Seeing a way forward

Visual communication strategies for overcoming barriers to engagement with environmental issues

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Abstract

Despite the widespread availability of information available to the public regarding major environmental issues like climate change, communicators have faced difficulty in generating the levels of public engagement necessary to make meaningful positive changes in society. This master's thesis explores the potential role of visual environmental communication in addressing barriers that general audiences might face in engaging with environmental issues. In order to explore this issue, in-depth, semi-structured interviews with open-ended lines of questioning were used to collect qualitative primary-source data from image creators and other professionals working with visual environmental communication. This data was sorted using thematic analysis and compared to relevant existing literature to unpack potential interactions between visual environmental communication and barriers to engagement with environmental issues.

The interviewees described a number of specific strategies that they used to engage their audiences, including addressing issues of attention and accessibility, using storytelling to encourage feelings of connection, and providing next steps for their audiences. These strategies were further contextualized by discussion of the interviewees' roles as topical experts and translators, the importance of integrity and contextualization in communication, and the participants' frustration with the difficulty of measuring the impact of their work. Comparison with existing literature supported the potential of the strategies cited by the interviewees to increase audience engagement. Overall, the findings suggest that the professionals interviewed were actively developing specific, intentional, and informed strategies to engage audiences in their work. However, most of them felt that it was difficult to accurately evaluate how well their current strategies were working and expressed a desire for better clarification regarding best practices for audience engagement in visual environmental communication.

Key words: Visual communication, environmental communication, conservation photography, interdisciplinarity, qualitative methods

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Keegan Glennon

TABLE OF CONTENTS

1. Introduction

Human-caused environmental ills such as climate change, mass extinction, and rampant pollution are among the most pressing issues facing society today. However, public engagement with these issues is often low, or at least has not been sufficient to make significant progress on solving them. Given the increasing availability of information on environmental problems over the past few decades, it might be expected that engagement would have increased to a greater degree, but the relationship between information and engagement has proven to be far from linear (Kellstedt et al., 2008). This suggests that there are other factors influencing this relationship.

If simply providing more information in itself does not seem to lead to similarly increased engagement with environmental issues, then perhaps it would be more useful to examine whether engagement might be more related to how information is presented. One angle from which this examination can be approached is by focusing on visual communication.

Visual communication involves the use of visual elements to convey information, and thus, by definition, is strongly concerned with how information is presented. Visual elements become signs and symbols that transmit meaning, and the presented elements of an image – its shapes, color, and use of space, for example – are used to evoke its suggested elements, which include ideas, themes, and associations (Foss, 2004). The red of a stop sign suggests danger, while a photograph of a seed sprouting might suggest growth, new life, or future potential. Visual communication has a rich history within environmental communication and has been successful at driving engagement with environmental issues in the past. For example, visual art has been credited as playing a defining role in the modern conservation movement (Ellison, 2014; Gaynor & Mclean, 2005), and visual communication campaigns against littering and nuclear power plants have had long-lasting cultural impacts (Dunaway, 2015). Visual communication has also been highly successful in other contexts, such as commercial advertising. Thus, insight into visual environmental communication is instructive for environmental communication as a whole.

In order to achieve a better understanding of visual communication as a technique for encouraging engagement in environmental issues, this interdisciplinary master's thesis explores the experiences and beliefs of currently active visual environmental communicators through in-depth interviews. It then connects these experiences and beliefs expressed in the interviews with existing literature in the fields of communication studies, psychology, and sociology in order to better understand the intersections between the strategies described and existing explanations for why people do or do not engage with certain issues. Finally, it looks at some of the challenges that active visual environmental communicators describe in their work.

1.1 Motivation, rationale, and scope

The idea for this research came from my prior experience in environmental communication. Although I have primarily been involved in creating text-based content, I was able to see audiences' positive responses to visual content published by the organizations I worked with, and I enjoyed working on the occasional visual project. I also worked closely with visual communicators and had a positive impression of the effort and passion they put into their work. During the Covid-19 lockdown, I found myself spending more time consuming visual media related to environmental issues online and became curious about these visual communication styles and the intentions behind them. This curiosity led to the initial conceptualization of the current master's thesis.

There is a large and rapidly growing body of work on the topic of environmental communication. Given the pressing threat of many environmental issues (most notably, climate change), there has been strong academic interest in how to translate communication about environmental issues into action. However, there is relatively little work investigating the current state of the specific strategies used by visual environmental communicators to engage audiences and drive action on environmental issues. This research helps to fill this gap by providing an exploration of the experiences, strategies, and beliefs of currently active visual environmental communicators and analyzing these in view of the existing body of relevant academic research. This information can guide future work in evaluating best practices for visual environmental communication and positioning visual media as a tool for comprehensive environmental communication strategies.

Since visual environmental communication can encompass a wide range of visual content styles, it was necessary to narrow the scope of my exploration to adhere to the time and length requirements of a master's thesis and to derive sufficiently specific results from my data collection. Therefore, this research focuses on visual communication in the forms of documentary-style conservation and nature photography, as these are frequently used in communication on environmental issues. Other forms of visual art, including sculptures, drawings, paintings, performance art, and abstract or experimental photography, are considered to be outside the scope of this work. However, the literature review does contain some discussion of representative landscape paintings from the 1800s as precursors to modern landscape photography.

It is also important to note that this work was heavily influenced by Western cultural perspectives. I, as the researcher, grew up in the United States and studied both there and in Western Europe. The interview subjects in this research came from several different countries, but most either lived in or grew up in Western cultures. In addition, the majority of the sources used in this thesis were written by Western authors and all conclusions drawn from them are embedded in this cultural landscape. It is acknowledged that various cultures likely have different meanings attached to visual motifs and different lenses through which they view images. For example, the literature review discusses how certain Western conceptions of nature may see humans and nature as highly separate entities and idealize untouched wilderness over nature that is closer to home, but people from different cultural backgrounds might not share these conceptual frameworks. In order to maintain a manageably narrow scope in this work, this research did not pursue a comparison of visual environmental communication across cultures. However, this would be an interesting topic for future work to explore.

In addition, the scope of this work is focused on democratic societies in its assumptions about the actions that most citizens can take regarding environmental issues, as well as the necessity of public pressure for the creation of pro-environmental policies. It assumes that the audiences discussed have free access to media and that public engagement can influence environmental

policies. The relevance of this work to non-democratic contexts in which these assumptions do not apply may be limited.

Finally, this master's thesis does not empirically assess the actions taken by communication audiences to measure engagement. Instead, it uses a relatively broad definition of engagement influenced by the work of Lorenzoni et al. (2007). Engagement is taken to refer to a state of being involving cognitive, affective, and behavioral elements rather than a process defined by particular actions (for example, voting or recycling). Therefore, when discussing how communicators encourage engagement with environmental issues, this is taken to mean that communicators are encouraging a state of being in which audiences care about these issues and are motivated and able to take action.

1.2 Research question, aim, and objectives

As described above, the aim of this thesis is to develop a better understanding of visual communication as a technique for encouraging engagement in environmental issues by exploring how visual communicators in the field of environmental communication attempt to create audience engagement around the topics they present. Given the frequently cited difficulty of generating levels of engagement that are sufficient to enact positive change around environmental issues (Moser, 2016; Norgaard, 2009), this exploration centers on potential barriers impeding audience engagement and how the visual communicators in question attempt to overcome them. The following central research question was formulated to achieve this aim:

How do visual environmental communicators attempt to use visual media – specifically, photographic media – to address barriers to engagement regarding environmental issues?

This central research question shaped the research process of this master's thesis. In order to answer this question, several sub-questions must also be investigated.

- *What do active visual environmental communicators see as barriers to engagement regarding environmental issues?*

- *What specific strategies do active visual environmental communicators use to counter what they see as barriers to engagement?*
- *What factors moderate the use of these strategies?*

Three objectives were set out in the pursuit of answering these research questions. The first objective was to conduct a thorough literature review in order to better understand the current state of academic knowledge on visual environmental communication and determine what information might be relevant. The second objective was to recruit participants working in relevant positions and conduct detailed, in-depth interviews regarding their thoughts and experiences related to visual environmental communication. Again, in order to maintain a manageable scope for this study, it was determined that the participant recruitment would focus on photographers and filmmakers working in environmental communication. Finally, the third objective was to use thematic analysis to distill the interview data into qualitative insights that would provide answers to the research questions.

1.3 Structure of the thesis

After this brief introduction describing the motivation and scope of this master's thesis and presenting the central research question, the rest of this paper is organized as follows.

Chapter 2 presents a review of existing literature relevant to the topic at hand and provides background information useful for understanding the context of this research. It introduces the topic of environmental communication and underlines the importance of its study. It then explores existing thought on why engagement with environmental issues has not kept pace with the increasing amount of information available. Next, this chapter looks more specifically at visual communication as a subset of environmental communication. It explores a number of concepts that are useful in providing a greater understanding of visual environmental communication, including evidence of its efficacy, potential interactions between visual communication and barriers to engagement, how images communicate, and how cultural understandings of nature are relevant in visual environmental communication. It also looks

briefly at image creators in visual environmental communication and discusses the "dark side" of visual environmental communication – that is, how it can be used disingenuously.

Following the literature review, Chapter 3 gives an overview of the theoretical framework that guided the choices made throughout the research process. In line with the interdisciplinary nature of this master's thesis, this chapter examines theories from the fields of psychology, sociology, and communications with relevance to the research questions. It also discusses the ontological and epistemological basis of the research methodology used in the present study.

Chapter 4 describes the methods and methodology used to answer the research question in this study. This chapter explains exactly how the data used in this master's thesis was collected and how the thematic analysis was conducted to distill detailed, in-depth interviews into several concise themes that address the central question of this work. In addition, it discusses ethical considerations made during the data collection process and my own positionality as a qualitative researcher.

After the methods and methodology used in this study have been laid out, Chapter 5 describes the results of the interview process and thematic analysis. After the results for each theme are presented, there is a discussion of the results in relation to existing literature and theory.

Finally, Chapter 6 presents a brief conclusion to this work. It clarifies the answers to the research questions and recapitulates the main arguments of this master's thesis. It also emphasizes the contribution that the present study has made to the field and makes recommendations for future work on the topic of visual environmental communication.

2. Background and Literature Review

This chapter presents a review of the existing body of literature relevant to the visual communication of environmental issues. Given that the topic of visual environmental communication is highly interdisciplinary, there is a massive amount of relevant literature spanning diverse academic fields. Thus, it is not within the scope of this paper to conduct an exhaustive review of the relevant literature. Instead, this literature review aims to provide a general exploration of topics relevant to the stated research question to establish some context for the present study.

This literature review is structured as follows. First, Section 2.1 provides an introduction to the study of environmental communication. Then, Section 2.2 discusses barriers to engagement with environmental issues and why environmental communicators need to be aware of these. Finally, Section 2.3 explains this thesis's focus on visual communication and why visual media may be a particularly useful tool in countering the barriers to engagement introduced in Section 2.2.

2.1 Environmental communication

In August of 2016, an international team of researchers presented a recommendation to the 35th International Geological Congress to add a new geological time segment to Earth's history: the Anthropocene, or the age of humans ("Overview of the 35th International Geological Congress," 2016). The team argued that we have reached a point where human activity exerts a dominant influence on climate and the environment.

Unfortunately, this influence of human activity has, in many ways, not been positive. Evidence of the negative environmental consequences of human activity has continued to mount over the past several decades. The ways that modern industrialized societies have interacted with the planet have caused both ecosystems and the people who rely on them for survival to suffer. Environmental degradation and climate change disproportionality harm vulnerable populations and ecological systems. In order to reduce detrimental effects on human and non-human health

and wellbeing, it is crucial that action be taken to make the ways that we interact with our planet more sustainable.

If human activity is now the dominant influence on climate and the environment, then humans have both a great responsibility and a great opportunity to change things for the better. Our actions are already determining the future of the planet. Therefore, it is up to us to create a future that minimizes suffering and allows both people and ecosystems to thrive.

There is a large body of existing research about both the adverse environmental impacts of human activities and how humanity can improve its future outlook with regard to the environment. For example, the negative impacts of anthropogenetic climate change have been well-established, and at the most basic level, what humans need to do to improve this state of affairs – reduce emissions of greenhouse gases – has been established as well (Cook et al., 2016). However, despite the existence of this basic knowledge, human society has failed to make significant progress in solving the issue of anthropogenetic climate change. Similar situations apply to other environmental ills such as biodiversity loss and pollution.

Environmental issues like the ones listed above are what is referred to as "wicked problems" (Rittel & Webber, 1973). Wicked problems are highly complex, difficult to define, and influenced by a web of interconnected social and political factors – many of which are constantly changing even as attempts to solve the problem are made. In addition, the nature of wicked problems is likely to be viewed differently depending on the perspectives and biases of different stakeholders (Rittel & Webber, 1973; Kreuter et al., 2004). It is one thing to say that humans need to reduce greenhouse emissions to combat climate change or reduce the use of single-use plastics to tackle microplastic pollution, but it is quite another to actually go about making these things happen.

In democratic societies, public support is essential to making meaningful changes that move the needle toward a planet that can sustainably support both human and non-human life (Beierle, 2010). Given the complex nature and huge number of stakeholders involved in wicked problems, solutions cannot come solely from the top down. Therefore, it is necessary to give citizens the

tools to understand and respond to environmental issues, both in terms of education and empowerment. In order to create a sustainable and equitable society in which both humans and nature can thrive, it is vital that people be engaged with issues, express their concern, and work to create solutions. People must not only know about issues, but care about them and be motivated and able to take action (Lorenzoni et al., 2007). All of this falls under the role of environmental communication.

Communication about environmental issues is not simply a matter of disseminating information. Cox (2007) argued that environmental communication has a normative tenant of seeking to "enhance the ability of society to respond appropriately to environmental signals relevant to the wellbeing of both human civilization and natural biological systems" (p. 16). If this is true, then the problem becomes not just how to communicate information but "how to communicate both scientific and social scientific information about climate change to the public in a way that the information engenders engagement with social and policy implications" (Norgaard, 2009, p. 26). As a result, studies of how environmental communicators in diverse positions – such as educators, activists, and members of the media – harness communication techniques in pursuit of this goal are vital for fulfilling the above normative tenant and moving towards a more equitable and sustainable society.

History has proven the problem of how to communicate information in a way that positively engages the public in seeking solutions to environmental problems to be a formidable one. However, by tailoring their communication strategies, environmental communicators may be able to optimize their messaging in order to better engage the public and empower more people to take action (Hornsey & Fielding, 2020).

One school of thought assumes that this optimization can be achieved by simply providing more information on environmental issues. This strategy follows what is known as the information deficit model of science communication, which assumes a direct link between access to information and people's beliefs, attitudes, and behaviors (Reincke et al., 2020; Simis et al., 2016). Intuitively, it makes sense that if people have the right information, they will make the right decisions, but this approach has been heavily criticized in communication and social

science literature that finds fault with its overly simplistic assumptions about the relationship between information and behavior (Simis et al., 2016). Instead, critics argue, the relationship between information and behavior is mediated by cognitive, social, and emotional factors that must be acknowledged in order to achieve more effective communication (Simis et al., 2016; Suldovsky, 2017). Therefore, it is not just the availability of information that matters – how information is presented can have a significant impact on how much audiences are influenced.

In the environmental context, multiple studies have found evidence that did not support the widely presumed link between the public's access to information on climate change and their levels of concern or subsequent actions (Kellstedt et al., 2008; Norgaard, 2009). One study found that respondents who were more informed about climate change actually showed *less* concern about this issue than those who were less informed (Kellstedt et al., 2008). In investigating why a straightforward link between information and concern or action regarding environmental issues did not seem to exist, Norgaard (2009) argued that this link is impeded by psychological, conceptual, social, and cultural barriers. Environmental communications research could help to elucidate how communicators can overcome some of these barriers and inspire people to action. For example, Norgaard (2009) stated that when hearing about climate change, people often feel helplessness, guilt, disconnection, and fear. These negative emotions make people want to shut down and turn away from the issue to protect themselves from emotional distress. If environmental communication is making people feel disempowered and causing them to shut down, then it is certainly not sparking the engagement that is necessary to make positive and sustainable changes. However, if they know that this is a barrier for people, environmental communicators can adapt and change their communication approaches accordingly.

In order to create a more equitable and sustainable world, environmental communication is vital to inform and engage people in pushing for change. However, how communicators present information matters and can have a major impact on how well that information translates into audience engagement. Research on environmental communication can help to develop communication strategies that elucidate how communicators can counter barriers preventing people from engaging with environmental topics and empower the public to work towards a more sustainable future.

2.2 Barriers to engagement with environmental issues

There is now a huge amount of information available to the public on climate change and other environmental issues. However, and perhaps contrary to what one might expect, this wealth of information has not necessarily translated into engagement (Kellstedt et al., 2008). Many researchers have attempted to offer explanations for this phenomenon (Lorenzoni et al., 2007; Norgaard, 2009).

In a working paper for the World Bank, Norgaard (2009) laid out some traditionally argued reasons for this gap between information and action and also offered up her own framework, arguing that there are specific psychological, cognitive, and cultural barriers to addressing climate change.

According to Norgaard, there are four commonly cited explanations as to why people do not act to combat climate change (or other large-scale environmental issues). These are as follows:

1. people do not know enough (an information deficit approach),
2. people do not care enough,
3. people are distracted by more immediately pressing problems in their lives (a hierarchy of needs explanation), and
4. people trust that the problem will work out without action from them (for example, through government or technological solutions; Norgaard, 2009).

These explanations both do and do not explain people's inaction on climate change. For example, while it is true that people need a basic understanding of the problem to care and engage in action, research has shown that more information is not always correlated with more concern or action (Kellstedt et al., 2008). In addition, many people both know about and express concern over climate change but do not engage in action to combat it (Lorenzoni et al., 2007). Similarly, the idea that most people are too greedy or selfish to bother about future generations is flawed. This argument implies that individuals hold equal individual responsibility for

environmental issues and ignores socio-economic, political, and cultural factors as well as institutional responsibility (Fahlquist, 2009). Regarding the hierarchy of needs explanation, while it may be true that people are distracted by more immediate problems, Norgaard (2009) argued that what people perceive as "needs" is heavily influenced by social and cultural norms, and thus, an explanation of inaction would have to include these. Finally, Lorenzoni et al. (2007) found that people do tend to shift the responsibility of dealing with climate change to others, but trust in government, corporations, or technology to solve environmental problems is called into question by surveys indicating skepticism about this very topic ("Reducing Carbon Emissions and Tackling Climate Change," 2024).

To supplement the explanations above, Norgaard offered up her own reasoning as to why people do not engage with climate change. She argued that people face psychological, conceptual, social, and cultural barriers to responding to climate change, including the motivation to

1. avoid emotions of fear, guilt, and helplessness;
2. follow cultural norms; and
3. maintain positive conceptions of individual and national identity (Norgaard, 2009).

Central to the first point of avoiding negative emotions is Anthony Giddens' idea of ontological security. Giddens defined ontological security as "the confidence that most human beings have in the continuity of their self-identity and the constancy of the surrounding social and material environments of action" (Giddens, 1991, p. 92). At a fundamental level, climate change threatens peoples' ontological security as it causes uncertainty about whether they are headed towards a day when the very planet they live on can no longer sustain life.

Another word for this uncertainty is climate anxiety, and it is a significant problem today. In 2002, the American Psychological Association found that 68% of surveyed Americans reported experiencing some degree of climate anxiety. Younger people were most likely to be affected, and nearly half (47%) of the respondents aged 18 to 34 said that the stress they felt about climate change affected their daily lives ("Majority of US Adults Believe Climate Change Is Most Important Issue Today," 2020). Another study reported that 84% of responding children and

young adults ages 16 to 25 were at least moderately worried about climate change, and 59% were very or extremely worried (Hickman et al., 2021). Climate anxiety can even cause people to feel guilt and worry over lifestyle choices that have been taken for granted for almost all of human history, like having children (Nakkerud, 2021).

Secondary to this fear of the loss of ontological security, people are motivated – psychologically, socially, and culturally – to avoid feelings of helplessness and feelings of themselves or their culture being in the wrong (Norgaard, 2009). People desire to maintain positive senses of individual and group identity, and when these are threatened, it may activate psychological defense mechanisms such as avoidance or denial, otherwise known as cognitive dissonance (Festinger, 1957; Harmon-Jones & Mills, 2019). This avoidance or denial could hinder engagement with environmental issues.

In addition, some people feel that there is quite a bit of confusion and uncertainty around climate change and other environmental issues (Lorenzoni et al., 2007). These issues may seem overwhelming, and knowledge, rather than being accessible firsthand, must be relayed and translated by a number of parties (e.g., scientists, NGOs, the media, politicians) before it is understandable to the layman. Confusion and uncertainty represent more feelings that people prefer to avoid, and culturally, they are difficult to discuss due to social pressure to appear confident and in control (Norgaard, 2009).

Finally, people may feel a sense of disconnect regarding environmental issues (Norgaard, 2009). They may feel like the problems are far away and difficult to link to their daily lives, and that they as individuals cannot personally do much to make a difference (Lorenzoni et al., 2007; Norgaard, 2009). For example, those living inland may not feel much connection to small island nations battling rising sea levels and may not feel like they can do anything about this issue even if they did feel connected to it. According to Norgaard (2009) and based on input from other researchers (e.g., Lorenzoni et al., 2007), all of the above factors are barriers that contribute to the lack of engagement and action on climate change and other complex environmental issues.

