Traversing Roles Of Climate Crisis: A Visual Social Semiotic Study On Climate Change Advocacy On Instagram

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ARTICLE INFO	ABSTRACT
	Climate crisis is one of the most serious threats to Earth and its inhabitants. There are attempts to engage individuals and groups in taking action to reduce climate crisis and images are an increasingly significant part of these attempts. Research regarding the use of images indicates that they are capable of affecting a viewer's thoughts about climate crisis. This research study is an attempt to understand how climate activists use social media platforms to conduct advocacy. Using a visual social semiotic approach, the researcher has studied how still visuals uploaded on Instagram feed helps climate activists to reach out their respective audience. This research is qualitative in nature and the theoretical framework is drawn on Stuart Hall's Representation Theory. Data interpretation has been carried out using Gunther Kress and Theo van Leeuwen's understanding of visual social semiotic analysis. The findings show that social media is used for primarily triggering consciousness and action among the users or viewers, and draw attention of the policymakers, government, and media. The photographs posted on the platforms of a global social movement in an Indian state that combat climate crisis, are more of infographics, instructional guides, illustrations, rather than actual photographs that document climate crisis. The representational meaning of a photograph posted by a climate activist is different from the constructional meaning of that photograph.

Keywords: Climate Crisis, Visual Social Semiotics, Photographs, Instagram, Digital Advocacy |

Introduction

It is prudent to examine how visual images are created and understood in relation to climate change because images are assuming a more dominant role in society and have had an ongoing relationship with science. Climate change is extremely difficult to depict visually, particularly with photography (Doyle, 2007) because it occurs over time spans of decades and more, whereas photography focuses on particular scenes at particular moments. And yet, there is evidence of our frequent attempts to represent climate change with photographs: utilising images that we can connect to climate change in some way, such as symptoms. Further, Leiserowitz (2006) found that imagery had a strong influence on risk perceptions and policy support, revealing the importance of imagery to responding to climate change. The objective of this study is to explore visualisation and the different roles it plays in climate change communication and to understand the climate crisis messages and their meanings that activists and organisations put out on social media to reach out to various audiences or stakeholders.

Concept of Visual Social Semiotics and Photography

Semiotics has always been associated with making of meanings. It deals with the study of how representation of language, text, images, or objects create meanings or the ways in   which any individual understands meanings. Semiotics has been considered as the science that studies signs and how they create meanings. According to Danesi and Perron (1999) the study of semiotics seeks to decipher the nature, origin, and evolution

of signs. Schramm and Porter (1982) define signs as, "elements in communication that can be decoded into 'meaning'."

Social semiotics focuses "on the process of sign-making, in which the signifier (the form) and the signified (the meaning) are relatively independent of each other until they are brought together by the sign-maker in a newly made sign" (Kress & van Leeuwen, 2006, p. 8).
According to Peirce (1991), social semiotics does not rely on pre-existing relationships but recognises the complexity of sign-making and not sign-choosing. Each sign has a potential for meaning making. In other words, different signs may have many different potential meanings connected to them through elements such as societal conventions (Kress & van Leeuwen, 2006), and the meaning is determined by a particular context (van Leeuwen, 2005).

Images are often perceived as being universally understood (Kress & van Leeuwen, 2006). Photography, in particular, has often been identified as a direct representation of the world without interpretation. Hulick (1992) stated that photography "has a direct connection to real circumstance and hence to the diurnal reality of a culture" (p. 80). The association between photography and the truth arose from the earlier invention of the telescope. The telescope revealed that technology could support and even extend the ability of the human senses, "it became understood that to see through an instrument (such as the telescope or microscope, and, eventually, the camera) was to see a more profound reality than could be observed by the eye" (Harper, 2000, p. 718). Thus, photographs have been described as a "message without a code" (Barthes, 1977, p. 17).

As an objective eye, photography became closely associated with science-based topics and issues in education (Rosenblum, 1997). As science began to dominate, "images, ever more naturalistic, began to function as 'the book of nature', as 'windows on the world', as 'observation', and verbal text served to identify and interpret" (Kress & van Leeuwen, 2006, p. 18). Thus, the history of photography has been largely dependent on a Saussurian perception because it captures evidence of a reality and was therefore not a sign. Peirce (1932) on the other hand, described a photograph as a sign, specifically an index, which has a direct relationship with reality. Social semiotics recognises the importance of the community in how any semiotic resource including images is interpreted (Harrison, 2003).

