioxide along with tar are the environmental factors that induce distress and solastalgia in the characters.

Figure 4.20

Figure 4.21

Scene Time	05:12-05:46
Conversation	63 There's been a new development in our situation. It seems that our planet is on an orbit that will bring us dangerously close to the sun. So, it's gonna get hotter and hotter, until it's, um... Well, it's too hot. 68 Are you saying the planet is dying? 69 Not dying. Just entering a phase malignant to human life. Well, it explains why there's a rapid increase in seismic activity.
Denotative Analysis	A rise in seismic activity has caused the alien planet where colonists have settled to become increasingly heated. The first person to learn of the unsuitability of this planet's environment is Maureen. However, ultimately everyone finds out despite her best efforts to keep it a secret until she finds a solution.

Kind of Signs	**Icon:** A Black Hole
Connotative Analysis	In the first scene, Maureen makes the decision to investigate the alien planet by approaching the Sun with the right tools and logistics. She has a sneaking suspicion that the planet they are on is out of the ordinary with regard to its temperature. Black holes are among the most intriguing objects in space. Because of their enormous density and powerful gravitational pull, not even light can elude them (Tillman & Dobrijevic, 2023). In the second image, there is a black hole being formed near the Sun which means that the gravitational pull of this black hole will propel the Sun closer and closer to the alien planet and this will cause everything to burn. This black hole is an index of the temperature getting hotter on the planet and therefore it is perceived as a sign of danger.

Table 4.25 Scene Analysis Table

Eco Destructive Nature of Discourse	**Participant Role in Transitivity System**		
Data	**Participant Type**	**Participant Role w.r.t Experience**	**Participant Role w.r.t Process**

63 There's been a new development in our situation. It seems that our planet is on an orbit that will bring us dangerously close to the sun. So, it's gonna get hotter and hotter, until it's, um... Well, it's too hot. 68 Are you saying the planet is dying? 69	**Social**	**Superordinate Level** • Happening • Perception **Basic Level** • Autonomous **Subordinate Level** • Natural	**Physical World** • Affected **Mental World** • Perceiver • Emoter • Cognizant
Not dying. Just entering a phase malignant to human life. Well, it explains why there's a rapid increase in seismic activity.			
	Circumstantial Role in Transitivity System		
	Interpersonal Level		

There's been a new development in our situation. It seems that our planet is on an orbit that will bring us dangerously close to the sun.	• **Empathy and Sensitivity** • **Clarity and Directness** • **Prepare the Recipient for a Bad News**

Table 4.26 Transitivity Analysis Table

Analysis

According to the data in Table 4.25, an increase in the seismic activity on the alien planet is the cause of solastalgia in humans. Maureen investigates the theory that the alien planet's surface is burning up because a black hole is forming close to the Sun. She first keeps this a secret from everyone on the planet, but soon her husband, John, informs all of the colonists. They are all anxious about the planet's demise since it will result in their own demise. On an interpersonal level, John follows the protocol when breaking this news to other colonizers. For example, first he prepares them for the news by saying, "There's been a new development in our situation". Secondly, he conveys this news directly and with clarity so that there does not remain any confusion in the minds of his fellow colonizers. This is reflected in his statement, "It seems that our planet is on an orbit that will bring us dangerously close to the sun." Lastly, he shows empathy and sensitivity to the issue by using words like, "our" and "us". These words convey a sense of support and unity in times of difficulty. According to Cheng (2022), this model of EDA follows the principles of Confucianism. John and Maureen's efforts to keep all the colonizers united in the face of the space hazard (the dying planet) indicate that they are trying to build a harmonious society with their ethical governance; and these are the moral values which are emphasized by Confucius. In this scene, it is the increase in "seismic activity" which causes solastalgia in characters which means that sun is being perceived as a sign of danger. The color schemes in the figures 4.20 and 4.21 given above are crucial as they reflect the emotions of the characters. Maureen takes her parachute in space to assess the increase in seismic

activity. As seen in Figure 4.20, there is a purple aura with the hues of black. Within this spooky backdrop, Sun is placed in the middle; thereby portraying it as a threatening sign. The overall color scheme adds to the tense and foreboding mood of the image. Moreover, in Figure 4.21, the color scheme is predominantly yellow with a dark aura in the background. This color contrast indicates the presence of black hole which is yet another sign of danger for the colonizers in space. The intensity of the color yellow induces feelings of danger and awe. It also reflects the curiosity that Maureen feels about outer space. Overall, the second image indicates that something extraordinary is happening in outer space which is not beneficial for human beings. The selection of this color scheme effectively captures the feelings of human beings in outer space. The basic core of a visual image should be prioritized above minute details in order to determine its mood…. Color and lighting are crucial in achieving this (*View of Eco-Linguistic Analysis of Flood Representations in Selected Print Media: A Case of Climate Change Semiotics*, n.d.).

In this instance, in answer to the query regarding the planet's impending demise, the speaker offers an explanation or clarification in this statement. John's proposition about the dying planet sounds bizarre to all the members of the colony and it results in utter distress. As a matter of fact, the planet, in this context, is not dying but entering a phase that can pose a serious threat to the existence of human beings. This instance yet again indicates the rapid changes that occur in outer space thereby putting the lives of human beings at stake and causing solastalgia. The term "malignant" here is a proof of the harmful and destructive nature of the planet, Alpha Centauri. An abnormal increase in the seismic activity in outer space, in this context is considered to be a hazard for human beings. Although this process is a natural occurrence within the boundaries of Earth as well and yet does not pose any threat to humans. The conceptualization of this seismic activity as dangerous highlights the potential difficulties which are brought upon by the alien environment. The comprehension of the characters regarding these seismic activities is influenced and predetermined because of their experiences on Earth. This conceptualization emphasizes a crucial need for adaptation by human beings in case they inhabit a new environment.

The comprehension of the space hazards by the characters in outer space informs us about the intricate relationship between their mental models and the environment of space.

The foundation to understand the characters' emotional responses in relation to the outer space environment is laid through their awareness and preconceived ideas about the environmental changes. From here onwards, my research intends to elaborate more on the psychological states of the characters by introducing the lens of alterity. Now, my research shifts from the analysis of geological occurrences to the analysis of human encounters with the extraterrestrial species. As the characters come across unknown life forms and navigate the difficulties of coexistence in outer space, the potential for solastalgia emerges—a deep seated mental distress arising from their interactions with alien beings and the challenges of harmonizing with the unfamiliar, thus emphasizing the notion of alterity.

4.2 Analysis of the Theme of Alterity in Space

Figure 4.22

Episode	1
Conversation	What's that? What is that? Who knows if you can even understand me. Dad, this is Will.
	Do you read me? I'm kind of in a lot of danger here.

Denotative Analysis	The Robinson family makes their first encounter with an extraterrestrial life form in space. In each of the aforementioned situations, they are unsure of what this creature is and are alarmed by its presence.
Kind of Signs	**Symbol:** Aliens as Dangerous
Connotative Analysis	According to Shi-Xu (2006), discourse contributes to the formation of the mind. According to this statement, it is not only our cognitive processes that help develop and shape our thinking and mental processes, but language also plays a significant role in how we think, interpret, and perceive things, and our language and discourse are heavily influenced by our society, cultural contexts, and so on. This is why Will links the sign "danger" with aliens since aliens are viewed as hazardous beings according to our social standards. The alien's distinct appearance causes this marginalization. In the first photo, it is clear that the extraterrestrial lacks eyes and other human like facial traits. Only a little light appears on his face, and the rest of his body appears to be formed of iron. The dread caused by its presence can be seen in the second shot, where Penny is hiding behind her mother out of fear. She is the one who yells, "What's that?" twice when she sees it, contributing to a sense of exclusion.