Regarding the lack of engagement with complex environmental issues like climate change, it is also useful to look at mechanisms of denial. Cohen (2001) identified denial as having three separate types: literal, interpretive, and implicatory. In the context of climate change, literal denial would be asserting that climate change does not exist, and interpretive denial might be saying that it exists but will not be as bad as scientists say. Both of these arguments are fairly recognizable as common forms of climate change denial. However, Norgaard (2009), in her work, most frequently observed implicatory denial, defined by Cohen (2001) as the minimization of not facts themselves but their psychological, political, or moral implications. This type of denial appropriately sums up the barriers Norgaard described – not so much denial of the facts but attempts to minimize the painful or uncomfortable implications of a planet being radically and negatively altered by human activity.

The above discussion about barriers to action or engagement with climate change and other large-scale environmental issues is relevant to environmental communicators aiming to – returning to Cox (2007) – enhance society's ability to create a world that maximizes the wellbeing of both human and non-human entities. These communicators may benefit from considering the barriers that their audiences face in engaging with complex environmental issues and, subsequently, by seeking out ways to circumvent or address these barriers.

2.3 Visual environmental communication

Much of the Western world currently lives in a highly digitized society in which they are constantly being bombarded with media and information. Goldhaber (1997; 2006) elaborated on the idea of the attention economy, arguing that human attention is a limited resource, and in today's digital world, there is a practically infinite amount of information competing for this resource. As a result, environmental communicators must use strategies to help them capture people's attention first before they can continue to convey information on a deeper level.

Once a viewer's attention has been captured, information can be conveyed. As the popular adage goes, "A picture is worth a thousand words." In a world where readers' attention often does not go further than the headlines, a photo can simplify a complex story and quickly convey it to a

viewer (Levie & Lentz, 1982). Of course, in many cases, images require more context to paint the full picture of a situation, but in general, much more information can be conveyed in a glimpse than with prose, and this can both aid in audience understanding and potentially "hook" viewers enough to encourage them to continue engaging with the given media (Pieters & Wedel, 2004). In contrast, textual information can be relatively time-consuming to sort through and consume.

Images can also be very effective in evoking emotion, which can be a useful tool for encouraging engagement with environmental issues (Feldman & Hart, 2018). In contrast with the previously discussed research indicating that information alone is often not enough to create engagement with environmental issues (Kellstedt et al., 2008; Lorenzoni et al., 2007; Norgaard, 2009), Feldman and Hart (2018) found that images invoking both hope and fear influenced support for environmental policy issues. Thus, images may be useful tools to address barriers to engagement with environmental issues. It is important for environmental communicators to understand how visual tools can best be used to convey the information that the public needs to understand environmental issues and, more than that, tell stories that motivate engagement with these issues.

It is important that viewers keep in mind that images cannot always tell the whole story, and what is presented is often as important as what is left out. Therefore, just like text, visual information should not be uncritically disseminated and accepted. Disingenuous environmental communication, like greenwashing, is often used to persuade consumers that products or services are more environmentally friendly than they actually are (de Freitas Netto et al., 2020). Greenwashing and other forms of false or misleading communication will be explored in Section 2.8.

In general, however, the use of visual elements has been proven to be an effective communication tactic, both in general and in the field of environmental communication specifically. A notable example of visual artists directly influencing environmental policy was the creation of Yellowstone National Park and the eventual establishment of the US National Park Service ("Landscape Art and the Founding of the National Park Service," n.d.). This event represented a turning point in American conservation policy in that it was the first time that a

nation had preserved such a large block of undeveloped land for public use (Keiter, 1996). Both painters and photographers were instrumental in sparking public support to preserve the landscapes that would eventually be preserved as national parks. Long before a Google search could be used to instantly bring up thousands of images, these artists helped to popularize an appreciation of nature through visual representation and had a lasting impact on American cultural conceptions of nature – an article published by the Museum Management Program (a subset of the National Park Service) stated that "Romantic portrayals of nature by artists, including Thomas Cole and Frederick Edwin Church, countered earlier views of the wilderness as something to be conquered" ("Landscape Art and the Founding of the National Park Service," n.d., p. 4). In this way, artists paved the way for a recognition of the importance of natural spaces and the subsequent foundation of national parks to protect them. The influence of visual art and aesthetics on landscape preservation decisions has also been recognized outside the US, for example, in China (Ellison, 2014).

Strong evidence exists to support the importance of visual media in communication (e.g., Pieters & Wedel, 2004; Levie & Lentz, 1982). The use of visual media can be a helpful technique in any kind of communication, but it has proven to be highly effective in environmental communication campaigns (Dunaway, 2015), likely due to its ability to evoke emotional responses and inspire viewers. In addition, visual communication was a pivotal part of the success of the conservation movement that led to the American National Parks program, in large part because of the power of imagery to inspire and evoke emotional responses that were strong enough to alter viewers' existing cultural conceptions of nature ("Landscape Art and the Founding of the National Park Service," n.d). Therefore, the use of visual media is an important topic for research seeking ways to communicate environmental topics more effectively and motivate audiences to take action.

2.4 Possible interactions between visual communication and barriers to engagement

This section explores some of the possible interactions between visual communication and barriers to engagement. More specifically, it investigates the psychology of nature imagery, the possibility of certain visual communication strategies to contribute to a fantasy view of nature

rather than one grounded in audiences' surroundings, the use of negatively valenced imagery in environmental communication, and the use of visual communication as storytelling.

2.4.1 Nature imagery and positive emotions

As discussed above, one of the major psychological barriers to engagement with environmental issues is a desire or tendency to avoid negative emotions. Some research has found that nature imagery, both photography and video, is linked to positive emotions and better mental health. Keltner et al. (2017) found that watching content from Planet Earth II increased viewers' feelings of joy, contentedness, awe, amusement, and curiosity and reduced feelings of anger, tiredness, and stress. These results suggest that nature documentaries (and, by extension, nature imagery in other types of visual communication) could work to counteract the psychological and emotional barriers to engagement described by Norgaard (2009).

In general, however, an explicit link between exposure to nature imagery and engagement with environmental issues has not been established in the literature. Martin et al. (2020) did find a connection between viewing nature documentaries and pro-environmental behavior such as recycling, volunteering, and donating to environmental causes. According to their study, individuals who reported watching nature programs reported greater engagement in household conservation behaviors than those who did not. Arendt and Matthes (2016) found that watching a nature documentary was not sufficient to elicit an increase in feelings of connectedness to nature, but it did increase donation behavior to animal and environmental non-profits in those who already had a strong sense of connectedness to nature. Yet another study found that exposure to nature documentaries increased pro-environmental donations and recycling behavior only in individuals who reported low environmental values, which was almost a complete reversal of the previous study (Ibanez & Roussel, 2022). A possible explanation for these differences in results was offered by Klein and Hilbig (2018), who found that while priming subjects with general nature imagery did not increase pro-environmental behavior, priming subjects with destroyed nature that emphasized the need for environmental protection did. However, the use of imagery surrounding destroyed nature does not suggest that the pro-environmental behavior was caused by positive emotions. Thus, it seems that there is a possibility for nature imagery to interact with

engagement in environmental issues by evoking positive emotions, but there is currently not enough evidence to support a direct link.

2.4.2 Negatively valenced imagery in environmental communication

In contrast to the discussion above about nature imagery and positive emotions, visual environmental communication is not all beautiful landscapes and cute animals. Often, images with a negative emotional valence are used to draw attention to environmental issues. Images with a negative emotional valence are those that invoke negative emotions like fear, anxiety, and loss – common negatively valenced images include images of natural disasters like wildfires or hurricanes, plastic pollution choking marine life, or landscapes scarred by oil drilling.

Literature regarding the use of negative imagery in environmental communication has had mixed findings (Klein and Hilbig, 2018; O'Neill & Nicholson-Cole, 2009). It is true that environmental issues have many negative repercussions, and it can be argued that these need to be brought to light. Alternately, an eco-optimism approach argues that people are constantly bombarded with negative environmental messaging that is depressing and overwhelming (Stoknes, 2015). Therefore, it is better to avoid negative messaging as much as possible and instead focus on the positives. Assuming that the desire or tendency to avoid negative emotions is a major barrier to public engagement in environmental issues and thus society's progress in solving some of the world's major environmental challenges (Norgaard, 2009), avoiding negatively valenced messaging seems to be a logical strategy to avoid triggering negative emotions as much as possible in environmental messaging. However, if messaging were to be entirely positive, it might run the risk of minimizing actual negative impacts from environmental challenges and thus weakening audiences' perceptions of why engagement is necessary in the first place. Thus, it is useful to look deeper into the effects that negative environmental imagery could have on audiences.

Negative or fear-inducing imagery is frequently employed in media discussing environmental issues. This could be attributed to the usefulness of shock value in attracting attention (Dahl et al., 2003) or the perceived newsworthiness of threatening events (Weingart et al., 2000).

However, a study by O'Neill and Nicholson-Cole (2009) argued that success in attracting attention is not the same as success in encouraging engagement. They found that while the use of fear-inducing imagery was useful for attracting attention to environmental issues, it was not generally effective in encouraging engagement. In addition, it is possible that people may become desensitized to fear-based appeals over time, and increasingly intense stimuli will be required to achieve the same effect on audiences (Hastings et al., 2004).

Another factor to consider is existing literature suggesting that visual cues influence peoples' perceptions of social norms (Cialdini et al., 1990), which can have both positive and negative environmental effects. For example, one study found that people tend to litter more when there is already visible litter in an area, and this effect is even stronger when they see someone else littering (Cialdini et al., 1990). Stated another way, people were less likely to litter when there was no visible litter around. The authors of this study argued that people interpret signals in their physical environments to determine what behavior is acceptable – that is, that the social norms suggested by their physical environment (such as the presence of litter on the ground) shape people's behavior (Cialdini et al., 1990). As a result, it is conceivable that images evoking negative environmental impacts could have a similar effect of sending an unintended message about social norms. For example, an image of plastic pollution in the ocean might suggest to the viewer that, since plenty of people litter, throwing the occasional cigarette butt on the ground is not making much of a difference.

2.4.3 A fantasy view of nature

Other possible barriers to engagement with environmental issues are that people may feel disconnected from issues that they do not see as relevant in their daily lives, or they may feel that certain environmental issues are complex and difficult to understand (Lorenzoni et al., 2007; Norgaard, 2009). Visual communication also has the potential to interact with this barrier to action. Images could provide people with a better contextualization of topics, and the inclusion of human subjects (or even emotive animal subjects) could humanize them by invoking empathy in viewers. In addition, the use of images could be an effective method of environmental education that people may find more approachable than text-based environmental communication.

However, it is also possible that images might not decrease the abstractness of topics. For example, it has been suggested that certain nature documentaries present a fantasy version of nature or wilderness that is untouched by humans – a version that does not actually exist in reality. Similarly, images of far-off places may not do much to bring issues closer to home for many viewers, and the exclusion of humans from nature imagery might make these issues seem even more distant and unrelatable.

William Cronon (1995) argued for the value of looking for wilderness in everyday, human-settled nature rather than reserving it only for specific pieces of land. He clarified that he was not against wilderness or conservation, but rather, he was critiquing the idea of wilderness as something that is separate from humans. He pointed out that the separation between humans and nature is something that is taken for granted in much of Western culture, but the actual helpfulness of this point of view in achieving conservation and fighting environmental degradation is worth critically investigating. He argued that rather than a concrete fact of ecology, the concept of wilderness is a result of human framing: "The Romantic legacy means that wilderness is more a state of mind than a fact of nature, and the state of mind that today most defines wilderness is wonder" (p. 23). Moreover, he argued the value of looking for wilderness in everyday, human-settled nature rather than reserving it only for specific pieces of land, saying "if wilderness can do this – if it can help us perceive and respect a nature we had forgotten to recognize as natural, than it will become part of the solution to our environmental dilemmas rather than part of the problem" (p. 24). As Cronon saw it, creating a harsh divide between people and nature is not a solution to our environmental dilemma, and the value of nature should be appreciated in both human-settled and "wild" areas. This line of reasoning might be useful for environmental communicators to consider as they plan their communication strategies. To avoid furthering the idea of nature as divorced from the world of humans, environmental communicators could choose images that emphasize the unity of humans and nature – for example, images of urban nature or humans working with nature instead of vast, empty landscapes.

2.4.4 Visual communication as storytelling

Another way that visual environmental communication may be able to address the barrier of people feeling disconnected from environmental issues is through storytelling. The body of literature covering the importance of storytelling in human communication and understanding is extensive and well-established (e.g., Fisher, 1989; Kahneman, 2011). According to Fisher's (1989) Narrative Paradigm, storytelling helps people to understand complex information by organizing it in a way that is highly compatible with human cognition. Fisher argued that narratives are the basis of communication, and as humans are not rational beings, a compelling story is more persuasive than a logically constructed argument. In other words, a compelling narrative and photo essay about a sea turtle struggling to migrate back to its nesting ground could potentially be more effective in persuading people to donate to sea turtle conservation than a logical argument about how sea turtles protect the ecological balance in the ocean. In the decades since Fisher first published his work on the Narrative Paradigm, research from various fields has shown both the efficacy of storytelling in conveying information and persuasion (Green & Brock, 2000) and a close connection between narrative and how the human brain processes and interprets information (Bransford et al., 2000; Pinker, 1994). There is also a growing body of research linking emotionally driven stories to increased empathy and pro-social behavior (e.g., Barraza et al., 2015; Lin et al., 2013; Small & Loewenstein, 2003). All of this suggests that storytelling is a potentially invaluable tool for environmental communication.

Existing literature has explicitly tied storytelling to opinion and behavior surrounding environmental issues, both on the individual level and on the societal level. One example of research on the individual level is an experimental study by Morris et al. (2019), which found that stories were more effective than informational content at promoting pro-environmental behavior. Study participants who were exposed to story content were more likely than those exposed to an informational article to recycle, choose a glass cup over a plastic one, and subscribe to an environmental newsletter directly afterward.

Regarding the societal level, interest in the influence of stories on public policy issues has been highlighted by the development of the Narrative Policy Framework, which was formulated to

guide research on how narratives influence policy outcomes (Shanahan et al., 2011). This theory has been specifically applied to environmental communication contexts, such as in a study examining how communication surrounding strategies for managing local bat populations influenced public support for different management options (Guenther & Shanahan, 2020). This study found that stories featuring specific characters (and, preferably, images) were more effective than informational content in creating support for different management strategies. Guenther and Shanahan attributed the greater effectiveness of the stories in their study to the ability of narratives to cause emotional reactions in their audiences. The researchers argued that these emotional reactions influenced risk perception, which is a critical component in whether people are supportive of a given management strategy.

Visual media is an ideal conduit for storytelling for several reasons. First, images can grab people's attention quickly in a way that text may not (Pieters & Wedel, 2004), which is important in the age of the attention economy (Goldhaber, 1997). Second, the human brain will often automatically attempt to construct stories from visual input (Kahneman, 2011). Most people have a strong tendency to assign narratives to what they see, even when the visual in question involves simple geometric shapes. Heider and Simmel (1944) conducted a psychological experiment in which they showed a short animation of several different shapes bouncing around on a screen. They found that based solely on this highly abstract clip, viewers constructed narratives and assigned both personalities and agendas to the shapes. Heider and Simmel concluded that the human brain is, in most cases, wired to look for stories to make sense of what is being seen. This processing is immediate and involuntary – it is part of the brain's constant unconscious efforts to contextualize the outside world (Kahneman, 2011).

As most people involuntarily look for stories to understand visual input already, it follows that images would be an effective medium for immersing the human brain in a story. This immersion could then counter the barrier to engagement of disconnect and alienation, making environmental issues less abstract and more relevant for viewers.

There is also evidence to suggest that storytelling can help people process negative emotions (Bransford et al., 2000). Pasupathi et al. (2017) found that their study participants reported

reducing feelings of sadness and anger after producing narratives about past negative experiences. Narratives can also be used to make meaning out of negative experiences by connecting them to positive outcomes such as personal growth – a process that has been linked to increased wellbeing (McLean et al., 2007; Pals, 2006). This means that if a person is able to construct a story about a difficult experience emphasizing how they overcame that experience, they are likely to score higher on subjective assessments of wellbeing. In this way, narration is a useful tool for framing – that is, emphasizing either gain-oriented or loss-oriented aspects of something in order to influence its perception (Tversky & Kahneman, 1988). The persistent existence of religious/mythical storytelling throughout human history indicates that storytelling has historically been a prominent strategy for processing existential anxiety – this phenomenon suggests that people needed a way to make meaning of mortality and turned to stories to do so (Kahneman, 2011). Thus, it makes sense that storytelling is also vital to processing climate (existential) anxiety, overcoming emotional barriers, and enabling positive action.

This is relevant to the question above of whether negative images reinforce the barrier of negative emotions. In isolation, a negative image might invoke helplessness, apathy, or even social modeling. However, through storytelling, imagery can make negative images part of a story arc instead of the whole story in and of themselves (for example, a photo of litter vs. a photo of someone picking up litter). This could allow people to emotionally process negative events by offering a way forward, thus negating the sense of helplessness that negative events without a story arc may evoke. In this way, it is possible that storytelling through visual imagery could also address the action barrier of negative emotions.

2.5 How images communicate

Images speak in a language that is steeped in psychological and cultural connotations. The message that a viewer receives from a photograph is the cumulative result of multiple visual cues. These include, but are not limited to, the subject, color scheme, framing, and perspective of images.

The subject suggests the important player in the story that an image is telling. In environmental communication, this might include a person, a landscape, or an animal. This can provide information on what the photograph is suggesting that viewer should empathize with and what they may interpret as their connection to the image. For example, if an image depicts a remote and pristine landscape, the viewer may feel a sense of awe. However, they may not feel very connected to the scene and experience a sense of disconnect – that the scene does not have much to do with them or is irrelevant to their everyday lives. This disconnect was cited as a barrier to action by Norgaard (2009). Having a person as the subject can humanize a scene and increase a viewer's connection with it, as it allows them to empathize with the subject and potentially imagine themselves in the scene.

Different colors evoke different emotions. Images of blue and green can create a sense of calm and appreciation of nature. Images with warmer colors can create feelings of stress or urgency in viewers. Lighter scenes may feel more hopeful, while darker scenes may feel heavier. Thus, colors can be very important in environmental storytelling.

Framing and perspective are also important. Closeups can feel more intimate and are often used in wildlife photography to encourage the viewer to empathize with an animal. A wide angle can provide context and show where the subject fits in the wider scene. Photos taken from a low angle make the subject seem larger and more imposing and may suggest that the subject has power over the viewer. Photos taken from a high angle may suggest that the subject has less power than the viewer. In a study on photographic environmental activism, Schwarz (2013) explained how aerial shots of industrial sites gave viewers a feeling that they had power over polluters and countered the idea that polluters were overwhelming, untouchable entities. Going back to Norgaard (2009), this technique suggests the potential to use images to overcome barriers to engagement like feelings of powerlessness by giving viewers a sense that they can make a difference.

Often, images do not stand alone but are grouped together in a website, an article, or a slideshow. This allows for analysis of the overall communication strategy of the publisher. The visual

elements above all come into play in the overall story that is being told. A collection of images can give more insight into the message that is being conveyed.

For example, Takach (2013) analyzed a rebranding slideshow about Alberta, Canada. He reported that the themes in the visual elements of the images in the slideshow presented an "ecocentric, Romantic gloss on an anthropocentric core, rooted firmly in a consumptive gaze" (p. 225). He went on to say that "nature, beautiful as it is, [was] presented as available for human conquest and advantage, a grand backdrop for the economic Darwinism valorized by neoliberal forces under the mantles of globalization and free enterprise" (p. 225). He supported this view by citing images of subjects using nature for recreation, showing nature as "pathway for to freedom and personal achievement" (p. 220), and, in particular, an image using forced perspective to show a person walking on a log appearing larger than the scenery. It is important to take into consideration that, in this particular instance, the slideshow in question was meant to draw attention away from the massively destructive oil drilling being done in the area, and that this context likely had a role in the researcher's interpretation of the imagery. For example, while Takach viewed pristine landscape photographs in this example as "a Romantic gloss" over a "consumptive gaze," he may not have had the same interpretation in the absence of oil drilling. However, despite (or, perhaps, because of) its context, the Alberta rebranding campaign is an illustrative example of the visual elements of visual communication being used in place branding to support a particular cultural conception of nature.

Place branding deals with strategies involved in the marketing of places (Porter, 2013). In order to ensure cohesive storytelling, place branding strategies specify certain color palettes, compositions, and photographic techniques that images must incorporate to be used in their materials. Porter (2013) found that the branding strategy manual for the local government tourism body of the Blue Mountains in the New South Wales region of Australia specified four photographic styles that made up its brand strategy: "Dynamic Perspective, Intelligent Experiences, Macro Details, and Standard Panoramic" (p. 243). The first and primary photographic style, Dynamic Perspective, instructed that "images of people engaging with the environment should be shown in extreme perspective, characterized by acute angels, subjects viewed from above, below, or contrapuntally" (Porter, 2013, p. 243). This level of planning and

specificity shows the lengths to which some place branding strategies go to curate the visual cues that media should incorporate and, thus, the message that this media conveys to viewers.

