

THE BRIDGE BETWEEN PHOTOGRAPHY AND SCIENCE

CRITICAL ENVIRONMENTAL PHOTOGRAPHY AS A TOOL TO
RAISE AWARENESS ABOUT ECOLOGICAL CONCERNS



LUNDS
UNIVERSITET

Degree of Master of Science (Two Years) in Human Ecology: Culture, Power
and Sustainability
30 ECTS

CPS: International Master's Program in Human Ecology
Human Ecology Division
Department of Human Geography
Faculty of Social Sciences
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Title and Subtitle:	The bridge between photography and science: critical environmental photography as a tool to raise awareness about ecological concerns.
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ABSTRACT

Motivated by bridging the dichotomy between photography and science, this thesis considers how the selected group of scholar-practitioners view the role of critical environmental photography. Particularly, it surveys whether they think it can be used as a tool for raising awareness of environmental issues and whether it's significant enough to encourage collaboration between photography and science. Furthermore, the research looks at photography as a sociocultural construction and explores the concept of environmental awareness. The study's results have been informed by expert interviews and a literature review. This thesis concludes that critical environmental photography has a high potential to be used as a communication apparatus that can enable an alternative outlook on environmental issues, as opposed to the solely scientific point of view. Though, the findings consider that a thoughtful approach is needed, informed by careful research, especially concerning the subjects and people they are involved with. The study has concluded that critical environmental photography has the power to raise environmental awareness if it is used mindfully, with honest intentions, and is informed by careful research.

Keywords: *Environmental photography, environmental awareness, art and environment, photography and science, art and science*

ACKNOWLEDGEMENTS

For my parents - thank you for your love, support, and encouragement on my educational journey.

First of all, the biggest words of appreciation to my supervisor Oscar Krüger for guiding me through this process. I'm really grateful for your insightful feedback!

Additionally, I would like to express my gratitude to Professor Tyrone Martinsson, who has been exceptionally helpful with developing my project's idea further, and for his thoughtful insights and recommendations that made this research process not only feasible but engaging and compelling. Moreover, I would like to thank the inspiring scholars who have dedicated their time and efforts to discussing the topic with me.

Last but not least, I would also like to thank you for the immense support from my friends and loved ones who helped me with the motivation to finish this thesis (I am sure you know who you are). Thank you for being by my side!

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1 INTRODUCTION

“A photograph is both a pseudo-presence and a token of absence. Like a wood fire in a room, photographs—especially those of people, of distant landscapes and faraway cities, of the vanished past—are incitements to reverie.” (Sontag, 1989)

In a world oversaturated with images one might wonder whether we do need more visuals? Meanwhile, photography itself is known to create waste, contribute to resource and travel pollution, and can be harmful to wildlife, which leads to one of Anthropocene’s biggest failures; biodiversity loss (Green & Higginbottom, 2000; Lott, 1988; Manfredo, 2002; World Animal Protection, 2017). Furthermore, it carries a reputation as an elitist activity that favors the advantaged individuals, though its availability has augmented vividly over the years (Diehl et al., 2016; Franklin, 2006). Nevertheless, the photographic practice can be a vehicle to raise problematic environmental discourses. It has a strong correlation between the visible and the invisible meaning that can be artfully conveyed through visuals (Anne Noble, personal communication, April 25, 2022). The work of one of New Zealand’s prominent photographers, Mark Adams, can be a brilliant illustration of how critical environmental photography practice can contribute to debating environmental affairs. Adams captures the invisible histories of the sites of indigenous massacres in New Zealand’s landscape. He pictures indigenous houses that were uplifted by the British colonizers in the 19th century and taken as artifacts and located in Britain as showpieces of indigenous culture. He photographs where they once were, then goes to the place within a set and photographs them again. Some of his projects have contributed to the long-term endeavor of relocation, ownership of cultural artifacts, and to the relationship to cultural dialogues that are current and important in New Zealand today (ibid.).

To complete this research paper, I have spoken to a group of six scholar-practitioners who engage in critical environmental practices, even though they often examine the issues from different fields and they are all based in the Global North, which limits the scope of the study. Tyrone Martinsson; is a Swedish Professor and researcher at the University of Gothenburg, who works in environmental and landscape photography, in his artistic expression uses the re-photographing method. Bénédicte Ramade; is a French art historian based in Canada who works as a lecturer at the University of Montréal, curator, and art critic with expertise in Ecological Art. Heidi Morstand; is a Norwegian Professor in Photography at the University of Plymouth, based in the United Kingdom, her photographic and documentary work surveys the importance of landscape, and is frequently created in a partnership with scientists. Mark Klett; is an

American photographer, educated as a geologist, Regents Professor of Art at the Arizona State University, he's interested in concepts of time, change, and perception. Liz Wells; is a researcher, writer, curator, and Emeritus Professor in Photographic Culture at the University of Plymouth. Finally, Anne Noble; is a New Zealand photographer and former Professor of Fine Art Photography at Massey University's College of Creative Arts, her work is often created with the human-nature narrative in mind.

1.1 Aim and purpose

The overall aim of the thesis was to explore whether critical environmental photography can be a tool for portraying ecological pressures. The narrow purpose of the research was to comprehend how the interviewed group of scholar-practitioners see the role of photography in documenting environmental issues. Followed by whether they reflect on the potential function of encouraging collaboration between photography and science, intending to raise public awareness of pressing environmental narratives.

