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Semiotic Analysis of the Effectiveness of Visuals in Climate Change posters

Abstract

This study, titled “Semiotic Analysis of the Effectiveness of Visuals in Climate Change Posters,” examines Greenpeace's climate change posters from the 2022 and 2023 series through a semiotic lens, addressing a gap in current literature. The research aims to evaluate how these visuals communicate complex climate issues by identifying and analyzing both iconic and symbolic semiotics. Iconic semiotics refer to images that closely resemble the objects they represent, while symbolic semiotics involve signs whose meanings are derived from cultural and contextual associations. Data for the study were collected from online sources by sourcing relevant Greenpeace campaign posters. The analysis employs Barthes' semiotic theory, which dissects meaning into three levels: the denotative, capturing the literal aspects of the images; the connotative, reflecting the associated mental concepts; and the mythological, which situates these meanings within historical and cultural contexts. Findings indicate that the integration of iconic imagery and symbolic textual elements in the posters significantly enhances the clarity and impact of the climate change messages. The interplay between these semiotic elements not only increases audience engagement but also ensures the messages resonate across diverse cultural settings. This research contributes to the fields of linguistics and semiotics by providing a robust framework for understanding the role of visuals in constructing meaning and conveying the same in environmental communication and advocacy.

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1.1 Introduction

Sign language is a form of communication that employs symbols, signs, or images to represent ideas, concepts, objects, or relationships. Unlike natural language, where words have denotative and connotative meanings, sign language relies on the interpretation and association of symbols to convey meaning. These symbols may include visual representations, gestures, sounds, or even written characters that stand for abstract or complex concepts. The sign or symbolic language is crucial because it allows complex and abstract concepts to be communicated effectively and efficiently.

According to Holmes (2017), non-verbal communication includes all forms that do not involve words but are closely related to spoken language. She emphasizes that our understanding of face-to-face interactions can be significantly limited if we overlook the non-verbal cues accompanying speech. Visuals are an essential component of communication

especially in climate change messages because they can transcend barriers, elicit emotions, and create meaningful connections with diverse audiences. Stakeholders in the area of climate change have adopted visuals to illustrate the cause, effect, and prevention of climate change because people often fail to see how their actions can cause or prevent climate change. In Benue State, for instance, there was an incident of gas emission in the Mbayion community, resulting in poor water condition, and environmental pollution. Little or nothing was done to remedy the situation until people in the area started going down with different ailments (International Centre for Investigative Reporting, 2024).

According to Gophinatan (2022), Visual communication is the transmission of information and ideas using symbols and imagery". The definition of visual communication as "the transmission of information and ideas using symbols and imagery" highlights the fundamental aspects of this field. Visual communication involves the use of visual elements, such as symbols, icons, images, and other forms of imagery, to convey messages to an audience (Gophinatan, 2022). The above definition emphasises two key components: the transmission of information and ideas, and the use of symbols and imagery as the means of communication.

Climate change communicators can effectively convey the urgency of the issue, inspire action, and mobilize global efforts towards a more sustainable future by leveraging the power of visuals. However, these visuals do not go without misinterpretation as some of the symbols are prone to misinterpretation by different ethnic groups and this is indeed a problem. It is against this background that this study is carried out, to investigate and examine visuals in climate change messages to understand how meaning is constructed and communicated through visual elements.

The concept of "semiotics" has evolved, with scholars from various fields contributing to its definition. Despite the different approaches, these definitions consistently describe semiotics as a system that goes beyond verbal communication to include all forms of signs and symbols used by humans. According to Chandler (2017), semiotics is "the study of signs and the way they create meaning in various contexts," emphasizing that its scope extends to anything that can function as a sign. This view builds on the idea that semiotics applies to any system of meaning-making, not just verbal language.

In a similar vein, Adedimeji (2003) assert that semiotics is concerned with the theory or science and analysis of signs and signs systems as well as their meanings, specifically, those concerned with communication between human beings in different societies and cultures.