Understanding the language of images is important for the use of visual environmental communication. Analyzing visual cues in images is vital to teasing out the unspoken messages and connotations embedded in them, which will subsequently affect the messages these images convey to viewers. Visual communicators can use this information to develop communication strategies that help them present cohesive messages that both educate and empower their audiences.

2.6 Cultural understandings and visual motifs

Understandings of what exactly constitutes nature are not uniform – rather, the idea of "nature" is culturally defined. These cultural definitions of nature have far-reaching implications, including "buttressing certain beliefs, warranting actions, justifying forms of society, and naturalizing hierarchical social relations," according to environmental communications scholar Kevin DeLuca (DeLuca, 1999, p. 47). Cultural understandings of nature also influence how visual environmental communication is received by audiences, and vice versa. Thus, it is useful to consider some of the major cultural movements that have shaped cultural understandings of nature and their relationships to the current state of environmental issues. To do so globally and exhaustively would be outside the scope of this master's thesis, but a brief exploration focusing on the Western cultural context provides a basis for understanding some of the unspoken assumptions about nature that lie behind certain visual motifs in visual environmental communication.

Many of today's major environmental issues, including climate change, mass extinctions, and rampant pollution, can be roughly traced back to the spread of industrial capitalism (Baer, 2012). Industrial capitalism seeks to harness and control the forces of nature in the name of profit. The worldview engendered by industrial capitalism sees nature primarily as a resource to be exploited and emphasizes how nature can be conquered or controlled for human gain.

Clear examples of activities that follow from this worldview include commercial mining, logging, and fishing. It is also inherent in the view that increased carbon in the atmosphere and plastic in the ocean are acceptable prices to pay to maintain economic growth. Nature is valued for what it can provide as a resource rather than having inherent value. Although this conceptualization of nature has tended to have an overall destructive effect on ecosystems, concepts like ecosystem services have been used to attempt to quantify and sometimes even assign a monetary value to the benefits that well-functioning ecosystems provide for human life (Wallace, 2007).

Another prominent cultural movement that has influenced existing cultural conceptions of nature is Romanticism (Hinchman & Hinchman, 2007; Hodgins & Thompson, 2011). Romanticism was an intellectual and artistic movement that is generally understood to have arisen during the second half of the 18th century and was largely a cultural response to the ills of the industrial revolution. Many realized that along with industrial progress and economic growth came pollution, poverty, and deprivation. To escape crowded, polluted cities, those with the economic privilege to do so traveled to the countryside (Smith, 2012). Here, they professed strong aesthetic appreciation for the vast natural landscapes that writers of the time described as sublime – in other words, invoking an emotional response of transcendent awe in the viewer (Brady, 2013). The Romantic movement saw nature as having value almost in a religious sense (Garrard, 2004) and considered time spent in nature to be vital for self-actualization (Rigby, 2014).

In many ways, Romanticism shaped the conservation movement in the West, and its roots can be seen in much contemporary environmental thought (Hodgins & Thompson, 2011; Hinchman & Hinchman, 2007). Its ethos is reflected in the writings of prominent pioneering conservationists such as Aldo Leopold and John Muir, who expressed ideas such as the value of nature outside of purely scientific merit, a focus on the sublime, and the ability to achieve a sense of freedom through wild places (Hinchman & Hinchman, 2007). In addition, the visual motifs of Romanticism were heavily represented in the nature imagery that sparked the creation of the National Park system in the United States (Demars, 1990), for example.

Visual motifs reflecting a Romantic view of nature include vast landscapes, often with the viewer looking down on them. These landscapes are generally either devoid of humans to highlight the grandness of nature or feature an individual human gazing out across the landscape. In the latter case, the human is generally represented as experiencing a sense of self-actualization from their surroundings – nature is not a threat but a source of awe or self-reflection (Rigby, 2014). In addition, the human figure is often portrayed as a visitor rather than one living off the land, in line with the Romantic tradition of traveling to but not necessarily living in the countryside (Smith, 2012).

Wanderer Above a Sea of Fog by Caspar David Friedrich (1818; see Figure 1) is one of the best-known Romantic paintings and is an excellent example of Romantic visual motifs. It can be described as a portrayal of the sublime – a Romantic ideal of awe at the greatness of nature (Haladyn, 2016). The painting uses perspective to emphasize the vastness of the landscape compared to the lone man standing above it, but also the fact that the man is looking down on the land and is made larger than the landscape by appearing in the foreground. In this way, the image carries a sense of the primacy of the rugged individual and makes the figure seem like a conqueror of nature – but one who has conquered it through recreation rather than industry. In addition, the man's clothing does not seem to be that of a man living off the land, which portrays a sense that he is a tourist, a visitor, or a stranger to this land. In this way, the painting seems to offer some contradictions – nature inspires awe, but humanity is in the foreground and looking down on the land; the man is portrayed as a conqueror of nature and bastion of individualism, but does not seem to use the land for more than recreational enjoyment. All of these contradictions are embedded in the cultural movement that is Romanticism, as well as in the tradition of the modern conservation movement (Hodgins & Thompson, 2011; Hinchman & Hinchman, 2007).

Figure 1. Caspar David Friedrich. (1818) *Wanderer Above a Sea of Fog.* [oil on canvas]

The visual motifs of Romanticism are still reflected in nature imagery today, which reflects Romanticism's continued relevance in Western cultural understandings of nature (Smith, 2018). One might, for example, recognize a similar composition and sentiment to that of *Wanderer Above a Sea of Fog* in the social media posts of many contemporary "nature influencers."

Especially in light of Romanticism's strong influence of modern environmental thought, it is important to view it through a critical lens. Romanticism places a high value on nature that, on the surface, seems to encourage a healthy relationship between humans and a livable planet. However, there are several aspects of Romanticism that may belie its idealized plan for humanity. For one, it emerged from a position of relative economic privilege. As discussed above, most of its early proponents were those with the financial means to take excursions outside of what they called "civilization" (Smith, 2012) in pursuit of recreation, freedom, or spiritual growth (Rigby, 2014). They did not rely on nature for their livelihood. Rather, the ideal nature was one that was untouched by humans, which implies that such thinkers had a certain degree of material privilege and were getting their basic needs met in other ways through the very civilization that they wished to escape.

While the idealization of untouched nature may have stemmed from backlash over the Industrial Revolution's attempts to conquer and subdue nature for economic gain, it fails to take into account the many ways that humans can and have lived symbiotically with nature throughout history. In this sense, Romanticism can espouse a colonial view that in order to conserve "nature," one must remove any humans living on in, including native groups who have been practicing careful stewardship of the land for many generations. This has been seen in America, for example, where native populations were excluded from National Park land even though their interaction with the land up to that point had not kept it from a state that was considered worth preserving (Spence, 1996).

Finally, rather than being in direct opposition to the extractive gaze inherent in industrial capitalism, the Romantic gaze is seen by some as a subset of the extractive gaze itself (Hodgins & Thompson, 2011). Nature is still valued for what humans can derive from it, even if that is recreation or a sense of awe or freedom, and there is still a sense of distance between humans and nature. In *Wanderer above a Sea of Fog,* nature is conquered by climbing a mountain instead of building a mine, but it is conquered all the same. Incidentally, the above-mentioned popularity of Romantic aesthetics among social media nature influencers can be seen as an illustrative example of the overlap between the Romantic gaze and the extractive one in which nature is turned into a commodity to be exchanged for social media influence (Smith, 2018). Even assuming the best intentions of many people creating this kind of content, there has been no shortage of news stories about locations struggling to handle large influxes of visitors drawn by social media virality (Holson, 2018).

In sum, criticisms of Romanticism can be made on the basis of both classism and colonialism. In addition, Romantic thought draws a strong distinction between nature and human civilization. It puts nature on a pedestal and idealizes it as a vast open wilderness free of human influence. As a cultural conception of nature, this view impacts both the delivery and reception of environmental communication. Most relevant to this master's thesis, it impacts how both ecological issues and potential solutions are understood. For example, Romantic conceptions of nature may lead to underlying assumptions that ecological issues would be best solved by top-down solutions involving setting aside remote areas and keeping them untouched by humans. Wilderness-based

conceptions of nature may cause people to place less value on the nature in their local environments and communities and to see nature as inherently separate from themselves and their daily lives.

More recent environmental thinkers have attempted to call out and counter the Othering of nature that they see as inherent in leading Western cultural conceptions of nature – both the traditional extractive views of industrial capitalism and the less obvious ones of Romanticism (Cronon, 1995; Wolfe, 2003). Some of these thinkers have expressed that environmental destruction is directly linked to "Western notions of humanity and non-humanity [that] generate misguided conceptions of nature as separate and lesser" (Wolfe, 2003, p. 47). Environmental historian William Cronon similarly connected the Othering of nature to existing ecological problems and argued that in order for humanity to solve our environmental dilemma (Cronon, 1995), it is necessary to recognize the small, everyday, and close-to-home nature as well as the vast, awe-inspiring wilderness. Cronon wrote that idealizing nature as a far-off, uninhabited wilderness risks overlooking the nature that is right in front of us on a daily basis, but both must be valued equally to create a livable planet for future generations.

Returning to the barriers to engagement with environmental issues discussed in Section 2.2, one of the main explanations for the lack of engagement with environmental issues is a sense of disconnect with the issues or feeling like the problems are far away and that individuals cannot personally do much to make a difference (Norgaard, 2009). It is possible that this barrier is connected to the Othering of nature in Western thought as described by Cronon (1995) and others. Therefore, perhaps environmental communication that emphasizes, as Cronon wrote, the nature that is right in front of us, can be helpful in fostering a sense of connection with nature that helps to break down barriers to engagement with environmental issues.

Given that the idea of nature is culturally defined and that this affects how environmental communication is both created and received, this subsection looked at some of the major schools of thought influencing Western cultural conceptions of nature. It discussed the purely extractive view of nature underlying industrial capitalism and the Romantic view, which has heavily shaped modern-day environmental thought. It also looked at some of the issues inherent in these

conceptions of nature and their implications. Finally, it briefly discussed some alternate views of nature and how they might fit in with the goals of environmental communication.

2.7 Behind the camera: The image creators

In order to reach a better understanding of the use of visual imagery in environmental communication, it is useful to seek to understand the image creators involved. Several studies have been conducted towards this end.

Farnsworth (2011) found the professional conservation photographers he interviewed to be highly qualified environmental educators who did extensive research into their subjects over the course of their assignments. He also found these professional conservation photographers to be well-versed in the socio-political climates surrounding the subjects. Farnsworth suggested that more should be done to take advantage of the specialized knowledge of conservation photographers and capture their potential as environmental educators. However, he also interviewed professional photojournalists without a conservation specialty who were more concerned about capturing aesthetically interesting photographs than developing ecological understandings of their subjects, and this sometimes hindered them in their work. Thus, Farnsworth emphasized the specific skill sets of specialized conservation photographers, including formal and informal ecological education and the ability to translate scientific knowledge for public consumption, and argued that these skills should be appreciated and utilized in environmental conservation.

Schwarz (2013) found that photographers can be very useful in acting as translators, creating a bridge between scientists and the public, and dramatizing environmental issues. The photographs in her study were aimed at evoking the emotions of viewers in hopes of spurring them to take action. Some photographs were composed in a way so as to give viewers a feeling that they have power over industrial polluters, with high angles and zoomed-out shots. The photographs also leaned on traditions and cultural understandings to make environmental issues seem close to home and relatable. The images used emotional appeals, relatability, and feelings of empowerment to try to convince viewers to take action. Schwartz highlighted the importance of

exploring complexities such as these in visual narratives. It may not be obvious to viewers – or even to those presenting the images – that these visual devices are being used to influence users' opinions. As such, it is useful to understand both how these devices can be useful and to be aware that it is important to critically analyze and consider bias in visual communication.

Studies report that, as one might expect, photographers working in environmental communication have varying degrees of knowledge and experience. However, those who are most involved in the field have a lot of in-depth, specialized knowledge on various environmental issues, as well as the visual storytelling skills to act as a bridge between scientists and the public (Farnsworth, 2011; Schwartz, 2013). Therefore, previous research has emphasized that image creators can play pivotal roles in environmental communication, and this potential may be very useful to organizations working in the environmental communication sphere.

Gervais (2006) surveyed a sample of conservation photographers to investigate their experiences with integrating online technology, including social media, into their work. She found that the photographers she interviewed had complicated relationships with online technology. They often struggled to balance their careers as photographers and their roles as environmental advocates while using online technology. While they found that online technology could be useful for communication about issues, it was very time-consuming, and they often experienced issues with copyrights – both having their images stolen and being unable to publish images that were planned for publication until sometimes long after they were most relevant. In addition, the photographers found using social media to require a lot of digital labor, generally unpaid – both the act of distributing images itself and sometimes also maintaining an online persona, which is a major factor in gaining attention online. Overall, many worried that they were devaluing their work by distributing it for free online when they expressly relied on selling it to make a living.

In other words, while some photographers saw online technology as a potentially useful tool for engaging audiences with environmental issues, they also saw it as, to some extent, working against their interest as professional photographers – pitting their desire to engage in activism against their ability to sell their work. Some of those interviewed expressed that they simply felt they could reach more people and be more effective by working with traditional corporate media

entities like National Geographic. However, it is important to note that the organization from which the researcher collected her sample seems to consist largely of well-established career photographers who are more likely to have opportunities to work with organizations on the level of National Geographic. Younger or less-established conservation photographers might not have the opportunity to rely on distribution through this level of corporate media.

In the study by Gervais (2006), some photographers spoke positively about the potential for advocacy through digital technology, but because of the level of labor involved and because they were in some ways working against their careers, they wrestled with whether this potential was realized. They spoke about the possibility of social media to humanize photographers, bring the audience along on a journey (such as field work) in real time, and give them a platform to talk about whatever they wanted. The photographers expressed frustration about the short lifespan of many online posts (even back in 2006) and said that it was difficult to create the sustained momentum necessary for change. However, some also brought up that once a publication like National Geographic runs a piece on a topic, the publication is hesitant to talk about that topic again for a while, even if it is still a problem. Thus, although individual posts have short lifespans, the freedom of not relying on corporations to decide what gets published may be a balancer. Finally, photographers worried about the echo chamber of online spaces and that the audience seeing their work in digital spaces consisted largely of those who were already convinced of the need for conservation, whereas they saw traditional media as having a wider reach.

2.8 False or misleading imagery

Photographs are far from objective. Even if their content has not been altered with image editing software like Photoshop, the choice of subject, framing of the image, post-processing, and presentation all hold conscious or unconscious bias. One example that may be familiar is the "Instagram versus reality" phenomenon – many of the stunning, remote natural scenes presented on social media may actually hide crowds of people, litter, or other less desirable scenes on the other side of the camera. Consciously or unconsciously, the photographer has effectively edited out this part of reality by simply aiming their camera in a different direction.

However, despite widespread awareness of the subjectivity of photographic images, there is still a general tendency to treat the camera as a reliable eyewitness (Tirohl, 2000). Psychologist Daniel Kahneman (2011) discussed the principle of what he calls "what you see is all there is" – the human brain's tendency to jump to conclusions on the basis of limited evidence, even when that evidence is incomplete or potentially of poor quality. Barring a particular reason to be suspicious about a given photographic image, people's first instinct may be to accept it at face value and not to immediately think about what is out of frame or how the image may have been digitally altered. This intuitive way of thinking, though not perfect, is vital to our ability to process information quickly and make sense of the complex world we live in (Kahneman, 2011, p. 74).

A number of studies have found that photographs have powerful suggestive effects despite widespread awareness of their subjectivity and the potential for digital alteration. Wade et al. (2002) exposed study participants to doctored childhood photos showing the participants taking a hot air balloon ride. They found that about half of the participants created false memories about the event and even reported surprise when told that the photos were fakes. Frenda et al. (2013) showed subjects digitally altered photos of fabricated political events, and again, approximately half of the study participants reported "remembering" that the false events happened – with participants being especially likely to "remember" events that were in line with their political beliefs.

Nash (2018) examined the effects of doctored images on people's beliefs and recollections regarding prominent public events and found that the effect size, despite being smaller than that of previous similar studies, was similar for both well-doctored and overtly inauthentic photos, which he defined as photos that were poorly altered or had an explicit declaimer of having been altered. For example, subjects viewing either realistically doctored or explicitly fake photos of protestors at the 2011 Royal Wedding of Prince William and Kate Middleton both estimated similarly higher numbers of protestors and arrests made at the event than subjects viewing unaltered photos. In light of this finding, Nash theorized that the credibility of photos may be less important in their effects on beliefs than the associations and mental images that the photos

evoke, which viewers may then misattribute to their recollections of the event in question. In other words, images may have suggestive power due to cognitive processes that occur even if the viewer knows that a particular image is not credible (Nash, 2018).

People's tendency to be influenced by visual evidence can make photographs useful tools for greenwashing and other disingenuous forms of environmental communication. Greenwashing refers to messaging meant to mislead stakeholders about the environmental practices or performance of a company or other entity – more specifically, messaging implying that the entity is more sustainable than it actually is (de Freitas Netto et al. 2020). Companies may hold up photographic "proof" of their sustainability, but what is not shown might tell a different story. For example, an oil company may tote its investments in sustainable energy by publishing images of its new solar project on its website despite a business model that continues to center heavily on fossil fuels.

Greenwashing is not always successful in influencing its audience. Takach (2013) examined a public relations campaign to rebrand Alberta, Canada, which was known for its extraction of oil from bituminous sands. The extraction of oil from bitumen is a highly ecologically destructive process, much more so than conventional oil extraction, and this industry in Alberta has been called the world's largest industrial project. In the face of national and international criticism over these extractive practices, the government of Alberta launched a $25-million public relations campaign to improve its image (Takach, 2013). Despite Alberta being among Canada's most urbanized provinces, the campaign heavily emphasized images of pristine rural landscapes. The government confirmed that the public relations campaign was, among more innocuous reasons, designed specifically to counter Albert's associations with "dirty oil" – the royalties from which make up almost a quarter of Alberta's annual revenue (Takach, 2013; *2023-24 Mid-Year Fiscal Update and Economic Statement*, 2023). Public reception of the campaign was poor – citizens found the campaign to have little relevance to their lived experience, and many pointed out the blatant propaganda of presenting Alberta as a land of unspoiled nature when its extensive and ecologically devastating extractive practices were common knowledge (Takach, 2013). In this case, the government's attempt to improve Alberta's image by glossing over its destructive

ecological practices backfired and weakened the credibility of those responsible for the communication campaign.

As discussed above, photographs constitute a subjective form of communication that harbors both conscious and unconscious biases. Photographic imagery can have powerful suggestive effects that can impact viewers' beliefs, attitudes, and recollections. Evidence suggests that these effects may persist even if viewers are explicitly aware that the images in question are not credible. Subjectivity in image creation is not inherently negative – it is simply part of the process of communication – but disingenuous communication such as greenwashing can cause viewers to fall victim to misinformation campaigns or, alternately, damage the reputation of the communicator.

3. Theoretical Framework

This section explores some of the major theories underpinning the relationship between environmental communication, visual media, and behavior change. First, it reviews the information deficit model and how it has been insufficient in creating public engagement around environmental issues. It then examines some of the major psychological and sociological theories that could be related to barriers to engagement in audiences of environmental communications. The following section reviews some alternate theories of communication that propose useful tools for environmental commentators. Finally, this chapter discusses the ontological and epistemological basis of the research methodology in this master's thesis.

3.1 The information deficit model and the limits of rationality

In an idealized version of democratic society, the relationship between information and action would be simple: given sufficient and accurate information about an issue, the public will make decisions and respond accordingly. This is the basis of what is known as the information deficit model – a model of science communication that assumes that a lack of public engagement with various issues in science and technology is primarily caused by a lack of knowledge among laypeople (Reincke et al., 2020; Simis et al., 2016). The information deficit model assumes that people process knowledge in a rational, objective manner and that there is a linear relationship between people's access to information and their attitudes and behaviors.

Although it is an intuitively appealing concept, the information deficit model has been criticized repeatedly for its simplistic assumptions about the links between knowledge, attitudes, beliefs, and behaviors (Simis et al., 2016; Suldovsky, 2017). While it is true that a complete lack of information would, by definition, preclude public engagement with an issue, simply providing information on a topic is not the most effective strategy for creating public engagement. In the realm of environmental issues, climate change is a case in point – despite the wide availability of information on the threat of climate change, no nation has yet seen sufficient social and political engagement to adequately address the problem (Norgaard, 2009).

If simply providing more information is not enough to engender engagement with environmental issues, then alternate strategies must be considered. However, first, it is useful to consider some of the reasons why people do not engage with these issues. The next section explores some of the major psychological theories that could explain the general lack of public engagement with pressing environmental issues.

3.2 Barriers to engagement: Psychological theories

There are a number of psychological theories that could contribute to explaining why people do not engage with environmental issues. This theoretical framework focuses on construal level theory, cognitive dissonance theory, and self-efficacy theory. These theories were selected based primarily on Norgaard's (2009) discussion of barriers to engagement with climate change.

Construal level theory explains that how people conceptualize and respond to objects and events is affected by psychological distance (Trope & Liberman, 2010). Psychological distance refers to how far away a given object or event is from the reference point of the self in the here and now. This distance can be temporal, spatial, social, or hypothetical (referring to the perceived certainty of an event). Objects or events that are closer in psychological distance to the present self are conceptualized as more concrete, whereas objects or events that are further away are conceptualized as more abstract (Trope & Liberman, 2010). For example, an environmental issue like climate change might be psychologically close to a farmer living on an island in the Pacific threatened by rising sea levels, while it might be psychologically distant to an office worker living in a suburb in the continental United States.

