In Pursuit of a Biophilic Dialect: The case of mucilage in the Marmara Sea

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This paper presents the findings of a preliminary study of a research project that aims to identify the essentials of a biophilic way of communication within the frame of environmental conflicts. While biophilia is a life-affirmative concept, it will be an inspiring frame to create a dialect and communication form to approach environmental issues. In this study, the environmental conflict case is the marine mucilage that invaded the Marmara Sea (Turkiye) and became a hot topic during the summer of 2021. The study aims to shed insight into the statements and reactions of the actors, responders, and dependents, in other words, stakeholders of the case, through a design thinking process. This study is the first step to address the indicators through nature-centric and pro-environmental communication that leads toward efficacious policies and behaviours. Within this study's framework, communication is considered the mediator between the organs of a system, and discourse analysis is employed to understand the root problems of environmental communication as a creative connection in an environmental conflict. In the limits of this study, the mucilage-related entries on Twitter are inspected at regular time intervals. The approach and tone of the tweets yield eight categories of communication forms. Besides, the importance of metaphors for efficient communication manifested itself once again. Communication is the key to any justice conflict, as in human-nature conflicts.

KEYWORDS: biophilia, biophilic dialect, environmental communication, governance, policymaking, system design thinking

RSD TOPICS: Policy & Governance, Society & Culture

Introduction

It is inevitable to be concerned about sustainability in our era since the earth is on the edge of extinction and suffers from the conflicts caused by standard corporate-centric or anthropocentric policies rather than a systematic nature-centric approach. Nature is a giant system that works through a complicated yet super-efficient network of its constituents, essential to natural systems that the human-made world mostly lacks. As human residents of nature, we have various kinds of networks that cannot be said to be holistic. However, all share on an everyday basis: Communication. It has a significant impact on the way we think, speak, and bond.

A rich literature is available on environmental communication; there are sophisticatedly published research studies on the topic in different academic fields like business (Yu, 2020), ecology (Songsore & Buzzelli, 2017), education (Blom et al., 2020), and so on. These studies mostly are through an inspection of either the narratives of corporations (Yu, 2020) and governmental organs (Ponton, 2015) or shares of individuals on social media (Allgaier, 2019; Breves & Heber, 2020; Pavelle & Wilkinson, 2020). Nature-centric methodologies to develop a way of pro-environmental communication are growing dramatically, especially under the term sustainability communication (Fischer et al., 2016; Godemann & Michelsen, 2011; Saleh, 2023). However, to the best of our knowledge, a biophilic perspective of sustainability communication still needs to be framed in related literature.

This paper presents the results of a preliminary study of a research proposal that suggests a framework in line with the concept of biophilia, which Edward Wilson (1984, p. 85) defined as: "Urge to affiliate with other forms of life" and naming that frame as biophilic dialect. As Bsumek et al. (2014) stated, corporations and organisations metaphorise nature in their expressions to bond more with the audience, which concludes with a status known as greenwashing in most cases. The biophilic dialect

does not intend to create a set of words for greenwashing advertisements. Instead, it aims to inspect the narratives of individuals, communities, or organisations to understand their underlying needs, desires, frustrations, and demotivation to find the root problem in the environmental conflicts and the possibilities of enhancing the pro-environmental behaviours. So, the research question of the leading project is formulated as:

> How could one develop nature-centric forms of communication based on biophilia, a life-affirming concept, to inspire and motivate pro-environmental behaviours for the sake of nature and all species?

Literature Review

It is not a secret that developing a genuinely sustainable system approach needs to be considered holistically, not only with the physical elements of nature but also with the social, political, and ethical ones. As a reference point, each UN (United Nations) (n.d.) Sustainable Development Goal indicates a comprehensive title and comprises multi-faceted features that promote the democratisation of resource allocation and environmental justice not only for human beings but all living beings. While the sixth mass extinction is on the gate, we must face the truth that many species have been extinguished or are about to become extinct because of anthropogenic invasion, overpopulation, and overconsumption (Earth.org, 2020). This grievous consequence demonstrates that our commercial and individual interests are improper with how nature works.

