

Grammatical Mechanism in Environmental Discourse: An Ecolinguistics Study of Voice, Nominalization and Metaphor

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Abstract

Against the backdrop of growing global attention to environmental issues, language, as a key tool for constructing environmental awareness, plays an indispensable role. This study explores the role of three grammatical structures, namely passive voice, active voice, and nominalization, in environmental discourse. Based on foregrounding theory, transitivity analysis, grammatical metaphor, and green grammar, this research conducts a case analysis of environmental discourse about various environmental topics, demonstrating how grammatical structures shape the transmission of information and the cognitive responses of recipients, particularly the articulation and comprehension of environmental topic discourse. The study ultimately aims to reveal how these grammatical structures collectively intensify the sense of urgency and responsibility associated with environmental issues for both sides of writers and readers.

Keywords: ecolinguistics, grammar structure, environmental discourse analysis, cognitive metaphor

1. Introduction

The representation of environmental crisis pertains to the formation of attitudes and the stimulation of environmental issues. Linguistics, particularly ecolinguistics, provides a theoretical basis for studying the role of language in those issues. Specifically, language is not just a neutral medium for conveying information but also influences our interpretation and reaction to related information. Therefore, the choice of grammatical structures in environmental discourse can play a decisive role in understanding the complexity and urgency of environmental crises.

Specifically, this paper focuses on three grammatical structures in English — active voice, passive voice, and nominalization — to explore their specific roles in articulating and understanding environmental issues. Integrating green grammar and grammatical metaphor theory, this study employs stylistic analysis to examine how these grammatical structures work together to enhance the urgency and sense of responsibility in environmental topics. Additionally, this paper investigates how these structures influence cognitive levels, namely through linguistic metaphors and frameworks that shape the thought patterns and

cognitive structures of the audience. This paper aims to provide scientific linguistic strategies for environmental education and policy-making, to foster more effective environmental actions and policy support.

2. Literature Review

The emergence of environment discourse analysis, particularly ecolinguistics, signifies the growing linguistic community's attention to environmental issues. In this field, language is regarded as a dynamic system that not only reflects but also shapes cognition and attitudes toward the environmental crisis. Linguistically, Hu (1999) has revealed the complex interaction between environmental topics and linguistic expression, emphasizing the importance of understanding this interaction for effective environmental communication. Particularly on the syntactic level, Alexander, Richard, and Arran Stibbe (2014: 108) have explored the significant role of green grammar in conveying concepts of environmental protection, highlighting the criticality of grammatical choices in shaping eco-friendly discourse. In terms of stylistic analysis, systemic functional linguistics provides a theoretical framework for the relationship between grammatical structures and meaning construction, used to analyze how grammatical structure impacts the transmission and reception of information. Especially in the context of environmental topics, all these theories aid in understanding how specific grammatical structures construct cognition and attitudes toward environmental issues, which was supported by Fan's research (2005: 113-115) revealing the role of specific grammatical forms in strengthening or weakening the sense of urgency in discourse.

Previous researches on environmental discourse analysis mainly focused on lexical choices (Mühlhäusler, 2003; Nerlich, 2012), textual organization (Fill, 2015; Couto, 2021), narrative styles (Goatly, 2000: 780) and cross-cultural level (Maphosa, 2021; Poudel, 2021; Stibbe, 2021), but with insufficient attention to grammatical structures — an important factor in shaping meaning and emotional tone. Therefore, this study aims to fill this gap by exploring the use of English grammatical structures and analyzing their impact on environmental topics.

Some influential research on grammatical structures of environmental topics adds new dimensions to this field. For instance, Nanson's

work (2021: 76) focused on how grammatical structures are used to intensify or mitigate the attribution of responsibility for environmental issues, revealing the potential impact of grammatical choices on shaping public attitudes and actions. Stibbe (2015) discussed how stories constructed through language, including grammar, can contribute to an ecologically sustainable future. Ungerer (2000) examined how nominalizations affect the conceptualization and communication of environmental issues, particularly in scientific and public discourse. These studies collectively form the foundation for understanding grammatical structures in environmental topics.

Although existing studies have focused on the role of grammatical structures in the articulation of environmental topics written in various languages (Döring & Nerlich, 2005; Salazar, 1999; Wang, 2006), there is still lacking on how English grammatical structures — crucial factors in constructing meaning and emotional tone — impact the cognition and articulation of environmental issues. Therefore, this study aims to contribute new empirical research to the field of ecolinguistics by analyzing the patterns of English grammatical structures and their effects on the understanding and articulation of environmental topics.

3. Research Question

How do grammatical structures affect the articulation and understanding of environmental issues? This study conducted ecolinguistics discourse analysis of three grammatical structures (passive voice, active voice, nominalization) within news reports, academic publications, and government announcements about environmental issues, through which we explored how environmental texts boosted the urgency and responsibility of environmental issues by the choice of grammatical structures and how these structures shaped both the cognition of information recipients and the attitude towards related environmental problems. Additionally, the study examined the mixed effects of the combined use of three grammar structures in the discourse expression of various environmental topics.