Roland Barthes (1915-1980) was the first to apply ideas of semiotics, as it developed from linguistics, to visual images, for example, food advertisements, photography and motion pictures. Barthes' work offers a useful summary of the important aspects of semiotics discussed above. Essentially, he sought to analyse how the meanings we attribute to images are not a "natural" result of what we see; that is, images are not self-evident and universal in how we understand what we see.

Visual impact denoted meaning (or first order or basic meaning) and the cultural meaning we attach to it connoted meaning (or second-order meaning). In other words, denoted meaning refers to the recognition of what is registered by the image or photograph and connoted meaning refers to the possible invitation of the image to interpret, give meaning to, the forms even against or beyond the authors' intention. This provides a useful backdrop to look at the application of semiotics to visual and material culture and, furthermore, in terms of considering cultural meanings. Barthes called the immediate visual impact denoted meaning (or first order or basic meaning) and the cultural meaning we attach to it connoted meaning (or second-order meaning). In other words, denoted meaning refers to the recognition of what is registered by the image or photograph and connoted meaning refers to the possible invitation of the image to interpret, give meaning to, the forms even against or beyond the authors' intention. This provides a useful backdrop to look at the application of semiotics to visual and material culture and, furthermore, in terms of considering cultural meanings.

Therefore, visual social semiotics is the analysis and interpretation of connections between the audience of an image and the content within an image. Visual social semiotics is a new field of study (originating in the 1990s) and has been defined by Jewitt and Oyama as involving "the description of semiotic resources, what can be said and done with images (and other visual means of communication) and how the things people say and do with images can be interpreted" (2001, p. 136).

Visual social semiotics follows Halliday's theory of metafunctions (1994; 2004; Halliday & Matthiessen 2004), which postulated that language fulfils three meta functions simultaneously: ideational, interpersonal and textual. The same metafunctions have been extended to visual social semiotic resources by Kress and Van Leeuwen (1996; 2006) and renamed as representational, interactive and compositional.
They stated "the visual, like all semiotic modes, has to serve several communicational (and representational) requirements, in order to function as a full system of communication" (2006: 41).

Social Media and Digital Advocacy
The rapid advances in Internet-based technologies have integrated technology usage into daily life. Social media platforms like Facebook, X, and YouTube are now seen as powerful tools for influencing, learning, and

connecting people globally (Kassens Noor, 2012, p. 12). Social media's primary benefit lies in its ability to connect diverse individuals and groups, even in remote areas, fostering a sense of shared experience.

Advocacy, a distinct form of civic engagement, often precedes or complements direct action. It addresses issues like civil rights, education, healthcare, the environment, and the criminal justice system, aiming to influence decisions within various systems (Berke, Boyd-Soisson, Voorhees, & Reininga, 2010). Effective advocacy empowers people to make institutions more responsive to human needs and influence public policy and resource allocation (Bowen, 2014). Media advocacy specifically aims to mobilize supporters (Guo & Saxton, 2014).
Social media can enhance existing advocacy strategies by facilitating communication about public issues, building relationships with supporters, and encouraging greater involvement (Fine, 2006; Kanter & Fine, 2010). It complements offline tactics, which are crucial for engaging those who prefer traditional communication methods (Brunson & Valentine, 2010; Satariano & Wong, 2012). Combining offline and online approaches creates a "hybridity between physical and virtual space" (Penney & Dadas, 2014, p. 80). Social media can spread information, reinforce relationships, promote dialogue, and strengthen collective action cost-effectively (Brunson & Valentine, 2010; Orbar, Zube, & Lampe, 2012).

The photograms selected for this study are posted on Instagram. A social network site with over 1 billion monthly active users, Instagram is the fourth biggest social network (Clement, 2019). It focuses on sharing photos and videos, initially intended for users to upload pictures directly and connect with others (Herman, 2014). The platform emphasizes large, creative images and offers various filters to enhance posts (Herman, 2014, p.1). Instagram has grown in popularity for storytelling and advertising, particularly among millennials and Gen Z, who seek self-gratification, self-expression, surveillance of others, and entertainment (Muhammad, 2018). Unlike other microblogs, Instagram is primarily image-focused, enabling users to share pictures or short videos with their network and the public (Hu, Manikonda, & Kambhampati, 2014). Its mobile-first design and the use of hashtags to connect communities have fueled its popularity, making it an invaluable tool (Shirky, 2010; Shaw, 2016).

