



THE DELETION OF THE HUMAN AGENT IN ENVIRONMENTAL SCIENCE DISCOURSE: AN ECOLINGUISTIC STUDY

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Abstract

This study explores the use of the strategy of erasure in environmental science discourses to explore the deletion of the agent. Three environmental science textbooks have been chosen for analysis. Stibbe's (2015) framework of erasure has been used as a model for analyzing the data. He asserts that the natural world is marginalized in texts through the use of certain linguistic strategies; these strategies run throughout the whole discourse to construct the erasure of the ecosystem. The researchers aim to identify erasure at the level of void, which is the complete erasure or deletion of the agent from these discourses. Stibbe mentions nine linguistic strategies for the construction of erasure in environmental discourses. These strategies are passive voice, nominalization, co-hyponymy, hyponymy, metaphor, metonymy, construction of noun phrases, transitivity patterns and massification. For the construction of void, the researchers have analyzed the strategies of passivization and nominalization. It has been found that these strategies are pervasive in the discourses, thereby deleting the agent and constructing void. The study suggests a new way to look at the language of ecological discourses and proposes further studies on how euphemistic language in these discourses can negatively influence readers.

Keywords: erasure, mask, void, environmental discourse

INTRODUCTION

The advent of novel technology has led to a proliferation in ecological problems, creating havoc worldwide. There is a pressing need for individual and collective remedial measures to counter these problems. Discourses on environmental problems are imperative to promote such curative actions. For this purpose, environmental discourses have been included in the education curriculum to make young minds aware of environmental problems. Environmental education has been defined as the students' awareness, sensibility and concern for the environment and its continued deterioration (UNESCO, 1976).



Concerning Pakistan, the National Environment Policy 2005 has laid out instructions on incorporating environmental discourses in education. It sets forth a plan for integrating environmental education at all levels, from the primary level to the university level. Moreover, it outlines a scheme for establishing environmental education and training institutes and environmental clubs in all educational institutes.

However, certain loopholes have been identified in environmental education and its language; as a consequence, students are not sensitized towards their calumnious role in the destruction of the environment. El Moussaouy (2014) propounds that EE focuses more on imparting knowledge on the issues of the environment rather than developing skills and abilities among learners to curb these issues and produce positive attitudes towards the environment.

Ecolinguistics has been recently introduced as a new discipline of study within linguistics. This paradigm of study analyses the loopholes in the language that leads to ecological degeneration. Analyzing the language to judge whether a text upholds an ecologically destructive or constructive ideology is the preeminent task of the ecolinguist analyst. Often, discourses endorsing ecologically destructive ideologies are laden with the objectification of the natural world and the ecosystem. Through the play of words and articulate use of language, animals and the natural world are shown as nothing but mere objects that have no life and consciousness of their own. Such objectification rids the authors as well as the readers of any moral responsibility towards nature. Scientific discourses are replete with language strategies that represent animals as specimens or objects of experimentation, denying them the qualities of life and activity; this type of representation promotes the idea that these animals are worthy of exploitation. Fill (2009) termed these linguistic strategies “euphemizing strategies”.

One of the euphemizing strategies used in discourses is erasure, which is the systematic elimination, marginalization, othering and backgrounding of an entity or event otherwise important and worthy of consideration. Stibbe has expounded the concept of erasure as “a story in people’s mind that an area of life is unimportant or unworthy of consideration” (2015, p. 146). Erasure in ecolinguistics is the exclusion or backgrounding of the natural world. Through the use of certain linguistic patterns and devices, language is manoeuvred to construct the erasure of the natural world and the organisms found within it (Stibbe, 2015).



Withal, three erasure patterns are rampant in discourses based on the extent to which erasure is found in these discourses (Stibbe, 2015). The void is the complete exclusion of an entity or event from discourses, whereby the entity is nowhere to be found in discourses. The mask represents reality in a moulded or distorted way; thence, the true nature of something is erased. Lastly, trace is the appearance of something but only in scattered fragments- Stibbe elucidates, “When discourses include mention of ‘something important’ but still manage to erase it by representing it in a vague, weak or abstract way, then this is the third type of erasure, which we will call ‘the trace’ ” (2014, p. 4).

A void is created in environmental discourses when the agent engendering the ecological problems is completely excluded. The expulsion of the human agent from environmental discourses does not direct the responsibility of the ruination of the environment on humans. Such ambiguous and inexplicit statements create doubts in the mind of the readers, and they are not sensitized towards their role in the destruction of the ecosystem. They start to believe that some unknown persons are responsible for this havoc, thence they do not mend ways. The deletion of the human agent is actualized through the linguistic strategies of passivization and nominalization.

Within this framework, Kahn conducted a study (1992) on passive constructions in ecological discourses and claimed that these constructions conceal the doer of the action, whereas the deed is given central importance. He backed this argument by analyzing an article from the Wildlife Society Bulletin, entrenched in scientific experiments on small mammals. He quotes from the article, “... Upon death, coyotes were skinned, eviscerated, and myectomized...”