1.2 Research questions

Following, here are the two research questions that I will answer in my thesis:

1. How do the scholar-practitioners taking a critically environmental standpoint view the role of environmental photography?
2. How does the addressed group reflect on the potential role of critical environmental photography in respect to contributing to a higher awareness of ecological issues, especially while it is based on thorough research, dialogue, or collaboration with science?

1.3 Structure of the paper

In the following Chapter 2: Background & Theory, I will address the group of scholar-practitioners I have been in dialogue with, and consider why they are relevant to my research. The following sub-chapters will address the emergence of environmental awareness, provide context to the photographic medium, and elaborate on the background of the environmental photography movement, whilst the chapter will end by examining photography's relationship to science. Furthermore, In Chapter 3: Research Methods & Methodology essentially, I will outline the expert interviews, on which I have based my research. Additionally, in Chapter 3 I will elaborate on my chosen data gathering methods, justify their use, and finish the chapter

with a brief explanation of my chosen methodology. Consequently, in Chapter 4: Findings & Analysis I will summarize my main findings and analyze their relevance to my research questions. Lastly, in Chapter 5: Conclusion, I will finalize my research paper with a final reflection.

2 BACKGROUND & THEORY

“The inclusion of irreversibility changes our view of nature. The future is no longer given. Our world is a world of continuous “construction” ruled by probabilistic laws and no longer a kind of automaton.” (Ilia Prigogine, 2003, p. 39)

2.1 Structure of the chapter

In Chapter 2: Background and Theory, I will start by introducing scholar-practitioners who take a critically environmental standpoint, and with whom I have conducted interviews that inform the research paper. I will provide a context of how their work contributes to the field of visual art; including photography and considers ecology and the environment. The following fragments will address the emergence of environmental awareness, provide context to the photographic medium itself, and further elaborate on the background of the environmental photography movement, whilst the chapter will end by examining photography’s relationship to science.

2.2 Scholars taking a critically environmental stance

Tyrone Martinsson is a Professor, researcher, and lecturer at the University of Gothenburg in Sweden. Martinsson works in environmental and landscape photography. His work revolves around the complexity of the relationship between humans and the environment and how our understanding of landscape evolves over-time (University of Gothenburg). Over the last couple of years, Tyrone Martinsson has been focusing his efforts on the research of Arctic glaciers. He’s particularly interested in re-photographic methods, that talk about climate change, especially concerning the polar landscape, as well as reflecting on our common responsibility for the future generations (ibid.). His interest in environmental photography developed from “a general interest in the outdoors and nature man interactions” (Tyrone Martinsson, personal communication, April 22, 2022). He started focusing on environmental photography in 2009,

when he met with photographer Mark Klett and photographer and activist Subhankar Banerjee. Since that time, Martinsson has started to use the term for his work in Svalbard, documenting the changing landscapes of ice and rock. In his work, Martinsson desires to reflect on reality and not twist or use any tools available to create a false impression of what is out there. He believes new technologies can empower the possibilities of creating the illusion of reality and make it a gratifying experience, despite being a constructed visualization such as within a virtual tour of a natural environment (ibid.).

Mark Klett is a photographer originally from the United States, though interestingly with an educational background in geology. Klett works as the Regents Professor of Art at Arizona State University. Since the start of his practice, he has been interested in the relationship between place, time, and transformation (Mark Klett, personal communication, April 5, 2022). His interest has developed from the way the public majority considers the environment, how photography narrates its greater understanding, and how the field itself has transformed over time. In my interview with Mark Klett, he revealed that these factors have caused him to reflect on the possibilities of communicating with images and further think about how photography has the power to affect the perception of facts and truth. He considered that it's not sufficient to assume photography is recognized by all people in the same way; he finds it crucial to consider how images are "delivered and consumed" (ibid.). Mark Klett, together with Tyrone Martinsson, uses re-photographs and photographs that recapture historical photos to showcase a thorough evaluation of the natural landscape (Klett and Martinsson, 2018, p.120, as cited in Adamson and David, 2018). Such a photographic method is particularly useful for research concerning the Anthropocene, whilst it can provide a context of how the natural landscape has been altered due to the human intervention (ibid.).

Bénédicte Ramade is a French art historian based in Canada who works as a lecturer at the University of Montréal. Ramade has curated photographic exhibitions and often works as an art critic with expertise in Ecological Art. Her interest in environment and ecology emerged whilst she was pursuing her Master's degree, focusing on the work of American artist Gordon Matta-Clark, meanwhile considering early projects questioning recycling and the transformation of recycled glass (Bénédicte Ramade, personal communication, April 5, 2022). In the personal interview, she mentioned becoming inspired by the topic whilst coming in contact with a catalog of the exhibition titled *Fragile Ecologies* which took place at the Queens Museum of Art in New York in 1992. She has discovered practices that were rather overlooked

at that time. She has become fascinated by the artists who were engaged with an environmental issue but not lured by lobbying or militant tactics (ibid.). She has started working on these artists because she found it crucial to discover why they are being so neglected, as opposed to the land art, which has been prominent in numerous books. She thought it was unfair for ecological art to be overlooked and be featured only as an annex in landmark books (ibid.). In 2013, for her Ph.D., she produced a new chapter related to the Anthropocene and aimed to demonstrate that the ecological art of the beginning of the 70s was the pioneer for the establishment of the Anthropocene art. She has demonstrated that the artistic practices from that period were not only considering nature but ecology and environmental issues that are still relevant today (ibid.).