Climate Change Communication
Climate change, driven by human activities, poses significant threats to Earth and its inhabitants (IPCC, 2007; Oreskes, 2004). The Intergovernmental Panel on Climate Change (2014) warns that continued greenhouse gas emissions will lead to severe and irreversible impacts. Addressing climate change requires actions ranging from individual behaviors to international cooperation (González-Gaudiano & Meira-Cartea, 2010).
The UN Framework Convention on Climate Change (2012) describes climate change as a complex problem with environmental, economic, and social consequences. This necessitates solutions from various disciplines. Public advocacy on climate change has been driven by environmentalists, scientists, and activists (Dubash, 2019).

The term "climate crisis" is now preferred over "climate change" to reflect the urgency (The Guardian, 2019). Effective climate change communication combines visual and textual media, and social media has become a crucial tool for raising awareness and promoting activism (Carvalho, 2007; Painter, 2013). Social media facilitates engagement and dialogue on climate change, influencing public attitudes and participation (Gladston & Wing, 2019; Anderson, 2017).
Images play a vital role in communicating climate change, making the issue more concrete (O'Neill, 2019; Smith & Joffe, 2013). However, images depicting human suffering can also lead to feelings of helplessness (Ballantyne, Wibeck, & Neset, 2016). Social media platforms like Instagram have the potential to effectively disseminate climate change information, but more research is needed to understand their impact fully (Ballew, Omoto, & Winter, 2015; Bowman et al., 2015).

Climate Change in Assam
In India, there has been a noticeable increase in temperature and changes in rainfall patterns over the last 112 years (IMD). Assam, in Northeast India, has experienced significant climate changes, including increased temperatures and extreme weather events, affecting agriculture and livelihoods (Deka et al., 2009; Das et al., 2010; De & Bodosa, 2015; Nath & Deka, 2010).
A 2015-2020 action plan by the Government of Assam acknowledges the challenges climate change poses to development. A 2021 report by CEEW identifies Assam's Dhemaji and Nagaon as the most vulnerable districts to extreme weather events (Times of India, 2021). There is a lack of extensive research on climate change in Assam concerning visual social semiotics, highlighting the need for further study.

Organisations Fighting Climate Change in Assam
Fridays For Future – Guwahati Chapter
Fridays For Future (FFF), initiated by Greta Thunberg in 2018, has grown into a global movement. The Guwahati chapter started in September 2019, raising awareness about climate change and waste management through local climate strikes and community engagement across Assam.

Semiotic Methodology
Semiotics involves diverse concepts applied in various contexts (Manning, 1987; Chandler, 2002; Halliday, 1978; Van Leeuwen, 2005). Different schools (e.g., Geneva, Prague, Copenhagen) have distinct focuses in sign analysis, from superficial structures to deep meanings (Rose, 2007). Common traits among semioticians include viewing objects as structures and using systematic methods for deconstruction. Semiotic analysis limits itself to the content within the text and uses a scientific meta-language to determine layers of meaning (Rose, 2007). It focuses on the processes of meaning production, observing divergences within the content to comprehend meaning (Rose, 2007).

Visual Social Semiotic Analysis
The visual social semiotic approach by Kress and Van Leeuwen (1996; 2006) categorizes analysis into representational, interactive, and compositional metafunctions. Representational refers to real-world depictions, interactive to interactions between depicted and real participants, and compositional to the layout and salience of visual elements. Each category includes further subdivisions for detailed exploration.

Analysis of Instagram Posts
Instagram posts are analyzed for their ideational, interactive, and compositional meanings. Users learn visual grammar and technical photography aspects through interaction on the platform. The analysis considers information value, salience, and framing to understand how elements are arranged and connected.

Theoretical Framework

Stuart Hall's representation theory connects meaning, language, and culture. Hall (2013) describes two systems of representation: one correlates objects and concepts, and the other is the public and social nature of language. His constructivist approach emphasizes that meaning is derived from symbolic practices rather than material objects. This involves the use of language, signs, and images to symbolically represent things. Hall identifies two systems of representation: first, a mental system where concepts and images enable humans to interpret and refer to the world both internally and externally; and second, a broader system involving shared linguistic conventions and codes crucial for meaningful communication.