As manifested in the example above, the deed has been shed light upon, and we have been made aware of the atrocities carried out on the animals, but the doer of the deeds has been veiled. It is as if the actions were carried out without any human input.

Nominalisation is another euphemizing strategy that deletes the agent from discourses. The grammatical category of the verb is changed into a noun with the addition of –ion. Ergo, a noun does not require an agent grammatically, so the author disencumbers himself off the responsibility of including an agent. “The expression of grammatical agency can be avoided by several means in English, including through passivization, use of ergative verbs, and nominalizations” (Schleppegrell, 1997, p. 51). Verb forms like ‘to degrade’ and ‘to pollute’ are



converted into the nominal forms ‘degradation’ and ‘pollution’; such constructions do not entail an agent.

As a consequence of living in a digital world, the environment has to pay a hefty price. Technology is playing havoc in the ecosystem; henceforth, innumerable species are declining and disappearing. As a result, environmental education has been introduced to enlighten learners on the issues of the environment and take measures to heal the environment. However, critics have highlighted certain loopholes in the language of environmental discourses that further environmental deterioration.

Euphemizing strategies are used within environmental discourses that distort the reality of the natural world; such strategies impede sensitizing students towards their destructive role in the ecosystem. One such strategy is erasure and within erasure is the category of the void, which is the complete expulsion of the human agent from environmental discourses. Ecologically harmful actions are left agentless and soulless; thence, learners are not sensitized towards their calumnious role in the ecosystem. Ergo, the current study analyzes the linguistic strategies employed to construct void by deleting the human agent in environmental discourses in the selected texts.

Research Question

How far is void constructed within the environmental discourses in the selected texts through passivization and nominalization?

Delimitations of the Study

The researchers have analyzed only one aspect of the linguistic framework of erasure, namely void. Three environmental science textbooks are examined to study void. Lastly, the researchers have only conducted textual analysis and not the visual analysis of the selected textbooks.

Significance of the study

The present study explores how language has been euphemized to conceal and cloak the human agent in environmental discourses. Drawing attention to this aspect of language use will aid learners in unmasking and discerning these linguistic strategies; after that they can deduce the implied and hidden meanings of these discourses.

Concerning the authors of these discourses, the study will highlight the unfitting language they use for the grave issue of environmentalism. They will be able to ascertain the adverse effect of these discourses on the learners. Thereupon, the study may help in



dysphemizing the language of these discourses. Further, environmental science textbooks have not been analyzed using the linguistic framework of erasure; thus, the study suggests a novel approach for analyzing environmental science discourses.

LITERATURE REVIEW

The ecolinguistic analysis is the study of the interconnectedness of language and ecosystem. It dives deep into determining the ideologies of a text and deconstructs through the linguistic patterns within a discourse, whether they are ecologically destructive or constructive. Ecologically destructive ideologies are shaped by applying several linguistic strategies, one of which is erasure. As the name suggests, erasure in the ecosystem is the expulsion or backgrounding of the natural world in discourses. Deleting agent from environmental discourses is also a form of erasure, whereby a void is created when the agent responsible for ecological destruction is omitted.

Ecolinguistics

Ecolinguistics is the study of language regarding ecology. Ecology, coined by Ernst Haeckel in around 1865, is the study of the relationship of living organisms with each other and the environment (Fill, 2009). Stibbe (2015) proffers that a new paradigm of study is introduced when the already existing ones have erased an important facet of study. Sociolinguistics enquires into the use of language in relation with the society it is being used in. It does not delve into the relationship of language with the natural world. Ecolinguistics was introduced to fill this void. Stibbe (2014) advances that ecolinguistics dissects the relationship of humans with other species and the physical environment since these ecological relationships sustain life. The reminding of a harmonious relationship between humans and the ecosystem is imperative in these compelling times.

Erasure and Void in Ecolinguistics

Ecolinguists venture into the study of discourses to determine whether a piece of discourse endorses a destructive or constructive ideology, actualized through studying and revealing the linguistic patterns and strategies that run across the text. One strategy that constructs a destructive ideology is erasure, the expulsion or marginalization of an otherwise important area of life. Adding on, Stibbe (2015, p.146) used several defining terms for erasure- “suppression, backgrounding, exclusion, abstraction...”

The mention of the ecosystem and its living organisms is pivotal in discourses because



only when an entity is talked about the students can relate with it and develop a moral consideration towards its well being, as put forth in the quote, “We can be ethical only in relation to something we can see, feel, understand, love or otherwise have faith in” (Leopold, 1979, p. 214, as cited in Stibbe, 2017, p. 506).

The enshrouding of important information and expatriation of participants are accomplished through the use of abstract language in discourses (Fairclough, 2003). Abstractions run throughout the text like appraisal patterns, but instead of appraising something as good and bad, they appraise them as unworthy of consideration (Stibbe, 2015).