Environmental conflicts between the interests of nature and humans are attributed to governance issues mostly grounded on miscommunication between the policy-makers and the residents (Haider et al., 2011; Pettit et al., 2009). Humans need to develop a thinking and communication system that keeps them in line with nature rather than behave like the owner of nature. Decentering 'human' within the ecosystem, namely more-than-human approaches, has been making ground in literature (See Beacham, 2018; Edwards & Pettersen, 2023; Ergene & Calás, 2023). As Merchant (1992) suggested, there are three types of nature values for humans: eco/bio-centric values for the sake of nature, anthropocentric values for the sake of humans, and egocentric values for the

sake of individuals. A strong alternative for humans may be to embrace pro-environmental behaviours for the sake of nature and so for the sake of themselves.

Participatory communication in governance issues (Castells, 2008; Dagron, 2009; Pettit et al., 2009) and the reciprocal influence of behaviours and communication have gained ground in literature, especially on environmental issues (Haider et al., 2011). Some studies suggest that cultural models are more effective in influencing people's environmental knowledge than scientific facts (Kempton et al., 1995; Larson, 2011). Klöckner (2015) highlights the importance of communication patterns as the constituent of social practices, bridging physical entities to knowledge and meaning shared by society. Therefore, communication is central to this research, but from which perspective should it be considered?

There is a body of research on the metaphorization of nature and living beings in different media types. Animal metaphors in literature, stories, myths, films, and children's books (See. Bump, 2014; Hart, 2017; Orr, 1993; Shepard, 1993) exhibit significant examples within the context. The use of nature metaphors as a tool for environmental sustainability (Larson, 2011; Songsore & Buzzelli, 2017) and natural metaphors for encouraging pro-environmental behaviours (Passmore & Howell, 2014) have progressed in recent studies. Similarly, the biophilia hypothesis suggests that nature, living beings, and biophilic elements positively affect human well-being (Kellert, 1993; Orr, 2002; Salingaros, 2015; Ulrich, 2008).

Erich Fromm (1964) coined the term biophilia, "love of life," and Wilson (1984, p.85) expanded the definition to "Urge to affiliate with other forms of life," as stated above. Many scholars have various studies on biophilia; however, the social ecologist Stephen Kellert had inarguable contributions to the literature and field, including A Typology of Biophilia Values (Kellert, 1993), which guided many studies. Herrmann et al. (2013) referred to Kellert's (1993) biophilic values as evaluation criteria for measuring cultural values and animal symbolism. Chang et al. (2020) studied the values via social media shares within a biophilic frame to measure life satisfaction. These studies enhance the idea of the necessity for a comprehensive study of a biophilic way of communication. Thus, the nine biophilia values proposed —Utilitarian, Naturalistic, Ecologistic-Scientific, Aesthetic, Symbolic, Humanistic, Moralistic, Dominionistic, and Negativistic (Kellert, 1993)—set a starting point for the analysis of this study.

Biophilia is implicitly influential in human perception and tendencies, and so is communication. The implicit actors in language play a substantial role in our approach to the natural environment (Klöckner, 2015; Lakoff & Johnson, 1980; Larson, 2011). In this context, natural indicates all kinds of life forms, wilderness, and non-living compounds of nature. Wilson (1998), a socio-biologist and one of the pioneers of biophilic studies, hypothesised the concept of consilience grounded on the co-evolution of nature and culture. Biophilia cannot be reduced to a mere biological perspective—on the contrary, it should be considered as a whole with all aspects.