Heidi Morstand is a Professor of Photography at the University of Plymouth, originally from Norway. In her photographic and documentary work, she surveys the importance of landscape and is frequently working in a partnership with scientists. In my interview discussion, Morstand has mentioned her close ties to nature since her early childhood, and whilst being five or six years old her grandmother inspired her interest in environmental issues. Additionally, she recalls discussions with her grandmother, questioning ideas such as “what will happen if all these pesticides are being used?” (Heidi Morstand, personal communication, April 8, 2022). Later on, she has also considered how her cultural perspective comes in the context of growing up in Norway, where nature has a great importance and influences people’s daily lifestyle (ibid.). She contemplated that having an access to nature has inspired her work to reveal how human beings have interfered with the landscape, often for their materialistic gains and exploitation (ibid.). Furthermore, she often thinks about how we can shift the perspective of the landscape to become the protagonist, and instead view humans as a passerby on Earth (ibid.). In her photographic and documentary film work, Morstand is trying to shift the perspective of landscape as an entity to be maintained. She does that by altering the view, making humans much smaller in scale, which is considered to be a technique used frequently in nature documentaries. By using that technique in her artworks, she gives greater attention to the importance of discussing nature and climate change (ibid.).

Anne Noble is a photographer and beekeeper originally from New Zealand. She is the Emeritus Professor of Fine Art Photography at Massey University’s College of Creative Arts. Her interest in photography has emerged from research related to contemplating specific issues; such as looking at the bees. In our discussion, she has deliberated how the bees are important

and aligned to species loss; “as signal species, they are the visible end of what is invisible devastation of the ecosystem”, so photography “(...) just seemed a very good way to point to not only to bees as a particularly wonderful species at risk, but also everything invisible that we risk or we are currently losing” (Anne Noble, personal communication, April 25, 2022). Furthermore, in the zoom discussion, Noble has expressed her interest in the politics and our relationship with places and other species. Notions of how photography can produce a sense of the invisible, “(...) whether it be the kind of tangible kind of sensory engagement in the world, but also the invisible kind of politics that influence how we see and then kind of narrate clichés” (ibid.).

Lastly, I have spoke to Liz Wells who’s a prominent British photo-theorist, researcher, writer, curator, and Emeritus Professor in Photographic Culture at the University of Plymouth. Her background is rather vibrant since she worked in theatre before studying lighting design, and further has pursued sociological studies, whilst simultaneously becoming active in the Women's movement. Afterward, she attained a Master’s degree in film studies, and in the mid-80s got a job as an editor of camera work. Working as an editor of camera work, Well’s refocused her attention on considering the still image. (Liz Wells, personal communication, April 21, 2022). In our communication, Wells reflected on her inherent interest in light, which runs through theatre, film, and photography, especially analog photography (ibid.). She had developed an interest in the way in which we read photographs, and how light works to build an atmosphere in visuals (ibid.). Her parallel interest has emerged in women and representation (ibid.). Sparked after visiting the exhibition ‘The Wasteland’, held in Rotterdam in 1992. It has included works of Western male photographers, including several British ones. It led to Well’s reflection on the representation of female photographers and her commission to work on an exhibition held in Cornwall in 1994, as part of the festival of women’s photography called Signals (ibid.). The exhibition featured landscape photography captured by female photographers. It has also brought up the questions of gender, in the genre of landscape photography where women were relatively absent (ibid.). Additionally, Wells has cultivated an interest in the landscape genre, and the questions related to identity, the post-industrial, and the post-colonial, whilst considerations of post-industrial landscape sparked her interest in the environment, sustainability, and the ecological future (ibid.).

2.3 Environmental awareness

In the context of environmental history, the Industrial Revolution has granted humans more dominant power over nature and drove the emergence of the Anthropocene; the Earth's most recent geologic time when humans became aware of their offenses against nature and started to notice their impact on the environmental degradation; scarcity of the natural resources, driving animal species to extinction and the loss of biodiversity (Marks, 2019, p. 118). Environmental consciousness has particularly developed in the Anthropocene because it's also the time when an indicator has been initiated to help in classifying and recognizing such impacts (Horborg, 2019, p. 8). The scientific data outlining Earth's geological era has provided concrete validation for the alarms of environmentalists advocating that human action is becoming an opponent to nature by causing its irreversible damage (ibid.). Anthropocene has appeared to disperse the established ontological margin between society and nature (ibid.). Whilst, many scholars in the area of humanities or social sciences lean towards a post-humanist identification that the categories 'society' and 'nature' are obsolete, and that approaches suggesting 'human exceptionalism' should be rejected (ibid.). Such anthropocentric perception has been heavily ingrained in western philosophy, which has been founded on Cartesian dualisms, such as binary of body and mind; nature and culture; male and female (Wells, 2011). Whereas nature was believed to occupy a submissive position to culture, masculinity was associated with culture and femininity with nature (Ortner, 1974). The value dualisms resonated that it was more relevant to be classified as male or culture than to be classified as female or nature (Warren, 2015). However, at the end of the 19th century and the beginning of the 20th, the emergence of feminist movements has challenged such ontological separation (ibid.). With the politics of representation being put into question, the emergence of mediums such as photography has been a significant tool in shaping the novel perception of: "what, how, and who" has the power to be represented (Wells, 2011).