In his theories, Hall (2013) delineates three approaches to representation: reflective, intentional, and constructivist. The reflective approach posits that meaning resides within objects or events, reflected accurately through language. The intentional approach suggests that meaning is imposed by the author's unique perspective. Hall critiques this view, asserting that language must adhere to shared conventions for effective communication, rejecting the notion of purely private meanings.

Hall (1997) underscores that representational systems, such as spoken words, images, and digital signals, utilize material objects but derive their significance from their symbolic functions rather than their physical properties.

In applying Hall's framework, the research analyses how the advocacy movement and organisations' posts represent their viewpoints within cultural contexts, using Hall's insights to navigate the complexities of representation, meaning, and language in societal discourse.

Sampling
Instagram is selected for its widespread use and relevance in digital advocacy. Fridays for Future (FFF)–Guwahati, a climate action movement has been selected based on their influence and active presence. Five posts from FFF - Guwahati profile has been chosen and analysed based on engagement during the 2020 lockdown. A stratified random sample is used, dividing the population into homogeneous groups for higher precision. Posts are selected based on likes and comments, and activists are interviewed about their digital advocacy during the lockdown.

Data Analysis

For the analysis of Fridays For Future (FFF) during the 2020 lockdown, the researcher focused on Instagram posts related to climate activism. FFF utilized various visual formats such as memes, infographics, and campaign photos to advocate for environmental issues. Despite challenges during the lockdown, including limited content creation capability, FFF maintained a consistent online presence. This was crucial in raising awareness on significant environmental concerns such as the Baghjan blowout and coal mining in Assam. Their proactive approach involved digital strikes and impactful posts, like those highlighting the Dehing Patkai rainforest.

#IamDehingPatkai Campaign

Fig.1 #IamDehingPatkai campaign

Figure 1 from the #IamDehingPatkai campaign depicts a striking image of a young man with a painted face, symbolizing the uniqueness of the Dehing Patkai Elephant Reserve. This post garnered significant engagement during peak lockdown months.

Representational Function
In the narrative process, the image features a non-transactive narrative with the actor simply looking into the frame, emphasizing the cause through visual elements whereas in the conceptual process the post urges viewers to join the movement to save Dehing Patkai, using both textual and visual appeals.

Interactive Function
The image act comprises the actor's gaze demands action from viewers, fostering a close social relation while the high modality enhances the image's impact, supported by lighting techniques and thematic colours.

Compositional Function
The composition emphasizes the actor's features and the artwork, though some elements could be more pronounced and effective framing around key phrases and images enhances the message's coherence and impact.