Consequently, looking through the lens of biophilia to environmental communication will bring a new prospect to understanding humans' innate tendencies and perception of nature and solving environmental conflicts. Kellert (2005) defined three types of contact with nature: Direct, indirect, and symbolic/vicarious contact. Direct contact is physical contact with the wilderness; indirect contact is a relationship with natural elements in a human-built environment; and symbolic/vicarious contact mainly reflects biophilia in cultural appropriation. Paintings, literature, stories, tales, myths, and metaphors are examples of this contact type (Kellert, 2005). The last is the basis of this research proposal to consider biophilia with its symbolic reflections and develop a methodology towards a biophilic dialect to find the root problems of conflicts and contribute to more constructive language and pro-environmental behaviours.

This study is a part of the research proposal grounded on an interdisciplinary basis at the intersection of nature-based studies, environmental studies, psychology, and linguistics, namely, technology and social sciences. This study resonates with the policymaking practices in contact with systems thinking and design thinking in an academic environment where systems thinking comes closer to social sciences and policymaking rather than solely employed by engineering (Midgley & Richardson, 2007), and design thinking employed in policymaking approaches (Lewis et al., 2020).

Besides being practitioners, designers put much intellectual effort into the design process, broadly known as design thinking. As Donald Norman (2013) states, design thinking is about finding the root problem and mapping the context of the problem before jumping to a solution.

This paper claims that environmental issues and policymaking studies need a practice of design thinking. The practice includes finding the root problem, defining the problem concisely, searching for contextualisation and alternative solutions, addressing all the stakeholders within the context, and considering the needs, desires, and motivations of each stakeholder to address the problem realistically and creatively (Buchanan, 2019; Dorst, 2015; Norman, 2013). This process does not necessarily belong to a product; it could be applied to a service, system, or policy. Given the attention to public sector innovation, design-led solutions and design thinking approach to policies gained gravity (SEE Platform, 2013; Lewis et al., 2020). Herewith, design thinking is the key for this study to bring the main problems forth, understand the motivations and needs of all stakeholders, and map the context in a holistic, democratic, and ethical manner. This paper presents the first research findings to find the root problems within this context.

Method

As stated above, this is the preliminary study of the research project addressing the research question, "How could one develop a nature-centric communication based on biophilia, which is a life-affirming concept, to inspire and motivate pro-environmental behaviours for the sake of nature and all kinds of living forms?" The aim is to create a biophilic dialect grounded on a content analysis study of an environmental conflict case. The case study of this preliminary study as an environmental conflict is the boom of mucilage in the Marmara Sea (Turkiye). Merriam-Webster Dictionaries (n.d.) define mucilage as "a gelatinous substance of various plants (such as legumes or seaweeds) that contains protein and polysaccharides and is similar to plant gums". Wilcox (2021) defined mucilage, also known as sea saliva or sea snot, in marine science terms as "a combination of three things: high nutrient content, the very stratified water that's in that sea, and the phytoplankton bloom that ensues". According to Alice Alldredge, whom Wilcox (2021) interviewed, and many scientists agree, this is not the first time it has happened; however, its catastrophic effects on sea life and biodiversity are major. The significant reason for this crisis is the discharge of organic waste into the Marmara Sea without advanced biological wastewater treatment. In the Summer of 2021, the mucilage in the Marmara Sea was a hot topic for a couple of months. On the one hand, the socio-economic consequences have been discussed; on the other hand, biodiversity,

sustainability, the right to live for all species, and ethical responsibility are at issue. Mucilage has invaded the printed, audiovisual, and social media platforms as it did the sea.

At this point, it needs to explain the concept of biophobia, which is the opposite of biophilia as Kellert (1997, p.147) defines: "... the source of great dread and disdain." Living beings such as dangerous predators like snakes or those with hazardous potential for diseases such as insects, microbes, and bacteria (Heerwagen & Gregory, 2008; Ulrich, 1993) are considered in the frame of biophobic effects. Thus, mucilage is one of the biophobic phenomena. It is mentioned as Negativistic in Kellert's (1993) biophilic values categorisation.