2.4 Photographic medium

Photography can be defined as a byproduct of industrial society (Pasternak, 2021, p.255), an apparatus that mirrors people and culture (Elkins, 2011). Principally, it is an aesthetic practice, communications equipment, sociocultural construction, and a vessel that crafts a cultural industry (Pasternak, 2021, p.255.) According to Elkins (2011), photography has the extraordinary ability to communicate the act of seeing, through emotional, physical, aesthetic, and even psychological dimensions. Furthermore, it can be used as a "social glue", through its capacity to partake as a spectator in war, as a reflection of the social groups, and as a vehicle

for understanding gender, race, and politics (ibid.). Barthes (1981) reflects that photography seizes time, and it reveals what could never be retold existentially. Essentially, photography is epitomizing optical symbols, a period in time, reminiscence, existence, love, loss, and grief (Elkins, 2011). Photography can be understood as an insight into the passage of time (Barthes, 1981; Elkins, 2011), as a method for observations, where the discourse of science unites with art and humanities through its competence to record, which is a novel way of managing, understanding and producing research (Klett and Martinsson, 2016). Equally, a photograph can “disturb or upset the predictable ways of understanding and the kinds of narratives that are told through photography that have us see us in a particular way, like a product to be consumed so you can insert a view or the images that will upset what people think they know about a place, then you have the chance of introducing some kind of discomfort about what people think they know” (Anne Noble, personal communication, April 25, 2022). Conversely, according to Markwell, (1997), and van Dijck (2008), one of the main purposes of photographs is to assist in reminiscence of momentous occurrences. Whereas, pictures can be used as “external memories”, artless capture of an object or event (van Dijck, 2008). Miller & Edwards (2007) identified photographs as storytelling tools, which can enhance interaction with strangers or close social groups.

2.5 Environmental photography

Photography’s role, as a device for capturing and memorizing occurrences, has been essential in documenting human-driven environmental devastation. Incidentally, an American photographer Eliot Porter, with significant environmental and scientific curiosity, introduced color to landscape photography in 1939 (Thoreau and Porter, 2020). He is a fundamental figure since he has created how we view and identify the natural world today (ibid.). His work is known to be highly influential for the arrival of the environmental photography movement. Environmental photography emerged in the mid-20th century (Seeling, 2015, p.47), whilst photographers and ecologists have noticed the urgency to shift from conservation to prevention and started recording the disastrous consequences modern lifestyles were causing to the environment (ibid.). With all of that in mind, it wasn’t until the 2000s that the genuine apprehensions about the shifting ecologies and visuals of the transformation of landscape surfaced, particularly in the socio-political dimension (Wells, 2011). But what is understood here as landscape? The landscape is shaped through human activity either through its direct alteration, such as architecture, gardening, etc., or its depictions in diverse artistic mediums,

such as film, written word, and photography (ibid.). Wells (2011) argues that to ‘landscape’ signifies enforcing an order, often on nature. Landscape can also be understood as a cultural concept that mirrors our outlook of seeing and connecting to our environment or simply concerning land control (ibid.). It’s significant to mention that the illustration of nature in environmental photography brings prospects of “pleasures of contemplation” (ibid.). Whereas unsettling images of nature can cause distress, and fright of irreversibility (Prigogine, 2003, p. 39). Hence, critical environmental photography can question the way we view visuals, nourish our longing for a sense of identity or cultural belonging, and be a resource through which it is possible to examine the environment via “experimentation and critical exposures” (Wells, 2011). Since the turn of the century, environmental photographers used technological advances for advocating for humanity’s destructive contribution to climate change by making a visual record of the leading consequences (Seeling, 2015, p.47).

2.6 Photography’s dialogue with science

Photography and science have an interdependent relationship since the medium has been brought to life out of science but became cherished by the art world (Wilder, 2009). Photography has been introduced as a helpful tool for scientific inquiry by François Arago in 1839 (Wilder, 2009). In the scientific context, photography has facilitated picturing natural phenomena, recording substances and sensations that are undetectable to the human vision, but essential for scientific research (PhotoResearcher, 2012). Scientists of the mid-nineteenth century have valued photography’s ability to frame and distinguish a variety of phenomena objectively (Wilder, 2009). Furthermore, photography has been used in depicting nature and biology since the emergence of evolutionary biology and showcased in the work of a prominent figure; Charles Darwin, and his book “The Expression of the Emotions in Man and Animals” (ibid.). However, Kepes (1972, p.1) has reflected that ironically science through establishing control over nature and the environment can be held responsible for the destruction caused to it. Scientific discoveries have “shrunk living space, dimmed light, bleached color, and relentlessly expanded noise, speed, and complexity”, ultimately leading to pollution of the waters, generating waste, and contamination of the air (ibid.). Whereas, current studies have recognized that photography’s ability to capture natural phenomena and illustrate scientific facts have been a valuable apparatus in communicating climate-related concerns (Hanisch, et.al. 2019; Ohara et.al. 2019). Additionally, it comes in hand with supporting areas, such as wildlife or conservational photography (Hanisch, et.al. 2019, p.269-270), and can be defined as a