This study provides a valuable framework for understanding how meaning is constructed and communicated through visual elements. Semiotics, also known as semiotic analysis or semiotics theory, is a field of study that examines how signs and symbols function in communication and how meaning is created and conveyed through signs and their interpretation. The semiotic analysis focuses on the relationships between signs, signifiers (the physical forms of signs), signified (the meanings attributed to signs), and the cultural and social context in which signs are used.

Peirce (as cited in Suciyanto, 2016) categorises the concept of sign into icon, index and symbol based on the relationship between 'representamen' and object. An icon is a sign that bears a resemblance or similarity to the object it represents. Icons rely on visual or perceptual similarity to convey meaning. For example, a diagram or a photograph of fire can be considered an iconic sign. An index is a sign that has a direct, causal connection or relationship with the object it represents. Indexical signs indicate a physical, temporal, or spatiotemporal relationship. For instance, smoke is an indexical sign of fire because it is

caused by the presence of fire. Besides, the presence of a footprint on the ground is an index of the person or animal that passed there. A symbol is a sign that relies on arbitrary conventions or social agreement to represent an object. Symbols are learned and established through cultural practices. Words, numbers, and abstract representations are examples of symbolic signs. For example, Garuda Pancasila for Indonesia is a bird that has a rich symbolic meaning with the addition of the word Bhineka Tunggal Ika (Unity in Diversity) (HD Asian Art, 2024). However, for those who have different cultural backgrounds, such as Eskimos, Garuda Pancasila may be regarded as an ordinary eagle.

Previous research explored the role of visual illustrations in climate change communication, including their use in raising awareness, shaping perceptions, and motivating action. However, the previous studies seen and reviewed by the researcher did not cover visuals of climate change messages in series 2022 and 2023, also, they adopted the semiotic theories of Ferdinand de Saussure and Charles Sanders Pierce. Hence, the present study aims to analyze visuals in climate change messages in Greenpeace posters of series 2022 and 2023 using the semiotic theory of Roland Barthes.

1.2 Statement of the Problem

The field of Eco Linguistics examines the relationship between language, ecology, and environmental communication, offering valuable insights into how messages about nature and environmental issues are constructed and perceived. Despite the growing body of research in this area, there is a gap in understanding the semiotic mechanisms through which visuals in climate change posters convey meaning and influence viewers' perceptions and actions.

This study aims to fill this gap by conducting a semiotic analysis of selected climate change posters to evaluate their effectiveness in conveying intended meanings. By analyzing the signs, symbols, and visual codes used in these posters, the study seeks to uncover how visual elements are employed to communicate climate change issues and to what extent they resonate with and impact the audience.

1.3 Aim and Objectives

The study aims to assess the effectiveness of visuals in conveying climate change messages to different audiences around the globe.

The objectives of the study are:

- i. To identify the iconic semiotics of climate change posters.
- ii. To identify the symbolic semiotics of climate change posters.
- iii. Interpretation of the iconic and symbolic semiotics of climate change poster

2.1 Review of Related Literature

Metykova (2014) conducted a study on the topic "Semiotic Analysis of Visual Communication in Climate Change Campaigns". The study investigated the semiotic elements used in visuals and their persuasive effects in shaping public understanding and engagement with climate change. One of the strengths of Metykova's research is the application of semiotic analysis, which allows for a comprehensive examination of the signs, symbols, and visual elements used in climate change campaigns. By adopting this approach, the study provides insights into the underlying meanings, ideologies, and discourses communicated through visuals, uncovering the strategies employed by campaign designers to convey messages related to climate change. The study explored how metaphors, symbols, colours, and composition are utilised to evoke emotions, convey urgency, and motivate

action. The findings of the study shed light on the persuasive potential of visual communication and provide practical implications for designing effective climate change campaigns.