Abstractions are employed in environmental texts to exclude the human agent who causes havoc in the ecosystem. The deletion of the human agent averts the responsibility from the humans and directs attention towards the action. Without agency, the action becomes incomplete and soulless. Such abstractions are realized through varied linguistic strategies, two of which are passivization and nominalization.

Linguistic strategies for the construction of void

Passive Voice

The well-being of the ecosystem is the fundamental principle of ecosystem discourses, however, the deletion of the agent through the passive structures of sentences is rampant in these discourses. Passivization is when the agent is either deleted or placed towards the end of the sentence while the action is placed in the subject's position. Such constructions avert the responsibility from the human actor and make the deed agentless and incomplete. Agency has been defined by the Longman Dictionary of Language Teaching and Applied Linguistics as “a philosophical term referring to the capacity for human beings to make choices and take responsibility for their decisions and actions” (Richards and Schmidt, 2010, p. 18).

The ecolinguistic analysis deals with various media, including climate assessment reports, science experiment reports, news reports, and scientific reports. Pertaining to science experiment reports, Kahn (1992, as cited in Fill et al., 2001) investigated the construction of passives and brought to light that these discourses are laden with such constructions, excluding the agent and highlighting the action only. About passive constructions, Kahn puts forth, “It is indeed a passive, soulless voice... perfectly reflective of a mode of thinking that proceeds outside the moral realm of active responsibility” (1992, as cited in Fill et al., 2001, p. 242).



Miles and Larouz (2018) studied 14 environmental texts in Moroccan English language teaching textbooks within this framework. They delved into the use of euphemistic language and passive construction in texts. They resolved that these texts were brimming with passive constructions, whereby the human agent was systematically erased, and the deed was left incomplete, agentless and soulless. In this way, the reality is cloaked, and only the information befitting the human race is put forth. It is rather analogous to the use of euphemistic language by politicians and government officials, who state facts in a soulless, passive voice, therefore not taking any moral responsibility for their actions.

Nominalization

Nominalisation is an important linguistic strategy through which language is manoeuvred so that grammatically an agent is not required with the action. In nominalized constructions, the grammatical category of the verb is transformed into a noun; nominalized actions thereby do not require an agent. Verb forms like ‘to destroy’ and ‘to pollute’ are converted into ‘destruction’ and ‘pollution’, erasing the need of a doer.

Assessing the effacement of agency, Schleppegrell (1997) engaged in a study on the discourses on ecology that are used as teaching material by teachers. Highlighting nominalization, he quotes,

Human-induced changes in the environment, such as pollution, habitat degradation, and the introduction of exotic species, push the limits of nature’s resilience and may lead to irreversible environmental damage and biodiversity loss on human time scales. (p. 54)

The quote mentioned above makes it evident that nominalized forms like pollution, degradation, the introduction of exotic species, and biodiversity loss are rampant in these discourses. The author manipulates language to rid him off the responsibility of mentioning an agent since nominalized forms do not grammatically require one.

Following the literature review on erasure and the deletion of agency in ecolinguistic analysis, it has come to the researchers’ attention that erasure and the exclusion of the agent have not been explored in environmental texts. Therefore, the researchers have committed to filling the void and studying passive and nominalized constructions in environmental discourses.



THEORETICAL FRAMEWORK

Research Method

The researchers have used a qualitative approach to study the linguistic strategies of passive voice and nominalization used in the selected textbooks of environmental sciences to construct void. The model used as a lens is Stibbe's linguistic framework of erasure given in his book, *Ecolinguistics: Language, ecology and the stories we live by* (2015). It is exploratory research focusing on the language of the textbooks.

Erasure

Erasure is the systematic exclusion, backgrounding or marginalization of an otherwise important entity or event from a discourse. It is a pattern that runs throughout the discourse, i.e. erasure is not constructed in a sentence or two; rather, it permeates throughout the entirety of the text. The construction of erasure is actualized through certain linguistic strategies, which Stibbe has proposed in his linguistic framework of erasure (2015). Depending on the level of representation of erasure in texts, Stibbe categorizes it into three categories: void, mask and trace. Void is the complete exclusion of an area of life from discourses; mask is the distorted representation of reality, while the trace is the partial erasure of an area of life (Stibbe, 2015).

The Void

The complete obliteration of an area of life from discourses is called void. In ecological discourses, the void is constructed when the agent who causes the wreckage of the environment is completely effaced. The agent behind the ecologically harmful activities is cloaked to avert the responsibility from humans. Void is constructed through the employment of the strategies of passive voice and nominalization.

Passive voice is an important strategy of deleting the agent or rendering him insignificant and unworthy of attention. The action takes the subject's place, while the doer of the action is either mentioned towards the end of the sentence or not mentioned at all. In this way, the agent is appraised as unworthy of attention, which conduces to insensitivity among the readers towards their individual and collective roles in the degeneration of the ecosystem.

Nominalizations play the same role as passive constructions, whereby the agent is deleted from the scenario, hence implying that an ambiguous and vague entity has committed the action. Schleppegrell (1997) has studied nominalizations in environmental discourses and seen how the erasure of the agent leaves the message partial and incomplete. Although the



readers are elucidated about the harmful activities that hamper the natural world, the doer is cloaked to avert responsibility.