window to nature and habitats that we are incapable of comprehending otherwise (Ohara et.al, 2019). Still, just as science has caused negative implications, photography also has a similar power to both benefit and harm nature and the environment (Hanisch, et.al. 2019, p.269-270). One research study has recognized that wildlife photography can be advantageous for conservation as long as photographers have a high level of ecological consciousness of their potential environmental imprint (ibid.). Though the same study noted that photographers can equally become more emotionally bonded with nature, through pre-fieldwork research acquire a higher level of scientific knowledge, and ultimately practice more mindful activities that can be valuable for the environment in the long term (ibid.). Photography holds an inherent dichotomy; it can be appreciated by both art and science alike (Wilder, 2009). Interestingly, it was photography's relationship to science that has deterred its progression to becoming an art form (ibid.). Nonetheless, throughout the year's photography has become a medium equally valued and used for artistic practices. Still, it has encouraged artists to apply the concepts of "truth, objectivity, surveying and documentation", which are foundations of science (ibid.). Ultimately, photography has been used as a tool for showcasing the interconnectedness of the world in different fields (ibid.). The photographic medium has been highly-esteemed by artists due to its power to affect feelings (Elkins, 2011). As such, it has been useful for communicating environmental and societal encounters, whilst "artists typically do not possess the skills or instruments needed to determine scientific figures, nonetheless, they are typically superior at generating human empathy and effecting emotions" (Mark Klett, personal communication, April 5, 2022). Whereas scientific data can be perceived as somewhat abstract, particularly when it doesn't straightforwardly affect an individual's reality (ibid.). Furthermore, other research studies have shown that interdisciplinary discourses addressing environmental transformation, more imaginatively and artistically, are becoming more prominent and offer a space for collective experimentation (Gabrys & Kathryn Yusoff, 2012; Seelig, 2015; Roosen et al. 2017). Especially the increasing dialogue between Art and science, which provides a novel outlook on reconsidering climate change (Gabrys & Kathryn Yusoff, 2012, p.1). It seems that these dialogues arise from an opportunity seen through bridging the gap between the seemingly contrasting fields instead of focusing on what divides them (ibid., p.7). Such interdisciplinary thinking has been noted to provide innovative perspectives, and the possibilities to expand or bring to life creative projects evaluating environmental challenges via a variety of lenses (ibid.).

3 RESEARCH METHODS & METHODOLOGY

“When people are least interrupted when they can tell their stories in their way, . . . they can react naturally and freely and express themselves fully . . . [Interruptions and leading questions are likely to have the effect that] . . . the adventure into the unknown, into uncharted and hitherto undisclosed spheres, has been destroyed.” (Young, 1939, p. 190)

3.1 Methods

To complete my study, I used qualitative research methods. My qualitative research methods have involved structured interviews, semi-structured interviews, and secondary research, such as an open-ended discussion format. Furthermore, I have done a literature review to gather an overall idea of the subject I was investigating. The most significant fragment of my methods chapter is committed to outlining the expert interviews with scholar-practitioners I have conducted since it was my principal foundation of data collection.

3.1.1 Expert interviews

According to Foucault (1977), “interviews as social arenas provide both vehicles and sites through which people construct and contest explications for their views and actions”. They provide an opportunity to analyze the social knowledge of a small group of participants (Schneider et al., 2002) or can have a focus on an individual semi-structured or unstructured interview, which can include multiple approaches, such as life story, ethnographic, or narrative (Gubrium et al., 2012, p. 179). Such a qualitative method of data gathering can generate an abundance of information about participants’ thoughts, feelings, and experiences from their unique perspectives (ibid.). Online interviews have become a significant tool in social research, where “practices, meanings, and identities can intermingle between researchers and participants in ways that may not be possible in the real world” (Dominguez et al., 2007). Its emergence has transformed the framework in which research can be accomplished and how knowledge can be created (Gubrium et al., 2012, p. 177). Conducting the expert interviews online has been possible due to the choice of my study field, and the selection of participants itself. Internet is still not equally available to different people and societies, which makes some types of research either impossible or biased, leading to some voices in the society being overlooked or marginalized (ibid. p. 178). The capacity in handling online platforms, such as Zoom has been facilitated by the fact that both myself, and my chosen interview participants, have been

accustomed to working with such learning or teaching mode, especially given the Covid-19 pandemic.