According to construal level theory, perceiving environmental issues as psychologically distant could be a psychological barrier to engagement with these issues. In a review of literature on personal experiences of climate change, McDonald et al. (2015) found that decreasing psychological distance generally increases people's willingness to take action. Based on these findings, they suggested that environmental communicators could focus on decreasing audiences' perceived distance to climate change to increase engagement (McDonald et al., 2015). For example, communicators could emphasize how environmental issues are impacting

audiences' own communities in the present or help them relate to those being more severely impacted to reduce psychological distance through empathy.

Another theory related to protecting oneself from negative emotions is cognitive dissonance theory (Festinger, 1957). Cognitive dissonance refers to a feeling of psychological discomfort resulting from a person holding conflicting elements of knowledge (Harmon-Jones & Mills, 2019). It is one of several psychological theories suggesting that people are motivated to protect their sense of self when they feel that it is threatened. Facing the reality of environmental issues like climate change can lead to strong negative emotions and threaten one's individual and collective identities (Norgaard, 2009). For example, people may not want to think about the fossil fuel emissions involved in their plans to fly somewhere for vacation or how the plastic food wrapper they just used will continue to exist for hundreds, if not thousands, of years. This can lead to defensive self-protective strategies ranging from minimizing to flat-out denying environmental issues (Harmon-Jones & Mills, 2019). Related to cognitive dissonance is the idea of confirmation bias, which describes the tendency to seek out, accept, and remember information that is consistent with one's existing attitudes and beliefs (Nickerson, 1998). This means that people may easily accept information that aligns with what they already think to be true (confirmation bias) but be much more critical or skeptical of information that challenges them (disconfirmation bias; Luong et al., 2019).

Self-efficacy, a central tenant of social cognitive theory (discussed further in Section 3.5), states that an individual's belief in their ability to succeed influences their behavior (Bandura, 1986). Individuals who believe in their ability to complete a task are more motivated and likely to achieve successful outcomes than those who do not. Regarding environmental issues, this theory suggests that people would be more likely to engage with an issue if they believe that their actions will actually make a difference. Conversely, a lack of self-efficacy could be a barrier to engagement. For many large-scale environmental issues, people might not know how to help, or it may be difficult for people to see their individual actions as truly making a difference. This could result in feelings of helplessness, and people might disengage because they think that there is no point in trying. However, environmental communicators could work to increase audiences'

self-efficacy by clarifying how their audiences' actions could make a meaningful difference in order to encourage engagement.

3.3 Barriers to engagement: Sociological theories

In addition to psychological barriers to engagement, Norgaard (2009) also described social barriers. She argued that the pressure to conform to cultural norms could be a barrier preventing people from taking action on climate change.

Social or cultural norms describe the predominant behaviors, attitudes, and beliefs of a group of people (Cialdini & Jacobson, 2021). The theory of normative social behavior argues that people's perceptions about the prevalence of given behaviors affect their own behaviors (Rimal & Real, 2005). If an individual sees a certain behavior as prevalent, they are generally more likely to also engage in that behavior. Norms also affect the opinions and expectations of group members.

In most modern industrialized societies, many behaviors that are not environmentally friendly are understood as social norms. Going against these norms requires conscious and intentional effort. Often, the defiance of norms results in some type of negative consequence or social sanction (Bendor & Swistak, 2001), which can range from minor to major. For example, someone choosing not to eat meat in a place where eating meat is the norm might experience difficulty finding non-meat options at social functions, while someone who wants to bike to work in a car-centric city might risk physical injury going against the norm.

Although many norms reinforce environmentally harmful behaviors, the theory surrounding social norms does lend itself to a potential strategy for environmental communicators to encourage environmentally responsible behaviors. Norms are not set in stone and naturally change over time as the needs and values of their society change. By emphasizing instances of environmentally responsible behavior, communicators may be able to help shape people's perceptions about their behaviors, thus guiding social and cultural norms in a more environmentally friendly direction (Sparkman et al., 2021).

Another societal factor that could be a barrier to engagement with environmental issues is described in theories of the attention economy (Goldhaber, 1997; 2006). Goldhaber has defined the attention economy as "a system that revolves primarily around paying, receiving, and seeking what is most intrinsically limited and not replaceable by anything else, namely the attention of other human beings" (Goldhaber, 2006, p. 5). Theories of the attention economy argue that human attention is, as Goldhaber indicated, a limited resource, and in today's highly digitized world, there is a practically infinite amount of information and media competing for this resource. The competition is intensified by the fact that so much media is monetized via advertising – the business models of countless media producers depend on attention capital (measured in views, clicks, ratings, social media "likes," and more) to generate income (Franck, 2019). The monetization of attention has led to such phenomena as sensationalized news coverage, click-bait headlines, and social media platforms engineered to encourage endless scrolling.

Adding to the competition for attention resources is the fact that today's media landscape is highly participatory. In the past, the media landscape was heavily dominated by an oligarchy of mass media producers (Tufekci, 2013). Today, anyone with access to the internet can produce media and distribute it through blogs or social media platforms, which has exponentially increased the amount of information competing for the same limited attention resources. All of this means that while communicators may have more avenues for reaching audiences, they also face strict competition in both attracting attention to their work and sustaining that attention long enough to create meaningful engagement.

3.4 Alternate theories for communication

Again, it is true that if people do not have any information on a subject, then it is impossible for them to engage with it. However, the information deficit model focuses primarily on the one-way delivery of information and makes the simplistic assumption that this alone will affect audiences' behavior. In reality, *how* information is presented can strongly affect engagement outcomes. Thus, it is useful to examine some theories exploring this relationship.

The Narrative Policy Framework is a theoretical framework used to guide research on the use of narratives in public policy communication (Shanahan et al., 2011a; 2018). It holds as a core tenet that narrative plays a central role in how humans make sense of the world around them, and thus, storytelling can be a highly effective tool for shaping public attitudes and behaviors (Shanahan et al., 2018). The framework encompasses a number of hypotheses that attempt to explain how this process works. For example, it theorizes that narrative transportation, or the degree to which a reader becomes emotionally absorbed in a story, plays a key role in how likely the reader will be to feel persuaded by the story (Jones, 2014). It also argues that the portrayal of characters within policy narratives has a greater influence on audiences' policy opinions than scientific information (Shanahan et al., 2011b). Thus, the Narrative Policy Framework not only puts forth narrative as a promising tool for environmental communicators but also emphasizes specific narrative elements that can influence the degree to which narratives affect audience engagement.

Another theory that could relate to how the presentation of information affects people's attitudes, beliefs, and behavior is social cognitive theory (Bandura, 1986). Social cognitive theory is one of the most influential theories in social psychology and emphasizes that learning occurs in a social context. Core tenets of social cognitive theory include vicarious learning – that the act of observing the behavior of others plays a major role in learning – and the self-efficacy described previously in Section 3.3. In other words, social cognitive theory emphasizes that people's behaviors are strongly influenced both by what they see others doing and by what they believe they can be successful in themselves.

Social cognitive theory has been applied to media and communication research to explain how people are influenced by the behaviors they see represented in media. For example, the theory has been used to explain links between the consumption of women's magazines and dieting behavior and between TV viewership and cigarette smoking in youth (Pajares et al., 2009). Other research has attempted to intentionally shape audience behavior through media using the principles of social cognitive theory. Vaughan et al. (2000) detailed the effects of a Tanzanian radio soap opera with characters and storylines that were designed to provide educational content

surrounding HIV/AIDs in addition to providing entertainment. The study found evidence to suggest that the radio program had led to increased condom use among audiences.

Another theory relevant to alternate communication strategies is nudge theory. Nudging involves influencing human behavior in a predictable way without enforcing or forbidding any action or significantly changing economic incentives (Thaler & Sunstein, 2009). Ideally, the influence of the nudge can be easily overcome, and the aim of the nudge is the outcome that is best for the decision-maker. An example might be putting healthy snacks right near the checkout counter in a grocery store and leaving unhealthy snacks in a normal aisle – customers will be gently encouraged to buy the healthy snacks, but they can easily go get the unhealthy snacks with just a tiny bit more effort. The conditions under which this choice is made are referred to as the choice architecture, which has been influenced by the addition of the nudge (Thaler & Sunstein, 2009). Nudging works by making use of cognitive biases while still providing full freedom of choice to the decision-maker. In addition, they should be transparent and, again, in the interest of either the nudged individual or the greater social welfare (Lembcke et al., 2019). Essentially, the idea behind nudges is to make it easier for the nudged individual to make the "right" decision (Carlsson et al., 2019).

Framing is a type of nudge that is often used in communication. There are many specific types of framing, but in general, framing describes when different but essentially equivalent formulations of the same information are used to influence audience responses (Ropret Homar & Knežević Cvelbar, 2021). For example, a surgery with a 90% survival rate might not sound too bad, but a surgery with a 10% mortality rate sounds risky. This type of framing is known as risky choice framing and relies on the cognitive bias of loss aversion (Feinberg & Willer, 2011). Another example is goal-based framing, which might involve convincing someone to buy certain foods by emphasizing their health benefits (Onwezen, 2023). Existing literature has shown that both nudging techniques in general (Thaler & Sunstein, 2009) and framing techniques specifically are useful in influencing audiences (Ropret Homar & Knežević Cvelbar, 2021). Thus, the use of nudge theory could be a useful strategy for encouraging engagement in environmental issues.

The theory in this section provides the basis for the discussion of the themes derived from the thematic analysis of the interview data in this study. The discussion will look at the interview data in light of relevant theory and literature in order to answer the research questions presented in the introduction.

3.5 Ontological and epistemological basis of the research methodology

This research takes an anti-foundationalist ontological approach. This means that it does not assume that there is any specific foundational belief or principle that is the basis of inquiry and knowledge (Grix, 2002). Instead, it focuses on the localized narratives presented by the interviewees and explores these through thematic analysis.

Apart from its anti-foundationalist ontological approach, this research follows an interpretivist epistemology. Thus, it emphasizes the roles of both agents and structures in the presentation and interpretation of visual communications (Grix, 2002). It takes into account the capturing and processing of images by photographers, the presentation of images by curators or the photographers themselves, and the interpretation of images by viewers. All of these are affected by positionality, or the cultural backgrounds, biases, and agendas of the actors in question. Therefore, this research derives a subjective understanding of visual communication as constructed by multiple actors based on culturally derived understandings of visual cues.

The advantage of this epistemology is that it allows an in-depth exploratory look at the studied phenomenon to be derived from the rich descriptions of the research subjects. However, as the conclusions drawn from the qualitative data collected in this research rely heavily on my interpretations as a researcher, there is room for subjectivity. Just as the interpretations of the subjects in this research are shaped by their individual positionalities, the way that I, the researcher, understand and process qualitative data is shaped by and inseparable from my own positionality. Therefore, I try to be clear in this paper about potential subjective assumptions in my interpretations of the results to increase the accountability of this research and allow the reader to take these assumptions into account.

4. Methods and methodology

This chapter presents the research methodology used in this study. It first describes the overall research approach. Then, it covers the methods of data collection. It explains how participants were recruited and describes the demographics of the participant sample. It then covers how the interviews were conducted and reviews the ethical considerations taken throughout this process. Next, it lays out the process used for the thematic analysis of the interview data. Finally, it concludes with some final notes on the research process and my positionality as the researcher.

4.1 Research approach

This research used an exploratory, qualitative research approach to gain an overview of the topic at hand and answer the research question. First, an interdisciplinary literature review was performed to generate a basic understanding of the existing body of knowledge related to visual environmental communication. This literature review spanned fields including psychology, sociology, and communication studies. Next, in-depth, semi-structured interviews asking open-ended questions were conducted with image creators and other visual communicators to generate insight into the kinds of strategies they use in employing visual media to communicate environmental issues. The interviews also aimed to identify some of the challenges these visual communicators encounter when using visual media to encourage the public to take action on environmental issues. Finally, thematic analysis was used to derive themes from the interviews to answer the research question.

4.2 Data collection

This study used in-depth, semi-structured interviews with open-ended lines of questioning to collect qualitative primary-source data from image creators and other professionals working with visual environmental communication.

The choice to collect qualitative data was made because this study aimed to explore participants' thoughts and actions regarding visual communication and investigate how these aligned with Norgaard's (2009) barriers to engagement as determined in the literature review. O'Leary (2017) posits that the qualitative tradition "argues the value of depth over quantity and works at delving into social complexities in order to truly explore and understand the interactions, processes, lived experiences and belief systems that are a part of individuals, institutions, cultural groups, and even the everyday" (p. 142). In this case, qualitative research methods were used to seek deeper insight into the experiences, beliefs, and processes of visual environmental communicates, looking at how they worked, why they made certain artistic and procedural choices in their work, and what they believed about their roles in environmental communication in view of the greater socially constructed world around them.

The next sections describe how the study participants were recruited and how the interviews were conducted.

4.2.1 Participant recruitment

This study aimed to recruit professionals who were actively involved in visual environmental communication activities. The inclusion criteria were defined somewhat loosely to preserve the opportunity to explore a range of experiences. The primary focus was on image creators – specifically photographers, but many of the participants also worked with film. These participants ranged from photographers directly focused on activism in their work to those for whom environmental themes formed a backdrop to their artistic endeavors. Secondarily, the study recruited some interviewees who worked with visual communication from a more administrative standpoint in hopes of obtaining more diverse perspectives on visual environmental communication.

The 14 interviewees were recruited via word of mouth and snowball sampling, which refers to building a sample through the referrals of previous participants (O'Leary, 2017). The initial interviewees were recommended by a personal contact of the researcher, and at the end of each

interview, the interviewees were asked if they knew of anyone working with visual environmental communication who would be interested in participating in this study.

Snowball sampling is a non-random sampling method. One danger of snowball sampling is that because the participants are connected via a social or professional network, the representativeness of the sample to a larger population is not guaranteed (O'Leary, 2017). However, the goal of this study was not to represent the total population of visual environmental communicators but rather to use key informants to explore some of the strategies that exist among professionals in the field.

Thus, potential interviewees were contacted via email upon the recommendation of a contact or another interviewee. In the emails, I explained the study and asked each of the contacts if they would be interested in participating. If the contacts agreed, I sent them a copy of the consent form for taking part in this research and scheduled Zoom meetings during which the interviews were conducted.

Interviewees continued to be recruited via the above-described snowball sampling until I found that the same themes and concepts were coming up repeatedly, and increasingly few new themes were emerging. This point in the qualitative sampling process at which new themes no longer occur is called data redundancy or data saturation (Saunders et al., 2018). While complete data saturation is a goal rather than something that is achievable in practice (O'Leary, 2017), at this point, there were diminishing returns of new interviews. As a result, the decision was made to stop snowball sampling. Between the evidence of data saturation and the time constraints for this master's thesis, the total number in participants interviewed for this study was ultimately capped at 14.

4.2.2 Sample demographics

All 14 of the interviewees were working in some capacity with visual environmental communication. Nine were photographers or filmmakers, and three were working in administrative roles with visual environmental communication (there was some overlap here).

Most of the interviewees were freelancers, but one was a staff photographer and filmmaker working for an environmental communication organization, and the two participants working in administrative roles also held staff positions. The interviewees described their roles slightly differently – one considered himself primarily a fine artist working with environmental themes, others considered themselves to take more journalistic roles, and others were more directly involved in environmental activism. The interviewees reported having between five and 40 years of experience in the visual communication field, with the average amount of experience being roughly 14 years.

Of the interviewees, eight were involved with the International League of Conservation Photographers (ILCP), a professional organization for conservation photography and filmmaking. The ILCP is a global organization consisting of over 120 photographers and filmmakers based in 26 countries. The fact that slightly more than half of the interviewees were associated with the same professional organization may have influenced the data. However, the use of strategic non-random snowball sampling inherently assumes that participants will be in interconnected professional or social circles, and again, this research was exploratory and not meant to be representative or generalizable in nature.

Regarding the geographic backgrounds of the interviewees, eight were from the United States. One interviewee was from Australia, one was from India, one was from Germany, and one was from Norway. The interviewees were primarily from Western cultural backgrounds, and all spoke English. As far as I could tell as the interviewer, no language barriers were evident during the interviews.

4.2.3 Interview process

I conducted comprehensive interviews in order to gain a nuanced understanding of the perspectives of the participants. These interviews were semi-structured and asked in-depth, open-ended questions of the interviewees. This means that I defined pre-written interview questions (listed in Appendix I), but my plans for the interviews were flexible in order to adapt to the flow

of the conversations and allow the interviewees to bring up different topics that they felt were relevant. Some example questions included the following:

> Do you think strategically about how you structure your images? How do you pick images that best tell the story that you want to convey?
>
> What are some of the main challenges of your work?
>
> How do you strike a balance between trying to inspire awe/positive emotion and showing people "the reality of the situation" in terms of negative and potentially scary images (i.e., dead animals, burned forests, plastic pollution)? In particular, how do you balance this to try to get people to act or change their behavior?

However, my lines of questioning often deviated from the pre-written questions to pursue interesting tangents or lines of thought as interviewees brought them up (O'Leary, 2017). This flexibility was important to the exploratory nature of this study – sometimes, it was not clear in advance which questions needed to be asked of the interviewees in order to fully understand their points of view or experiences. In addition, this approach allowed the experts I was interviewing to highlight issues that they thought were important based on their experience in their field.

The interviews were conducted over Zoom in the time period between September 2022 and February 2023. Each participant was individually interviewed, and each interview lasted between 30 minutes and an hour in length. All of the interviews except one, which was audio-only, were video calls. With consent from the interviewees, audio from the meetings was recorded for later transcription. Although I took some notes by hand during the interviews, I found that taking too many notes was distracting and made it difficult for the conversation to flow naturally, which was important given the semi-structured nature of the interviews, so I largely relied on the audio transcripts for records of the conversations.

One participant was unavailable for a real-time Zoom interview and requested the option to record a response instead. I sent her my list of interview questions, and she sent me a recorded

audio of herself responding to the questions and a transcript of the audio. In this case, I listened to the audio to manually check the transcript and to fully understand the interviewee's tone of voice and verbal emphasis while responding to the questions.

4.2.4 Ethical considerations

This study was registered with and approved by the Norsk Senter for Forskningsdata (NSD), which reviewed the research methods for compliance with GDPR regulations and research ethics standards. Data collection and management for this research was conducted according to NSD regulations.

All participants were provided with and electronically signed an informed consent form (see Appendix B) before their data was collected and used in the study. The consent form, which was approved by the NSD, described the study, the interview process, and how data would be processed and stored. It also informed the study participants of their right to withdraw from the study at any point. This ensured that the participants were giving their active and informed consent to participate in the study. As the consent form was sent over email, each participant was able to permanently retain an electronic copy for future reference. As of the date of submitting this paper, none of the interviewees had withdrawn their consent to participate in the study.

Given the study design and sampling method, it was not possible to ensure the full anonymity of the participants. As the snowball sampling method was used, many of the interviewees referred each other to the study, so these interviewees knew who referred them and that those they referred were potential participants. In addition, quotes from the interviews in which participants described their backgrounds and past experiences could potentially be used to identify them. When clearing the study with the NSD, it was confirmed that the study did not intend to capture sensitive information about the participants. However, steps were taken to obscure the identities of the participants. Interview and transcript files were saved using numerical identifiers rather than names, and names were left out of the transcript files. Data files were stored on a password-protected personal computer and in the University of Oslo OneDrive, which was also password-protected and cleared for the storage of research data. Finally, in the process of writing this

paper, effort was made not to refer to the study participants with specific details about their backgrounds, and potentially identifying information within quoted excepts from the interview data was replaced with more general terms in brackets.

4.2.5 Data analysis

I used reflexive thematic analysis for my data analysis and followed the methodology of Braun and Clarke (2019, 2006). This methodology was chosen because it allowed me to tailor my analysis by seeking out patterns of information relevant to my research questions. Since this was an exploratory study, my interview questions covered a wide range of topics, and I was not sure which would be relevant before I started to see patterns in the interview data. Thus, reflexive thematic analysis allowed me to take advantage of the richness of my data to determine which themes came up repeatedly or were emphasized the most by my participants.

The methodology consists of six general steps that are, rather than being completed in order, constantly revisited through the process of analysis. These steps include the following: (1) familiarizing oneself with the collected data, (2) generating initial codes, (3) searching for themes, (4) reviewing the collected themes, (5) defining and naming these themes, and (6) producing a written report of the findings (Braun & Clarke, 2006).

As part of the process of familiarizing myself with the collected data, I transcribed most of the audio recordings manually to obtain written transcripts of the interviews. One interviewee completed their interview using a written version of my prepared interview questions, as we were unable to coordinate a Zoom interview, and sent me an audio file and a transcript of the recorded audio. For this interview, I used the audio file to manually check the transcript that was sent to ensure that it was accurate.

Although potentially identifiable information about the interviewees' backgrounds was retained in the transcripts, the interviewees' names (from when they introduced themselves) were left out, as were the names of other interviewees they mentioned (for example, during the snowball sampling). In addition, some of the specific animal species that the photographers worked with

were removed from the quotes included in this paper, as these could be potentially identifying. As I transcribed the interviews, I made notes regarding recurring themes mentioned by the interviewees as well as statements by the interviewees that recalled notable points from the literature review. These notes provided the basis for my analysis.