A briefer content analysis was held to understand the context of the actors, responders, dependents, and their (de)motivations, expectations, and ways of expression. Within the frame of this research, the case is the Marmara Sea mucilage issue and its reflections on Twitter (as it was called back then, "X" by its current name) as a more inclusive social media platform on which various types of actors, such as politicians, organisations, scientists, and citizens, express themselves in both formal and informal way. The tweets at different time intervals are used to analyse and search for the underliers of their communication forms on a social media platform.

The mucilage crisis in the Marmara Sea was a top topic in all kinds of media in the Summer of 2021. This issue was selected because it occurred recently and has no long history on social media. Thus, following the content from the beginning to the end would be easier. Nevertheless, it is a human-driven problem that needs the sensitivity of facilities, municipalities, and even the individuals responsible. Whilst the mucilage is a result of organic waste, it demands the sensitivity of individuals not to use toxic chemicals and mix organic waste into water outlets. This marine environment conflict has both socio-economic consequences and devastating impacts on the ecosystem and biodiversity. Therefore, it would be an appropriate topic to be analysed since it corresponds to both citizens and policy-makers.

Within the framework of this study, a search is held on Twitter via the keywords "mucilage", "musilaj", and "müsilaj" (the Turkish spellings of the mucilage). The search is limited to the period between the 29th of April and the 30th of August of 2021. That

period is when the case was a trending topic on Twitter. The first tweets on the issue started about the end of April 2021 but were not so frequent. On the first days of June 2021, mucilage was observed around the Istanbul coasts. Both the frequency and the content of the tweets peaked simultaneously.

Table 1. The categories of the communication forms of the sampled tweets.

Biophilia Values (Kellert, 1993)	Category	Explanation of the Category
Dominionistic	Anthropocentric	The risks to human health, economic loss, tourism, and the policies only related to humans.
Humanistic	Emotive	Expressions that reflect fear, shame, sadness, and anger.
	Implicative	Expressions by politicians, scientists, press accounts, and NGOs that have implicit supportive or critical messages.
Ecologistic-Scientific	Informative	Neutral language with scientific and informative expressions by scientists and press accounts.
Symbolic	Metaphoric	Use of metaphoric expressions to criticize the policies and analogies with literature, cinema, music, etc.
Humanistic	Nature-centric	Mentions about the life of non-human beings, biodiversity, sea life, and so on.
Negativistic, Symbolic	Politically critical and sarcastic	Critical and sarcastic mentions about policies and political figures of governmental and main oppositional parties.
Naturalistic	Anthropo- and nature-centric	Mentions about nature-centric issues including humans as one of the parts of nature.

Likewise, the visibility of mucilage on the sea surface decreased near the end of the summer, so the echoes of the topic faded out, even though it continued to harm the seabed. Only marine scientists and environmental organisations have tweeted about the issue after this period. Besides, marine scientists' tweets, related governmental accounts, and actively tweeting NGOs are charted separately to monitor their communication forms.

The tweet sample is collected at a ten-day interval between specified dates. The exception to this rule is adding dates like the day of the Marmara Sea Action Plan announcement by the Marmara Municipality Union and Ministry of Environment, Urbanization, and Climate Change. Also, some days when the tweet traffic intensified by the political statements on the media are added. The tweets belong to some national and international press accounts, political figures, environmental organisations and

initiatives, journalists, marine scientists, and individuals who are supposed to be citizens. The tweets are inspected through their communication forms and contents. The tweets are categorised by eight titles alphabetically: anthropocentric, emotive, implicative, informative, metaphoric, nature-centric, politically critical, and sarcastic. The preliminary findings of this study are these categories given with explanations and the relation with Kellert's (1993) biophilic values in Table 1.