Online interviewing has become a very popular form of inquiry, especially in the social sciences department, as it is more accessible than a traditional face-to-face interview and has an easily customized format (ibid. p. 179). Ultimately, I have guided two types of interviews: synchronous, and asynchronous interviews, both have affected the formation of researcher-participant interactions (ibid.). Synchronous interviews are more aligned to the traditional interview style but are more challenging due to their high reliance on software, Zoom in my case, and appropriate working conditions, such as stable internet connection, noise-free background, etc. During my Zoom interviews, I encountered some technical difficulties, such as interruption to the Internet connection, an invitation from Zoom not working, etc. Though all the disturbances have been quickly resolved so overall, I had a good experience with online interviewing. Nevertheless, such type of online conversations offers organic, real-time, responses, and in some situations can provide more information given that they are taking place in the comfort of one's home, or another environment of choice, which can facilitate the participant to speak more openly (Rheingold, 1994, pp. 23–24). Additionally, as a researcher I had to adapt to the different time zones, the most challenging being Canada and New Zealand, and finding the time that would suit both parties involved (Kazmer & Xie, 2008). On the other hand, asynchronous interviews are much easier given that they are completed through email so in a non-real-time scope (Gubrium et al., 2012, p. 180). This non-spontaneous form of interviewing is efficient at providing coherent answers and gives more flexibility to adapt to the participant's schedules. (ibid.). I have sent out questionnaires via email to two participants who have raised their interest in such a form of inquiry over the synchronous interview style. After forwarding the questionnaires, I didn't have to wait long for the answers, which has facilitated gathering the research rather efficiently. Although, in the case of one participant, I have decided to send a couple of follow-up questions, to which he has kindly and promptly responded.

It's important to mention that I have commenced my research for this study by arranging an open-ended discussion via Zoom with Tyrone Martinsson, professor in the Film, Photography, and Literary Composition unit at the University of Gothenburg. I have been familiar with Tyrone Martinsson's work because I have taken part in his freestanding online course; Environmental Visual Practice – Extended Ways of Telling at the University of

Gothenburg, during the autumn semester of 2021. The course's focal point was to provide an insight into visual storytelling concerning environmental questions, such as climate change, sustainable future and the relations between man and nature, art and science, so it was perfectly aligned with my chosen study field. The zoom call has taken the form of an open-ended discussion, since I was aiming to gather, as a researcher, more in-depth insight into the context of my chosen study field, besides conducting the literature review. The conversation has proven to be very fruitful for commencing my research, thanks to Martinsson's scholarly knowledge of visual storytelling about environmental questions, and the field of photography. Furthermore, Tyrone has kindly provided me with a couple of contacts to other relevant sources, and researchers who would fit the qualitative nature of my study. Such type of research is based on collecting and analyzing non-numerical data, mainly text, and images, to better comprehend experiences and opinions (Creswell, 2013). The biggest advantage of such a research method for me was being able to conduct conversations with highly experienced scholar-practitioners, whose rich knowledge of the field of photography, visual arts, and environment, has deepened my understanding and helped me to draw out informed conclusions. I have initially reached out to twelve people that seemed relevant to my research; however, I have heard back from six, who have expressed interest or had time to talk to me. Four out of six interviews took place via Zoom, and two via email, due to the spread-out location of my interviewees, who are based in Sweden, the United Kingdom, Canada, New Zealand, and the United States, and their availability. The structured, and semi-structured interviews, used as part of the qualitative research practice have enabled me to create links between all the gathered sources and observe reoccurring patterns. The type of research method I have chosen can be classified as emergent since the initial plan wasn't too rigid and some of its aspects got modified during the process of my fieldwork (ibid.). For instance, I have altered some of the questions, when I felt like I wasn't getting enough sufficient information, or when a new theme has emerged that I thought was worth exploring.

Lastly, I have completed an inductive literature review to grasp the background of environmental photography, find out more about existing studies on the topic of photography's relationship with science, and draw theories emerging from the latter. The literature review has further shaped the creation of my interviews, and has in combination with the expert interviews, informed the results of my study. The literature review assists in defining whether the subject area is significant to study, it further shapes the direction and extent of the research (Creswell, 2013, p.57). Conducting such a review is crucial since it conveys whether the study is associated

with an ongoing discourse in the literature, it aspires at filling in gaps and encompassing preceding findings (Cooper, 2010; Marshall & Rossman, 2011). Additionally, it delivers a context for determining the significance of the study as well as a scale for relating the outcomes with other conclusions (Creswell, 2013, p.60).

3.1.2. Expert interview participants

My research explored multifaceted topics, such as the climate crisis, environmental photography, a holistic outlook on sustainability, the idea of individual responsibility, decolonization of nature, and ecological knowledge. Therefore, the choice of interviews as a qualitative inquiry method seemed the most suitable for my research design. However, it has required gathering information from highly informed scholar-practitioners working within the field of photography, film studies, photo theory, art history, and visual media. Given the fact that my interviewees have been the primary sources for my investigative qualitative design, it was of uttermost importance to choose the right individuals to give my study anticipated depth. Interviewees were consciously selected from either Tyrone Martinsson's network, who as mentioned previously have kindly provided me with a list of suggestions, or from my research of relevant researchers. It has proven difficult, possibly given the timeline of the study, to get hold of people outside of Tyrone's network so I have focused on the valuable recommendations he has given me. In total I have collected data from six participants (mentioned alphabetically):