#SaveDehingPatkai
Figure 2. illustrates the pain of Mother Earth through an emotional illustration, aiming to evoke viewer empathy and support for conservation efforts.
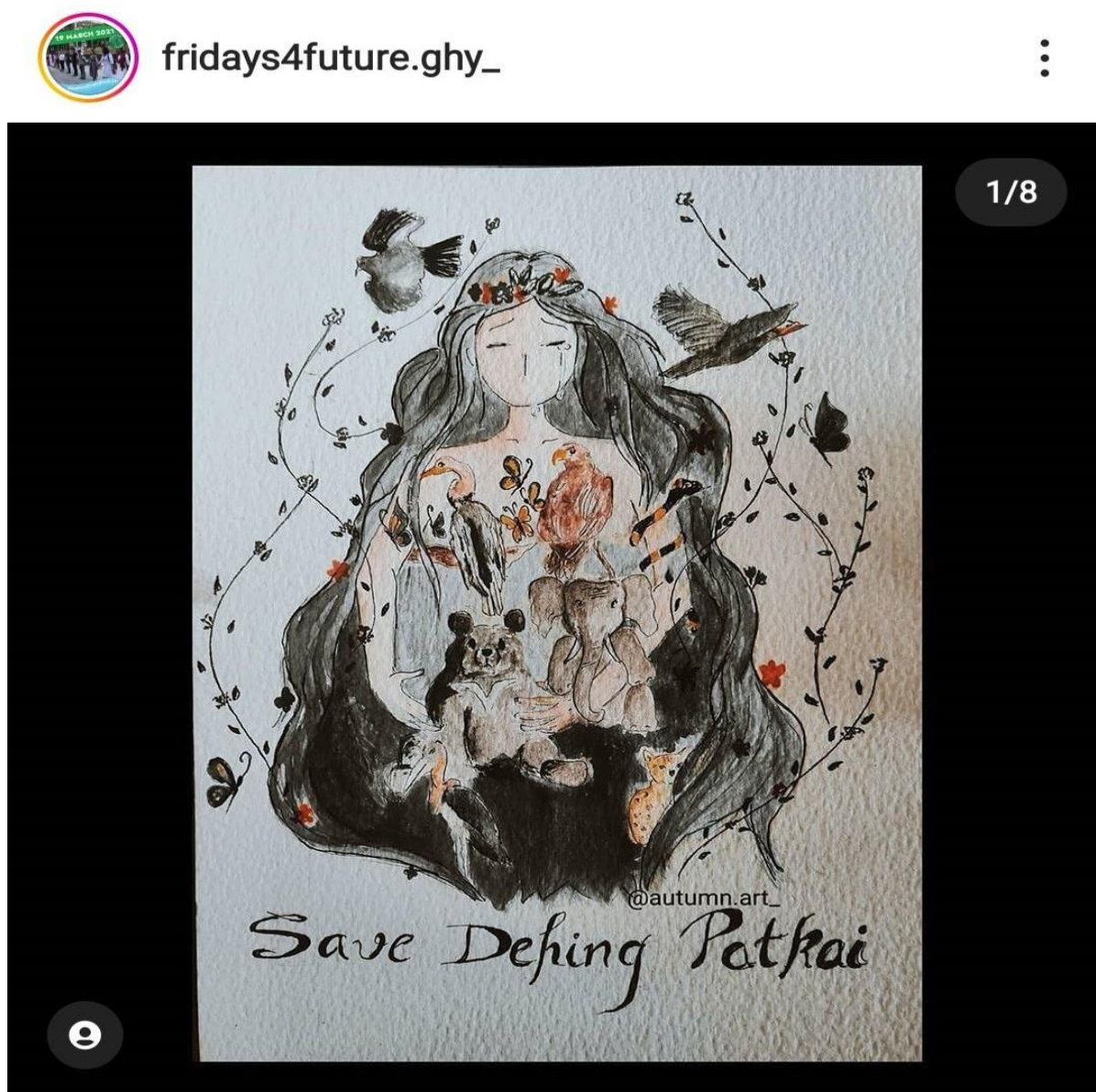
Representational Function
It features a transactive narrative with the maiden symbolically protecting wildlife, appealing to viewers' emotions and it underscores the urgency of preserving Dehing Patkai amid environmental threats.

Interactive Function
The image pleads for attention and empathy without direct viewer engagement and the moderate modality affects the image's depth and contrast.

Compositional Function
There is uneven salience due to the illustration's placement, impacting clarity and focus and there is diverse framing highlights elements and thematic coherence.