Despite the merits of the study, there are a few limitations worth noting in Metykova's study. Firstly, the research focuses primarily on the semiotic analysis of visuals and does not extensively consider the broader context in which the campaigns are situated. Factors such as target audience demographics, cultural backgrounds, and media platforms used for dissemination could impact the interpretation and effectiveness of the visuals. Further exploration of these contextual factors would have provided a more comprehensive understanding of the dynamics between visuals and their intended audiences.

O'Lear and Oryschak (2016) carried out a study which was entitled "Visual Representations of Climate Change in Canadian National Newspapers". The study employs semiotic analysis, a fundamental method for studying visuals, to examine the visual elements used in climate change visuals within the newspapers. It explores how signs, symbols, colours, composition, and other visual cues convey meanings and frame climate change narratives. Through semiotic analysis, the researchers aim to uncover the underlying messages, ideologies, and discourses communicated through these visuals.

The study provides valuable insights into the semiotic analysis of visuals in climate change messages within the context of Canadian national newspapers. This study contributes to the broader understanding of how visual representations in media shape public perceptions and understandings of climate change. By focusing specifically on Canadian national newspapers, the research sheds light on the visual discourse surrounding climate change in a specific socio-cultural and political context.

Cinque and Hauptmeier (2019) studied "Visualising Climate Change: A Comparative Analysis of Public Interpretations in Sweden and Australia". The study aimed to do a comparative analysis of how visuals related to climate change are interpreted by the public in Sweden and Australia. The research specifically focused on public interpretations of climate change visuals, emphasizing the importance of understanding how different audiences perceive and make sense of these visual representations. By conducting a comparative analysis between Sweden and Australia, two countries with distinct cultural and socio-political contexts, the study aims to explore how visuals are interpreted within specific societal and cultural frameworks. The work employed a semiotic analysis approach, which allows for an in-depth examination of the signs, symbols, and visual elements used in climate change visuals.

By comparing the interpretations of climate change visuals in two different countries, the research highlights the influence of cultural and social factors on the semiotic analysis of visuals. It provides insights into how the cultural context and societal norms affect the reception and interpretation of climate change visuals. This comparative approach enriches our understanding of the complexities involved in communicating climate change visually and emphasizes the need to consider cultural factors in semiotic analysis. Besides, the study contributes to the field by examining the role of visuals in shaping public perceptions and understandings of climate change. By focusing on public interpretations, it recognizes the active engagement of individuals in making meaning out of visual representations.

Boerman and Voorveld (2020) conducted a study which was entitled "A Semiotic Analysis of Climate Change Visuals on Twitter: A Comparative Study of Government and Activist Accounts". The study focused on the semiotic analysis of climate change visuals shared on Twitter. The study compared the visual communication strategies used by government and activist accounts in addressing climate change issues. The researcher

adopted a semiotic analysis approach to examine a sample of tweets from government and activist accounts, analysing the visual elements, symbols, and framing techniques employed in the visuals.

The study offers valuable insights into the visual communication of climate change on Twitter and sheds light on the different approaches used by government and activist accounts. It highlights the potential impact of visuals in shaping public perceptions and attitudes towards climate change. However, it is important to consider the limitations of the study. Firstly, the study's focus on Twitter limits the scope of the findings to this specific social media platform. It may not fully capture the range of visual communication channels and platforms used in climate change discourse, such as other social media platforms or traditional media outlets. In addition, the study's sample selection of government and activist accounts may not be representative of all climate change communicators on Twitter. Other important stakeholders, such as scientific organizations, businesses, or individuals, are not included in the analysis. Therefore, the findings may not provide a complete picture of the visual communication landscape on Twitter.

Previous research explored the role of visual illustrations in climate change communication, including their use in raising awareness, shaping perceptions, and motivating action. However, the previous studies seen and reviewed by the researchers did not cover visuals of climate change messages in series 2022 and 2023, also, they adopted the semiotic theories of Ferdinand de Saussure and Charles Sanders Pierce. Hence, the present study aims to analyze visuals in climate change messages in Greenpeace posters of series 2022 and 2023 using the semiotic theory of Roland Barthes.