The goal of this research is to reveal how grammatical structures influence the representation strategies of environmental issues and the cognitive attitudes of the public in different contexts, providing more effective

linguistic strategies to generate appealing publicity for environmental-protecting education.

4. Case Analysis

4.1 Passive Voice

Foregrounding and transitivity are key theories for understanding how language shapes environmental issues. Foregrounding, proposed by Halliday (1985), is a kind of discourse strategy of the usage of unconventional language forms to highlight special information, making it more prominent and significant in the text. For example, specific grammatical structures in environmental topics, such as passive voice, can be used to emphasize the significance and urgency of certain environmental issues by placing the main content before any other information in the whole sentence, rendering them the focus of the reader's attention. In addition, transitivity in environmental text involves how verbs interact with other sentence components, revealing the relationship between the actor and the affected entity, thereby either highlighting or hiding the attribution of responsibility for environmental issues. Goatly (2000) noted that transitivity plays a crucial role in conveying specific meanings and eliciting emotions through texts focused on a particular theme. The following three cases in passive voice foreground specific elements to convey the urgency of earth pollution and the sense of responsibility for environmental issues through the transitivity mode.

Example (1) *The river was polluted by the factory.*

Example (2) *Thousands of species have been driven to extinction.*

Example (3) *Global temperatures have been increased significantly.*

In Example (1) foregrounding is achieved by placing "the river" at the beginning of the sentence, emphasizing its role as "the polluted entity". In terms of transitivity, although "the factory" is mentioned, the use of passive voice downplays its prominence as the source of pollution, instead highlighting the pollution event itself and the severity of the environmental damage. Example (2) foregrounds "thousands of species," making the concept of species extinction more salient in the sentence. According to the transitivity mode, the main actor is omitted, and this omission highlights the extent and profound

consequences of species extinction rather than specific responsible parties, indirectly weakening the attribution of responsibility to environmental polluters and naturally shifting the focus. Contrasting to the previous two examples, the passive voice in Example (3) focuses on the subject "Global temperatures," highlighting the reality and impact of climate change, which is the main subject of environmental issues. Further, the employment of transitivity reveals that this climate change is driven by external factors (mainly indicated by human activities) instead of natural phenomena, thereby emphasizing the negative impact of human activities on the environment.

These examples demonstrate how passive voice in the articulation of environmental issues not only foregrounds elements of environmental damage but also advances the attribution of responsibility for ecological problems through its well-organized transitivity structure and the placement order of information (always placing the main subject before any other content in the sentence). As Steffensen and Fill (2014) pointed out, specific grammatical choices can build a stronger consciousness of environmental protection in the minds of readers. This strategy is particularly important in environmental communication as it not only conveys basic as well as crucial information but also stimulates readers' primary attention and sometimes actions on environmental issues.

4.2 Nominalization

Grammatical metaphor involves using one grammatical form (such as a noun) to express a concept typically expressed by another form (such as a verb or adjective). This form of transformation is particularly important in the context of environmental issues, as it can abstract or even visualize specific actions or events into more conceptual expressions. Nominalization, as a common form of grammatical metaphor, abstracts processes or actions, making them objects of discussion and contemplation, thereby enhancing the importance of the topic. Halliday (1985) asserts that such grammatical choices significantly impact the transmission of information and the interpretation by recipients. At the same time, according to the theory of cognitive schemas by Lakoff and Johnson (1980), nominalization can activate the patterns of knowledge and experience about the world constructed in the human brain. This makes abstract concepts such

as “ecological destruction,” “oceanic/atmospheric pollution,” “species extinction” and other highly generalized environmental terms more concrete and comprehensible in people’s minds. The following three cases use nominalization to create grammatical metaphors, concretizing human activities that negatively impact the environment.

Example (4) *The destruction of rainforests is accelerating.*

Example (5) *The rise in pollution levels is causing widespread health issues.*

Example (6) *Deforestation leads to severe ecological consequences.*

In example (4), the nominalization of “destruction” transforms the verb “destroy” into a more concrete and impactful concept for readers. By abstracting an exact action into a noun term, the sentence highlights the ongoing process of rainforest loss, making it a focal point for prompt concern and action. Also, the verb “accelerate” directly stimulates the cognitive schema of speed and pace in the physical world, thereby constructing and highlighting a new schema of the environmental issue: the ecological environment is undergoing prolonged and increasingly severe pollution. Further in example (5), “rise” and “pollution” as nominal forms convert dynamic processes into static states, vividly describing the urgency of pollution currently amounting to the water level in the period of flood season which demands a prompt solution. This transformation underscores the gravity of increasing pollution and its consequent health harm. The nominalization not only emphasizes the issues at hand but also encourages a deeper consideration of the causes and potential solutions by human beings. Finally in example (6), the nominalized form from “deforest” to “deforestation” is used to emphasize the concept of severe forest falling. This manner of linguistic expression not only highlights the process of worsening destruction of all kinds of forest resources but also underscores its following ecological aftermath soon, indirectly referring to an inevitable causality relation. Through the1 abstraction, nominalization makes the extent and the impact of environmental degradation more apparent, prompting a deeper understanding among the audience.