Table 4.27 Scene Analysis Table

Mood System				
Data	**Ecosystem Type**	**Speech Role & Type of Interlocutors**	**Speech Motivation**	**Ecosophy**

613 What's that? What is that?	Natural	**Identity Status:** Medium Subjective Initiative Speaker: Human Adresse: Alien	Demanding	Violates "Diversity, Harmony and Coexistence Principle"
564 Who knows if you can even understand me.	Natural	**Identity Status:** Weak Subjective Initiative Speaker: Human Addressee: Alien	Giving	Violates "Diversity, Harmony and Coexistence Principle"
557 Dad, this is Will. Do you read me? I'm kind of in a lot of danger here.	Natural	**Identity Status:** Strong Subjective Initiative Speaker: Human Addressee: Alien	Giving	Violates "Diversity, Harmony and Coexistence Principle"

Table 4.28 Mood Analysis Table

Analysis

The data shown in Table 4.27 depicts human remarks made in the presence of aliens that contravene the ideals of Diversity, Harmony, and Coexistence. Not only can the atmosphere of outer space generate solastalgia in humans, but its occupants also instill anxiety and sorrow in them, generating a theme of alterity. In the first occurrence, one of the protagonists, Penny, is terrified by the sight of the extraterrestrial and exclaims, frightened, "What's that? "What is that?" This means that she believes aliens are so distinct from humans that they cannot be recognized as any entity in the world. In Figure 4.22, it can be seen that Penny is hiding behind her mother out of the fear of the alien. This symbolizes her innocence and apprehension. Moreover, Maureen has her arm wrapped around Penny which indicates maternal protection in the face of the impending danger. It is worth noticing that Maureen and Penny's eyes are wide open in this scene that connotes shock and terror. Blueish black hues add to the overall eerie mood of this scene. According to Cheng (2022), the interrogative attitude is eco-destructive when the speaker contradicts the ecosophy and often requests information with a hidden agenda, which might destroy the interpersonal connection. In this scene, Penny seeks information about the extraterrestrial species out of fear and terror. The shrill and shriek in her tone show that she is not asking this question out of curiosity but out of an urge to understand what she considers a threat. She hides behind her mother so that she could protect her from the alien species. All these factors go against the rules of ecosophy; thereby, making this discourse eco-destructive.

In the second case, Will converses with the alien and then questions his capacity to comprehend him, robbing the aliens of the ability to understand humans. In the third case, Will, upon first witnessing the extraterrestrial, becomes terrified and attempts to contact his father via his gadget. He describes the presence of an extraterrestrial as a "danger." It is ironic because it is humans who have landed in space, which is home to aliens. The opposite should be true. Humans should be seen as a warning indication by aliens. Both these instances reveal a pattern of power relations between humans and extraterrestrial species. Humans having a mindset of colonizers tend to consider themselves superior to all the species in the universe. The statement, "Who knows if you can even understand me" assigns the alien the status of a robot who is devoid of emotions; and, calling aliens a "danger" is another way through which humans marginalize them. According to Cheng (2022), in the exchange of propositions or proposals with the addressee, mood force—

which was primarily created from the modality system —is a linguistic technique that expresses the speaker's subjective attitude, judgment, and position. In the above statements, modality is expressed through the words, “can” and “kind of”. Both these words suggest a degree of uncertainty with regard to the status of alien species and also the subjective opinions of humans about them. Here it is important to note that the media carefully chooses language to create certain meanings and generate specific emotions. In all these instances, the makers of this show have shaped the perception about alien species by dictating the tone (shrill, shriek) and the style of dialogue delivery. Humans perceive aliens as a sign of danger and therefore marginalize them. According to Sebeok (1986), human language may be used as a versatile instrument to engage with the significant environment, but it can also be used as a toy to manipulate not just this world but also past worlds, future worlds present, and an infinite world of fantasy worlds. Makers of the show, “Lost in Space” have employed vivid imagery of aliens. The alien has a heavy metallic build comprising one eye that glows. Because of this menacing appearance, humans see him as a threat. Through language and imagery, the creators have manipulated the worlds of outer space which shapes the perception of audiences about the extraterrestrial life. The makers of this show have deliberately used words of negative connotations for extraterrestrial life. They have done so, in order to distinguish between humans and aliens; thereby, shaping the perspective of the audience about outer space and its occupants.

The aforementioned claims show an underlying presumption of human superiority in communication and support a hierarchical viewpoint. "If you can even understand me" places humans as the presumed communicative standard and suggests a possible disparity in language capacities. This implicit assumption creates a hierarchical power dynamic in which humans marginalize extraterrestrials by assuming that they are incapable of understanding human language. The way the language is framed unintentionally perpetuates a hierarchical framework in which humans, with their roots in Earthly language conventions, take on a superior role, perhaps marginalizing alien species as being incapable of comprehension or having inferior communication skills. The term "danger" also suggests a hierarchical viewpoint in which the alien is viewed as a possible threat to human nature. Although the urgency of the crisis drives this hierarchical framing, it also serves to strengthen the alterity by portraying the alien as a force that threatens the security and predictability of the human world. In the statement, the known (Will) and the unknown (alien threat) are established as binary oppositions. The striking contrast between the human

and the extraterrestrial creature is emphasized by this binary opposition, which heightens the feeling of alterity.

Figure 4.23

Episode (s)	2-3
Conversation	How many more of you are there? I think he's all alone. Or else he wouldn't have needed me to help him. You helped it? What the hell are you? You trust that thing? Was that you? Why did you attack us? Tell me! Will, can you tell your robot to open the damn door? I've been trying. He won't listen.
Denotative Analysis	The Robinson family and other colonists see the extraterrestrial on several occasions during the season. In all of these encounters, humans go to great lengths to distinguish themselves from

	the extraterrestrial society. The issues of solastalgia and alterity are addressed in various ways.
Kind of Signs	**Symbol:** Alien being viewed as Robot and Thing
Connotative Analysis	Creating stereotypes is one of the ways through which colonizers create fixed images and unequal relationships with colonized people. The colonial discourse employs stereotypes as its primary discursive tool in order to construct a fixed "paradoxical mode of representation" (Colonial Discourse and Stereotype, 2012). By employing such stereotypes, a regime of truth is created. The stereotype, according to Bhabha, is perpetuated by the interdependence of colonial subjects: the colonizer and the colonized, who are always involved in conflicts and exchanges (Colonial Discourse and Stereotype, 2012). The tension between John and the extraterrestrial is seen in the photograph above. They are both eyeing each other in the eyes, as though they are threatening one another and promoting a sense of hostility. Furthermore, the red light in the backdrop contributes to the negative vibe of the scenario. The terms for extraterrestrial include "thing" and "robot," and the pronoun "it" is usually used to marginalize it. The signs such as "robot" and "thing" are repeatedly used to refer to the alien because of its different appearance and power. These repeated signs create a stereotypical image of a being that lacks consciousness and a capacity to feel and emote. These signs reduce the aliens to either a mere machine or an object.

Table 4.29 Scene Analysis Table

Mood System				
Data	**Ecosystem Type**	**Speech Role & Type of Interlocutors**	**Speech Motivation**	**Ecosophy**
Was That you? Why did you attack us? Tell me!	Natural	**Identity Status:** Strong Subjective Initiative Speaker: Human Addresse: Alien	Demanding	Violates "Diversity, Harmony and Coexistence Principle"
What the hell are you?	Natural	**Identity Status:** Strong Subjective Initiative Speaker: Human Addressee: Alien	Demanding	Violates "Diversity, Harmony and Coexistence Principle"

Table 4.30 Mood Analysis Table

Analysis

The data presented in Table 4.29 reflects the nature of an environment in which human coexistence with aliens is nearly impossible. Will is questioning the extraterrestrial about the attack on the Resolute in the first instance. He accuses him of the attack without giving him the opportunity to defend himself. This suggests that aliens are viewed as hostile and intolerant creatures. Furthermore, throughout the season, the aliens are granted a