Once all of the transcriptions were completed, I re-read the transcriptions and started generating initial codes for my analysis. I chose codes based on information that was relevant to my main research question and three sub-questions regarding the barriers perceived by the environmental communicators, the strategies they used to address these, and factors relevant to these first two points. As I went through the interviews and made my initial codes, it became possible to see some themes in the data – for example, the interviewees' repeated references to using storytelling to create connection. The analysis process was a reiterative one – the processes of coding and drawing out themes fed into each other, and I reviewed each interview several times to refine my analysis before coming up with a final collection of themes. Finally, the process of writing was itself part of the process of analysis, as themes were further refined in the process of reporting them.

4.2.6 Notes on the research method

I attempted to choose participants who were similar enough to maintain a manageable scope for the research while still including some variety in viewpoints. In addition, the scope of this research was limited by time constraints, so it was necessary to choose a sample size that was manageable for a single researcher within the data collection period. A wider variety or larger number of interviewees could have yielded different results. However, the final number of interviewees was decided when I found that the same topics and concepts continued to reappear in new interviews, and I determined that data saturation was being approached. More interviews could have slightly changed the results of this study. However, I determined that significantly different results would be unlikely unless the sampling criteria were expanded.

Interviewees were included from several different countries (USA, India, Germany, Norway, and Australia), but the interviewees primarily came from Western cultural backgrounds. It would be

interesting to do more cultural comparison on the topic of visual environmental communication, but this was outside the scope of the present research. All of the interviews were conducted in English, and I did not notice any misunderstandings due to language barriers during the interviews.

I was acquainted with one of the participants prior to starting this project, as we had previously worked together. Having personal connections with study participants can have an effect on the data that is gathered, especially in qualitative studies like this one. However, as my interview questions did not cover overly personal or sensitive topics and I had not held a position of power over this interviewer when we worked together, I determined that it was acceptable to include this participant in the study. For the rest of the interviewees, my first contact with them was my emailed requests to participate in this study.

Finally, subjectivity is inherent in the process of doing research – both on the part of myself as a researcher and on the part of my participants. This subjectivity is part of what leads to rich data and new insights, but it is important to be aware of its existence. O'Leary (2017) says that "working towards credible research … demands reflexive awareness of our worldviews and a conscious effort for us to take them into account as we enter our research journey" (p. 57). Throughout the research process, I took active steps to manage my subjectivities and aim for a neutral stance. These steps included noting down and questioning assumptions that I noticed in myself, taking time to repeatedly engage with the data, and recording both my initial thoughts and the new observations that I noticed as I moved beyond these first impressions. The reflexive nature of the thematic analysis I used was helpful in this process. In addition, I have attempted to be as transparent as possible in describing my research design throughout this chapter and in describing my results in the next chapter in order to increase the credibility and auditability of my research.

5. Thematic analysis

This chapter presents the results of the thematic analysis of the interview data. It describes each of the six themes derived from the interview data in turn and provides quotes and evidence from the interviews to support each one. After each theme, there is a discussion that presents my interpretations of the findings of this study and explores how they relate to ideas in the existing literature. This structure was chosen so that the reader could review the discussion of each theme with the quotes from the interview results still freshly in mind.

Returning to the research questions laid out in the introduction of this master's thesis, the first two sub-questions asked about what visual environmental communicators see as barriers to engagement and what specific strategies they use to counter these. In light of these questions, three major themes were identified: attention and accessibility, storytelling and connection, and providing next steps. Each theme was broken down into three subthemes to allow closer inspection. For the theme of attention and accessibility, the subthemes of attracting attention, leveraging the accessibility of images, and reaching target audiences were identified. For the theme of storytelling and connection, the subthemes of creating connection through emotion and storytelling, making meaning in the negative through storytelling, and creating connection through local places were identified. For the theme of providing next steps, the subthemes of providing procedural knowledge, setting clear communication goals, and making a call to action were identified.

The third research sub-question asked about factors moderating the use of the communication strategies identified. In order to answer this question, three more themes were derived from the interview data. These three themes include the status of visual environmental communicators as topical experts and translators, the importance of integrity and contextualization, and the participants' frustration with the difficulty of measuring the impact of their communication work. These additional themes play important roles in both strengthening and qualifying the evidence for the strategies described in the first three themes.

Throughout this analysis, each quote from the interview data is marked with a number in parentheses. These numbers refer to the study participants, who were each randomly assigned a number between 01 and 14, and are used to indicate the speaker of the quote.

5.1 Attention and accessibility

The first of the three themes concerning specific strategies identified in the interviews was attention and accessibility. It emphasizes limited attention resources as a barrier to engagement and covers the interviewees' strategies for capturing audiences' attention through the enhanced accessibility of visual communication versus other forms of communication. This theme includes the subthemes of attracting attention, leveraging the accessibility of images, and reaching target audiences.

5.1.1 Attracting attention

Most of the interviewees saw attention as a major barrier to engagement with environmental issues. Several described most people as preoccupied with their everyday lives and their own more immediate problems. (It should be noted that none of the interviewees who cited this preoccupation did so in a deprecatory way and instead seemed to see it as an understandable part of human nature or reaction to life in today's busy and often stressful society.) In addition, many of the interviewees cited the difficulty of navigating the imbalance between audiences' limited capacities for attention and the seemingly unlimited amount of media competing for this attention as a constant challenge for communicators in general. They talked about the huge amount of information most people today encounter in their daily lives and the challenge of getting audiences to engage with their work specifically as a result.

> If you see how much time people spend on pictures, you know, it's seconds, fractions of seconds sometimes. How many pictures do you get exposed to every day? It's crazy. (12)

> I think the problem we face now is that there is so much noise in terms of what you see on social media. You know, wherever you're looking, there's so much media coming at us. (13)

The interviewees noted that given the sheer amount of information most people are exposed to every day in contemporary society, it is very difficult for communicators to make their work stand out. They may have only "fractions of a second" to capture viewers' attention. This was cited as a significant challenge in the interview data. However, the participants did indicate that they saw visual communication as having a slight advantage over text-based communication:

> It's really hard to get people's attention, and compelling visuals tend to do that in a way that I think text doesn't. (08)

Several participants specifically mentioned the ability of images to capture audiences' attention by rapidly invoking emotion. The use of emotion in visual communication was a prominent topic in the interviews, and it is discussed under the theme of storytelling and connection in Section 5.2.

The examples above indicate that the participants saw audiences' limited attention resources as a barrier to engagement. They indicated that both people's personal lives and the massive amount of media that they are exposed to on a daily basis could place significant demand on attention resources. However, participants described the use of eye-catching visual imagery as a strategy for attracting attention and thus competing for these resources.

5.1.2 Leveraging the accessibility of images

While some participants focused on the ability of visuals to capture attention, other participants focused on using imagery to try to make the most of the attention they did manage to capture. They described attempting to deal with audiences' limited attention resources by making information more accessible through visuals.

> People's attention spans are getting shorter and shorter, and to get somebody to even read a long caption on Instagram can be difficult. But a photograph can tell a story in a single moment, and I think that can be really powerful. (13)

Many interviewees cited this ability of images to convey a large amount of information with just a brief glance. They said this speed of information transfer gives visual communicators a better chance of "hooking" their audiences and provides one advantage over textual communication, which often takes more time to absorb. These claims were supported by arguments that cited cognitive and evolutionary psychology.

> First of all, we know images are processed more quickly than words. That's a fact, about 60,000 times faster. So, it gets through quicker. (05)

> As [humans] evolved, we were able to read each other visually with body language and body cues. We hunted that way, through visuals in the landscape. That's just the way we are. So naturally, when we are taking in information, it's predominantly in a visual manner. So, if you're taking a picture of something and you're trying to communicate, you have a real chance to put a lot in one frame. And obviously, the more knowledge you have about, you know, angles and trying to tell a story within a frame to include different characters and all these different little variables like that, you've already got so much on your side just from an evolutionary standpoint. (02)

Participants also described using images to make complex data more accessible to non-specialists. One of the interviewees (10) described being approached by an organization that needed photographs for a report they were releasing, saying that they needed something to help them reach their target audience because most people would not read "dry data." In this case, visual communication was used as a bridge to try to make research data more accessible to the public.

> The general public isn't really open to reading vast amounts of text about an issue that they are not very familiar with, that they don't really understand … Imagery, for me, is basically a way to communicate a large-scale message in a very simple way and in a very direct way. Which is something that, I guess, articles or scientific papers, or even

> presentations are not necessarily able to do – to just kind of catch people's attention within the first couple of seconds that they see something. (11)

The examples above indicate that the participants used visual communication as a strategy to condense information and deliver it in a way that is quickly understandable and digestible to their audiences. Several participants highlighted more specific cases for which this strategy could be useful, including cases of learning disabilities and language barriers.

> I'm very dyslexic, and I have a lot of learning disabilities, so school, particularly, like, reading and writing – which is why I'm not very good at science, cause there's no way I could learn Latin or anything. So, for me, visual communication is huge. And I think it's really great because it can cross language barriers, it can cross disabilities, it's all-inclusive. (04)

> Images are, I don't know if this is the correct term, but translingual. It doesn't matter what language you speak; it doesn't matter your level of literacy. I mean, even if you write in English and your audience is [English-speaking], we know that something like 20% of Australians have sub-10-year-old literacy and English isn't their first language. (05)

These participants acknowledged that visual imagery could not solve all access issues – such as in cases of visual disabilities, for instance – but they did indicate that visual communication was a useful way to reach certain populations who might not be able to access other forms of communication.

With statements like the ones above, the participants indicated that they used visual communication as a strategy to reach audiences who may not necessarily find text as accessible a form of communication. This could be for many reasons – maybe the audiences are sorting through large amounts of information over a limited time frame, maybe there is a disability or language barrier involved, or maybe the textual information is complex, dry, technical, or otherwise does not catch viewers' attention. Either way, the participants found that visual

communication was an effective strategy for helping more people access the messages they were trying to convey.

5.1.3 Reaching target audiences

A common topic that came up in the interviews during discussions about attracting attention to one's communication projects was *whose* attention, primarily, the interviewees were trying to attract. The participants had mixed opinions regarding their ideal target audiences. Some interviewees mentioned that one issue they faced related to their strategies for attracting attention to their work was that it was much easier to reach audiences who were already interested in environmental issues but that communication with this audience sometimes felt like "preaching to the choir."

> If I'm publishing my images in BBC Wildlife, then that's already speaking to the choir. And I can get those people interested in a certain issue, but how do I reach the people that have the means to help but aren't already aware of what's going on? (07)

However, another said she did not see this as a major problem. She said that even if people were seeing her work because they were generally interested in environmental issues, they still might not know much about the specific issue that she was presenting.

> I do sometimes feel that I'm preaching to the choir, especially being involved with a lot of nature conservation organizations that are targeting audiences who are already interested in whichever issue they're trying to resolve. On the other hand, what I tend to find with magazines, even if they're natural history magazines or scientific-based magazines, is that there is always going to be an issue that somebody in the audience doesn't know about and that's going to be reported in the magazine that might spark their interest. So, by reporting on a broad kind of range of issues, I'm not necessarily preaching to the choir, but I'm educating the choir about different kind of aspects of conservation that they may not know about. (11)

In discussing their target audiences, the participants brought up strategies for attracting attention that went beyond the creation of compelling visuals from Section 5.1.1. A few participants described using creative techniques to get new eyes on their work, such as entering photography or film competitions. Several participants said that a strategy they have used or seen used successfully to get in front of new audiences was a focus on local communities. Several participants said that focusing on local projects allowed them to get their work in front of people who might not regularly engage with environmental content when local news outlets picked up their stories. The strategy of focusing on local stories was also used to build feelings of connection in audiences, which will be explored further in Section 5.2.3.

In addition, although most interviewees described their target audiences as the general public (preexisting interest in environmental issues aside), there was one who diverged from the majority by saying that his ideal target audience was political figures or other people in power. Although he did try to encourage engagement on a grassroots scale, this interviewee preferred trying to approach public officials in person to make appeals for a given cause. Although the interviewee who mentioned this technique said that it had been successful for him, it does require the opportunity to network directly with these parties, which may not always be available to communicators.

The theme of attention and accessibility covers the first category of visual communication strategies that the interviewees indicated using. Interviewees saw attention as a major barrier to engagement with environmental issues, and this informed the strategies they used to engage audiences. Participants described using images to attract attention and how leveraging the accessibility of images helped them convey information quickly to take advantage of that attention. Finally, they discussed the primary audiences whose attention they were trying to attract.

Discussion

The first theme derived from the interview data involved using visual communication to capture attention in today's busy and media-saturated environment, which many participants saw as a

barrier to engagement with environmental issues. The participants described how visual communication could be used to attract attention and convey information quickly in a way that is highly accessible to a large number of people. They also spoke a little about the ideal target audiences for their communication efforts.

Attracting attention

Many of the interviewees touched on the idea of attention being a barrier to people's further engagement with environmental issues. They described attention-related barriers in two main ways. First, they indicated that people in general are preoccupied with their own busy lives and more immediate problems. Second, they described the struggle as communicators to stand out given the massive amount of media that the average person encounters on a daily basis in today's heavily digitized society.

The argument that people in general are preoccupied with more immediate problems has been previously explored in the literature. Norgaard (2009) cited a hierarchy of needs explanation as one of four commonly cited reasons why people do not act to combat climate change or other large-scale environmental issues. This explanation refers to the work of psychologist Abraham Maslow (e.g., Maslow, 1954) and argues that people tend to focus on needs in order of immediacy. The negative effects of many environmental issues (for example, climate change and biodiversity loss) accumulate gradually and sometimes invisibly. For many people, especially those living in wealthier industrialized societies, these issues may not seem to have much of a bearing on daily life, and thus, addressing them might be lower in peoples' needs hierarchies. As Maslow's hierarchy of needs runs from concrete needs such as food and water to more abstract needs such as self-actualization (Maslow, 1954), construal level theory is also relevant here. As described in Section 3.2, construal level theory holds that objects and events that are further away in terms of psychological distance (which can be temporal, spatial, social, or hypothetical) are conceptualized as more abstract than those that are closer (Trope & Liberman, 2010). This suggests that many people living in wealthier industrialized societies may have a high psychological distance from many environmental issues and thus perceive them as more abstract, which could result in a lower motivation to take action.

Next, the interviewees' descriptions of the struggle to make their work stand out given the massive amount of media that the average person encounters on a daily basis and the difficulty of capturing audience attention amidst so much informational noise strongly reflect existing literature describing life in contemporary society as being subject to the attention economy (Goldhaber, 1997; 2006; Franck, 2019). Again, the attention economy describes how, with the rise of digitization, the limiting factor in people's ability to process and engage with information changed from the availability of information to human attention capabilities. The monetization of attention capital through advertising is a business model that countless media producers and platforms rely on, and it has contributed to intense competition over these limited attention resources (Franck, 2019). Based on the interview data, the study participants were acutely aware of the phenomenon of the attention economy, and many referenced the challenges of trying to compete for audiences' limited attention resources.

In order to beat the attention economy, the interviewees needed a way to attract audiences. One method was to focus on creating compelling visuals. Research has indeed found that visuals can help draw attention and are harder to ignore than text-based communication (Pieters & Wedel, 2004). There is still a lot of competing visual media out there, but images seem to have at least some advantages over purely text-based communication in attracting attention. Again, the interviewees indicated here that the use of emotionally charged imagery was useful, and this will be explored further under the theme of storytelling and connection in Section 5.2. It is well-established in psychology literature that emotionally charged images tend to attract more attention than neutral images (Mogg & Bradley, 1999; Öhman et al., 2001).

Leveraging the accessibility of images

Several interviewees argued that images can be more accessible than text, citing the ability of visual media to quickly convey large amounts of information, cases such as certain disabilities and language barriers in which the meaning of text may be lost, and the use of visuals to simplify complex information. In this way, these participants claimed that visual communication was able

to reach wider audiences than text-based communication by breaking down certain barriers to accessing information.

The participants expressed that a useful strategy for dealing with limited attention resources in their viewers was using visual media to convey large amounts of information in a short amount of time. Several interviewees cited the faster processing speed of images versus text. Although I was unable to find a peer-reviewed source for the interviewee-cited statistic that images are processed 60,000 times faster than text, research has found that images can effectively aid in simplifying complex information and improve understanding, especially in educational contexts (Levie & Lentz, 1982). Visual content also increases the amount of time for which information is likely to be remembered – a phenomenon that has been called the picture superiority effect (Childers & Houston, 1984). Therefore, it is reasonable to assume that the use of images can help communicators to rapidly and accessibly convey information in the age of the attention economy.

The idea that images can make complex information more accessible in environmental communication was explored in practice through a case study by Schwarz (2013), who analyzed a communication project about the Chesapeake Bay watershed in the northeastern US. She found that visual communicators could act as translators between scientists and the public by using visual narratives to present complicated ecological concepts in a way that is more accessible to more people. The role of visual communicators as topical experts and translators will be discussed further in Section 5.4.

Reaching target audiences

The participants also discussed the target audiences whose attention they were trying to attract. Some were fine with reaching an audience that was already interested in similar topics, while others were actively looking for ways to branch out from "preaching to the choir" and instead reach audiences who might not have prior interest in or knowledge about environmental issues. Still others considered attracting the attention of the general public to be secondary to attracting the attention of those in government or other influential positions.

For communicators trying to reach audiences who are not already convinced, it may be useful to keep in mind that research has indicated that people are more likely to accept information that is in line with or appeals to their preexisting values, attitudes, and beliefs (Crow & Jones, 2018; Luong et al., 2019). This tendency falls under the idea of confirmation bias (Nickerson, 1998). Communicators may find it helpful to tailor their approaches and try different techniques, such as priming or framing, to reach these audiences. An example of using priming in the environmental communication context was given by Guenther and Shanahan (2020), who found that those with cooler attitudes toward wildlife could be convinced to support protections for a given species if primed to perceive more positive impacts of the species on human society. Similarly, audiences who may not be receptive to climate change mitigation when it is framed in terms of risks to the environment may be more receptive if the issue is framed in terms of public health (Myers et al., 2012). Thus, the literature suggests that it is useful for communicators to specify their target audiences and consider what these audiences' preexisting values and beliefs might be, and to create targeted communication that is tailored to meet viewers where they (ideologically) stand when trying to engage an audience that is not already invested in environmental issues.

5.2 Storytelling and connection

The second of the three themes concerning specific strategies identified from the interview data was the use of strategies centered on storytelling and connection. This theme emphasizes a sense of disconnect as a barrier to engagement with environmental issues and includes the subthemes of creating connection through emotion and storytelling, making meaning in the negative through storytelling, and creating connection through local places.

5.2.1 Creating connection through emotion and storytelling

The most common factor participants cited that, in their view, kept people from engaging with environmental issues was a sense of disconnect with issues or with those being affected. They explained that people saw environmental issues as having a long time frame before their effects would be felt or as happening to someone else far away with whom they could not really relate.

Meanwhile, most of the interviewees immediately cited their efforts to create emotional connection as one of their main strategies for visual communication. They described this sense of emotional connection as the most important driver of audiences' further engagement with environmental issues.

> Whilst facts help us rationalize decisions, most decisions are based on emotions. (05)

> Visual communication, it not just impacts your mind, but it also touches your heart. So literally, it evokes emotions in people. (06)

> My challenge for the work that I do is, well, don't stop at the mind, please go to the heart. And in fact, start at the heart. Forget about the mind. The mind will follow the heart. (03)

Every one of the interviewees a statement similar to those quoted above, indicating that evoking emotion was a major factor in their strategies for visual environmental communication. Thus, the interview data suggested that the interviewees primarily relied on appeals to emotion over logic, expertise, or even ethics to persuade their audiences. However, they argued that emotion alone, without a sense of connection, was not enough to result in engagement:

> Imagine you're watching television and you read about this terrible mudslide in China, or a tsunami, and thousands of people are killed. You're going to think, "That's horrible." If you're any kind of decent person, you're gonna think, "Oh my God, that's so terrible." And then you're gonna [change the channel] and watch your favorite television program. Most people are gonna do that. (13)

The main strategy that the interviewees cited for creating this sense of emotional connection in audiences was storytelling. The process of storytelling was usually highly intentional and at the front of the participants' minds throughout their projects, from planning to execution. Two participants explained part of their processes for creating images as follows:

> Something that has now been taking a more important role in the way I [work] is thinking about narrative in the sense of a story. And a story is comprised of three foundational elements, all stories have them: agreement, contradiction, and consequence. Those three forces. So always think to myself, "What is the status quo, what is the disrupter, and what is the 'therefore' in the image?" (02)

> In terms of structuring images, you want each image to tell a story, and you have to think about how that builds a story in general. So, always thinking about [how] a story breaks down to four parts – situation, problem, implication, and solutions. (07)

These participants described how they specifically consider the elements of storytelling while framing their images. In this way, they aimed to convey an entire story arc in an image that a viewer could take in in a single moment of time. This is reminiscent of the previous theme centered on attention and accessibility, which included using the strategy of condensing information to convey it quickly to an audience with limited attention resources. However, interviewees specifically related the use of story arcs in images to creating a sense of emotional connection in the viewer, evoking empathy, and making audiences want to know more.

One example that highlights the intentional use of storytelling to build empathy is that many of the interviewees mentioned the effectiveness of building a story around a specific "main character" figure: a single individual, either human or animal, who was presented as the protagonist of the story in question. Interviewees expressed that focusing on the struggles and successes of a single individual could be a highly effective method for creating a connection between audiences and that individual, and that this method could evoke a much stronger empathetic response than focusing on a large group of people or a species as a whole.