2.2 Theoretical Framework

The study adopted Barthes' semiotic theory which focuses on the three levels: denotative, connotative, and mythology. The denotative describes the literal meaning, the connotative is related to the mental concepts and the mythology is related to the history, and culture of viewers. Barthes holds that sign is a 'first order system' which implies the relationship between the signifier and the signified as projected by Saussure. According to Barthes (1980), the word or image of a 'scale' is the denotation 'signifier' and its concept of measurement is the connotation 'signified'. Hence, the sign is the relationship between the denotation and the connotation in addition to the historical and cultural background of the viewers. This framework helps decode the deeper meanings behind images, symbols, and texts.

3.0 Methodology

This study adopts a qualitative approach, utilizing multiple methods for data collection, including participation, direct observation, in-depth interviews, and document analysis. Data were sourced from primary (responses from respondents) and secondary materials (journals, unpublished works, internet sources, and textbooks). The researcher selected Greenpeace International and Greenpeace Africa climate change posters from 2022 to 2023 series, covering themes such as flooding, overfishing, deforestation, waste disposal, deep-sea mining, wildlife extinction, fossil fuels, and rising temperatures.

A random sampling technique was used to ensure diverse representation of climate change visuals. Posters featuring symbols and icons were specifically extracted, avoiding those lacking visual features or previously analyzed in other studies. Data collection instruments included an image analysis guide (Barthes' semiotic frameworks), an interview guide, a voice recorder, and a writing pad.

For data analysis, the collected visuals were systematically numbered (Posters 1–8) and examined using semiotic theory to interpret iconic and symbolic meanings in alignment with the study's objectives.

4.1 Presentation and Analysis of Data

Poster 1



Source: *Greenpeace International Post*. 28 July, 2023.

Analysis

The poster uses various signs, including a flooded area, a canoe, life jackets, and text, to convey its message. These signs carry symbolic meanings: the flooded area and canoe symbolize the impact of climate change and the need for adaptation, while life jackets represent preparedness and safety measures. The poster's text explicitly calls out ENI (Ente Nazionale Idrocarburi in English National Hydrocarbons Authority), urging them to stop contributing to the climate change emergency. The visual elements in the poster are iconic semiotic aspect while the statement 'ENI, stop fuelling climate emergency' is a symbolic semiotic aspect and this notion of iconic semiotics and symbolic semiotics aligns with the ideas of Peirce (as cited in Suciyanto, 2016). The poster's cultural context targets a global audience familiar with climate change urgency and the importance of collective action. The poster's rhetoric emphasizes the urgency of the climate crisis and appeals to viewers' emotions, evoking concern and empathy for those affected. The picture of the flood is the denotative while the danger it poses to humanity is the connotative, and the mental representation the picture creates in the viewers is associated with mythology following the semiotic theory projected in Barthes (1980).

Poster 2



Source: Greenpeace International Post, 26 June, 2023.

Analysis

The solar panel serves as a powerful symbol representing renewable energy and sustainability. By portraying children seeking shelter under solar panels, the image conveys the message that embracing clean energy solutions can protect future generations from the harmful effects of climate change. The picture of the children and the solar panels is the denotative while the harsh sunny weather and the decision of the children to run away from the harsh condition of the sun represents the connotative, and the mental representation it creates in the viewers is associated with mythology by the semiotic theory projected in Barthes (1980). The picture features only the iconic semiotic aspect, however, the intended message is conveyed and it would be understood by the viewers based on their cultural and historical backgrounds. The poster does not provide for the interaction between the iconic semiotic aspect and the symbolic semiotic aspect since no sentence or phrase is placed in the poster.

Poster 3



Source: Greenpeace International Post. 12 January, 2022.