relatively restricted capacity to talk, implying that humans believe they are the only creatures capable of speaking with an endless number of language patterns. Furthermore, it represents the desire of humans as colonists to govern the colonized. Will commandeers the alien and asserts his authority over him by using the demanding term "Tell me!" Furthermore, John's assumptions about the nature of an alien in the second situation are likewise disparaging and serve to further promote isolation. His usage of the phrase "what the hell are you?" fosters an attitude of superiority and prevents aliens and humans from communicating and understanding one another effectively. In Figure 4.23, it can be seen that John and the alien are standing face to face which symbolizes a confrontational or a critical communication. Moreover, the build of an alien is entirely different from John signifying the strength of extraterrestrial species in relation to human beings. As John confronts the alien, it can be seen that he has focused eyes which connotes that he is alert of the threat that an alien can pose. Moreover, the addition of color red is deliberate as it metaphorically represents a potential danger. As per the model of Cheng (2022), only when the speaking roles, aims, and motives are all eco-beneficial can the mood be said to be advantageous. All the statements that are mentioned above are used by the characters with respect to alien species and these linguistic elements do not bear positive environmental outcomes as they violate the principle of harmony and coexistence. The statements indicate that the overall mood which is created as a result of the communication between humans and aliens is negative and sinister. In all the above mentioned cases, humans have assumed powerful roles with regard to aliens (“Tell me!”), and the objectives or goals of their communication (“what the hell are you?”) are not environmentally sustainable or friendly as they try to marginalize aliens. Moreover, the ideologies that drive humans to use such negative words for aliens are destructive for the environment of outer space; thereby proving that humans cannot exist with aliens. In all these examples, all the aspects of communication (speech roles, targets and motivations) do not align with the environmental friendly goals and principles; therefore, the overall mood is eco-destructive. Another feature that contributes to the negative mood of the communication is the one sided communication. As it is seen from the examples, that is only human beings who are sending the messages towards aliens without getting anything in return, and this creates a suspicious yet fixed image of aliens in the minds of humans. The alien maintains his quiet and still persona throughout the season due to which humans remain suspicious about him and deem him as an object of danger. According to Sebeok (2001), a certain amount of redundancy is

introduced by processing messages in parallel, increasing the likelihood that reception mistakes will be minimized. There are numerous ways through which humans process information about aliens, some of which include media sources, their own experiences and popular social and cultural narratives. Frequent portrayal of aliens as being hostile results in redundancy with regard to their image in the minds of human beings. Due to these redundant images, humans are quick to label them as a sign of threat to their existence; thereby, minimizing any chance of having an alternate perspective about them. This redundancy consolidates their ideologies and becomes a part of their cultural code. According to Burke (2023), it is impossible to overstate the significance of context and, by extension, ideology in this situation because, when readers or viewers interact with written or visual cues, their perception is shaped by the cultural rules they insert in the background to unite the signifier and signified.

The concept of alterity is represented in the binaries that humans construct against aliens. *Powerful Vs Powerless, Tolerant Vs Violent*, and *Superior Vs Inferior* are the binaries established in the preceding examples. Moreover, "I think he's all alone" and "You helped it?" are examples of colonizer viewpoints in which humans, assuming a position of control, inquire about the intentions and characteristics of the alien. The idea that an extraterrestrial needs aid suggests a superiority complex, implying that the alien is reliant on humans for support. This viewpoint is consistent with a colonial worldview, in which the colonizers see the colonized as creatures that need to be directed or subjugated. In addition to this, the humans utilize words to communicate their disapproval and indicate that the alien is not responding to them. This failure in communication turns into an important semiotic aspect that illustrates the difficulties in deciphering and interpreting signals from extraterrestrial species. "Can you tell your robot to open the damn door?" is one of those phrases. and "He won't listen" are indications of power relations. Framing their acts as rebellious or non-compliant, the humans are using language to establish authority and command over the alien creature.

Figure 4.24

Figure 4.25

Episode (s)	4-5
Conversation	Look, we don't know what it is yet. We don't know anything about Dr. Smith, but you're not worried about her. Yeah, well, that's different. Why? Well, she can't hammer metal stakes into the ground like they're toothpicks. Oh, hey, before we get there, nothing about the robot, okay? We don't know how people are gonna react to it. Or it to them. What are you drawing? An eight? You wouldn't know what an eight looks like. It's dangerous. - He's different now. - It's not a he, Will. It's an it. Don't you always say that people make mistakes sometimes, and that they deserve a second chance? Maybe people do, but… Okay, then what are we doing? Helping our brother hide that thing.

Denotative Analysis	The extraterrestrial is hidden in a cave during the course of the following two episodes when Will's sister Judy compels him to get rid of it since she thinks it's harmful. Their father continues to have
	doubts about the extraterrestrial. The alien's strength and power make him feel frightened. He also does not want other colonists to be aware that such a beast exists on this planet.
Kind of Signs	**Icons:** Robot and Thing **Index:** Dangerous and It
Connotative Analysis	The rationale for a colonizer to exploit a piece of land is that it is their obligation to civilize the people living on their land. In order to justify their actions, conquering nations claimed that they were civilizing "barbaric" or "savage" nations and that doing so served the interests of the people whose territories and peoples they exploited (Blakemore, 2021). In the second image shown above, where we can see a nine-year-old human being attempting to teach an extraterrestrial how to draw and write, we can see a reflection of this colonial narrative. Will labels the alien civilization as being illiterate and himself as being literate after he draws something like an eight on the sand and Will wonders if the creature even understands what an eight is. On the other hand, a metal spike is hammered into the ground by the alien in the first image, which is a difficult undertaking for humans because it takes a lot of strength and force. Will's father cautions him because he is terrified by his power. The signs associated over these two episodes with the alien are “robot”, “thing” and “dangerous”. Moreover, the pronoun “it” is also used as an index to refer to the alien in order to dehumanize him.

Table 4.31 Scene Analysis Table

Mood System				
Data	**Ecosystem Type**	**Speech Role & Type of Interlocutors**	**Speech Motivation**	**Ecosophy**
What are you drawing? An eight? You wouldn't know what an eight looks like.	Natural	**Identity Status:** Strong Subjective Initiative Speaker: Human Addressee: Alien	Giving	Violates "Diversity, Harmony and Coexistence Principle"
It's dangerous. - He's different now. - It's not a he, Will. It's an it.	Natural	**Identity Status:** Strong Subjective Initiative Speaker: Human Addressee: Human	Giving	Violates "Diversity, Harmony and Coexistence Principle"

Table 4.32 Mood Analysis Table

Analysis

The data mentioned in Table 4.31 clearly marks a boundary between the nature of human beings and aliens. Will as a human being as well as a colonizer tries to teach the alien how to write and comprehend the language by writing and drawing in the sand thus labeling the alien as barbaric and savage. It also shows the urge of human beings to control other creatures, case in point aliens. In Figure 4.25, it can be seen that Will draws the face

of the alien in the sand and asks him if he recognizes it to which the alien stays quiet and does not respond. Moreover, when the alien draws an eight in the sand Will declares he could not know what an eight is thus establishing the superiority of human beings over aliens by labeling them as illiterate and themselves as literate. In both the figures (4.24 and 4.25), it must be noted that the alien has a "bowed down" posture which reinforces a social hierarchy in which aliens are assumed to be at a lower level. Moreover, Judy insists Will on getting rid of the alien and refers to him as a "dangerous" creature. Will insists that he is different than what she thinks, upon which Judy corrects him by saying, "*It's not a he, Will. It's an it.".* Considering the contextual and cultural factors at play, this use of "it" dehumanizes the alien. The use of "it" also indicates that the alien is a non-human entity thus violating the principle of harmony, inclusion and diversity. According to Cheng (2022), in the declarative mood system, the first is the ecological attribute of the information provider and the information recipient, which primarily relates to how their status and identities impact the interpersonal dynamics between speaking roles. The above-mentioned statements "You wouldn't know what an eight looks like " and "It's not a he, Will. It's an it" are both declarative in nature. The statements clearly indicate a power imbalance between humans and aliens as in the first statement, Will indirectly labels the alien an illiterate creature whereas, in the second statement Judy categorizes the alien as non-human by using "it" to refer to him. Moreover, no response from the alien also indicates that he holds a lower-status in this communication process. It is the detrimental ecological property of outer space that shapes the identities of humans and aliens in a certain manner. In addition to this, in all these examples, we are able to perceive the reality of aliens only through human linguistic rationality. Aliens are seen as signs which are passive and submissive in nature showing no signs of the process of semiotics (producing and interpreting signs), and this limits our understanding of their reality. According to Švantner (2023), the issue is that symbol-making capacity only becomes a synonym for another term and tells us nothing about the nature of the sign, the nature of the symbol, or the particular semiotic traits of non-humans if it is trivially understood as exclusively human and exclusively linguistic. This one-sided semiotic process is ideologically driven so that extraterrestrial species can be marginalized; thereby, reinforcing the theme of alterity. According to Sebeok (2001), every organism is so equipped as to obtain a certain perception of the outer world," as Jacob has succinctly defined.... Because of this, every species has its own sensory universe, to which other

species may be completely or partially blind. The dichotomies established in these instances are *Illiterate Vs Literate, Humane Vs Non- humane,* and *Harmless Vs Harmful.*

Figure 4.26

Episode (s)	6
Conversation	Twenty-seven people died crashing here. Husbands, wives, friends. Dead because of what that thing did. What about last night? It was protecting us. - It was defending itself! Angela... put the weapon down. That's exactly why I'm here. To put the weapon down.