These categories were the prominent ways of expression among the sample tweets. Figure 1 shows the dispersion of these categories by the dates of the sampled tweets. As seen on the chart (Figure 1 see p.12), nature-centric expressions increase at the case's beginning and end. As the mucilage spread and thickened on the sea, tweets increased in June and July 2021. In this period, anthropocentric and implicative tweets dominate the nature-centric ones. During the same period, political figures like ministers, mayors, and parliament members tweet more about their efforts and achievements. In parallel, the implicative tweets by the press that promote or criticise the politicians and the politically critical and sarcastic tweets co-increase. The implications of the analysis are discussed in detail in the Implications section.

Implications

The study is an inquiry to gain insight into the communication forms of the stakeholders of an environmental conflict, the mucilage in the Marmara Sea. Evidently, a more comprehensive sample and a deeper inquiry into the content are needed. However, the results of this preliminary study revealed some enlightening findings for the leading research on biophilic communication.

The first of those findings is about the tone of the tweets, especially by the authenticated accounts with blue (legacy-verified), gold (business), or grey (government-affiliated) checks (Twitter verification, 2023). Since the individuals demonstrate a critical and sarcastic attitude, some media organs and environmental NGOs (Non-Governmental Organizations) have a neutral and informative tone. Nevertheless, politicians' tone is more optimistic and reassuring, mentioning cleaning, controlling, solving, strategical meetings, statistical information, and their achievements. Their attitude cannot be said to be neutral but has implicit messages for propaganda. Some media organs have a similar tone to support or criticise political attitudes. On the

scientific side, some marine biologists use neutral and scientific language to inform the community; others prefer a daily language with an optimistic or pessimistic perspective. The different approaches to delivering the message are crucial to affect the choices and behaviours pro-environmentally (Larson, 2011). In this case, some scientists accuse the people, tourism, fisheries, and policy-makers in an aggressive tone. They share their knowledge and suggestions to solve the problem with an imperative tone. However, one of the scientists has a discourse on hope by giving the example of a single corkwing, a small fish that uses mucilage as a nest to proliferate. This scientist uses different metaphors to communicate the case besides explaining the scientific facts. That fish symbolised their book (Sarı, 2022) and a documentary (Göloğlu, 2021), emphasising the hopeful side and faith in solutions. He kept tweeting about the issue, stating that the mucilage is not over and entirely solved. The most significant focus of further studies should be on conveying the messages within the context of eco-anxiety that causes frustration in people to have faith in themselves to behave proactively (Albrecht, 2012).

Since the politically critical and sarcastic tweets have a significant intensity, it is crucial to say that the unauthenticated accounts are considered citizens within the framework of this study. There is the possibility of them being fake accounts created for provocation. However, the disparaging metaphoric use of the mucilage is an essential finding in the study of communication forms. Mucilage is just an organic compound that indicates a state of viscosity. However, it has been targeted as an invader since it literally invaded the sea. Thus, it was widely used as a metaphor for political corruption, as "political mucilage is everywhere". The critical and sarcastic tweets, some of which have very offensive expressions, are essential indicators of citizen reactions sensitive to the discourse of politicians, mainstream, and social media. This criticism and sarcasm may be one of the key paths of the research of biophilic communication.

Regarding biophilic communication, some expressions, such as from the mouth of the sea, fish, and marine plants, indicate a perspective that gives the stage to nature to speak for itself. Nature-centric hashtags like #Marmaradeniziölüyor (means the Marmara Sea is dying) and #Marmarayaşasın (means let the Marmara Sea live) put nature as a subject rather than an object. The concerns about the life of non-human beings, biodiversity, and ecosystem health are significant keys for biophilic communication. This metaphoric approach is supported by some quotes from novels,

movies, and even song lyrics in some tweets. The bond with metaphors was formed mainly through citizens and scientists in positive and negative ways. Metaphors are essential in the thinking mechanism and behavioural reflection (Lakoff & Johnson, 1980; Larson, 2011), and they are vital in creating effective communication, including biophilic ones.