#Save_Dehing_Patkai

Figure 3 features a poetic and artistic representation of Mother Earth and wildlife, urging viewers to protect natural ecosystems.
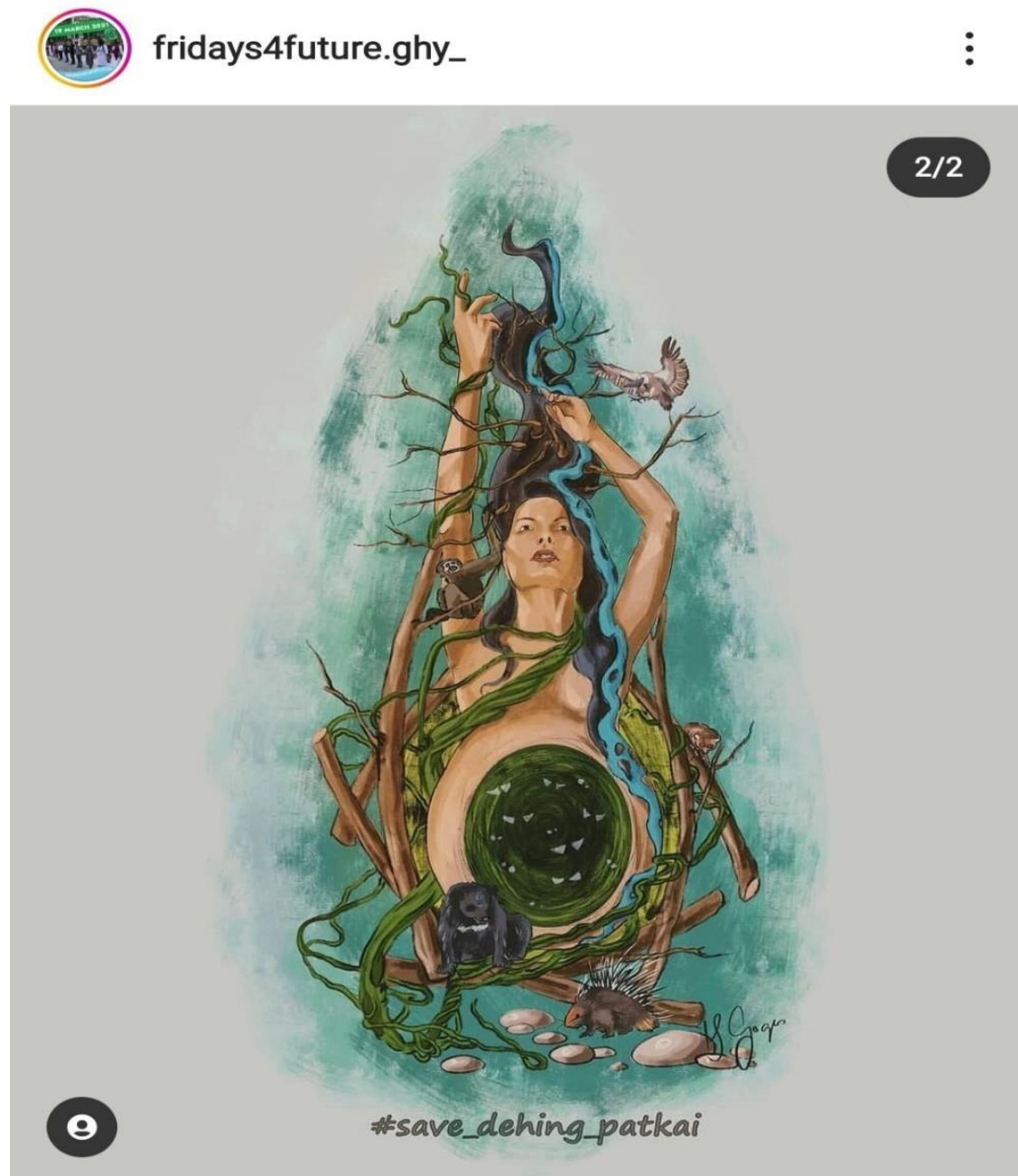

Fig.3 #IamDehingPatkai

Representational Function

The transactive narrative with the maiden embodying Mother Earth's plight is depicted while emphasizing the interconnectedness of nature and the need for conservation efforts.

Interactive Function

The post encourages reflection and awareness without direct demands on viewers and the high modality enhances visual impact and thematic resonance.

Compositional Function

Even distribution of salience enhances the image's impact and coherence and supportive framing enhances thematic unity and visual appeal.