Denotative Analysis	In episode six, humans are horrified when an extraterrestrial appears among them. Despite the fact that the extraterrestrial attempted to protect humans from an unusual beast on the planet, his efforts were not recognized by humans. Instead, they believe the extraterrestrial was merely fighting to protect himself. Because the alien is suspected of murdering twenty-seven individuals on the spacecraft, one of the women chooses to shoot the alien.
Kind of Signs	**Icons:** Thing **Index:** Weapon
Connotative Analysis	In the shot above, there is a woman holding a gun and aiming it at the alien. The woman considers it a threat and feels horrified that if the alien remains alive on this planet, it would be impossible for human beings to coexist with them. Once again, the sign associated with the alien is a "thing" that dehumanizes him. Another sign associated with him is "weapon". The sign weapon is considered to be an indexical sign because it refers to the qualities of an alien. These qualities, in this context, are threatening and dangerous.

Table 4.33 Scene Analysis Table

Mood System				
Data	**Ecosystem Type**	**Speech Role & Type of Interlocutors**	**Speech Motivation**	**Ecosophy**
Twenty-seven people died crashing here. Husbands, wives, friends. Dead because of what that thing did. What about last night? It was protecting us.	Social	**<u>Identity Status:</u>** Strong Subjective Initiative Speaker: Human Addressee: Human	Giving	Violating the Principle of "Diversity, Harmony and Coexistence"
- It was defending itself!				
Angela... put the weapon down. That's exactly why I'm here. To put the weapon down.	Social	**<u>Identity Status:</u>** Strong Subjective Initiative Speaker: Human Addressee: Human	Giving	Violates "Diversity, Harmony and Coexistence Principle"

Table 4.34 Mood Analysis Table

Analysis

Humans are attempting to develop a consensus on the presence of an extraterrestrial in the data given in the Table 4.33. When the guy responds, "Dead because of what that thing did," the extraterrestrial is charged with killing twenty-seven individuals on the vessel. The irony of this circumstance is that humans themselves are a threat for aliens, and hence their reaction and response to their existence can only be deemed normal. Furthermore, it is paradoxical on the part of humans to see an extraterrestrial as capable of killing people while yet referring to him as a "thing." In Figure 4.26, it can be seen that one of the colonizers feels so threatened by the alien presence that she decides to shoot him. She has a gun in her hand which signifies her aggression and defense mechanism against aliens.

Moreover, it can also be seen that Will's silhouette has dominated the image that metaphorically represents the impact of this conflict on his mental health. The visual also means that Will's experience and perception are significantly crucial to this narrative as he is a child. The woman refers to the extraterrestrial as a "weapon" that she wishes to destroy, despite the fact that she herself is holding a weapon that she insists on using to kill the alien. All of the language choices made above contradict the principles of coexistence, harmony, and diversity, demonstrating that humans cannot coexist with aliens in space. The dichotomies established in these instances are *Murderer Vs Victims, Humane Vs Non-humane,* and *Harmful Vs Harmless*

The claim "Twenty-seven people died crashing here. Husbands, wives, friends. "Dead because of what that thing did" starts an account about alterity right away. The use of words, especially the term "that thing," adds to the idea that the extraterrestrial is a strange and maybe dangerous being. According to Cheng (2022), the third is the information giver's ecological speech motivation feature…. When the speaker adheres to this philosophy, the declarative mood is eco-beneficial since the addressee is often given information in a positive and directed manner that fosters the growth of interpersonal connections and ecosystems…. When the speaker transgresses this ecosophy, they often do so by subtly disseminating unfavorable information that undermines interpersonal relationships and has a negative impact on the environment; in such cases, the declarative mood is eco destructive. Referring to the alien as a "murderer" and a "weapon" promotes a negative relationship between humans and aliens and disrupts the ecological balance. In this instance, the communication carries a negative effect that violates the principles of

ecosophy and promotes an eco-destructive declarative mood. The manner with which these pieces of information about the alien is conveyed to other human beings is detrimental to both the social and environmental ecosystem. The accusation against aliens highlights the difference between the two species by blaming the alien for human fatalities. The following statement "How about last night? It was protecting us," presents an opposing viewpoint, emphasizing how difficult it is to understand the alien creature's behavior. This is a subtle alterity, where some characters see the extraterrestrial as a guardian. By introducing a defense for the alien's behavior, the remark "it was defending itself" subverts the initial accusing position. The contradicting claims add to the uncertainty about the alien's objectives and motives. In this instance, human beings employ the two methods of semiotic inquiry that help understand the meaning of an object. First, relying on the opposite in the semiotic web and secondly, assigning an exact sign to aliens within a semiotic system. According to Sebeok (2001), if the former, the analysis should provide a semiotic network that can answer the following query: What does a particular sign mean in relation to and against any other sign in the same system of signs?... If the latter, the analysis ought to disclose the semiotic system's assigned sign for a certain entity. The characters fail to understand the intentions and motivations of the alien and try to determine the meaning by contrasting it with other signs in their semiotic system. The statements, "It was protecting us" and "It was defending itself" reflect characters' struggle to identify the differences and oppositions in the semiotic web for the determination of meaning. In the same way, by directly calling the alien a "weapon", the character pinpoints the exact sign for the alien. These scenes reflect the ways in which the characters try to solve a semiotic conflict which are entirely subjective in nature. The importance of this semiotic conflict cannot be denied as it provides a window into characters' subjective realities. This semiotic conflict is deliberate and results in "information fog" for the viewers. Due to the usage of opposing phrases "protect us/defending itself", the viewers receive mixed signals about the reality of the aliens that fosters critical thinking and further expands the semiotic network. According to Madisson and Ventsel (2020), when "information fog" is effectively produced, the audience will not be able to distinguish between true and false information. The concept of alterity is shown by the distinctions between humans and aliens as well as the differences in how different people understand what an extraterrestrial is. The uncertainty makes it more difficult to comprehend what the "other" is doing.