These examples illustrate how nominalization,

as a grammatical metaphor, effectively conveys the severity and urgency of environmental degradation within sentences. Specifically, by transcribing actions or processes into tangible and visible concepts, nominalization aids in constructing a more vivid and resonant narrative about environmental crises, fully aligning with Halliday’s insights (1985) on the profound effects of grammatical choice on communication and comprehension. Additionally, as Ungerer and Schmid (2013) pointed out, grammatical choices and cognitive patterns play a crucial role in shaping our understanding and response to environmental issues. Specifically, through these examples, we see that nominalization not only emphasizes the conceptual nature and the importance of environmental issues through grammatical metaphor but also activates specific cognitive schemas in the physical world, making these issues more concrete and urgent in the minds of readers.

4.3 Mixed Grammatical Metaphor

In the previous sections, we discussed the application of individual grammatical metaphors in environmental issues. In this part, we will turn to a more complex mixed category of grammatical metaphor, where the combined effect of active voice and nominalization in environmental topics can be intensified through stylistic strategies. Within the framework of green grammar, the active voice, by explicitly identifying the actor, strengthens the necessity of responsibility and action (Kress & Theo, 1996). Simultaneously, nominalization, as a form of grammatical metaphor, transforms complex environmental processes into more concrete and comprehensible concepts, enhancing the perceptibility of the issue. The collaborative use of both linguistic structures is not only expressively rich in style but also effective cognitively.

Example (7) *Consumers are accelerating the depletion of natural resources.*

Example (8) *Industrial activities are contributing to climate change.*

In example (7), the active voice “are accelerating” explicitly identifies “Consumers” as the agents accelerating the depletion of natural resources, directly emphasizing the responsibility of “resource consumers”. Simultaneously, the nominalized form “the depletion of natural resources” transforms a

complex process into a concrete and urgent concept, intensifying the severity of this environmental issue. The first part and the second part in example (7) stay in stark contrast in the form of grammar structures, which aligns with Goatly's (2000) assertion on the power of grammatical choices to shape environmental narratives by foregrounding the agents and the consequences of their actions. Verdonk (2002) also notes that the combination of active voice and nominalization as a stylistic strategy effectively enhances the visibility of environmental topics. In example (8), the active voice "are contributing" directly reveals the impact of "industrial activities" on climate change. To be specific, by placing "industrial activities" as the subject and "are contributing" as the verb phrase, the sentence identifies industrial operations as the agents of action. Meanwhile, the nominalization of "climate change" makes this broad, ongoing process more concrete and urgent than its traditional form like "Climate change is caused by industrial activities". Further, the nominalization of "climate change" might otherwise be described with a series of detailed descriptions involving rising temperatures, shifting weather patterns, and other climatic alterations. Nominalizing these complex processes into a single term condenses the vast and multifaceted nature of this global issue into a tangible and recognizable concept. More importantly, the synergistic effect of using active voice alongside nominalization in example (8) lies in its ability to both specify the actors responsible and highlight the gravity of their impact concisely. This grammatical strategy enhances the sentence's impact by ensuring that the focus is not diffused but rather pointedly directed at the critical intersection of human industrial activity and its environmental consequences (Alexander, Richard & Stibbe, 2014). The use of the combined grammatical structure not only conveys information linguistically but also stimulates the audience's attention to environmental issues on both a linguistic pattern and a cognitive level.

5. Conclusion

The present study reveals how these grammatical structures collectively work at the cognitive level to enhance the urgency and sense of responsibility for the issues. Hyland (2004) noted that our thinking and cognition are constructed through the metaphors and

frameworks of language. Under the context of environmental issues, the combination of active voice, passive voice, and nominalization not only conveys information at the linguistic level but also influences the audience's environmental understanding and behavioral response at the cognitive level. The integrated use of these grammatical strategies, as emphasized by Hasan (2018), is key in stylistics for effectively conveying and emphasizing information.

Based on the above, we conclude that traditional grammatical structures often marginalize nature, portraying it as passive and non-communicative. However, in environmental discourse, the use of active voice and the activation of experiential and existential entities, breaks the old pattern, presenting nature as a powerful agent and communicator, which demonstrates grammar as both a tool for conveying information and a crucial factor in shaping our understanding of the world.

In communicating environmental issues, the use of different grammatical structures constitutes a significant stylistic strategy. These structures not only individually carry the responsibility of conveying information but also complement each other when used in combination, forming a powerful method of communication. As Verdonk (2002) pointed out, style is realized through the choice and organization of language to achieve specific communicative purposes, which is particularly crucial for the production of environmental discourse.

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