Sample

The choice of the three environmental science textbooks in the study is ascribed to the fact that they are recommended by the Higher Education Commission (HEC) of Pakistan for the environmental sciences undergraduate program. The books are:

1. Environmental science: Earth as a living planet. (Botkin & Keller, 2011)
2. Environmental science: Towards a sustainable future. (Wright & Boorse, 2017)
3. Environmental science: Working with the Earth. (Miller, 2006)

Foreign writers have authored the books mentioned above; however, they are taught in Pakistani universities, and Pakistani students are elucidated about their contents.

The purposive sampling technique is employed for the selection of distinctive chapters from the textbooks. Chapters that are rampant with the usage of erasure and are fraught with instances of agent deletion are selected and analyzed. The selected units are mentioned below:

1. Environmental science: Earth as a living planet.
 - Chapter 1 – Key themes in environmental sciences (p. 1-21)
 - Chapter 7 – Dollars and environmental sense: Economics of environmental issues (p. 127-142)
 - Chapter 9 – Ecological restoration (p. 169- 184)
 - Chapter 13 – Wildlife, fisheries, and endangered species (p. 257- 285)
2. Environmental science: Towards a sustainable future
 - Chapter 1 – Science and environment (p. 2- 22)
 - Chapter 6 – Wild species and biodiversity (p.126-154)
 - Chapter 7 – The value, use, and restoration of ecosystems (p.155-182)
3. Environmental science: Working with the Earth.
 - Chapter 1 – Environmental problems, their causes and sustainability (p.5-18)
 - Chapter 6 – Community ecology, population ecology, and sustainability (p. 108- 127)
 - Chapter 8 – Sustaining biodiversity: The ecosystem approach (p. 154- 182)
 - Chapter 9 – Sustaining biodiversity: The species approach (p. 183-205)



After the assortment of the chapters mentioned above, paragraphs containing instances of void are chosen. A total of 171 paragraphs where void is constructed are identified in the three books: Environmental science: Earth as a living planet – 47 paragraphs, Environmental science: Towards a sustainable future – 63 paragraphs and Environmental science: Working with the Earth – 61 paragraphs. A total of 93 paragraphs were chosen: Environmental science: Earth as a living planet – 31, Environmental science: Towards a sustainable future – 34 paragraphs and Environmental science: Working with the Earth – 28 paragraphs. The selected paragraphs are analyzed.

DATA ANALYSIS

Introduction

Stibbe (2015) gives a number of linguistic devices for building erasure in a text in his linguistic framework. These linguistic strategies include passive voice, nominalization, metonymy, hyponymy, co-hyponymy, massification, construction of noun phrases, metaphors and transitivity patterns. Within erasure, three categories are constructed depending on the extent to which erasure is prevalent in texts. One of the categories is void, which is the complete exclusion of an area of life from discourses and hence, our consciousness (Stibbe, 2015).

Concerning void, the deletion of the human agent is explored by the researchers. The researchers have selected two linguistic strategies that exclude the agent from discourses: passivization and nominalization. The researchers have undertaken the task of unfolding the strategies of passivization and nominalization employed in the selected textbooks to construct void.

The void

The complete erasure of an important piece of information is known as void. It is defined by Stibbe (2015) as “where ‘something important’ is completely excluded from a text” (p.149). The linguistic strategies of passivization and nominalization have been dug out by the researchers from the selected textbooks to ascertain how void has been constructed in these discourses. The creation of void with reference to the deletion of the human agent in environmental discourses leads to ambiguity in the readers' minds.

Passive voice

Passive voice is a strategy whereby an action or verb is emphasized rather than the subject. The doer of the action is omitted, and the deed is shed light upon instead.



Passive Voice in Environmental Science: Earth as a Living Planet

The instances of passive voice within this textbook are manifold. Some instances have been listed below:

- 1.1. "...20 lions killed, 17 were speared and 3 were poisoned..." (p. 4)
- 1.2. "...conversion of some corn production to biofuels..." (p.6)
- 1.3. "...emission of modern chemicals..." (p. 10)
- 1.4. "...burning fossil fuels increases the concentration of greenhouse gases..." (p.10)
- 1.5. "...urban areas expand, wetlands are filled in, forests cut down, and soils covered over with pavement and buildings." (p.11)
- 1.6. "...depletion of resources..." (p.17)
- 1.7. "...burning wood in fireplaces..." (p.131)
- 1.8. "...overcrowding of national parks, wilderness areas, and other nature-recreation areas." (p.131)
- 1.9. "Both overfishing and pollution have been blamed for the alarming decline in groundfish..." (p.139)
- 1.10. "...much of the Everglades has been drained for agriculture and urban development..." (p.170)
- 1.11. "...Thousands of streams have been degraded by urbanization, agriculture, timber harvesting, and channelization..." (p.173)
- 1.12. "...inappropriate land use..." (p. 174)
- 1.13. "Turning the meandering river...degraded the river ecosystem...reduced the wetlands and populations of birds, mammals, and fish." (p. 174)
- 1.14. "Extensive browsing dramatically reduces the abundance of riparian plants, damaging the stream environment..." (p. 176)
- 1.15. "...prairie has declined as a result of land-use changes that have led to the loss or fragmentation of habitat." (p. 177)
- 1.16. "...construction of a flood-control channel...damaged an area of saltwater marsh." (p.181)
- 1.17. "The grizzly became endangered as a result of hunting and habitat destruction." (p. 258)