Figure 4.27

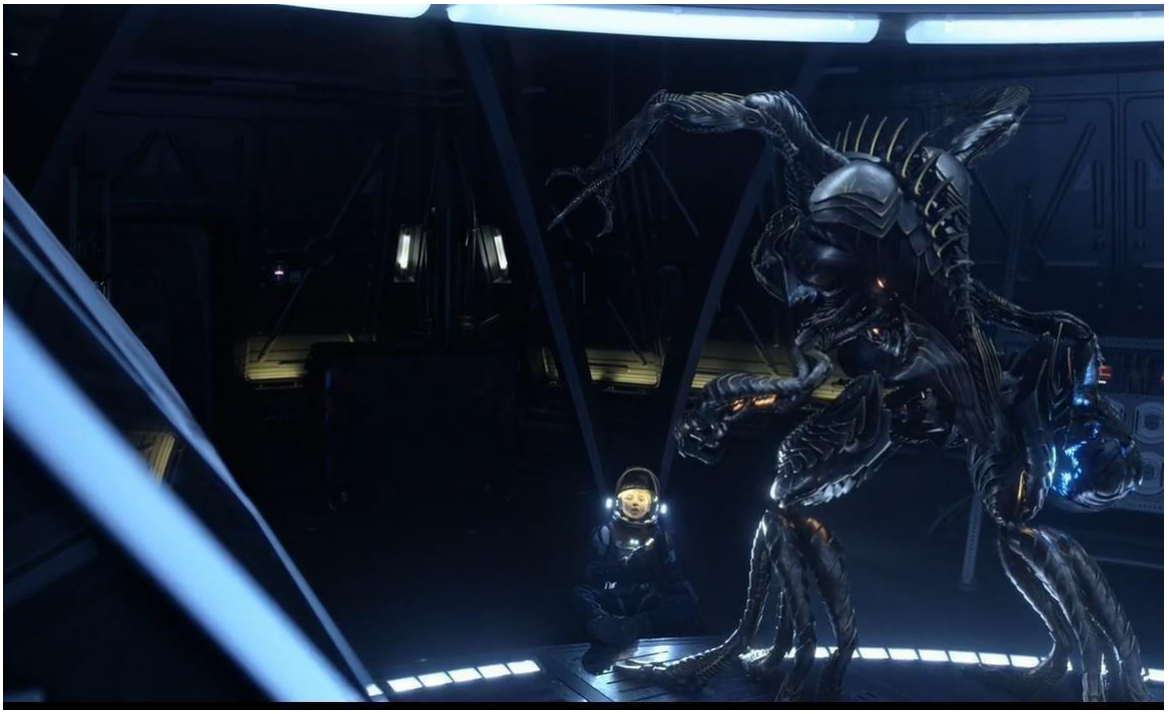

Figure 4.28

Episode (s)	7-10
Conversation	I'm not a violent person. I'm not a killer, like you. You were made to kill Get away from my kids!
Denotative Analysis	In the following episodes, there is an extraterrestrial invasion that humans are powerless to defeat. The aliens are extremely powerful and hostile to humans. Even the logistics designed by human beings fail next to aliens.
Kind of Signs	**Index:** Aliens seen as Killers and Violent
Connotative Analysis	It is clear from the images above that the aliens have assaulted humans. The extraterrestrial is burning down the Robinson family's chariot, in which Judy and Penny are sitting, in the first picture. The extraterrestrial is all set to assault Will in the second photo. Aliens are threatened by human invasion and are attempting to expel humans from their planet, proving that aliens and humans cannot coexist. Words like "violent" and "killer" are connected with aliens, and they are indexical indicators because they inform us about the attributes that humans identify with aliens, which turn out to be negative.

Table 4.35 Scene Analysis Table

Mood System				
Data	**Ecosystem Type**	**Speech Role & Type of Interlocutors**	**Speech Motivation**	**Ecosophy**
I'm not a violent person. I'm not a killer, like you. You were made to kill Get away from my kids!	Natural	**Identity Status:** Strong Subjective Initiative Speaker: Human Addressee: Alien	Giving	Violating the Principle of "Diversity, Harmony and Coexistence"

Table 4.36 Mood Analysis Table

Analysis

According to the data presented above in Table 4.35, the characters come across a conflict with the aliens. Humans employ their sophisticated technology to combat the aliens, but they are unable to defeat them. The aliens are labeled as "violent" and "killers" despite the fact that it is the humans who have colonized their planet. To defend her children, Maureen assaults the alien, but the creature retaliates and injures her. They also burn down the Robinsons' chariot and injure Will, causing him to lose air from his space suit. Figure 4.27 and 4.28 illustrate the way in which aliens retaliate. They have got arms or claws raised which represents their brutal attack on the Robinson family. From the visuals it can be seen

that the aliens are entirely different in their outlook which adds to depth and tension of the scene. Aliens are portrayed as heavy, huge and metallic creatures which symbolize the great extent of harm that they can pose to human beings. The declarative and imperative statements such as "You were made to kill" and "Get away from my kids!" reflect the internal feelings of the characters respectively. For example, in the second statement, the exclamation mark at the end of the dialogue depicts the degree of speech with which Maureen speaks with the aliens. Her pitch indicates the anger and fear that she feels for aliens. Her pitch and personal feelings (fear and anger) combine her internal and external moods. According to Cheng (2022), personal will and emotion may be realized via the mood force system, including internal mood force, which reveals the speaker's subjectivity in the conversation, and external mood force, which includes speech rate and degree. Moreover, the consistent use of the words like "violent" and "killer" by human beings for aliens reflect their deliberate cognitive activity. The characters are engaged in the phenomena of representation through which they intentionally and consciously use negative signs for aliens in order to understand and categorize the objects of outer space. This process of representation allows them to assert their power and marginalize the aliens easily. According to Sebeok (2001), the latter approach is referred to as representation…. representation is the purposeful use of signals to categorize, investigate, and ultimately comprehend the world. Humans and aliens both feel intimidated by the presence of the other and, as a result, seek to exterminate the other. This repeated representation of aliens as violent is deliberate as it shows that the idea of "aliens" has been already conceptualized. According to Nöth (2022), the other is the relation of signification, also known as the interpretant relation. It may be seen, for instance, in the idea of representation as representation, which is the act of bringing something that was previously present back into awareness. This fight demonstrates that aliens are just as intolerant of humans as humans are of them. The labeling of aliens as murderers and violent defies the principles of diversity, harmony, and coexistence. The dichotomy formed in this case is Killer vs. Victims, which reinforces the concept of alterity.

4.3 Conclusion

This chapter gave a comprehensive examination of the data while keeping the research questions in mind. Furthermore, this chapter shows a practical application of the conceptual framework created for this research, followed by an in-depth analysis of the data. The next chapter includes an extensive account of all the findings, a conclusion, and recommendations for future studies.

CHAPTER 5

FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This chapter provides a complete discussion based on the study findings while keeping the research questions in mind. The primary goal of this study is to reject the idea that humans can survive on planets other than Earth by evaluating the language choices of the characters in relation to the dangerous environment and inhabitants of outer space. Furthermore, this study analyzes the signs linked with the space environment by studying the visuals from a biosemiotic standpoint. It emphasizes human beings' subjective perceptions of the outer space world. I have emphasized the key findings of this research in the first part of this chapter, followed by discussion on research questions one by one. Following that, conclusions are developed while keeping the primary results and research questions of this study in mind. Finally, the researcher has made suggestions for further study in this field.

5.1 Research Findings

The current study utilizes the Cheng (2022) and Sebeok Biosemiotics Model (2001) models to examine human language choices in relation to the outer space environment. It analyzes the anxiety that the hazardous space environment may have on humans through these language choices. It also emphasizes human language choices that jeopardize their identity and position when they come into contact with alien intelligence. The Transitivity System has been chosen to analyze the experiences of human beings with regards to their environment and the Mood System has been used to analyze the experiences of human beings with regards to the inhabitants of outer space. According to Cheng (2022), mood force is a language technique that expresses the speaker's subjective attitude, judgment, and posture in the exchange of proposition or proposal with the addressee; whereas, the transitivity system is concerned with the link between man and nature, man and society, and the components within nature and society. Moreover, to underscore the binary relations between humans and aliens, subjective realities and hidden ideologies, the Sebeok Biosemiotic model has been used which is based on Uexkull Umwelt Theory. According to Sebeok (2001), every subject creates its own Umwelt (environment). This study highlights the subjective realities of the outer space environment of human beings by

highlighting the signs associated with the environment of outer space. The findings of the current study are as follows:

1. Although the Earth's ecology is deteriorating, colonizing space is not a prudent decision since it is full of unknown environmental hazards that are unacceptable for humans.
2. To comprehensively understand the meaning-making process and the impact of environmental hazards on the mental and physical health of human beings, it is crucial to understand and analyze their communication as a whole with regards to their environment. It is only by observing both verbal and non-verbal communication that the themes of solastalgia and alterity can be underscored in their entirety.
3. Delving deeper into the social and mental domains of the Transitivity System provides a clear picture of the hazardous circumstances and challenging psychological experiences of human beings in outer space.
4. For survival in outer space, non-verbal communication precedes verbal communication. For example, sending out light signals to locate other humans in space or trying to locate the light signal in order to reach a destination etc.
5. For the analysis of the experiences with regards to the environment, it is the theme clause (made up of process) that dictates the ecological property. The processes such as the setting of the Sun, the increase in seismic activity etc. and their negative impact on the health of human beings can be studied through the Theme Clause.
6. From the perspective of biosemiotics, human beings rely on their bodily needs and cognitive processes to create meanings.
7. In EDA, it is important to understand how phrases are structured in a text in order to determine the weak or strong ecological property of discourse. For example, in the analysis conducted above the fears related to the environmental aspects (Sun setting down, glacier melting, volcanic outbursts etc.) are foregrounded which indicate that the show, “Lost in Space” has a strong ecological property.
8. In the analysis conducted above, there are scenes in which characters are engaged in “potential semiosis” which means the characters interpret the “potential threat” based on their past experiences and mental models and act accordingly. It also

shows that our mind is in close connection with our body as it produces and interprets signs in the environment.

9. The characters frequently employ confirmation- seeking tags such as “Are you safe?” and “Are you hurt?” which highlight the theme of solastalgia.

10. In outer space, humans expand the signs freely. For example, on Earth “green color” indicates life and healing; whereas, in outer space, the green vegetation equates to threat, death and poison.