- Anne Noble; New Zealand Photographer, Emeritus Professor of fine art photography at Massey University's College of Creative Arts
- Dr. Bénédicte Ramade; Lecturer at the Department of Art History, and Film Studies at the University of Montréal
- Dr. Heidi Morstang; Associate Professor in Photography at the School of Art, Design, and Architecture at the University of Plymouth,
- Liz Wells; Emeritus Professor at the School of Art, Design, and Architecture at the University of Plymouth
- Mark Klett; American Photographer, regents' professor, distinguished global futures scholar, honors faculty at the Herberger Institute for the Arts, and School of Art at the Arizona State University
- Tyrone Martinsson; Professor at the Film, Photography, and Literary Composition Unit at the University of Göteborgs

I have interviewed via Zoom the following scholar-practitioners: Anne Noble, Bénédicte Ramade, Heidi Morstang, and Liz Wells. The two remaining photography academics; Mark Klett, and Tyrone Martinsson were interviewed via email, concerning their availability, nevertheless in the hope to gather their valuable point of view and collect a wide range of viewpoints. Interviews taking place via email are beneficial since the interviewees have the chance to answer in their free time, might have more time for forming considerate responses, and they remove the painstaking process of transcribing the answers (Gubrium et al., 2012, p. 180). Still, they provide a similar opportunity, as in-person or online interviews, to access a variety of individuals for unrestricted responses (ibid.).

3.1.3 Expert interview content

The semi-structured Zoom interviews took about an hour and were commenced by briefly introducing the research scope, and inquiring whether the interviewees will grant me their verbal consent to record the discussion. All of the participants have permitted me to record the interviews and understood that the data will be used for my research, transcribed, and included in the final written paper. One of the interviewees asked me to send the questions before the interview so she could have time to reflect on the answers, otherwise, the online interviews have been spontaneous, and the participants didn't know which questions to expect. Although the questions have been adapted according to the person I was speaking to, I was trying to keep as many similar ones to provide me with a better spectrum of answers on similar topics, and themes. My interview questions were framed by my research questions and the ongoing literature review. Some of the questions were rather "grand", while they intended to seek the opinions, and beliefs of the interviewees on important topics contextually framed by the idea of environment, and ecology. The Zoom interviews have started with a structured idea in mind, however as in real-life conversations, they have sometimes shifted away from the initial questions, or given time limitations, and some participants taking longer to answer the individual questions, had to be cut short or selected during the interview based on higher relevance. Before the Zoom interview ended, the meeting has been briefly summarized, and the interviewees were thanked for their participation. The people I have discussed with have often expressed the eagerness to keep the track of my research or its completion. On the other hand, the email interviews have proven efficient in keeping consistent with my previously structured questionnaire.

3.1.4 Transcription and coding

Given the qualitative research method, primarily my expert interviews were transcribed and evaluated using thematic examination (Marshall & Rossman, 2006; Gibson & Brown, 2009; Strauss & Corbin, 1998). Following the completion of each Zoom interview, I have exported the recordings made through the voice recording application on my phone, to an artificial intelligence program called Trint. The program comes in handy when being faced with a big amount of recording content, which would unquestionably take longer to transcribe manually. However, having no prior experience using such programs, it took me some time to accustom myself to it, and further, it has become clear that to be able to use it freely, and to the extent that I needed it, I had to buy a monthly subscription. Still, I have decided to purchase a monthly subscription to save some of my time for manually transcribing the interviews. Though, the program itself isn't as competent as I have imagined. It still required a couple of hours spent on each of the interviews, since some of the words have been interpreted wrongly, due to either the recording being unclear or the accent of the participants being unrecognizable to the artificial intelligence program. After finalizing the transcriptions, I have read them thoroughly and made notes of my initial thoughts and observations. Further, I have moved to code the interviews based on the reoccurring words, ideas, or sentences, that I found relevant, surprising, have reminded me of something I already read in the literature, or have related to a theory. I have equally kept attentive when I came across differences of opinion. During the coding process, I have tried to stay unbiased to conceptualize my data better. Consequently, I have chosen the most significant codes and merged them into categories, based on their similarities. The final categories have informed the results of my study, since they have provided a somewhat novel outlook on the research area, coming from the perspective of my interviewees.

3.1.5 Ethical considerations and positionality

For my research, I kept in mind that it is crucial to carefully examine ethical concerns before commencing a study. As previously outlined, I have conducted four online interviews via Zoom and two via email. Online research doesn't differ much from real-life one, since as a researcher you must consider the moral consequences research might evoke (Knoebel, 2005; Chadwick, 2001). Ethical concerns in research emphasize that a study shouldn't be managed at the expense of its participants, even if it contributes value to society (Gubrium et al., 2012, p. 183). As a researcher, it was crucial to address in my study my aims, the agency of my chosen participants, and the overall input I wanted to offer to society as a whole (ibid.p.184). Still, some researchers admit that online form of research can lead to more ethical concerns than real-

life research, since it can also be more ambiguous to receive a valid consent, and the issue of establishing credibility and information legitimacy might be more challenging (Ess & Association of Internet Researchers [AoIR], 2002). Moreover, I have approached each interview with the motivation to examine my aim, which was how the interviewed group of scholar-practitioners, taking a critically environmental viewpoint, view the role of photography in documenting environmental issues. Followed by whether they think it is significant to encourage collaboration between photography and science, intending to raise public awareness of pressing environmental narratives. In my first reach-out email, I have openly stated to each participant the purpose of my study, the scope, the aim, and the use of the gathered data. Therefore, I was quite clear at the beginning of each discussion about the topic, its direction, and its lifecycle.