- 1.18. "...bisons are ranched..." (p. 259)
- 1.19. "Records of the number of buffalo killed...2 million buffalo were killed."
(p.264)
- 1.20. "For marine fish caught with lines and hooks..." (p.267)
- 1.21. "...fish are depleted..." (p.269)
- 1.22. "...fish population...are generally declining, easily exploited, and difficult to restore." (p.271)
- 1.23. "...whales were brought on board and processed..." (p.277)
- 1.24. "...some of the animals were trapped and drowned." (p.279)
- 1.25. "By intentional hunting or harvesting..." (p.279)
- 1.26. "The development of agriculture and the rise of civilization led to rapid deforestation and other habitat changes." (p.279)

As put forth by Stibbe, an area of life is not explicitly and unequivocally rendered insignificant or unworthy of mention; it is done implicitly by carefully manoeuvring language in a way to background or exclude the entity or event (2015). This careful manoeuvring of language has been carried out by the author to delete the agent from the picture. It is evident in the phrases, clauses and sentences that the agent has been recurrently erased to avert responsibility from the humans.

Often, we have been enlightened about the harmful actions carried out on the ecosystem, but this message has been left incomplete; the doer of these actions has been shrouded, averting responsibility from him. Lions are poisoned and mercilessly killed, corn is converted into biofuel, chemicals are emitted, fossil fuels are burned, forests are brought down, resources are depleted, water channels are degraded, sea animals are overfished, habitats are degraded and fragmented, animal species are being endangered, and several other such environmentally degrading activities are occurring worldwide. However, the executor is not known, and the message is left vague and partial. Example 1.9 puts forth that groundfish is lessening, but the doer of this decline has been enshrouded. Is the decline happening because of fish hunters? Or is it because of the increasing number of consumers of groundfish? Or is it because of the industrial units that harvest this fish for manufacturing a specific product from its body parts? Such ambiguities arise when partial messages are conveyed, leading to vagueness, which convinces the readers that the doer is some unknown entity. It shuns even



the tiniest possibility that the doer could be the reader himself. Thus, such statements do not sensitize the readers towards their derogatory role in hampering the natural world, and they read these descriptions as though directed towards an unknown entity.

Passive Voice in Environmental Science: Towards a Sustainable Future

Likewise, in this text, passive voice for the construction of the erasure of the human agent has been used abundantly.

- 2.1. "...natural ecosystems... have been declining." (p.3)
- 2.2. "...ecosystems goods and services...were being degraded or used unsustainably." (p.5)
- 2.3. "...increases in the volume of this gas affect temperatures." (p.7)
- 2.4. "...conversion of forests, grasslands, and wetlands to agriculture and urban development." (p.8)
- 2.5. "species...many are hunted, killed, and marketed illegally." (p.8)
- 2.6. "unique, wild areas of the United States were disappearing." (p.9)
- 2.7. "half of the CO₂ produced by burning fossil fuels and producing cement." (p.8)
- 2.8. "The indiscriminate killing of birds and other animals" (p.10)
- 2.9. "The air in and around cities was becoming murky and irritating to people's eyes and respiratory systems. Rivers and beaches were increasingly fouled with raw sewage...conspicuous declines occurred in many bird populations..." (p.10)
- 2.10. "These rivers may be highly polluted, heavily divided by dams, and crowded with fishers." (p.126)
- 2.11. "In time, many living species were exploited to extinction, and others disappeared as their habitats were destroyed." (p.128)
- 2.12. "...any degradation of that environment affects commercial interests." (p.131)
- 2.13. "continuing depletion of the biodiversity of our planet." (p.135)
- 2.14. "Global forest cover has been reduced by 40% already..." (p.135)
- 2.15. "The species is endangered because its habitat has been greatly fragmented..." (p.136)
- 2.16. "streams are channelized" (p.136)
- 2.17. "...and sometimes the stream is straightened out...such alterations inevitably reduce the diversity of fish and invertebrates that live in the stream." (p.137)