11. The impact of the potential dangers can be realized by analyzing the grammatical status of starting and continuing clauses. For example, the dialogue, “Dad, there’s fire…and I can’t get out” is a sentence consisting of a starting and continuing clause joined by the conjunction “and”. These coordination taxis show that both the pieces of information are equally important and have the same kind of an impact on the mental health of the character.

12. In analysis, it is shown that the subjective realities of the characters are created through both “perceptual” and “operational signs”. For example, the perception of fire as threat is coupled with the character’s constant pleas to take an action against it makes it a perceptual and operation sign respectively. This collectively depicts his subjective reality.

13. The consistent negative expansion orientation of characters throughout the show makes this discourse an eco-destructive one; thereby, proving that humans cannot exist in outer space.

14. Almost all the processes that bring distress to human beings in outer-space are natural (storm, glacier, sun, eels etc.) which makes this study important from an ecolinguistic perspective.

15. Some of the environmental hazards such as “glacier” is deemed to be a “performative sign” and this is the point where sign-science and life-science overlap; thus, reinforcing the importance of the lens of biosemiotics for the analysis of this study.

16. The characters in the show, “Lost in Space” are actively engaged in the process of the interpretation of signs. This interpretation is influenced by their own biases. It

is analyzed that the characters employ both the “biological operations” and “logical reasoning” in order to create meanings. For example, Penny’s painful interaction with the eels and her usage of “it” to refer to them reflect both the biological and logical operations in the interpretation of signs.

17. To adhere to the principles of ecosophy, it is important to observe its four maxims (quality, quantity, diversity and interaction). Because of the environmental hazards, the characters are unable to effectively interact with their environment which flouts the maxim of interaction. Moreover, the outer space environment is unable to prioritize the well-being of humans; thereby, flouting the maxim of quality. The violation of these maxims indicate that the outer-space environment is not favorable for the health and existence of human beings.

18. From the standpoint of semiotics, the colors used in the visuals heighten the theme of solastalgia and add to the overall eerie mood of the show. For example, the consistent use of blueish black and purplish black backgrounds adds to the mystery of things which are present in outer space. Moreover, the refreshing color like “green” and its association with death is also interesting to note. Moreover, the nonverbal cues such as the terror on the faces of the characters at the sight of aliens, tears in the eyes of Will upon witnessing fire, gritted teeth because of the pain caused by the storm etc. all contribute to the themes of solastalgia and alterity.

19. The use of modality such as in sentences, “Who knows if you **can** understand me” and “I’ m in **kind of** danger” in relation to alien presence create a negative mood that destroys the interpersonal relationship between humans and aliens. Same is the case with the use of imperative and interrogative sentences such as “Tell me!’ and “what the hell are you?”

20. The redundancy in the portrayal of the image of aliens (quiet, suspicious, still) creates their fixed and stereotypical image in the minds of humans, and they consequently see him as a sign of threat.

21. The speech roles determine the power dynamics between humans and aliens. The use of the words like “robot” and “it” for aliens formulate social hierarchy in which humans are more powerful than aliens. Moreover, the process of production and interpretation of signs has been exclusively linguistic and human throughout the

show which ultimately creates a sinister image of the alien intelligence and gives human beings a threshold from where they can assert their power.

22. Humans are seen relying on the binaries in their semiotic system such as “It was protecting us/ It was defending itself” in order to understand the reality of the aliens. This process results in the generation of a number of binaries that differentiate humans from aliens such as empathetic vs non-empathetic, literate vs illiterate, self-sufficient vs reliant, humane vs inhumane, to name a few.

23. This study also found that children are more likely than adults to be distressed by the hazardous environment. Children are more susceptible to environmental anxiety than adults. This is mirrored in the suffering of Judy, Penny and Will (John and Maureen's children).

5.2 Reflection on Research Questions and Discussion

This section provides a discussion on the research questions designed in the first chapter of this study. These questions have been discussed keeping in mind the conceptual framework based on Cheng’s and Sebeok’s Biosemiotic Model. It examines how the environment and inhabitants of outer space induce distress and discomfort in human beings holistically. Firstly, the researcher has discussed question one and three and then the researcher has moved on to the discussion about question two and three.

5. 2. 1 Reflection on Research Question 1 and Research Question 3

The first and third research questions of this study aim at addressing the theme of solastalgia both linguistically and bio-semiotically respectively. From the analysis of the data, it can be concluded that the odds are against human beings when it comes to living on another planet. This has been concluded by examining the environmental hazards in outer space. Almost all the natural elements such as fire, water, soil and air are against human beings in space. Moreover, human beings do not possess enough power and technology to control these climatic catastrophes. Apart from the four major natural elements, there are other factors such as tar and cryo geysers which add to the distress of human beings which is caused by the environment of space.

Firstly, the environment of space is full of uncertainty and ambiguity. As of now it is not technologically and intellectually possible for human beings to predict the nature of environmental conditions in space which causes solastalgia to them. This can be seen in the first instance when an unexpected change in the atmospheric pressure almost cost The Robinson family their life. They start taking "deep breaths" holding each other's hands. Moreover, since it is not possible for human beings to evaluate the cause of such a drastic change in pressure; therefore, in the phrase "atmospheric disturbance detected" the agency is hidden. From a biosemiotic point of view, the mental models, non-verbal cues and cognitive structures of the characters regulate their experiences and meaning-making processes. The solastalgia produced through this event is visible on Will's face. His strained eyebrows, tense eyes, slightly backwards posture, and gaping mouth all communicate the fear that the environment is causing him to feel. His parents keep on reassuring him about his safety. This indicates that environmental hazards affect children more than adults.

Secondly, the occurrence of an environmental hazard is not just the only thing that can cause solastalgia in human beings in outer space. Even without an environmental hazard, the space is sinister because of its vastness and emptiness. Since man himself is a social animal; therefore, it is not possible for him to survive in the loneliness of space. This is reflected when Penny (one of the members of the Robinson's family) fires in outer space to see if there are other survivors like her who she can communicate with. She longs to meet another human being like her in space; therefore, this kind of distress is categorized as desideration. From a biosemiotic standpoint, this instance indicates the interconnectedness between human beings and the environment of outer space. Moreover, the vastness of the space symbolizes loneliness as Penny does not see another human far and wide. The white color indicates the colorless life in outer space which connotes monotony and disconnection from human contact.

Thirdly, it can be concluded that the technological resources available to human beings are scarce with respect to the environment of space. This can be seen in the scene where the power cells that Robinson family bring into space run out of power. These cells rely on solar power; however, because of frequent sunsets, it is unimaginably cold for human beings in outer space. The power of natural elements in outer space is more than the power of man-made technology, case in point Sun. The setting of the Sun in this case could

lead to the death of the Robinson's family which causes solastalgia to them. Within the framework of biosemiotics, these signs (natural processes) serve as "predictive guides" for Robinson family as they struggle for survival.

In addition to this, there are other factors which are lethal to human beings such as the glaciers which can melt at any point and the vegetation which human beings do not know if it is edible or not for them. Will's father cautions him about both the glacier and the vegetation. The expressions, "*Not sure how stable this glacier is. Don't wanna fall down a crevasse" and "There's vegetation all over the place. So there's bound to be things that eat the vegetation...and things that eat those things. Okay. Just... Just don't touch anything*" show the concern of Will and his father. He wants Will to tread carefully on the glacier in case it melts and he also asks him to not touch the plants around him in case they are poisonous and lethal. Will, on the other hand, suspects the presence of wild creatures around him that eat these plants. All these expressions reflect the discomfort and fear which is caused by the environment of space. From a biosemiotic point of view, Will's preprogrammed biological makeup and mental model perceive the vegetation as a "potential threat". It is his own cognitive processes that shape his view of outer space.

Moreover, from among the four major elements in the universe, fire and soil become a cause of distress for human beings in outer space. Will experiences a rapid forest fire and implores his dad for help. His use of the expression such as, "*Dad. Dad, come in. Dad, there's a fire and... and I can't get out"* indicates fear, panic and anxiety which is caused by the environment. Furthermore, even the land to walk in space is hazardous for human beings as it is so steep and prickly that it can rip the skin of a man. The nature of the sand is described by comparing it with diamonds. Don says, *"This sand... is sharp as diamonds. It's gonna tear through your soles".* From a biosemiotic point of view, he validates his point by crushing a stone between his thumb and index finger that causes them to bleed and demonstrates an example of "effective semiosis".