> Focusing on individuals, that breaks it down for people … so while they're focusing on an individual cat or focusing on an individual researcher, people start getting sucked in or building empathy towards this individual rather than thinking about climate change as a bigger thing … [For example,] Medina in Indonesia, who's this young conservationist breaking all these gender barriers by going out with anti-poaching teams as a young

> woman, you know, when the rest of the team is guys, and seeing her personal struggles through this process makes me connect to Medina … and then be like, hey, I'd like to support her. But supporting her actually means supporting the tigers in Sumatra. So, again, breaking it down, focusing on an individual, focusing on building empathy towards that individual, and then using that individual as a way of protecting and attacking these larger issues. (07)

This example illustrates the participant's intentional use of storytelling as a tool to create a sense of emotional connection with a specific individual and invoke empathy for them as a way of approaching an issue that audiences might otherwise find overwhelming and abstract. Another participant expanded on how focusing on storytelling around an individual could build empathy as follows:

> Telling the story of one person, or one family, or, like, one aspect can be so much more powerful for getting people to behave or respond societally than telling the story of 200,000 people or something like that because our brains associate those numbers as just that – they associate it as numbers instead of as a human being. And that's why humanizing science is so important to me, because there's power in doing that. You can actually get people to change their behavior based off the power of narrative and how we connect to other people. (03)

These participants emphasized the use of storytelling to encourage audiences to feel empathy and a sense of connection with those affected by or working to combat environmental issues as a major strategy for their visual communication work. In this way, the interviewees attempted to make environmental issues feel less abstract and closer to home for audiences and to make viewers feel not just emotion in general, but emotionally invested in the struggles and triumphs of the protagonists presented in their stories.

5.2.2 Making meaning in the negative though storytelling

Another strategy that the interviewees described as useful to encourage engagement in their audiences was using storytelling to present problems or difficult situations in a way that allowed viewers to see a way forward. They said that while it was necessary to discuss the negative impacts of environmental issues in order to show audiences that these issues needed to be addressed, communication should not stop there. Instead, narrative arcs could be used to show how the negative impacts are only part of the story and that the story does not end there.

Despite many interviewees expressing that the seemingly constant negativity in the news media cycle could be overwhelming for audiences, several pointed out that negative environmental impacts (for example, pollution or biodiversity loss) could not just be glossed over to avoid depressing people. If people were not presented with the problems, then they would have no reason to act.

> A lot of my images are negative, yeah. Because the problem and the implication are critical parts of the story that kind of create the emotional response from people to start building empathy … Every movie has a problem. Because otherwise there's no drama, [people] don't care. So, you need to have the negative images. (07)

This and other participants described their use of images with a negative emotional valence as an important part of their communication strategies. Negatively valenced images in the participants' work featured themes such as melting glaciers, litter, dead animals, and oil drilling. However, this strategy did not mean focusing solely on negative impacts. Several participants described using narrative arcs to present negative environmental impacts without overwhelming audiences and shutting down engagement.

First, the use of narrative arcs could help audiences understand issues better by humanizing them. In the previous section, interviewee 03 was quoted describing how news reports based on numbers and statistics tended to alienate audiences from what was being reported. He said that the human brain struggles to associate statistics with actual human beings, and that storytelling was a way to counter that alienation.

> We need to be telling stories to make sense of our world, that is how humans have evolved. (03)

> If it's a single image just showing a problem, it's not going to have nearly the same impact as when empathy has been built around a character that is then associated with that problem. (07)

Second, contextualizing negative impacts as just part of a story and looking to the future gives people hope, which is crucial for engagement.

> If people feel overwhelmed, they're going to throw their arms up and say, "I'm just going to, you know, eat, drink, and be merry. There's nothing I can do. Just going to ride it out." We have to give people hope. If you don't have hope, then what's the point, right? (13)

In order to give their audiences hope, the interviewees described focusing their narratives on what could be saved or achieved in a given situation, and on the people or communities that were making a positive difference – for example, scientists, conservations, or grassroots organizers working for a better future.

> I try to give people a little bit more hope through my work in kind of portraying that, yes, this issue exists, but there is research being done to try to amend it … I portray stories of the people that are working on fixing the problem. (11)

Furthermore, the interviewees indicated that giving people hope is especially effective when the potential for audiences to contribute to shaping the future that they desire is emphasized – an idea that will be explored in Section 5.3 as part of the third theme derived from the interview data. This third theme centers on the strategy of providing audiences with the next steps they can take to engage with the environmental issues presented.

Overall, the participants described using storytelling to help audiences contextualize and make sense of difficult or negative topics. They argued the importance of conveying negative impacts to show that a problem exists, but that the story should not stop there. Thus, the interviewees used narrative arcs to humanize environmental issues and emphasize that there was hope for the future.

5.2.3 Creating connection through local places

Another strategy that the participants used to create a sense of connection in their audiences was focusing on area-specific stories and sharing them with local communities. Again, the participants indicated that many people seemed to feel disconnected from large-scale environmental issues – for example, climate change or biodiversity loss – with impacts that may feel far away from their daily lives. However, bringing environmental issues home by showing audiences how their communities and local places are affected was a useful strategy for encouraging engagement.

> It's really hard for people to care or know what to do with these really big global issues, and I think breaking it down to communicating how [their] life is affected, how [their] neighborhood and community or social network is being affected by climate change, or whatever the issue may be, I think that's when people really start to relate. (04)

This approach was not limited to focusing on the negative impacts of environmental issues. Many participants found that connecting with people over their local species and natural sites was an effective way to overcome the barrier of disconnect. They described seeing enthusiastic responses from people regarding the nature in their own backyards.

> I focus a lot on [interviewee's local region], so a lot of times these places, people know them. They're like their backyards. So, when they get to see them in a really beautiful way, they're like, "I know that place! That's my home! That's my backyard! That's my park! Or, that's my beach," or whatever. And I think it's beautified, and they seem excited by that. It kind of lights them up. (02)

> What I've found is that once people are shown what's in their community, they fall in love with these species. (13)

These interviewees and others emphasized the success they had found in using people's senses of connection with their local species and natural places as a jumping off point to encourage engagement with environment issues. Several participants shared personal stories of local community members who had reached out to them to share how the participant's work had helped them connect to their local environment, and they had changed their opinions or behavior as a result.

> [Regarding] inspiring people through photography, I can't tell you the number of people that write to me about, "Oh, I saw this bee in my garden!" So, something is changing in their behavior. Or, "I took the spider outside. I normally would squash it, but I saw your Facebook post and I'm feeling weird, and now I'm going to take it outside." It's a step in the right direction. (13)

> I was giving a talk at a summit, and a woman came up to me afterward and said that she used to really hate coyotes because she had had, I think it was her cat or her dog ... was injured or killed by a coyote, and so she really hated them. But she said that because of the work that I was doing … she had really come around to feeling more empathy for them and being interested in them, and that's huge. I think that changing someone's actual emotional reaction to something is pretty significant. (14)

> With my film and my photo essay about bees, I do know of a lot of people in my community who started planting native plants. It's actually very cute. They'll send me pictures of bees in their yards; it makes me so happy. (09)

> In North America, there used to be a giant inland sea millions of years ago. So, a lot of the central part of the country is very sandy, and there are these huge dunes that have grasses on them now. It's like a rolling grassland. And there are areas where the wind

> blows off some of the grass and it creates patches of bare sand, and they call those blowouts. And the ranchers are constantly trying to cover those up. They'll throw tires on them; they'll throw cow carcasses – anything that they can to get grass to grow there because they see it as a waste. A lot of Western ranchers have this sort of old, what's called manifest destiny, sort of when people pushed this idea that they were on a mission from God to tame the land and all this stuff. That still exists. So, what I did [with one particular rancher] was I went to photograph the small species that lived on his property as part of a bigger story. So, almost everything that I photographed was up on those blowout areas. These amazing tiger beetles, turtles, wildflowers, all of these things that only lived there. And I kept going back to him and saying, "Look at this amazing-looking thing!" And he was like, "Whoa, that's so cool! Where did you photograph it?" And I was like, "I photographed it on the blowout." And I just kept doing that, and that's the kind of thing that sticks with people, because I don't have to say, "This is important." I can say, "Look how cool this is!" (13)

The interviewees quoted above had all experienced viewers responding with engagement to stories about their local environments. In addition to these personal experiences, two participants referenced the example of photographer Steve Winter's well-known photo of P22, a mountain lion living in a Los Angeles park, under the Hollywood sign. The photo was considered instrumental in raising funding for a wildlife bridge over a 10-lane highway near the city. One interviewee described how the image of P22 under the iconic landmark generated so much local interest in Los Angeles that the animal's death several years later was reported on the cover of the Los Angeles Times. Thus, the interview data indicated that the participants considered focusing on area-specific stories and sharing them with the people living in the local community to be effective communication strategies.

In summary, the second theme relating to using visual media to engage viewers with environmental issues was storytelling and connection. The participants described incorporating elements of storytelling such as a main character or "hero" role and suggestions of conflict or struggle as they structured their images in order to invoke emotions and create feelings of connection in their audiences. They also emphasized how local stories could create strong senses

of emotional connection and shared specific examples of these leading to audiences engaging with environmental issues.

Discussion

The second overarching theme identified in the interview data explored the use of strategies centered around storytelling and connection. The participants described how they used storytelling to encourage audiences to emotionally connect with their work and to make meaning surrounding challenges and difficult situations. They also described focusing on audiences' local communities to create a sense of connection.

Creating connection through storytelling and emotion

The interviews indicated that a sense of disconnect with issues or with those being affected was a major barrier that kept people from engaging with environmental issues. This sentiment reflects the discussion from the previous theme of attention and accessibility about the hierarchy of needs explanation for inaction (Norgaard, 2009) in that it highlights peoples' tendency to focus on their more immediate needs, but it leans much more into the idea of psychological distance. While the previous theme emphasized the distracting quality of more immediate needs, the barrier addressed in this theme emphasizes a sense of detachment from issues that feel psychologically distant and thus more abstract (Trope & Liberman, 2010) – that is, the difference between a person feeling like they have too much on their plate to engage with another issue and feeling like an issue simply does not have much to do with them. Thus, when the interviewees described their efforts to create a sense of emotional connection by drawing audiences into a story, they were essentially describing their efforts to reduce psychological distance and make environmental issues more concrete and personal for people.

There is evidence in the literature to support the ability of storytelling to create emotional connection. Narrative transportation describes a state in which audiences are immersed in a story through a sense of empathetic connection with the characters (Morris et al., 2019). Through narrative transportation, story-receivers process stories experientially rather than analytically,

and the process has been shown to strengthen beliefs consistent with the story and to create favorable impressions of the protagonist (Green & Brock, 2000). Thus, narrative transportation increases the persuasiveness of a story. Important for the environmental context, which may require audiences to forgo resources or expend effort for the greater good, narrative transportation has also been linked to increases in pro-social behavior (Green & Brock, 2000; Johnson, 2012).

The emphasis on specific characters as the focus of emotional connection is also relevant to quotes by the participants indicating that they had had success in focusing on a specific main character. Narrative Policy Framework research looks at the effectiveness of specific story elements in narrative persuasion and has shown that focusing on a protagonist or including a clear "hero" role is an effective tactic. In the field of environmental communication, research has specifically tied the use of a hero role in climate-change narratives to public perceptions of risk and policy preferences (Jones, 2014).

Similar to that in the discussion about reaching target audiences under the previous theme, one caveat to the strategy of using stories to create empathetic connection is found in the body of Narrative Policy Framework literature indicating that a story's congruence with a viewer's preexisting values, beliefs, and attitudes affects how convincing they will find that story to be (Crow & Jones, 2018). Thus, research suggests that it is useful for communicators to understand their audiences and consider what values and beliefs they might hold, and to use this as a guide when constructing stories for environmental communication.

Making meaning in the negative through storytelling

Literature regarding the effectiveness of negative imagery in encouraging audience engagement communication has reported mixed findings (Klein & Hilbig, 2018; O'Neill & Nicholson-Cole, 2009). Several interviewees expressed that in their experiences, they saw a greater response when negative information was presented. Studies have pointed out that just because negative imagery is successful in attracting attention does not mean that it is successful in encouraging engagement (O'Neill & Nicholson-Cole, 2009), but the interviewees emphasized that, rather than

standing alone, negative imagery should be incorporated into a narrative arc. These interviewees tried to present negative environmental impacts as the challenges that the protagonists of their stories (whether these were animals, people, or communities) needed to overcome, and to give audiences hope by describing how the protagonists were working toward this goal. For example, they might focus on researchers working on novel clean energy solutions or conservationists working to save ecologically important wetlands from development. Essentially, the participants aimed to accurately portray challenges and obstacles but remind audiences that all is not lost, and that there is hope for the future.

The strategy of presenting stories incorporating negative emotional valence to show the challenges posed by environmental issues has support in the literature. An experimental study by Morris et al. (2019) found evidence to suggest that stories with negative emotionally valenced endings were particularly effective at promoting pro-environmental behavior. The researchers suggested that this was because a negative emotional valence was necessary for their study participants to perceive a need for action. However, they noted that existing literature (Bandura, 1986) emphasizes that a perception of efficacy is also important for action and suggested further research into the specific conditions in which a negative valence could cause more motivation to act than a positive one. Both the finding of negatively valenced stories providing motivation to act and the suggestion that certain conditions must be met were reflected in the interview data from the present study. Furthermore, the findings from the interview data of the present study suggest that these conditions could include the presence of a narrative arc and the emphasis on hope for the future, as well as an emphasis on how viewers can play a part in realizing this hopeful vision.

In discussing barriers that prevent people from engaging with climate change, Norgaard (2009) argued that people have a desire to maintain positive conceptions of their individual and national identities and to follow cultural norms. Storytelling could help viewers maintain positive conceptions of their group identities and contribute to viewers' impressions of pro-environmental cultural norms. Environmental storytelling focused on those who are taking positive action against negative environmental impacts can allow the viewer to identify with those who are part of the solution rather than feeling chastised or told that they are part of the problem. Similarly,

stories of pro-environmental behavior, even in the face of complex ecological issues, can contribute to viewers' conceptions of cultural norms and encourage these to include pro-environmental behavior as well.

It is important to note here that issues in diversity and inclusion could play significant parts in whether or to what extent people might be able to identify with certain stories. For example, a story about a local fundraising dinner attended by only members of high socioeconomic status or a beach cleanup with no minority racial groups represented might not be relatable for many viewers, who would then be unlikely to identify with these stories. The importance of inclusion was acknowledged by two interviewees in this study.

Incorporating images of negative environmental impacts into stories centered on the people trying to solve these issues can also counter concerns raised by studies such as that by Cialdini et al. (1990) that viewing negative environmental impacts can send signals about social norms that desensitize people to actions detrimental to the environment. Ideally, centering stories on those working towards solutions would send the opposite normative message.

Creating connection through local places

In light of Norgaard's (2009) barriers to engagement with climate change, the participants' focus on local communities could be a particularly useful strategy. Stories of local efforts to improve the surrounding environment could counter both social and cultural barriers to engagement and provide audiences with a way to get involved that is geographically within their reach. These stories of local efforts could send normative cultural signals that working towards a solution is the thing to do and could also provide people with a way to engage socially in issues that are affecting their communities. They might also reduce the psychological distance that could follow from nature stories often being about somewhere far away that audiences are unlikely to ever experience first-hand.

The local focus discussed in the interviews is reminiscent of the discussion of cultural ideas of nature from the literature review (Section 2.6). It is in line with Cronon's (1995) argument that in

order to solve our environmental dilemma, or any complicated global ecological issue like climate change or biodiversity loss, it is necessary to recognize the small, everyday, and close-to-home nature as well as the vast, awe-inspiring wilderness. Cronon wrote that idealizing nature as a far-off, uninhabited wilderness risks overlooking the nature that is right in front of us on a daily basis. He also argued that this close-to-home nature must be valued equally in order to create a livable planet for future generations. Focusing on local stories brings ecological issues home for people and reminds them that the nature in their backyards is just as worth valuing as the far-off wilderness of the Romantics.

5.3 Providing next steps

The third major theme identified in the interview data was providing next steps for viewers. This theme covers interviewees' descriptions of their efforts to help their audiences understand what they could do to engage further with the environmental issues they presented in their work. Subthemes identified in this theme included providing procedural knowledge, setting clear communication goals, and including a call to action in communication projects.

5.3.1 Providing procedural knowledge

The first subtheme under the main theme of providing next steps is the category of providing procedural knowledge – that is, giving audiences concrete actions they could take to help solve or engage further with an issue.

The most common reason the participants cited for people not engaging with environmental issues was that they felt that the problems were overwhelming, they did not know what to do, or they felt like nothing they did would be significant enough to make a difference. Several participants said something similar to the following quote from interviewee 09.

> I think it can be really overwhelming when you hear about global climate change or just how big of an issue it is, and it can get really complicated. That can create apathy and people being like, "Well, what's one person gonna do?" (09)

These participants indicated that people felt powerless as individuals to have any real impact in the face of large-scale environmental issues. Interviewees mentioned the importance of providing action items or information about what viewers could do to help with the issues they covered but also said that it was something that maybe they did not do enough.

> Maybe that's one of the things that we don't do well enough sometimes, is just showing the negative and being like … look this polar bear is starving, but this is what we can do. I feel like you need to provide action items. It's simple marketing, you know? (07)

> I think a big thing that is not talked about a lot is this idea of procedural knowledge. So like, we may know that something's an issue, but we don't actually have the knowledge to address it, and we don't know the step-by-step, "how to" of implementing a solution. And so, we focus a lot, unfortunately, in environmental conservation on just like awareness knowledge and not on procedural knowledge. And so, to me, that's a huge gap. (08)

As in the quote above, interviewees described how, in their experience, much of visual communication surrounding environmental issues has historically focused on awareness rather than specifically telling audiences what they can do about an issue. However, in many of the informants' views, raising awareness without giving viewers the steps they can take to address an issue is not conducive to changing behavior or allowing for further engagement in issues.

> It's hard enough, in my opinion, to just like, be a person in the world today. So, taking the action to be like, "I know this is a problem and now I need to research what exactly I should do about it," it's just another step. I think that every step and every barrier makes it that much harder for the person to change, even if they care. (09)

This quote circles back to the idea of limited attention resources from the first main theme, with the interviewee pointing out that most people already have a lot going on in their daily lives, and expecting them to do additional research in order to engage with environmental issues is only adding another obstacle that lessens the likelihood of engagement. The gap between creating

awareness of a problem and equipping audiences with the procedural knowledge of what to do about it leads into the next subtheme, in which interviewees highlighted the importance of having clear communication goals for projects.

5.3.2 Setting clear communication goals

When asked if they had any projects that they would consider "failures" in their careers and why, several of the interviewees cited projects for which they had had a lack of clear goals or strategic planning. They described having found an interesting topic or created images that they liked but then seeing projects get stuck on the back burner or fizzle out due to a lack of clarity regarding approach, distribution, or outcomes (and, often, funding).

Conversely, useful goals and effective strategic planning often involved specifying desired outcomes for projects that included next steps for the audience, whether that was donating money, supporting certain policy causes, or making lifestyle changes. One interviewee said that in the environmentally focused photographic organization she was involved with, members aimed to set goals for their projects that involved more than just raising awareness for an issue.

> I think that's another big thing, … pairing the storytelling and photography with kind of a tangible action can be really helpful … [In the interviewee's conservation photography association] raising awareness is not really an acceptable goal anymore. (09)

In this quote, the interviewee emphasized that communication goals ideally would go beyond just providing general information about an issue. She illustrated this point by giving an example of a campaign with Match.com to create a dating profile using photographer Robin Moore's images of the Sehuencas water frog. The campaign approached viewers for donations to help the last male of the species, "Romeo," find his Juliet – that is, a female frog to mate with. In this case, the communication project had the tangible goal of raising money to help repopulate this particular endangered species of frog. Ultimately, the campaign successfully funded expeditions that rediscovered the frog in the wild, and a conservation breeding program was established to hopefully support wild populations. According to this interviewee, ideally, the goals for a

communication project would include providing a tangible action, such as signing a petition or donating to a cause, that viewers could take after viewing the story.

Not all of the participants mentioned goals or strategic planning – for example, two said that they were usually contracted to provide images for preexisting stories or environmental NGOs that handled most of the strategic planning themselves. In addition, the participants described different levels of focus on advocacy – some were openly trying to create change, while others took more journalistic approaches. However, many of the participants who worked independently on their own communication projects and had some focus on advocacy considered having clear communication goals that specified a project's desired outcome to be an important part of judging an environmental communication project's success.

5.3.3 Making a call to action

The third subtheme in this category is that of making a call to action. The interviewees indicated that rather than expecting viewers to take the initiative to figure out actions they could take on their own, communication that is intending to get viewers to take action needs to explicitly provide an action that viewers can take right away.