- 2.18. “Shrimps, fish, crabs, and other commercially valuable sea life are either killed or forced to migrate away.” (p.139)
- 2.19. “Forests and woodlands are overcut for firewood, grasslands are overgrazed, game species are overhunted, fisheries are exploited, and croplands are overcultivated.” (p.140)
- 2.20. “Each year, 35,000 elephants are killed.” (p.150)
- 2.21. “...cases of overuse and depletion of resources...” (p.161)
- 2.22. “...extinction of the passenger pigeon, caused by the unregulated hunting of wild flocks of birds.” (p.163)
- 2.23. “...80% of the native grasslands have been converted to agriculture and other purposes.” (p.168)
- 2.24. “...18 million hectares...of mangroves have been cut down.” (p.171)
- 2.25. “The ecosystem was degraded by the channelization of rivers and streams, the excessive withdrawal of water, and pollution.” (p.177)
- 2.26. “...degraded farmland, its sandy soil depleted by years of unrelenting use...” (p.178)

When readers who are not explicitly told that they are responsible for a great deal of ecological damage they would conjecture from the given examples that only the poachers or industrialists are responsible for most of these actions. Little would they be able to infer that they may be the biggest source of these damages.

Discourses are bound to exclude some areas of life because “erasure is intrinsic to the very nature of discourses” (Stibbe, 2015, p. 146)- it is the analyst's task to bring the excluded areas to the forefront, declaring them salient. One area of paramount importance is the agent of ecological destruction in environmental discourses.

Example 2.2 suggests that natural goods are used unsustainably, however from the statement, readers cannot decipher that they could be the one using these resources unsustainably. The wastage of paper is a very common way of exploiting the natural goods; the example does not specify that the readers could be causing this exploitation. Similarly, in example 2.4, converting greenery into buildings or infrastructure is committed on the individual level. Every individual who owns the property is responsible for cutting down trees and converting land. However, the statement does not specify this; instead, it presents this



information rather vaguely, putting the responsibility on some unknown construction companies. Moreover, example 2.9 proffers that cities and the air in cities are becoming fiercely polluted and irritating to people's eyes. One major cause of this pollution is vehicles, which are owned by every well-to-do individual. Thereby, the blame falls on every one of us, however, the statement does not define this, and the readers are made to believe that mainly the industrial units are blameable for the havoc. In example 2.10, we have been alerted that rivers are becoming polluted, but the polluter has been veiled, leaving the message incomplete.

These kinds of descriptions produce ambiguity in the minds of the readers, and they start to believe that some unknown poachers, hunters, industrial units and construction industries are responsible for the dishevelment in the ecosystem- they are not acquainted with the role of the individual in the wreckage as the authors do not explicitly mention the human agent.

Passive Voice in Environmental Science: Working with the Earth

The authors make profound use of passive voice as a linguistic strategy to erase the agent, destroying the natural world.

- 3.1. "an irreversible loss to the earth's variety of life forms, or biodiversity." (p.5)
- 3.2. "...the clear cutting of ancient forests..." (p.8)
- 3.3. "...areas that have been already cleared or degraded." (p.8)
- 3.4. "Overuse of common-property or free-access resource" (p.10)
- 3.5. "pesticides sprayed into the air" (p.12)
- 3.6. "...indoor air pollutants produced by burning wood or coal" (p.14)
- 3.7. "...amphibian species have been vanishing or declining..." (p.111)
- 3.8. "...environmental changes such as loss or fragmentation of their habitats and introduction of chemical pesticides." (p.111)
- 3.9. "Sharks are caught mostly for their fins and then thrown back alive..." (p.111)
- 3.10. "Sharks are also killed for their lives, meat...hides...and jaws." (p.113)
- 3.11. "...burned or cut forests, heavily polluted streams, and land that has been dammed or flooded." (p.119)
- 3.12. "Some species are overharvested." (p.124)
- 3.13. "Illegal hunting or poaching endangers wildlife species..." (p.124)



- 3.14. “...from burning fossil fuels and from clearing and burning forests and grasslands.” (p.124)
- 3.15. “Cutting down large areas of forests reduces biodiversity...” (p.155)
- 3.16. “...marine fish species are either overfished or fished to their estimated sustainable yield.” (p.156)
- 3.17. “40% of US commercial fish stocks are depleted or overfished.” (p.156)
- 3.18. “...tropical forest habitats were cleared or degraded.” (p.169)
- 3.19. “...16-47% has been deforested or degraded and converted mostly to tropical grassland (savanna).” (p.169)
- 3.20. “Brazil’s Atlantic coastal rain forest... 93% of it has been cleared...” (p.169)
- 3.21. “Island species...when their habitats are destroyed, degraded, or fragmented.” (p.190)
- 3.22. “Some protected species are illegally killed for their valuable parts or are sold live to collectors.” (p.195)

Often, passive voice has been employed to elide or marginalize the agent responsible for the deterioration of the natural world. Although the ecologically calamitous actions have been thrown light upon, the actor has been unexposed, leaving a void. Within this framework, Stibbe propounds, “something important, something that we should be giving attention to, has been ignored, sidelined or overlooked within a text or discourse” (2015, p. 146).

The human agent has been frequently cloaked in the instances mentioned above: the degrader in example 3.3, the killer in example 3.10, the over harvester in example 3.12, the hunter and poacher in example 3.13, the fisher in example 3.16 and the degrader and destroyer in example 3.21 have been enshrouded. The readers are enlightened about the destructive actions carried out on the ecosystem but who carries them out is left unexposed.