Apart from these hazards, there are deadly hailstorms, deadly creatures like eels, cryovolcanic activity, tar and increased seismic activity which become a cause of solastalgia for human beings. Their eco-anxiety is reflected in expressions such as *"Is it safe to keep going?. ...As long as we stay up here and don't drive into the field of exploding rocks", "If you open the hatch, the Chariot will fill with tar. You won't survive"* and *"Are you saying the planet is dying?... Not dying. Just entering a phase malignant to human life.*

Well, it explains why there's a rapid increase in seismic activity". It is also interesting to note that almost all these processes are autonomous and natural. This means that with or without human beings, these deadly processes are meant to happen in outer space.
Moreover, the processes are so dangerous and destructive that human beings cannot control them. Most of the signs that human beings attach with the environment of space are guided by their past experiences and assumptions such as a snake-like creature is an "eel" that causes harm to human beings.

5 2. 2 Reflection on Research Question 2 and Research Question 3

The second and third questions of this study aim to explore the idea of distress caused by the inhabitants of outer space both linguistically and bio-semiotically. These questions aim to examine the binaries which are created between humans and alien intelligence; thus, reinforcing the idea of "alterity" which is defined as the state of "otherness". From the analysis conducted above, it is concluded that humans cannot coexist with the aliens as their identity gets threatened because of the power and appearance of aliens. In the show, 'Lost in Space", human beings frequently marginalize the aliens and establish binaries to differentiate themselves. In this regard, humans manipulate the language as they please in order to establish their superiority over aliens. Moreover, here the role of media is crucial as it leaves no stone unturned in projecting a stereotypical image of aliens (quite, sinister) that shapes the perceptions of the audiences. "Lost in Space" is not just a narrative that depicts the sufferings of human beings in outer space; but, it also reflects the mentality of colonizers and their urge to make the colonized civilized. This is shown in the instance where Will tries to teach the alien to read and write.

Human beings associate many negative signs with aliens which shape their perception about them and reflect their opinion and assumptions about extraterrestrial species. From a biosemiotic point of view, it is the different appearance of the aliens that drive human beings to categorize them with negative words. The researcher has given a table below that enlists the dichotomies created by human beings to assert their superiority over aliens and to emphasize the concept of alterity.

Binaries Established by Human Beings Against Aliens		
Linguistic Expressions	**Humans**	**Aliens**
I'm kind of in a lot of danger here.	Non-threatening	Threatening
Who knows if you can even understand me.	Empathetic	Non-Empathetic
You trust that thing?	Trustworthy	Non-Trustworthy
Why did you attack us? Tell me!	Peaceful/Victims	Aggressive/Attacker
What the hell are you?	Humane	Non-Humane
Or else he wouldn't have needed me to help him. *You helped it?*	Self-sufficient	Reliant
Well,she can't hammer metal stakes into the ground like they're toothpicks.	Meek	Overbearing
You wouldn't know what an eight looks like.	Literate	Illiterate
It's not a he, Will. It's an it.	Human	Machine/Object

Don't you always say that people make mistakes sometimes, and that they deserve a second chance? *Maybe people do, but…*	Forgivable	Non-Forgivable
That's exactly why I'm here. To put the weapon down.	Non-Violent	Violent
Get away from my kids!	Harmless	Harmful

Table 5.1 Binaries Established in the Show

The above mentioned binaries in Table 5.1 are all negative and violate the principles of harmony, diversity and co-existence. These linguistic choices predict the nature of an ecosystem in which it is impossible for human beings to survive with aliens. From a biosemiotic point of view, humans associate signs such as "robot", "weapon" and "danger" with the aliens which further reinforces the idea of alterity and proves that humans cannot live with aliens.

5.2.3 Discussion

The data analysis and the findings of this research have made a contribution by leaving an indelible mark on the field of linguistics and biosemiotics. This research has challenged the prevalent assertion that human beings can survive in space through an intertwined approach of the semiotic system of organisms with the use of their language in outer space. This research has not treated language as an independent entity but has rather viewed its function within the broader biological and cultural contexts. This research is theoretical rather than applied, as it does not seek to provide practical solutions for space exploration or environmental policy. Instead, it contributes to the broader field of ecolinguistics by examining how linguistic and semiotic representations construct narratives of ecological anxiety and otherness in outer space. By applying the concepts of solastalgia and alterity to *Lost in Space*, this study offers a conceptual framework for understanding the psychological and emotional dimensions of environmental challenges in extraterrestrial settings. The findings enrich theoretical discussions on the intersection of language, ecology, and media, rather than proposing direct interventions in real-world ecological or aerospace contexts.

At the heart of this research lies the recognition that in order to understand the complexities of human language, it is important to understand the semiotic processes that underpin their subjective realities. An amalgamation of Cheng's EDA model and Sebeok's biosemiotic framework has rendered this research holistic in nature as it has explored the multifaceted dimensions of human communication by not only considering the linguistic exchanges but also the non-verbal, cognitive, cultural and ecological aspects. The communication that has taken place in the context of the show, "Lost in Space" has brought to the forefront the adaptive nature of human language and semiotic system in the face of the pervading ecological challenges. For example, characters are seen navigating between "it" and "him" to refer to alien species throughout the show. This contradictory use of language is also seen with regards to other living creatures of outer space such as "eels" (*It hurts*). This dual characterization of outer space species not only indicates the adaptive nature of human language but it also gives insights into their subjective realities.

This research has coupled a function-oriented linguistic theory with an ecosophical perspective which has brought to light the role of a discourse in shaping our understanding of the outer space environment that consequently promotes ecological consciousness. For example, the narrative of the show, "Lost in Space" has described the environment of outer space in actionable terms. For example, the words and phrases like, "tar", "exploding rocks", "increase in seismic activity" etc. are the linguistic patterns through which the audience can recognize the challenges present in outer space and be more informed about them. Moreover, by using this framework, this research has dismissed the notion of "Diversity, Harmony and Co-existence" in outer space. It shows that in outer space, human language does not recognize and reflect the ideas of "interconnectedness" and "interdependence". The use of the words like "weapon" and "danger" for extraterrestrial intelligence makes the discourse of "Lost in Space" anthropocentric in nature as human beings see themselves independent from and superior to the creatures of outer space and it does not yield ecologically beneficial outcomes. Towards the end of the analysis, it is shown how aliens choose to retaliate after being marginalized by human beings. In this regard, it is also important to consider the role of media in demonstrating the implications of the language choices made by human beings.

The context of the show, "Lost in Space" is crucial as it shows an overlap between ecological grammar and semiotics. The analysis present in the previous chapter has shown

that context plays an important role in shaping our understanding and interpretation of the signs and lexical structures. By combining ecological grammar with semiotics, the analysis of this research reflects a post structuralist approach that meaning is not fixed. Meaning varies from context to context. For example, in the show "Lost in Space", the bioluminescent elongated alien creature having sharp teeth are perceived as "eels" which are relatively different from the ones found on Earth. Moreover, words like "weapon" and "robot" have been expanded to define extraterrestrial species which are huge and metallic with long arms in outer space. This framework has also equipped my research with the analysis of various semiotic resources that contribute to the meaning-making process. For example, in the scene in which Will is trapped in a forest fire, the theme of solastalgia can be analyzed through the tears in his eyes and his open mouth. Similarly, Don's crushing of the sand between his fingers and the blood spewing out of them also symbolize that the environment of outer space is dangerous for human beings. This multimodal approach has enhanced the analysis of this ecological narrative. In addition to this, the analysis of my research has been successful in highlighting the dominant ideologies of human beings through this framework. The dehumanization (use of "it") and marginalization of alien creatures (referring to him as "danger") at the hands of humans could only be brought to the forefront through the analysis of semiotic and linguistic elements which emphasize the theme of alterity.