> In the end, it's like, if you get a newsletter from an ad company being like, here's a beautiful photo of a shoot or something, you're going to be like, oh, I like that shoot. But if you don't have the button that says, "buy now," I'm not going to buy it, right? So like, providing the call for action, is what marketers call it. (07)

Here, interviewee 07 applies marketing terminology to emphasize that if environmental communication is not providing clear next steps that viewers can take right away – a sort of "buy now" option – it is likely that viewers will move on without taking further action. This is similar to the idea of providing procedural knowledge but goes a step further – rather than more generally giving viewers information about what they can do to help solve a problem, a call to action encourages viewers to take a simple action right away while they are still focused on and emotionally affected by the presented message. Thus, a call to action seeks to immediately

capitalize on viewers' in-the-moment emotional responses to maximize the engagement payoff of audiences' limited attention resources. Examples of calls to action for online media include links to donate a small amount right away, sign a petition, or send a message to elected officials (which may even be pre-written to streamline the process).

The following statement by interviewee 13 sums up two of the other major themes discussed in this analysis – competing in the attention economy and creating connection through storytelling – and brings them full circle to illustrate the importance of a call to action.

> I think the problem we face now is that there is so much noise in terms of what you see on social media **(attention economy).** You know, wherever you're looking, there's so much media coming at us that until you make something relatable to a person, until you can connect them to that species or that place in a way that's almost tangible through story **(connection via storytelling)** or whatever, the chances are people are just going to move on to the next thing, so you have this very brief window when you've inspired them to get them to do something **(call to action)** … I think that that getting people to take an action right after they're inspired is important. (13, notes in bold font made by the researcher)

The interviewee touched on the attention economy and the amount of information inundating viewers on a daily basis, discussed how he uses storytelling and connection to try to overcome this obstacle and get through to viewers, and then emphasized the need to include a call to action providing the next steps a viewer can take right away, while viewers are inspired and still experiencing an emotional response to the story. In sum, this quote gives a succinct summary of some of the major strategies used by the visual communicators in this study to address barriers to engagement regarding environmental issues.

The three major overarching themes described above were those that directly answered the research question of how visual environmental communicators attempt to use visual media to address barriers to engagement regarding environmental issues. Each of the above-described themes presents specific strategies that the participants in this study used to try to reach

audiences and create engagement around the environmental issues about which the interviewees were communicating. In addition to these strategies, three additional themes were derived from the interview data that, in turn, both strengthen and qualify the answer to the research question. These themes include the status of visual environmental communicators as topical experts, the importance of integrity and contextualization, and the participants' frustration with the difficulty of measuring the impact of their communication work.

Discussion

The third overarching theme derived from the interview data was the strategy of providing next steps alongside visual communication in order to encourage audiences to engage further with the topics being presented. Participants discussed the importance of having clear communication goals, providing procedural knowledge, and making a call to action in encouraging audience engagement with visual environmental communication.

Providing procedural knowledge

The idea that visual environmental communicators need to go past raising awareness and be proactive in providing procedural knowledge and next steps for their audiences connects to Norgaard's (2009) arguments as to why people do not engage with climate change. Norgaard theorized that one of the main reasons that people do not take action regarding climate change is that they want to avoid emotions of fear, guilt, and helplessness. For problems as large and complex as climate change, biodiversity loss, and other ecological issues, having awareness that the issue exists but not knowing what one can do as an individual to change things or feeling like one's individual contributions are too small to matter can lead to both fear and helplessness. Norgaard says that these emotions constitute a barrier to action in responding to climate change, or, to extrapolate, other complex ecological issues. In other words, they make it unlikely that people will take action on an issue, which is the opposite of what visual environmental communicators hope to achieve. However, providing audiences with procedural knowledge would ideally help remove this sense of helplessness and make it more likely that viewers will engage with an issue.

Setting clear communication goals

Several participants discussed the importance of strategic planning and setting clear goals that went beyond simply raising awareness for their communication projects. Ideal goals usually involved specifying desired outcomes for projects that included next steps for their audiences. For example, if a goal was to raise money for a certain project, then the next step for audiences would be to donate to that cause. If a goal was to generate support for a policy outcome, the next step for audiences might be to sign a petition or share the information on social media. In addition, goal setting should include strategic planning as to how that goal will be reached, including how the communication will be disseminated and how audiences will be convinced to engage.

The stances of these participants were in line with public relations communication literature that considers communication to be effective only when it is tied to meaningful outcomes (Hon, 1998). They were also in line with the discussion in the literature review regarding the goal of environmental communication in general as being to enhance the wellbeing of both humans and the natural environment by giving the public the tools to engage with and respond to environmental issues (Cox, 2007; Norgaard, 2009) rather than providing information purely for its own sake.

The participants who mentioned the importance of strategic planning and outcome-focused goals (in particular, the one who explicitly said that goals should go beyond raising awareness) were, in essence, critiquing the information deficit model of science communication – a communication model arguing that simply providing information will be enough to change people's beliefs, attitudes, and behaviors (Besley et al., 2016). As mentioned in the literature review, the information deficit model has been heavily criticized in communication literature for, among other things, its overly simplistic assumptions about the relationship between information and behavior, although its use persists in practice (Simis et al., 2016; Besley et al., 2016).

If, as discussed in the literature review, the goal of most environmental communication projects is to get audiences to engage further with the topics at hand, then raising awareness is only one step in the direction of that goal. In a study of science communication training techniques, Besley et al. (2016) found that the information deficit model was still emphasized and argued that this was focusing only on the objective of increasing audiences' knowledge could be detrimental in reaching goals which could be better served by other objectives such as "fostering excitement, building trust, and reframing issues." Instead, they argued that science communicators would be better served by focusing on a larger goal and being strategic in deciding which objectives would best lead to achieving it. Thus, they also suggested that clarity surrounding communication goals and strategic planning regarding the objectives that are most relevant to those goals is important in achieving successful outcomes.

While many of the participants did express that their work could increase audiences' knowledge, the strategies in the three main themes derived from the interviews indicate that simply providing information was far from their only communication focus. Instead, this was only an objective – a single step towards the overall goal of fostering engagement.

Making a call to action

Several interviewees indicated that rather than expecting viewers to take the initiative to figure out actions they could take on their own, communication that is intending to get viewers to take action needs to be explicit in providing an action that viewers can take right away, while the emotional effects of the communication are still salient and before audiences can get distracted and move on to the next thing.

Wright et al. (2015) called for greater acceptance of the use of marketing techniques, including the call to action, in environmental communication. Similar to the views of Cox (2007) and Norgaard (2009) outlined in the previous section, Wright et al. (2015) argued that if environmental communicators were unable to influence behavior, then environmental communication would end up limited to chronicling the decline of the natural world (and the inevitable impacts this will have on human society). Marketing communication is specifically

designed to influence behavior, and thus is a useful field from which it draws inspiration on this front.

Certain marketing-related techniques, such as nudging, have been controversial in the literature because some see them as employing psychological manipulation and removing audiences' autonomy to achieve the communicator's goals ((Wilkinson, 2013)). Although perhaps it is true that this sort of behavior change technique should be used with care, it is worth considering that behaviors do not exist in a vacuum, and there are already conditions and factors nudge people to make certain decisions in any given situation. For example, making recycling the easiest option nudges people to recycle, but systems that involve people needing to put in extra effort to recycle are also nudging them, just in the opposite direction. Marketing in environmental communication may also carry connotations of greenwashing.

Thus, there is evidence to support the use of marketing techniques in environmental communication. Calls to action make it easier for audiences to engage by reducing the mental labor involved, but do not go so far as making engagement the default option. Existing literature suggests that effective calls to action should be simple (Jordan et al., 2007), specific (Rudd et al., 2014), feel like they will make a difference (Bandura, 1986), and involve some type of social proof (Sparkman & Walton, 2017).

If calls to action are successful in getting audiences to take the first step, there is even some research suggesting that this in itself will increase the likelihood that future behavior will align with that action. Psychology research has indicated that engaging in a behavior can influence future behavior and attitudes to be more consistent with the initial behavior (Bentler & Speckart, 1979; Albarracín & Wyer, 2000). More specifically, studies have shown that donation behavior may be path-dependent in that donating to a cause once increases the likelihood that someone will donate again in the future (Heger & Slonim, 2022). Therefore, lowering the bar and encouraging audiences to take a small action right away could be effective not only in achieving that specific outcome, but also in encouraging audiences' future engagement with the issue at hand or similar issues.

5.4 Visual communicators as topical experts and translators

One point that came up repeatedly in the interviews was the amount of time the interviewees dedicated to gathering knowledge related to their work. All of the interviewees except one described doing a great deal of research while preparing for their projects, and the one who did not was a bit of an outlier in that he considered himself as primarily a fine art photographer rather than someone specifically focused on communicating about environmental issues. The research that the participants described involved reviewing both scientific and popular literature as well as contacting experts, ideally local experts working on the ground in the area of interest.

> It's a lot of background work before you get out in the field. Like, you talk to the biologists, you call them up, you meet them in person, you just sort of like learn what the story is as best you can … so it's good to keep the researchers who are doing the work close. (04)

> If you understand the biology of a species when you're in the field, you know how to react faster. You may only have one chance to document that species. … You know, a sports photographer who's photographing a football game should know the rules of the game. Otherwise, he or she might be looking in the wrong direction as the plays are taking place. (13)

> The research part is extensive compared to the actual shooting part because, generally, you don't have that much time shooting. So, before you go, you want to make sure that you've done your research so that you know the complexities and therefore can be as efficient as possible about getting your images. (07)

This preparation evidences the seriousness with which the participants approached their crafts and aimed to achieve deep understandings of the issues they were presenting. Multiple interviewees even described how their work motivated them to pursue continuing formal education in related subjects. Although this theme does not directly answer the research question, it lends support to the intentionality with which participants approached their work and developed their communication strategies.

Familiarity with both communication techniques and academic research also served the participants in other ways. Several participants described efforts to work with scientists to communicate their research to the public. They said that, in many cases, scientists are not very familiar with visual storytelling as an avenue for communicating their research, although they noted that this familiarity tends to vary across countries or regions. One interviewee (11) said that she had encountered scientists who met her with some suspicion after having had previous negative experiences with journalists misreporting stories. She explained that, sometimes, it took the effort of building long-term relationships with researchers or research institutes to help them see the value of visual storytelling to convey their work to the public. In this case, she was building a bridge not only in terms of her communication work itself but also in building the relationships to make this work possible. Another participant said, referring to building relationships with researchers,

> [Our organization has] a reputation of bringing a warmth and a heartfelt aspect to the way that we help people communicate their science. (03)

The same participant (03) discussed how he uses narrative techniques to connect viewers to scientific research, and that, as this is a skill that is not generally part of scientific training, he found it to be a way that he could effectively help researchers bring their work to wider audiences. Still another emphasized the importance of relationships with researchers in his work:

> Without the biologists, I couldn't do the work that I do – in terms of access, in terms of the storytelling. (07)

These examples suggest that the visual communicators interviewed in this study have put in extensive work to build the knowledge, skills, and relationships that would help them be effective bridges and translators between the scientific community and the public.

The knowledge and skills evidenced here by the interview data and other literature are also relevant to another challenge that the participants described – that of obtaining funding for their

work. Many of the freelance participants expressed that it could be difficult to get organizations to see the value in hiring them versus just pulling images off the internet. This master's thesis does not quantify the impacts of visual communication on the audience side. However, the particular skills, relationships, and expertise that visual communicators develop through their work may be useful for environmental organizations to consider.

Discussion

Overall, the interviewees' descriptions of their roles as topical experts and translators were significant in contextualizing the barriers to engagement strategies to counter these perceived barriers that were described in the first three themes. Most of the interviewed visual environmental communicators indicated that a great deal of research goes into each of their projects and that they regularly consulted both academic and non-academic sources. This reflected a previous study by previous study by Farnsworth (2011) emphasizing that many nature-based and conservation image creators are highly skilled environmental communicators possessing specialized knowledge across multiple fields. It also provided evidence of the care and meticulousness with which the interviewees approached their environmental communication work and suggested that they likely put similar care into their development of communication strategies. At least, the interviewees' familiarity with both academic and non-academic sources indicated that they possessed the research skills to seek out relevant and up-to-date information in this area.

The interview data also supported the study of Schwarz (2013), who found that visual communication could provide an effective bridge between scientific knowledge and the public. The participants in this study made most of their work for the general public, but described both a familiarity with scientific literature and, in many cases, close working relationships with scientific experts themselves. In some cases, these relationships took significant effort to build, as in the case of interviewee 11 who indicated that some scientists had initially met her with distrust. Given that some people still feel confusion and uncertainty around climate change and other environmental issues, and that scientific information is often not easily understandable to

the average citizen (Lorenzoni et al., 2007), the ability of visual environmental communicators to act as translators or bridges between scientists and the public is significant.

5.5 The importance of integrity and contextualization

The importance of integrity and contextualization was another theme discussed in the interviews that qualifies the answer to the research question. Multiple participants touched on what they considered to be their ethical responsibilities when engaging in communication work. They expressed that adhering to these responsibilities was not only personally important to them but also important in maintaining audiences' trust.

One participant shared a story of how easily images can be sensationalized or used to tell a story that may not be accurate. He said it is important to responsibly present one's subjects in order to protect one's integrity.

> [A magazine] had this super skinny polar bear walking around among the rubble. And it looks absolutely horrible, and it was all over the media and it's like, climate change and so on. The thing is that polar bears get old and they die. It happens. And it's funny, I've spoken to … the production manager for [a nature documentary being filmed] in Svalbard, and he says … well, it's not uncommon to find them, but they usually die on the ice, and then they disappear. You know, polar bears die because they get old. There's no hunting in Svalbard anymore. So old polar bears die. It's just that when there's little ice, we've seen them on the beach. (12, continued below)

> I'm not saying using those pictures in a communication way or emphasizing the impact of climate change is wrong. But the problem is when the picture is presented, and the photographer or the presenter editor makes a choice to say that this picture reflects reality or climate change. And then someone that was there saw what was happening. They checked the teeth on this polar bear, turns out it was 27 years old, had a long life, and probably died of old age. That starts going around, rumors start spreading. And then you lose the impact of visual communication. (12)

On the other hand, the same participant also shared a story of visual communication being called into question undeservedly – a photograph of a seahorse holding onto a plastic earbud that his colleague had shared was accused of having been staged or otherwise faked, but the participant had been present when the photo was taken and knew it was authentic.

Another participant shared the importance of sharing accurate context about images so that viewers did not jump to inaccurate conclusions.

> If we don't have that context, we can't really [talk about] specific events that lead up to narratives, and then if we don't have specific events then we can't really tell stories that way. We're missing the information and we're leaving these really vulnerable spaces – especially if you put that in environmental issues – we're leaving these really vulnerable spaces for people to fill in those narratives on their own, and that can be really, really dangerous – as you can see all across the environmental communication landscape where you have these false narratives or these counter-narratives that don't align with what is actually happening, yet people still believe in them. (03)

A third interviewee described how, although he was aware of his own biases, he made efforts to remain objective. He said that while he wanted his images to look visually appealing, he was careful not to retouch them too much for fear of losing objectivity.

> I literally will not open Photoshop, because it's just too tempting. (05)

Several others also brought up that they saw themselves as photojournalists, and as such, expressed having a responsibility to present information in a way that was accurate and fair to the parties involved. This is not to say that visual environmental communication has to take a photojournalistic approach, but it does indicate that the interviewees who discussed this were taking steps to preserve their integrity in their own ways and ensure that the images they were presenting as photojournalism reflected reality as much as possible.

A few participants described specific situations in which they had to navigate conflicting views (both their own and those of others) and how they did their best to represent the situations involved as fairly and accurately as possible in their work. One described working on a story that discussed moose hunting regulations in light of both increased threats to local moose populations resulting from climate change and potential overpopulation resulting from disruptions that human settlement has made to natural predation patterns. Another discussed navigating controversy over whether efforts to make whale watching less disruptive to wild whale populations should be portrayed as a positive thing or whether whale watching in general should be condemned. Similarly, a third described internal conflict over whether he should work on a project that promoted more sustainable practices in the beef cattle industry or whether this was greenwashing of an overall resource- and emissions-intensive industry.

Although these participants saw visual communication as an important strategy, they believed that it should be used with care, keeping ethics and integrity in mind. The importance of context is relevant to the research question because the strategies that the interviewees described of attracting attention, creating stories and emotion, and providing next steps could backfire or lose their effectiveness if audiences do not trust the communicators' integrity, or if audiences draw incorrect conclusions from stories that do not include enough context. These interviewees indicated that they were aware of this risk and felt the weight of their responsibility to tell stories as completely and accurately as possible, and to provide fair representation of their subjects.

Discussion

While the interview portion of this study mainly focused on determining the communication strategies described by the visual environmental communicators and not so much on taking a critical view of their work, several participants brought up the importance of providing accurate and sufficient information to audiences. They also described what they saw as their ethical responsibilities as communicators. These included things such as maintaining a level of objectivity while being aware of their biases and doing their due diligence to present stories in a way that treated those involved fairly and with the appropriate respect.

The importance of integrity and contextualization is relevant to the research question because the strategies that the interviewees described of attracting attention, creating stories and emotion, and providing next steps could backfire or lose their effectiveness if audiences do not trust the communicators' integrity, or if audiences draw incorrect conclusions from stories that do not include enough context.

This theme is relevant to Section 2.8 of the literature review, which covered the risk of false or misleading imagery. One example of visual environmental communication backfiring due to a perceived lack of integrity was described in Takach's (2013) account of a government-sponsored public relations campaign to rebrand Alberta, Canada, which was seen by many as an attempt to greenwash the province's destructive oil extraction processes.

Given that most of the participants in this study were primarily interested in promoting conservation and other pro-environmental topics, this example of greenwashing oil drilling might seem off the mark. However, the importance of maintaining audience trust still stands, and there were several cases mentioned in the interviews in which the potential for accusations of greenwashing existed. For example, interviewees described cases in which they had to navigate differing views on topics such as moose hunting, whale watching, and the beef cattle industry while preserving their integrity as environmental communicators.

In all of these cases, the interviewees reported doing their best to present these topics in a way that represented them as fairly as possible by gathering information and taking into account different viewpoints. Thus, they tried to portray information that was as unbiased and objective as possible.

Although the interview questions did not center on much that would generally be considered sensitive information, this is one point that could have had some self-report bias. Participants completing in-person interviews would be unlikely to report directly that they did not take steps to maintain their integrity or that they were knowingly or unknowingly misleading their audiences. However, the validity of this data holds for several reasons. First, this theme was not a direct line of questioning in the interviews. The interviewees were asked if they had ever been

accused of being biased and, if so, how they dealt with it. However, the responses that formed this theme were partly from the interviewees pivoting and describing their efforts to avoid these accusations in the first place and partly from statements that the interviewees made elsewhere in the interviews in response to other lines of questioning – for example, general statements about their work process or anecdotes meant to illustrate a different point. Second, the fact that many of the statements making up this theme were derived from specific and illustrative examples of interviewees' experiences gives them more weight than if this theme had been derived from simple statements or yes or no answers on the same topic. Therefore, while self-report bias might be a major issue if this thesis were arguing that the interviewees never presented biased work, the data is sufficient to argue that many of the interviewees did consider it important to present nuanced and accurate stories and had this in mind as they worked.

5.6 Frustration with the difficulty of measuring impact

In addition to spending a great deal of time trying to understand the topics that they were communicating about, many interviewees seemed to take an active role in trying to seek out and keep up with best communication practices, in particular those that could inspire behavior change in their viewers. However, several interviewees brought up the difficulty of measuring the impact of their work and expressed frustration over this or a desire for more guidance via research in this area. Some interviewees specifically mentioned that this desire was what motivated them to take part in the present study, which further emphasized the need for further research in this field.

> One of the things that I find most [difficult] about [my work] is not having super clear metrics about how effective it is … I can see how many people it reached, but I have no idea how many people now like this [animal] or how many people donated to the [non-governmental organization] that protects this [animal]. So, I think for me, that's my constant thought because unless you have, like, a private donation link or these projects with direct conservation actions, you don't really know how effective your photography is. (07)

Another participant compared this experience to his previous career working in the pharmaceutical industry, where he said that his company would allocate a percent of its communications budget to testing in addition to tracking sales. However, in his role as a visual environmental communicator, he had neither option.

> Once the images are out there, if we're trying to drive change, do we test it afterwards? And we generally don't, we just hope. Which is no different than most advertising campaigns, except they do see a change in sales of product. That's the difference. They can have faith in that. I mean, maybe all the work that we do is great cause otherwise, the Kyoto targets would be 4 degrees rather than 1.5. So maybe it's been successful. We don't know. (05)

While some participants discussed the difficulty of assessing the effectiveness of their own work or visual environmental communication work in general, others cast doubt on the expertise of their fellow visual communicators.

> [Regarding] the use of images, the problem I have is everyone has opinions, and most aren't evidence-based. (05)

> Before I studied this and dove into behavior change and social science, I think I had a pretty naive perspective on the fact that, you know, if you build it, they will come. If you put the images out there and people like, feel something, they're suddenly going to change everything, right? And I think that it's been disheartening and also empowering to learn more about the complexities of changing human behavior. And I think that environmental communication professionals would benefit from more exposure to some of that literature and information. (08)

This theme is relevant to the research question at hand because it indicates that the participants were actively invested in trying to find ways to refine their communication strategies but felt that there was a lack of clarity in this area – it was difficult to get direct feedback on their own work, and there was not necessarily clear guidance available regarding best practices. It also indicates

that although the participants were making their best and most informed guesses as to the strategies they should be using to engage people, they did not necessarily always have solid evidence to back up these decisions. That is not to say that extrapolation or anecdotal evidence are not valuable or valid tools for making visual strategy decisions, but rather that this context is important for understanding how the participants developed their strategies.