Nominalization

The nominal construction of verbs plays a significant role in leaving the message of the destruction of the ecosystem incomplete, thus creating a void. Verb forms like ‘to destroy’ and ‘to pollute’ are converted into nouns ‘destruction’ and ‘pollution’ by adding –ion towards the end. Such constructions grammatically do not require an agent/actor; thus, the author rids himself of the responsibility of mentioning the agent through the play of words.



Nominalisation in Environmental Science: Earth as a living planet

From the selected textbook, some examples have been shed light upon.

- 1.1. "...conversion of some corn production to biofuels..." (p.6)
- 1.2. "...emissions of modern chemicals..." (p.10)
- 1.3. "...depletion of resources..." (p.17)
- 1.4. "...degradation of the commons." (p.131)
- 1.5. "major resource deterioration" (p.131)
- 1.6. "production of nickel...has serious environmental effects." (p.134)
- 1.7. "degradation of the environment" (p.134)
- 1.8. "Ecosystems of all types have undergone degradation...widespread loss and degradation..." (p.173)
- 1.9. "Thousands of streams have been degraded by urbanization, agriculture, timber harvesting, and channelization..." (p.173)
- 1.10. "Such a shift in the age structure of a harvested population is an early sign of overexploitation." (p.264)
- 1.11. "Exploitation of a new fishery..." (p.269)

Nominalisation is a powerful device for creating void; as Stibbe puts forth, "Nominalizations can be particularly powerful devices of erasure" (2015, p. 147). Terms like conversion, emission, depletion, degradation, deterioration, urbanization and overexploitation have been applied instead of the verb forms to elude the agent from the description. The agent is so tactfully cloaked that the readers do not find fault with the statements. The actor becomes an abstract entity that cannot be identified and put the blame upon. Therefore, the readers cannot discern the actor that caused the emissions, depletion and degradation; they are not familiarized with their role in these ruinous activities. Such constructions also rid the author of any responsibility since grammatically, he is not required to put an agent with the nominalized forms.

Nominalisation in Environmental Science: Towards a sustainable future

Within this textbook, too, many instances of nominalization to delete the human agent have been noticed. Some of them are mentioned below.

- 2.1. "degradation and overexploitation of ecosystem resources" (p.5)
- 2.2. "Environmental degradation, resource misuse, and disastrous events..." (p.9)



- 2.3. “heavy exploitation of natural resources” (p.11)
- 2.4. “destruction of the environment” (p.18)
- 2.5. “environmental degradation” (p.19)
- 2.6. “degradation of ecosystems, atmospheric changes, losses of species, and depletion of water resources.” (p.20)
- 2.7. “...the exploitation of oceanic fisheries...” (p.20)
- 2.8. “widespread degradation of essential ecosystems” (p.21)
- 2.9. “...the highest rate of deforestation.” (p.135)
- 2.10. “habitat destruction” (p.135)
- 2.11. “destruction of the trees” (p.135)
- 2.12. “Severe deforestation in Haiti” (p.136)
- 2.13. “...coral reef degradation, nutrient pollution, and habitat fragmentation...” (p.151)
- 2.14. “...coral reefs...habitat degradation.” (p.156)
- 2.15. “...collection of wild species of plants and animals for cultivation and domestication.” (p.160)
- 2.16. “the exploitation of common-pool resources” (p.162)
- 2.17. “Exploitation of the resource...” (p.163)
- 2.18. “Cattle production is the largest cause of deforestation in the Amazon region.” (p.166)
- 2.19. “Plowing, overgrazing and over-irrigation cause erosion and salinization.” (p.168)
- 2.20. “Grasslands around the world have experienced similar degradation.” (p.168)
- 2.21. “destruction of prairies, bison, and birds” (p.174)
- 2.22. “...problems of pollution and habitat destruction...” (p.175)
- 2.23. “deforestation, overgrazing, desertification, and the eutrophication of lakes” (p.177)
- 2.24. “Overconsumption of water from the Rio Grande causes stretches of the river to periodically run dry.” (p.179)
- 2.25. “...exploitation of a commons...” (p.181)



Stibbe sets forth that the underlying structures ‘A destroys B’ and ‘A pollutes B’ are encapsulated into single nouns like destruction and pollution, causing the actor's deletion from discourses.

In the first example, it is evident that natural resources are being exploited, but the nominalized forms leave the message partial, emphasizing the act of exploitation rather than the actor responsible for the exploitation. Likewise, the term degradation appears oft times in the discourse as is manifested in the given instances. Very seldom did the researchers come across the verb form ‘to degrade’ of this nominalized form, therefore putting stress upon the act instead of the executor of the actions.

Nominalisation in Environmental Science: Working with the Earth

Akin to the previous textbooks, this textbook also uses the nominalization strategy abundantly to construct the erasure of the human agent.