Analysis

The picture of the earth signifies that the message in the poster has to do with the planet Earth. In Tiv culture and most cultures of the world, flames of fire can be viewed as a sign of danger so, we can say that the flames of fire surrounding the earth signify that the planet is in danger, therefore needs protection or help from humanity. The poster calls on human beings to save the planet Earth from danger using the picture which represents the iconic semiotic aspect and the sentence 'Save the planet' which is a symbolic semiotic aspect. The picture of the planet and the fire surrounding the planet is the denotative while the dangerous condition of the earth is the connotative, and the mental representation and emotional reaction the picture causes in the viewers is associated with mythology following the semiotic theory projected in Barthes (1980). The images are iconic semiotic aspects while the sentence 'Save the planet' is a symbolic semiotic aspect telling the viewers to react without any delay to save the earth from danger. The interaction between the symbolic semiotic aspect and the iconic semiotic aspect in the poster calling on humanity to save the earth from danger reflects the notion of iconic semiotics and symbolic semiotics advanced by Peirce in his semiotic theory (as cited in Suciyanto, 2016).

Poster 4



Source: Greenpeace International Post. 31 January, 2023.

Analysis

The picture of the icy sea signifies that movement on the sea is not possible, and the picture of Arctic Sunrise, an icebreaker, shows that efforts are made to break the ice so that ships and boats can move on the sea smoothly. The picture of the ice represents the restriction of human movement through the sea caused by the icy sea which is a result of climate change. The poster conveys the message that man can provide a solution to climate change problems as shown in the use of the engine: Arctic Sunrise'. The picture of the icy sea and the icebreaker is the denotative while the danger and fight against the danger using Arctic Sunrise is the connotative, and the mental representation and emotional reaction to the picture from the viewers is associated with mythology by the semiotic theory projected in Barthes (1980). The picture is an iconic semiotic aspect while the sentence 'Stop drilling. Start paying' is a symbolic semiotic aspect telling the viewers to stop drilling which causes marine pollution.

The interaction between the symbolic semiotic aspect and iconic semiotic aspect in the poster conveying the message of marine pollution caused by drilling reflects the notion of iconic semiotics and symbolic semiotics advanced by Peirce in his semiotic theory (as cited in Suciyanto, 2016).

Poster 5

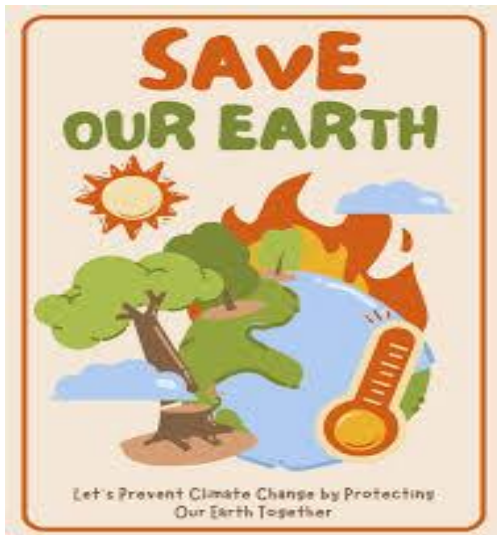


Source: Greenpeace International Post. 29 September, 2022.

Analysis

The picture portrays that sewage is being dumped in the body of the water, therefore the water is no longer safe for human use and even harmful to human existence around the water. The picture presents how waste products are pushed into the body of water, thereby contaminating the water. The poster conveys the message that man contaminates bodies of good water by dumping waste materials into the water. The picture of the waste products and the body of water is the denotative while the contamination of the water by the waste products represents the connotative, and the mental representation and emotional reaction to the picture by the viewers is associated with mythology by the semiotic theory projected in Barthes (1980) since the pictures are iconic semiotic aspect of sign, thereby confirming the claim by Peirce about iconic semiotic aspect of the sign in his semiotic theory (Suciyanto, 2016).

Poster 6



Source: *Greenpeace International Post*. 20 October, 2022.