Save Dehing Patkai
Figure 4 portrays a calligraphy and painting that highlights the urgency of preserving Dehing Patkai through impactful visual and textual elements.
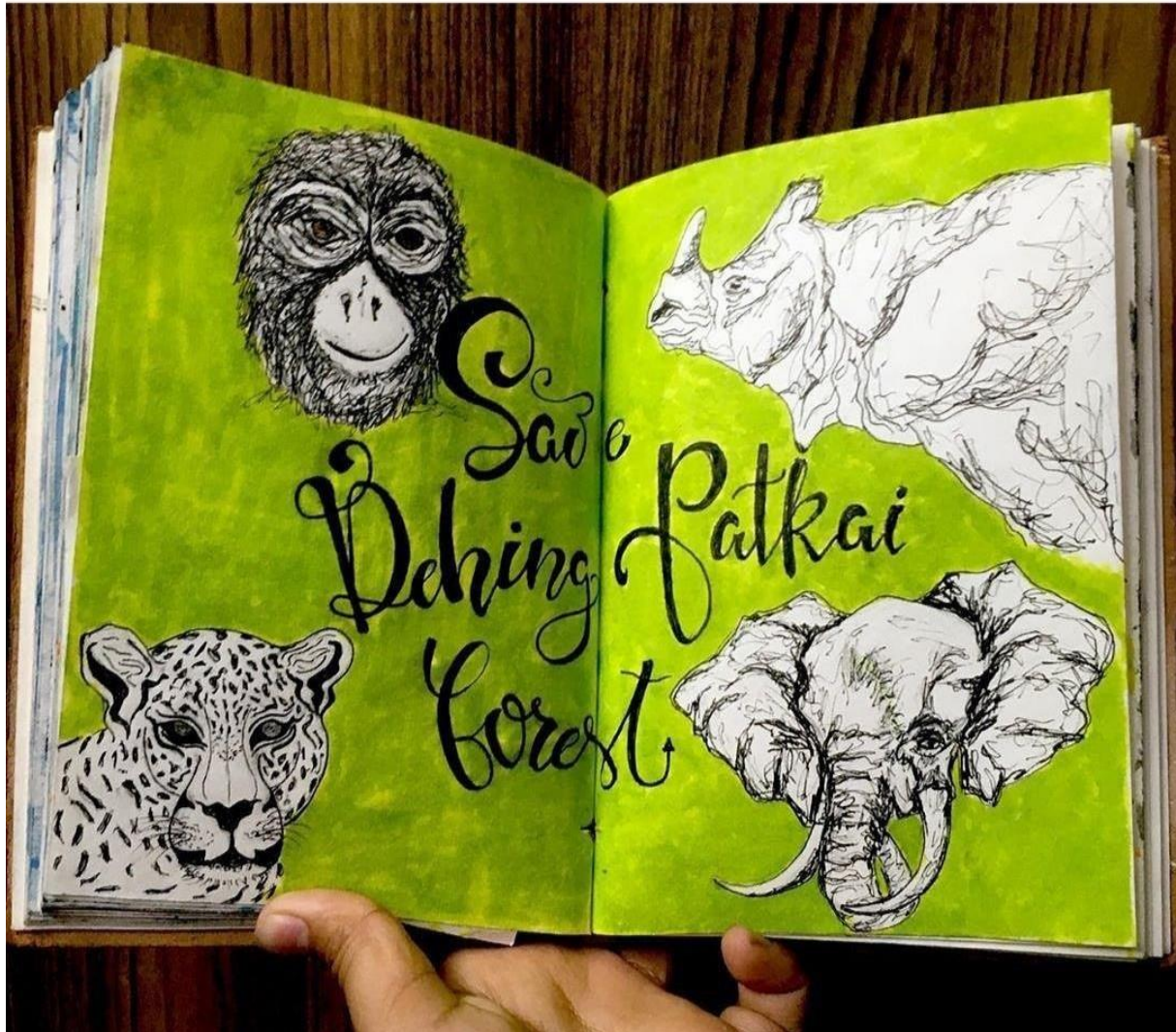

Fig.4 #SaveDehingPatkai

Representational Function
The non-transactive narrative focused on a static image with textual appeals and urges viewers to act for conservation through symbolic representations.

Interactive Function
The post demands action through visual and textual elements, engaging viewers emotionally and high modality enhances the image's visual and thematic depth.

Compositional Function
Even salience enhances the image's clarity and message while strategic framing supports the image's thematic coherence and impact.