- 3.1. “natural capital degradation” (p.6)
- 3.2 “Examples of such degradation include urbanization of productive land, excessive topsoil erosion, pollution, deforestation...groundwater depletion, overgrazing of grasslands by livestock, and reduction in the earth’s forms of wildlife (biodiversity) by elimination of habitats and species.” (p.10)
- 3.3. “degradation of renewable free-access resources” (p.10)
- 3.4. “Natural capital degradation” (p.13)
- 3.5. “environmental degradation” (p.15)
- 3.6. “...the resulting pollution and environmental degradation” (p.15)
- 3.7. “degradation of renewable resources” (p.15)
- 3.8. “...high levels of pollution and environmental degradation...” (p.15)
- 3.9. “resource use, pollution, and environmental degradation” (p.16)
- 3.10. “resource depletion and degradation” (p.17)
- 3.11. “habitat fragmentation” (p.109)
- 3.12. “environmental disruption” (p.111)
- 3.13. “Habitat loss and fragmentation (especially from draining and filling of inland wetlands, deforestation, and development.” (p.111)
- 3.14. “...environmental changes such as loss or fragmentation of their habitats and introduction of chemical pesticides.” (p.111)



3.15. “Natural capital degradation” (p.155)

3.16. “world’s ocean...open-access resource, subject to overexploitation...” (p.180)

3.17. “...the greatest threat to wild species is habitat loss...degradation, and fragmentation.” (p.190)

3.18. “Deforestation...destruction of coral reefs and wetlands...and pollution of streams, lakes, and oceans.” (p.190)

Pivotal to the discourse of environmental science is the protection, sustainability and well-being of the environment. The protection of the ecosystem can only be actualized if every individual is elucidated on his/her role in the torpedoing of the natural world. However, environmental discourses do not do justice to the environment since they veil the actor responsible for the wreckage.

As is obvious from the above examples, terms like urbanization, degradation, pollution, deforestation, depletion, elimination, disruption, fragmentation, and overexploitation are excessively employed to keep the agent under wraps.

FINDINGS

The main findings and discussion of the study are as follows:

1. The researchers have found that the deletion of the agent is highly prevalent in the selected environmental science textbooks.
2. In Environmental Science: Earth as a living planet, there are 57 instances of void in Environmental Science: Towards a sustainable future. The researchers found 74 instances where the void was seen, and in Environmental Science: Working with the Earth void was found in 70 places.
3. The strategies of passive voice and nominalization have been both employed to construct the deletion of the agent.
4. One hundred forty-six instances of passive voice were found in the three textbooks altogether, and 55 instances of nominalization were found.

DISCUSSION

The expulsion or sidelining of the human agent from discourses and emphasizing the action are called passivization. This strategy changes the active structure of a sentence, whereby the subject is deleted and replaced by the action. Where the human is the cause of environmentally harmful activities, he is omitted to avert the blame. Kahn has studied such



passive constructions in an article from the Wildlife Society Bulletin (1992). His study's findings unveil a complete lack of active voice/agency in scientific discourses on animal experimentation; thus, the actor who carries out these experiments and the atrocities on the animals used as a sample is deleted. Such findings are analogous with that of the present study, whereby passivization is rampant in the selected textbooks of environmental sciences. The studies differ in the aspect that Kahn studied scientific discourses while the researchers studied environmental science discourses.

Nominalizations have been analyzed by Schleppegrell, who studied pedagogical texts on environmental issues. He discovered that environmental texts are enshrouded in abstractions, which are constructed through the use of nominalization. "Environmental problems are presented as pre-packaged nominalizations: habitat loss, introduced species, pollution, and other problems that, presented as nouns, have no agents or actors that are recoverable" (1997, p.64). Loss of agency is a prevailing practice in these discourses, whereby averting the responsibility from humans. The findings of Schleppegrell's study go parallel with those of the current study, whereby passivization and nominalization are excessively employed in the texts to cloak the agent.

CONCLUSION

Language is a powerful tool that shapes and constructs a society. Loopholes in language can, on the other hand, lead to unfavorable consequences. One such loophole is the deletion of the human agent from environmental science discourses that creates a void and leaves the message of the destruction of the ecosystem deficient. The study has shown that this type of erasure is highly pervasive in the selected textbooks. The linguistic strategies of passive voice and nominalization often have been employed in the discourses to delete the human agent. Mere stress on the baleful actions does not suffice since the readers are not familiarised with their deprecatory role in the ecosystem.

A rethinking of the language of environmental sciences is imperative to bring the human agent to the forefront. The researchers thought it pivotal to shed light upon the destructive use of passive voice and nominalization in discourses. Eminence needs to be given to the inclusion of the human agent in ecologically destructive descriptions aiming to sensitize readers towards their destructive role.



Recommendations for Future Research

The recommendations based on the current study are as follows:

1. A study on the analysis of images and how they construct void can be conducted.
2. The influence of environmental discourses on students and whether the text sensitizes them towards their derogatory role in the ecosystem could be explored. It could be seen whether or not the strategy of erasure and the use of euphemistic language impact the readers and students.

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