The analysis of this research has shown the importance of sensory experiences in creating an awareness in human beings about the environment of outer space which consolidates the connection between biosemiotics and this ecological narrative. The relation between sensory foundations and ecosophy is reciprocal. It means that our sensory perceptions influence and shape our understanding of the environment and in turn our environment influences our sensory experiences. For example, Don crushing the sand between his fingers in order to feel its effect on the skin and Maureen cautiously touching the eel wearing blue gloves to examine it are some of the characters' direct sensory interactions with the environment of outer space. Their perceptions of sand and eels being dangerous indicate that our senses determine our initial iconic mode of thought. To adhere to the principles of ecosophy, "Diversity and Harmony, Interaction and Co-existence", it is necessary that our mental models (cognition), social and cultural practices - all foster a more sustainable approach towards the environment. In the show, "Lost in Space", it is the

consistent use of words of negative connotation by human beings that violates the principles of ecosophy; thereby, rejecting the idea of a balanced relationship between humans and their environment. In this context, the painful and distressing sensory experiences are important to consider as iconicity depends on them and this iconicity can later transform into abstract concepts because of cultural diffusion.

Moreover, the interplay between linguistics, ecology and biology in the analysis section has supported the notion of "conceptual idealism" as the fields of ecolinguistics and biosemiotics advocate for a subjectively perceived reality. It is only through a biologically mediated process that Tam and Don possess a different reality about the nature of the sand in outer space. Don's insistence on wearing shoes as a precautionary measure and Tam's rejection of it reflect their subjective mental models. Similarly, John's suspicions about falling down the "crevasse" and Will's disbelief in the occurrence of this phenomenon also signify their biologically different mental models. These examples show that there are external (context) and internal (innate mental models) forces at play that contribute to a subjective and biologically mediated perception. Furthermore, it is not just the linguistic structures that undergo adaptation while interacting with a different environment, but the perceptual systems of human beings go through the same process of adaptation in a different environment. This perceptual adaptation is necessary as it helps in the interpretation of the signs. For example, one of the characters relies on her pre-existing perception of the "cryo geysers" to understand and interpret the process of volcanic eruptions in outer space. They also employ perceptual adaptations many times in order to understand the reality of alien intelligence. From the analysis, I have concluded that the integration of biosemiotics and ecolinguistic in a framework has the potential to encourage an ethical approach towards the environment.

For a nuanced understanding of the environment of space, the analysis of spatial and temporal settings is crucial. For this research, this analysis has been grounded in the Transitivity System which is paired with biosemiotics. On one hand, the transitivity system brings forth the dominant ideologies of human beings with respect to the environment of outer space while on the other hand, the analysis of biosemiotics points towards the immediate ecological issues. In biosemiotics, Thomas A. Sebeok has referred to it as "indexicality". Sebeok looks at indexicality as the most basic category of "conscious" signing...this occurs during the process of identifying things, occasions, and

living things in the world as part of human semiosis Indexicality can appear in a variety of sign symbols, from the usage of words like "here" and "there" to the simple act of pointing with the index finger (Sebeok, 2001). There are many instances in the data analysis section where transitivity interacts with indexicality. For example, “Angela...put the weapon down. That's exactly why I'm *here*”, “Twenty-seven people died crashing *here*”,
“It's dangerous…..He's different *now*” and “What's *that*? What is *that*?” are some of the instances that convey a sense of urgency and prompt for a quick response. The words like, “here”, “now” and “that” also illustrate the influence of the processes on the participants (characters) in outer space.

Along with the Transitivity System, the integration of Mood System with biosemiotics has facilitated my research with the analysis of social and interpersonal context that offers a comprehensive perspective on human communication with respect to alien creatures. The analysis for this research has revealed that humans did not employ any soft persuasion methods (such as politeness and mitigation) that help promote a harmonious relationship between them and aliens. This refusal to adopt any soft persuasion techniques gives an insight into the biological and psychological processes of communication in human beings. Characters in “Lost in Space” perceive aliens as a “threat” or “other” on the basis of their appearance and this reflects their biological and psychological predispositions. The dialogues such as, “What the hell are you?”, “You trust that thing?”, “It's dangerous” and “We don't know how people are gonna react to it. Or it to them” are not beneficial in terms of broader social and environmental sustainability. The characters in the show, “Lost in Space” could have opted for a more cooperative communication that would minimize the possibility of conflicts with alien intelligence; thereby, promoting interpersonal harmony.

5.3 Conclusion

The current research examined the season "Lost in Space" through the perspective of ecolinguistics, with a particular emphasis on two themes: solastalgia and alterity. In the context of this research, these themes have been imbued with the subjective realities of the characters of the show, “Lost in Space”. This means that to understand the influence of the natural processes in outer space on human beings and their interpersonal dealings, I have solely analyzed the non-fundamental mood force of the characters which incorporates their

personal feelings and judgements, and that has largely facilitated in understanding the meaning-making process in outer space by human beings. This mood force has not only illustrated the influence of the processes that have occurred and influenced human beings but also the processes that have a potential or likelihood to affect them negatively which has been demonstrated through "potential semiosis". The analysis of the contextualized experiences of the characters have been fruitful in underscoring the subtleties of mood expressions.

One of the primary advantages of using Cheng (2022) model of EDA along with Sebeok (2001) model of biosemiotics is that this framework has effectively captured the feelings of distress and suffering due to the environmental degradation in outer space. This framework has successfully bridged the gap between scientific and an emotionally charged language that helps humanize the ecological sufferings of human beings; thereby, creating a sense of ecological immediacy. It has also broadened the nature of the ecological narratives as environmental issues in outer space are no longer a scientific problem but their impact should also be analyzed from a social and psychological dimension. Moreover, by highlighting the intimate words or emotional language used by the characters in the show, "Lost in Space", I have tried to show that the idea of outer space exploration is something that needs to be thought through. This framework has successfully addressed the issues of eco-anxiety, and has also been effective in validating the feelings of the characters in the hazardous environment of outer space. This framework has basically highlighted and provided us with a "language of environmental distress" that recognizes and validates the feelings of solastalgia.

Moreover, using this framework I could point out the ways in which human beings constructed social meanings and negotiated their identities through alterity with respect to alien species in outer space. Because of this conceptual framework, I have not neglected the ways in which humans create hierarchies and power dynamics with respect to alien life forms. Through my analysis, I have come to understand that even in outer space, human beings have not been denied the privilege of establishing an identity against aliens which violates the notion of ecosophy. By examining the acts of alterity under this framework, which considers human cognition an instrumental tool through which humans interpret the world, my research has added another dimension (apart from linguistic performances), through which the process of identity construction and negotiation can be analyzed. These

performances of alterity have proved that the characters in the show, *Lost in Space* adhered to the idea of nihilism in outer space which means that they wanted all previously established social structures of the alien planet to be destroyed in order to establish their autonomy which resulted in their relationship with aliens being dragged into anarchy.

Through the findings, I have concluded that the characters in the show, "Lost in Space" have frequently used the language of distress and have frequently performed the acts of alterity which proves that space environment induces solastalgia; and that, it is not possible for human beings to live in harmony with alien life forms respectively. Moreover, the lens of biosemiotic have complimented my analysis by giving me a deep insight into how biological and psychological predispositions come together to form the subjective realities of the characters with regards to their environment.

5.4 Recommendations

This research has proven that humans cannot exist in outer space using the themes of solastalgia and alterity. I have employed a conceptual framework that consists of EDA and Biosemiotic Models. The point of my research was to underscore an eco-destructive discourse in the space environment. Future researchers can analyze other shows situated in outer space from an eco-constructive standpoint. In addition to this, my research has employed a broader model of biosemiotics to analyze the interactions of the characters with the environment of outer space. Future researchers can combine the model of EDA with another branch of semiotics to further analyze and highlight the themes of solastalgia and alterity. For example, to analyze the hazardous nature of the environment and its impact on human beings, future researchers can integrate the model of EDA with Musical Semiotics as sound effects also play a crucial role in conveying meanings and emotional expressions. Moreover, my research opted for the Transitivity System and Mood System from Cheng's Model to analyze the influence of natural processes in outer space on human beings; and, how they construct and assert their identities in relation to alien life forms respectively.

Future researchers can apply other systems from Cheng's Model on the same or a different ecological narrative. For example, they can employ any other system such as appraisal, theme or logical system to further analyze the grammar of this show. In addition to all these recommendations, I also want future researchers to apply the model of Biosemiotics on alien intelligence in order to understand the process of meaning-making from their viewpoint. Lastly, future researchers can also analyze various space discourses within

different media ecosystems in order to analyze how people from different cultural backgrounds perceive the idea of outer space.

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