Digital Climate Strike for Dehing Patkai
FFF's digital strike initiative, Figure 5, aimed to mobilize online support against coal mining in Dehing Patkai.
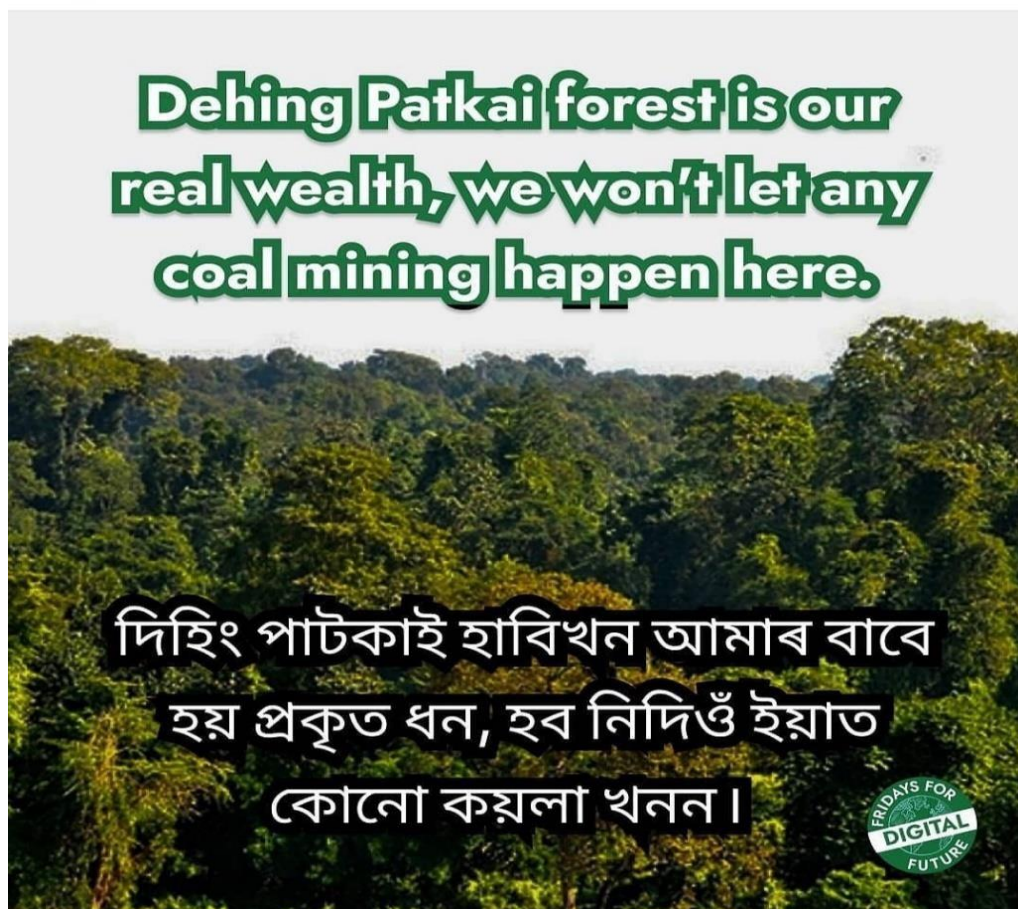
fridays4future.ghy_

Dehing Patkai forest is our real wealth, we won't let any coal mining happen here.

দিহিং পাটকাই হাবিখন আমাৰ বাবে হয় প্রকৃত ধন, হব নিদিওঁ ইয়াত কোনো কয়লা খনন।

FRIDAYS FOR DIGITAL FUTURE

Fig. 5 Digital Climate Strike for Dehing Patkai

Representational Function
The non-transactive narrative focused on textual and symbolic elements while the conceptual process urges viewer participation in climate activism through visual and textual appeals.

Interactive Function
The image engages viewers through bold text and thematic imagery, fostering social connection, however the low modality of the image affects visual depth and contrast.
Compositional Function

Even salience enhances the image's clarity and thematic focus, while effective framing of text and imagery supports thematic coherence and viewer engagement.
This concise analysis provides insights into how FFF utilized social media during the 2020 lockdown to advocate for environmental and social causes effectively.

Conclusion

The conclusion drawn from the study emphasizes that public support for climate action is not solely driven by scientific consensus but is deeply intertwined with broader societal attitudes encompassing morality, politics, economics, and culture (Höijer, 2010; Norgaard, 2011). The effectiveness of visual communication, particularly on platforms like Instagram, holds promise in engaging the public due to its ability to provoke understanding and involvement. However, analyzing images for climate advocacy purposes remains complex due to the diverse interpretations they can evoke.

The research specifically highlights that Instagram posts related to climate crises often feature infographics, instructional guides, and illustrations rather than direct photographic documentation. During the lockdown phase, there was a notable absence of on-ground climate crisis visuals, indicating a shift towards virtual advocacy and community mobilization.

Furthermore, the study underscores the role of social semiotics in understanding visual texts, noting that visual representations carry ideological messages that are circulated and contested within communities. This perspective aligns with Kress and van Leeuwen's visual grammar, which explores how elements like composition and modality shape visual meaning.

In conclusion, the research stresses the importance of visual representation in shaping perceptions and motivating action on climate change, acknowledging the varying interpretations that visual framings can engender (O'Neill, 2013). It advocates for a nuanced approach in studying visual communication on social media platforms to better grasp its impact on public understanding and engagement with climate issues.

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