Analysis

The picture of the Earth signifies that the message is connected with the planet Earth, and the flames of fire surrounding the Earth signify that the planet is in danger and, therefore needs human protection, if not, the fire may consume the planet completely, and if the planet is consumed completely, man cannot be an exception. The poster calls on humanity to save the planet Earth from danger using the picture which represents the iconic semiotic aspect and the sentence 'Save our earth' which is a symbolic semiotic aspect. The picture of the planet and the fire surrounding the planet is the denotative while the dangerous condition of the earth is the connotative, and the mental representation and emotional reaction the picture causes to the viewers is associated with mythology by the semiotic theory projected in Barthes (1980). The pictures are iconic semiotic aspects while the sentence 'Save our earth' is a symbolic semiotic aspect telling the viewers to react without any delay to save the earth from danger. The interaction between the symbolic semiotic aspect and the iconic semiotic aspect in the poster calling on humanity to save the earth from danger reflects the notion of iconic semiotics and symbolic semiotics advanced by Peirce in his semiotic theory (as cited in Suciyanto, 2016).

Poster 7



Source: Greenpeace International Post. 14 July, 2022.

Analysis

The picture of the trapped fish spreading blood on the surface of the water and its surroundings shows how catching fishing with the fishing fleets contaminates the water body. The blood on the water and walls around the water portray that water pollution is caused by the trapped fish. The picture of the bloody walls and the trapped fish is the denotative while the contamination of the water by the fishing activity is the connotative, and the mental representation and emotional reaction the picture causes in the viewers is associated with mythology following the semiotic theory projected in Barthes (1980). The pictures are iconic semiotic aspects while the sentence 'Hooked on sharks: the EU fishing fleets fuelling the global shark trade' is a symbolic semiotic aspect telling the viewers how the waters are contaminated by the fishing fleets. The interaction between the symbolic semiotic aspect and iconic semiotic aspect in the poster projects the contamination of the water bodies by the fishing fleets reflects the notion of iconic semiotics and symbolic semiotics advanced by Peirce in his semiotic theory (as cited in Suciyanto, 2016).

Poster 8



Source: Greenpeace International Post. 26 July, 2023.

Analysis

The above picture portrays that civil society leaders from the Pacific region are calling for a halt to deep sea mining. The poster portrays that humanity cares for and protects the earth, therefore, man can be seen as the protector of the earth. The sentence 'Stop deep sea mining' in the poster is a symbolic semiotic aspect, and the sentence is denotative while the anticipated response of the people for protecting the sea is the connotative, and the mental representation and emotional reaction the picture causes in the viewers is associated with mythology following the semiotic theory projected in Barthes (1980). The picture of the sea is an iconic semiotic aspect while the sentence 'Stop deep sea mining' is a symbolic semiotic aspect telling the viewers to react without any delay to save the sea from destruction or contamination. The interaction between the symbolic semiotic aspect and iconic semiotic aspect in the poster calling on humanity to protect the sea from danger reflects the notion of iconic semiotics and symbolic semiotics advanced by Peirce in his semiotic theory (as cited in Suciyanto, 2016).

5.1 Conclusion

The study utilises Barthes' theory of denotation, connotation, and mythology, to explore how climate change posters communicate their messages through iconic and symbolic semiotics. The study discovered that Greenpeace posters communicate many messages on climate change, and the pictures contain iconic and symbolic aspects of semiotics in passing the messages on climate change. The iconic aspect of the sign is a picture while the symbolic aspect of the sign is a sentence. Besides, the study also discovered that the iconic aspect interacts with the symbolic aspect to convey the climate change messages to the viewers.

This research contributes to the literature in linguistics and semiotics by deepening our understanding of the visual language used in climate change communication. It helps uncover the hidden layers of meaning conveyed through images and symbols in posters, enhancing our comprehension of how visual communication shapes public discourse on climate change. Furthermore, this study reveals new insights into how semiotics impact people's attitudes and behaviours towards climate change. It serves as a valuable resource for linguists, semioticians, and communication experts, offering a framework for analyzing and interpreting visual communication in various contexts beyond climate change messaging. Ultimately, this research enriches the field of linguistics and semiotics by bridging the gap between verbal and visual communication and contributing to more effective climate change awareness campaigns and advocacy efforts.

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