The difference in word attribution between biophilia values (Kellert, 1993) and the categories of this study is prominent. For example, Kellert (1993, p. 59) describes humanistic as "strong affection, emotional attachment, love for nature." However, the humanistic value more likely resonates with the category of nature-centric approach. Moreover, they put negativistic as "fear, aversion, alienation from nature," referring to biophobia (Kellert, 1993, p.59). This study included fear, sadness, and shame in the emotive category. At the same time, negativistic attitudes are exemplified by the politically critical and sarcastic category as the tone of the expression. The main difference here is the subject in action, which is a fruitful field to dive deeper into as a further study.

This research is scratching the surface of framing a biophilic dialect. It has a significant potential to pave the way for further studies on environmental conflicts and communication studies. Once a framework has been constituted, it would help to understand the underlying causes and dynamics of the environmental conflicts and create more constructive communication and discourse by employing design thinking.

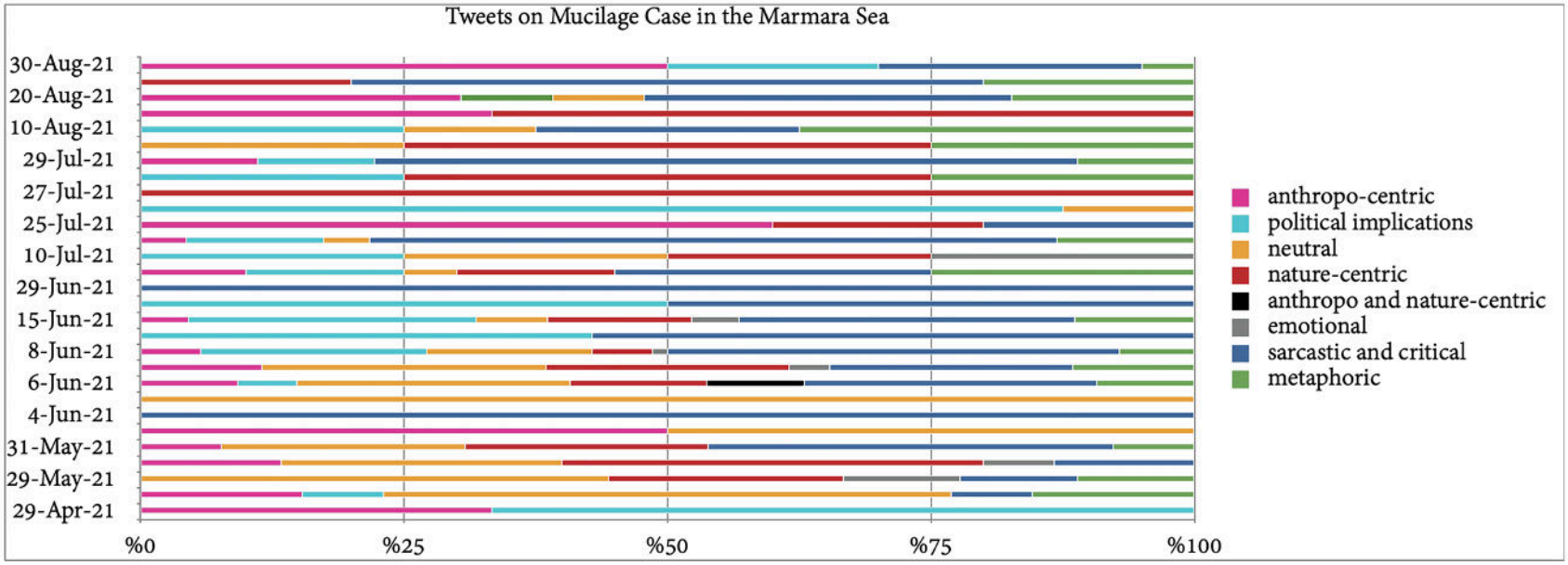

Figure 1: The dispersion of the categories by date of sampled tweets on mucilage in the Marmara Sea.

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