It may have been at least partly due to selection bias that the interviewees who chose to participate in the present study were those who were more interested in and engaged with research regarding communication and behavior change. However, the management-side interviewees said that talks given on these topics were highly popular in their photographic organizations and inspired a lot of conversation, indicating that interest was present beyond the specific participants interviewed here.

Related to measuring impact, interviewees expressed both ambivalence and outright frustration over the current cultural phenomena of conflating social media statistics with impact, especially in the absence of other accessible impact measures.

> There's so much pressure to make images that are going to do well on Instagram, for example, get likes. And I'm not convinced that 1,000 likes on a photo is going to have a bigger impact than an image that really reaches 20 people if those people are the right people. So really understanding your audience is an ongoing thing, and fighting that disease that we face right now in our culture to get likes and to be, you know, popular. I mean, there are so many photographers who have much bigger followings than I do. But there's also very few photographers who have done some of the things that I've done, and I have to be reminding myself of that all the time – that I've accomplished some real things. It doesn't matter if I don't have, you know, 100,000 followers on Instagram. That's not really what I'm here to do. (13)

The interviewees acknowledged that social media can be an accessible way for newcomers to get their work out to the public, and one mentioned that he gets most of his clients for an ecotourism project he uses to raise money for environmental causes through Instagram. However, the

participants were apprehensive about social media statistics being easily accessible but false indicators of impact and wondered if the time spent curating a social media following might be better spent in other ways. Given the prevalence of social media, especially for visual communication, in today's society, this topic is also of relevance to the research question.

Discussion

The interviewees' discussions of the difficulty of measuring impact reflect the ongoing effort to determine best practices in both visual and environmental communication. This thesis has already touched on multiple relevant theories as well as research from the fields of psychology, marketing, and public relations, sociology.

Part of this discussion was the conflation of social media engagement with impact in the real world. There are mixed views in the literature about the overall effectiveness of social media activity in engendering real-world engagement with environmental issues (Alsaad et al., 2023; Gervais, 2006). Some interviewees saw a certain amount of value in the ability to share their work on social media but wondered if the significant amount of time necessary to curate a social media following might be more effectively spent in other ways, which echoed some of the sentiments of conservation photographers in a study by Gervais (2006). Maintaining a personal social media presence can be a huge amount of (unpaid) work, and while it could potentially be a useful strategy, communicators only have so much time in the day. Thus, they need to consider which activities generate the most return regarding both their intended communication outcomes and their abilities to maintain their careers.

In sum, this chapter presented the results and discussion of the thematic analysis of the interview data. Three major themes were derived from the interview data in order to answer the first two research sub-questions of this work. These themes described the barriers to engagement that the visual environmental communicators interviewed perceived in their audiences and some of the specific strategies that they used to counter these barriers, exploring attention and accessibility, storytelling and connection, and providing next steps. Next, three more themes provided important context that both strengthened and qualified the evidence for the strategies described

in the first three themes. The second set of themes included the status of visual environmental communicators as topical experts and translators, the importance of integrity and contextualization in public communication, and the participants' frustration with the difficulty of measuring the impact of their communication work. After each theme was presented, there was a discussion of my interpretations of the data and how it related to ideas from existing literature.

6. Conclusion

In the face of complex environmental issues that pose real and pressing threats to both human and non-human wellbeing, the support and effort of the public is essential to moving towards a more sustainable and equitable world that allows both humans and ecosystems to thrive. The aim of this thesis was to achieve a better understanding of visual communication as a technique for encouraging engagement in environmental issues by exploring how visual communicators in the field of environmental communication work to generate audience engagement around the topics they present. As previous research has cited the difficulty of generating sufficient levels of engagement to enact positive change around environmental issues (Kellstedt et al., 2008; Norgaard, 2009), this exploration focused specifically on visual communicators' efforts to overcome potential barriers impeding audience engagement. In order to address the aim of this thesis, the following central research question was formulated:

How do visual environmental communicators attempt to use visual media – specifically, photographic media – to address barriers to engagement regarding environmental issues?

Furthermore, in support of the central research question, the following sub-questions were developed:

- *What do active visual environmental communicators see as barriers to engagement regarding environmental issues?*
- *What specific strategies do active visual environmental communicators use to counter what they see as barriers to engagement?*
- *What factors moderate the use of these strategies?*

These questions were explored through in-depth, semi-structured interviews with open-ended lines of questioning that collected qualitative primary-source data from image creators and other professionals working within visual environmental communication, and the data was compared to relevant existing literature to further explore potential interactions between visual environmental communication and barriers to engagement with environmental issues. This

chapter will summarize the answers to the research questions as supported by the evidence in this study.

Despite much academic interest regarding how to translate communication about environmental issues into action, relatively few studies have investigated the current state of specific strategies used by visual environmental communicators to engage audiences and drive action on environmental issues. This research helps to fill this gap by providing an exploration of the experiences, strategies, and beliefs of currently active visual environmental communicators and analyzing these in view of the existing body of relevant academic research. Wicked problems related to complex and multifaceted issues like global environmental degradation often require interdisciplinary solutions, and the interdisciplinary nature of this thesis allowed a wide range of fields to be examined in order to address the research question at hand.

6.1 Barriers to engagement

The first sub-question asked what the interviewed visual environmental communicators saw as barriers to engagement regarding environmental issues. The findings of this study indicated that the major barriers to engagement perceived by the interviewees included limited attention resources, a lack of emotional connection to the environmental issues in question, and a lack of procedural knowledge on how to meaningfully engage with issues.

The barriers to engagement discussed by the interviewees had many parallels to theoretical concepts and studies described in existing literature. The limited attention resources described by the interviewees are echoed by theories of the attention economy (Goldhaber, 1997; 2006). Theories of the attention economy describe human attention resources – as opposed to information resources – as the limiting factor in people's ability to process and engage with information in the digital age. Furthermore, these theories emphasize that there is intense competition for these limited attention resources, exacerbated by the monetization of attention capital through advertising (Franck, 2019). Similarly, many interviewees discussed the difficulty of attracting attention to their work and holding that attention long enough for people to engage further, especially given the massive amount of competing content just a click or scroll away on

the internet (ex. interviewees 12, 13). Others added that this competition for attention resources was not just happening online – simply living one's daily life in modern society could place high demands on peoples' attention resources (ex. interviewee 11).

Another barrier to engagement perceived by the interviewees was a lack of emotional connection to the environmental issues in question or to those being affected. By this, they did not necessarily mean that people were apathetic or did not care, necessarily – just that many environmental issues may feel somewhat distant and not have the same emotional weight for people as other issues that they see as more immediately impacting their daily lives. This view is reminiscent of construal level theory, which posits that objects or ideas that are temporally, spatially, socially, or hypothetically further from the current self are conceptualized as being more abstract, and vice versa (Trope & Liberman, 2010). The idea that this psychological distance may be a barrier to engagement with environmental issues is supported in the literature, as one study found that decreasing psychological distance regarding climate change generally increased people's willingness to take action to combat this issue (McDonald et al., 2015).

Finally, this study found that the visual environmental communicators interviewed percieved a lack of procedural knowledge regarding how to meaningfully engage with environmental issues as a barrier to engagement. Several of the interviewed visual environmental communicators indicated that people may not know how to take action on environmental issues, or they may know general advice for being environmentally friendly (recycle, save water, etc.) but feel that they do not have the power to effectively make a difference (ex. interviewees 09, 11). This view is reflected in self-efficacy theory, which holds that individuals who believe in their ability to complete a task are more motivated and likely to achieve successful outcomes than those who do not (Bandura, 1986).

6.2 Strategies to counter barriers to engagement

The second sub-question asked about the specific strategies that the interviewed visual environmental communicators used to counter what they saw as barriers to engagement. This study found that the interviewed visual environmental communicators used a number of specific

strategies to engage their audiences, including addressing issues of attention and accessibility, using storytelling to encourage feelings of connection with environmental issues, and providing next steps for their audiences.

The first specific strategy discussed by the interviewees was addressing issues of attention and accessibility, which they saw as barriers to engagement with environmental issues. They explained that they used visual imagery to capture audiences' attention in a media-saturated environment and how visual media could be used to convey information quickly and understandably in a way that is highly accessible to a great number of people. Studies indicate that visual information indeed attracts attention and can often relay complicated information more quickly than text (Levie & Lentz, 1982). In addition, although visual symbols may have different meanings for different people (for example, the cultural understandings discussed in Section 2.6), visual communication can help bypass language barriers, illiteracy, and certain learning disabilities to reach audiences who may have trouble accessing text-based media.

Second, the interviewed visual environmental communicators used the strategy of engaging in storytelling to encourage feelings of connection in their audiences. The potential of storytelling to influence beliefs, options, and actions is well-supported in the literature. For example, this potential is the basis for the Narrative Policy Framework, which was specifically established to examine the effectiveness of specific story elements in narrative persuasion. Echoing previous work conducted under the Narrative Policy Framework (Jones, 2014), some interviewed visual environmental communicators cited the usefulness of portraying a clear main character as the hero in influencing audiences. The interview data also suggested that narrative arcs could be a useful way to make meaning in negatively valenced imagery, allowing communicators to use negatively valenced imagery to provoke a response while maintaining viewers' sense of the efficacy of engaging further.

Finally, this study found that the interviewed visual environmental communicators used the strategy of providing next steps for their audiences. The interview data emphasized the importance of setting clear communication goals, providing procedural knowledge, and making a call to action to encourage audience engagement with visual environmental communication.

Again, self-efficacy theory holds that individuals who believe in their ability to complete a task will be more motivated and likely to achieve successful outcomes than those who do not (Bandura, 1986). In terms of providing next steps, the findings of this study suggested that clarifying concrete steps that people can take and emphasizing that these steps will make a meaningful difference could help encourage people to engage with environmental issues.

6.3 Moderating factors

The third sub-question asked about moderating factors. This study found that the interviewees' roles as topical experts and translators, the importance of integrity and contextualization in communication, and the participants' frustration with the difficulty of measuring the impact of their work were significant factors that contextualized the answers to the previous two sub-questions.

First, the interviewees' roles as topical experts and translators were found to be significant in contextualizing their perspectives on barriers to engagement and their use of strategies to counter these perceived barriers. Most of the interviewed visual environmental communicators indicated that a great deal of research goes into each of their projects, and that they regularly consulted both academic and non-academic sources. This provides evidence for the intentionality with which the interviewees approached their communication work and indicates that they have the research skills to make informed decisions regarding their communication strategies. In addition, several interviewees described their experiences working to translate scientific work to non-expert audiences. The interview data suggested that the interviewees had invested time into building the knowledge, skills, and relationships to help them be effective bridges between the scientific community and the public.

Second, this study found that the visual environmental communicators interviewed emphasized the importance of integrity and contextualization in communication. This emphasis provided further contextualization for their use of strategies to counter barriers to engagement. Several of the interviewees highlighted the importance of protecting their credibility as communicators and indicated that this is something they keep at the forefront while building their communication

strategies (ex. interviewees 03, 05, 12). The potential for loss of credibility due to disingenuous communication tactics has been covered in previous literature (Takach, 2013).

Finally, this study found that the interviewed visual environmental communicators expressed frustration with the difficulty of measuring the impact of their work. This difficulty constituted a third factor moderating the findings discussed in the first two sub-questions. Although the interviewees were making intentional choices based on both experience and outside information, they did not often get direct feedback on how well their efforts were working, and many actively expressed a desire for more information to further improve their communication strategies. Further research on best practices for visual environmental communication and perhaps partnerships between communicators and researchers in which both parties can learn from each other may be useful in addressing this desire.

6.4 Summary

In sum, the central research question of how visual environmental communicators attempt to use visual communication to address barriers to engagement regarding environmental issues can be answered as follows. The specific strategies that the interviewees used to engage their audiences, including addressing issues of attention and accessibility, using storytelling to encourage feelings of connection, and providing next steps for their audiences, corresponded with the major barriers to engagement perceived by the interviewees, which included limited attention resources, a lack of emotional connection to the environmental issues in question, and a lack of procedural knowledge on how to meaningfully engage with issues. This correspondence suggests that the interviewees had considered reasons why audiences might not engage with environmental issues and used this to inform their communication strategies. In other words, evidence from the interview data suggests that most of the interviewees were concerned not just with providing information but with intentionally creating strategies to increase their audiences' likelihood of further engagement with the issues that were being presented. Thus, this study suggests that many visual environmental communicators are moving past the information deficit model in favor of more comprehensive communication models.

The strategies that the interviewees described were contextualized by discussions of the interviewees' roles as topical experts and translators, the importance of integrity and contextualization in communication, and the participants' frustration with the difficulty of measuring the impact of their work. Comparison with existing literature supported the potential of the strategies cited by the interviewees to increase audience engagement. Overall, the findings suggest that the professionals interviewed were actively developing specific, intentional, and informed strategies to engage audiences in their work. However, most felt that it was difficult to accurately evaluate how well their current strategies were working and expressed a desire for greater clarification regarding best practices for audience engagement in visual environmental communication.

6.5 Limitations of the research

This research has several limitations. One limitation of this research is that it is heavily influenced by Western cultural perspectives. Most of the literature reviewed was written by Western authors, and the majority of the interviewees were living in Western countries. In addition, the qualitative analysis of interviews is unavoidably shaped by the biases of the researcher, and I (the researcher) also come from a Western cultural background that surely shaped my interpretations. All of these factors limit the generalizability of the results to non-Western cultural contexts. It should be kept in mind that, in line with qualitative research in general, the goal of this work is not global generalizability but rather in-depth exploration of the thoughts and ideas of a small, specific sample.

Another limitation of this research is that it is exploratory rather than empirical. This work aimed to obtain a general idea of the strategies that environmental communicators use, but it did not empirically assess these strategies. Instead, it used thematic analysis to pick out recurring topics in interview data from a small set of experienced participants to gain a rich understanding of the experiences and perspectives of currently active visual environmental communicators.

Finally, within the scope of this master's thesis, only a relatively small number of participants were interviewed. The use of snowball sampling indicated at least some degree of interpersonal

connection between participants, and slightly more than half belonged to the same professional organization, which could have exposed them to similar ideas. A larger sample of participants with a greater variety of communication roles and backgrounds would have resulted in a more comprehensive overview of the state of visual environmental communication strategies today. However, the focus on a small, strategic sample of participants who were highly relevant to the scope of this study allowed for an in-depth exploration of the strategies employed by these experts in their field.

6.6 Recommendations for future research

Many of the participants in this study mentioned the difficulty of measuring the impact of their work and expressed frustration at not knowing exactly what strategies were best for reaching viewers and, in particular, affecting their behavior. Follow-up studies that examine the impact of visual communication strategies in conservation would be useful to give photographers more tools to better shape their strategies and understand how different aspects of their work impact viewers. In my interviews, many of the participants expressed an active desire for this information and even said they were participating in this study because they wanted there to be more of a body of literature surrounding the subject of conservation photography.

In addition, this research primarily looked at Western cultural and artistic traditions. As this thesis illustrated, the context of these Western cultural and artistic traditions is highly relevant in modern Western environmentalism and the visual communication thereof. It would be interesting for future research to investigate visual communication of environmental issues across cultural contexts to see how differing cultural traditions influence the strategies of visual environmental communicators and how images are perceived.

For example, there are likely cultural differences in the degree to which nature is perceived as a source of recreation versus a source of livelihood that might affect environmental communication strategies. In addition, many of the interviewees referenced the prevalence of social media and media in general – referencing the attention economy described in the literature review and the fact that many of those who have grown up in the digital age are used to

encountering visual media as a form of communication. Finally, there may be different storytelling traditions across cultures that affect strategies for storytelling using visual media as well.

In addition, in line with its Western cultural focus, this research assumed that the intended audiences of the interviewed communicators were living in (more or less) democratic political contexts in which public participation has some influence on government policies. Although there was not a significant focus on political activism in the interview data, it is reasonable to assume that this political context could have played some role in the interviews' communication strategies, given the close connection between environmental issues and government policy. Thus, it would be interesting to look at how strategies for visual environmental communication differ across political contexts. For example, political context may influence communicators' preferred target audiences – that is, the general population or those with political power – or they may cause communicators to allot different amounts of focus to highly localized grassroots efforts versus country-wide issues.

6.7 Concluding remarks

This study has attempted to contribute to the growing body of work on the topic of environmental communication by providing an exploration of the experiences, strategies, and beliefs of practicing visual environmental communicators and analyzing these in view of the existing body of relevant academic research. Given the acute state of many environmental issues, insights from communication professionals in this field can provide useful guidance regarding how to translate communication into engagement, and visual communicators can provide a unique perspective on strategies for presenting information. Although the findings of this study suggest that the professionals interviewed were actively developing specific, intentional, and informed strategies to engage audiences in their work, there continues to be a discrepancy between the amount of publicly available information on environmental issues and the public engagement necessary to solve many of these issues. Therefore, future research is necessary to continue to explore best practices for environmental communication in order to give society the

tools to respond to pressing environmental issues in a way that will allow our planet to sustainably support both human and non-human life.

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Appendix A

Interview guide

Could you talk a little about your experience in conservation photography (years, biggest projects, etc.)? How did you get started?

What do you see as the main strength of photography or film when it comes to environmental communication?

Why do you think people don't act on environmental issues that they have knowledge of?

How do you think photography/filmmaking (whichever you focus on) fits in here?

How do you prepare for photography/filmmaking projects? What kind of research do you do?

Do you think strategically about how you structure your images? How do you pick images that best tell the story that you want to convey?

What are some of the main challenges of your work?

How do you strike a balance between trying to inspire awe/positive emotion and showing people "the reality of the situation" in terms of negative and potentially scary images (i.e., dead animals, burned forests, plastic pollution)? In particular, how do you balance this to try to get people to act or change their behavior?

Do you find it harder or easier to convey nuance/complicated stories through visual communication? Can you cite any examples of how you've approached this sort of situation?

Do you feel like it's difficult to reach an audience who isn't already "sold" on environmental issues? Do you do any kind of outreach to reach different groups?

Do you see any patterns regarding which of your images people respond most strongly? Why do you think this is the case?

Could you cite any successes that you know of when people were specifically motivated to act on an environmental issue due to your work, or any successful campaigns you were involved in? Why do you think these were successful?

Have you had any "failures" in that a project did not go how you wanted it to or envisioned it? Why did this happen?

Is there anything else that you would like to tell me or think I should know?

Do you have any colleagues who you think would be willing to talk to me?

Appendix B

Are you interested in taking part in a research project on the visual communication of environmental issues?

This is an inquiry about participation in a research project where the main purpose is to explore the visual communication of environmental issues. In this letter, we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project

This project aims to better understand how photographic media can be used to help bridge the gap between knowledge and action in the communication of environmental issues. It will reflect on the opinions, strategies, and experiences of visual communicators to understand the challenges and opportunities they face in their work. In particular, it will look at whether they use specific strategies to overcome common barriers to action on environmental issues, which will be collected from the literature.

This project is a master's thesis that will be used to complete a M.Phil. in Development, Environment, and Cultural Change.

Who is responsible for the research project?

The institution responsible for the project is The Centre for Development and the Environment at the University of Oslo.

Why are you being asked to participate?

This study aims to recruit image creators, specifically photographers, who are acting as visual environmental communicators.

Participants in this project have been chosen primarily through referrals from previous interviewees.

What does participation involve for you?

If you chose to take part in this project, it will involve participation in an interview, which will take approximately 45 minutes. The interview will include questions about your experiences in visual environmental communication. Your answers will be recorded as an audio file.

Participation is voluntary

Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or decide to withdraw later.

Your personal privacy: how we will store and use your personal data
We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

The data will be accessible by Keegan Glennon (glennon.keegan@gmail.com; student) and Johanna Adolfsson (j.s.adolfsson@sum.uio.no; supervisor).
Interviewee names will be replaced with codes. The list of names, interviewee contact details, and the respective codes will be stored separately from the rest of the collected data.

Participants will be anonymized in publications, but job descriptions and some anecdotes from the interviews may be included.

What will happen to your personal data at the end of the research project?

The project is scheduled to end in December 2023.

At the end of the project, all audio recordings will be erased. Anonymized interview transcripts may be retained for reference.

Your rights:

So long as you can be identified in the collected data, you have the right to:
access the personal data that is being processed about you
request that your personal data is deleted
request that incorrect personal data about you is corrected/rectified
receive a copy of your personal data (data portability), and
send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data.

What gives us the right to process your personal data?

We will process your personal data based on your consent.

Based on an agreement with the University of Oslo, Data Protection Services has assessed that the processing of personal data in this project is in accordance with data protection legislation.

Where can I find out more?

If you have questions about the project, or want to exercise your rights, contact:
The University of Oslo via Keegan Glennon (glennon.keegan@gmail.com; student) or Johanna Adolfsson (j.s.adolfsson@sum.uio.no; supervisor).
Our Data Protection Officer: Roger Markgraf-Bye. The data protection officer can be reached via e-mail at personvernombud@uio.no.
Data Protection Services, by email: (personverntjenester@sikt.no) or by telephone: +47 53 21 15 00.

Yours sincerely,

Johanna Adolfsson	Keegan Glennon
Project Leader (Researcher/supervisor)	Student

Consent form

I have received and understood information about the project "***Visual communication of environmental issues"*** and have been given the opportunity to ask questions. I give consent:

to participate in an interview.

I give consent for my personal data to be processed until the end date of the project, approximately December 2023.

(participant name)

(Signed by participant, date)