3.2 Methodology

Grounded theory is a methodological framework used to evaluate qualitative data (Charmaz & Bryant, 2011). The theory has assisted my social study-based research in a theoretical examination of my collected inquiry data, which has been done “inductively, comparatively, and interactively” (Charmaz, 2006). Barney G. Glaser, and Anselm L. Strauss (1967), as the forefathers of Grounded theory, have created this method to assess qualitative data and the further development of theoretical classifications and the occurring connections, which then aids to study experiences and interpret them theoretically (Gubrium et al., 2012, p. 347).

4 FINDINGS & ANALYSIS

“He [the artist] is capable of going beyond the limitations of coherent logic, and conveying the deep complexity and truth of the impalpable connections and hidden phenomena of life”

(Andrei Tarkovsky, 1989, p.21)

4.1 Chapter’s overview

In Chapter 4 - Findings & Analysis, I will describe the key results from my qualitative research collected through conducting interviews with scholar-practitioners, and further discuss them. Due to a significant amount of collected data, I will limit my scope to the findings that

are vital to answering my research questions. I will commence by describing my findings, based on my research conducted via interviews, on how scholar-practitioners, taking a critically environmental standpoint, view the role of critical environmental photography. Later in this chapter, I will describe my results on how the addressed group of scholar-practitioners thinks of critical environmental photography's power to generate environmental awareness, especially whilst it's based on thorough research, dialogue, or collaboration with science. I will end the chapter by reflecting on the limitations of my findings.

4.2 The role of critical environmental photography

My research paper has been focused on considering the role of critical environmental photography, which is a “means to engage in challenging narratives” (Anne Noble, personal communication, April 25, 2022). Environmental photography entails capturing visuals of the natural ecosystem and biodiversity fluctuating between; animals, plants, water, and land, and even picturing isolated cultures, whilst advocating for their safeguarding (Seeling, 2015, p.48). According to the research work on environmental photography conducted by Seeling (2015) the work of photographers focusing their practice purely on capturing nature, through the lens of aesthetics and beauty, shouldn't be mistaken with critical environmental photographers who are engaged with complex issues led by research that aims to cultivate more awareness of environmental issues (Seeling, 2015, p.48). Though, according to my research one scholar considers that “environmental artist can be a bit in the eye of the beholder or what you would like to identify yourself with” (Tyrone Martinsson, personal communication, April 22, 2022). Liz Wells shared that “there are a number of artists who work exclusively in relation to land, place and environmental change, as observers, as investigators. Asking what's changing, looking at seasonal change, thinking about the experience of land being in place, but not necessarily say and now we must do something about this” (Liz Wells, personal communication, April 21, 2022). Additionally, in our communication, Tyrone Martinsson has concluded that based on his, and his close collaborators Mark Klett's experience, as an environmental photographer can be seen as “someone focusing on the connection between science and art and the role that visuals can play in our understanding of our impact on the natural world. This of course includes aspects of environmental challenges such as climate change”, and he further thinks that an environmental photographer is “someone working with a purpose of dealing with issues regarding all these challenges facing us today even though it can include a more artistic approach. This often includes a more transdisciplinary approach”

(Tyrone Martinsson, personal communication, April 22, 2022). Furthermore, critical environmental photography “can be a window and a connector to complex stories that are not just through the photographs, but through the people that they impact on or who they are involved with” (Anne Noble, personal communication, April 25, 2022). Though, some scholar-practitioners deem that critical environmental photographers need to consider the balance between “greenwashing and green-wishing” (Bénédicte Ramade, personal communication, April 5, 2022). Ramade in our conversation has further reflected on the difference between artists who “are making a one-shot deal about environment and artists that are dedicating their entire life to environmental issues. (...) When it's a one-shot deal it's easier [to make] a striking thing, very powerful, but you're not obliged to continue on this path” (personal communication, April 5, 2022). Another pattern observed has been related to the idea of disturbing or shifting the audience’s perspective. Anne Noble has shared in our communication “I don't want people to grace their living room walls with beautiful pictures of the Antarctic. I want the work to trouble people. And if you're wanting that, if you want that sort of disturbances, or that sense of, shifting something” (personal communication, April 25, 2022). According to Tyrone Martinsson, the aim of critical environmental photographers should be to try to stay true to what one is working with and arguing for (personal communication, April 22, 2022). He concluded that as a practitioner he intends to “not twist the truth or use any tools available to create a false impression of what is out there.”, “(...) All the people I work with are very concerned about this and try to stay true to the responsibilities when arguing people to believe our works and stories told” (ibid.). Additionally, Heidi Morstand mentioned that critical environmental photography tries to “shift perspective that is about [maintaining] landscape” (personal communication, April 8, 2022), and photographers through their work raise fears emerging from climate change. So, the works can give greater awareness to the importance of what we need to take care of (ibid.). Furthermore, my interview question: “Do you think that it’s important to consider sustainability in photography or film production? Heidi Morstand has concluded: “I don't work with particularly environmentally friendly medium; photography and film (...), whether it's digital or analog we are using chemicals. We're using digital equipment that is using a mining extraction, all kinds of things going on” (personal communication, April 8, 2022), still, it seems that photographers working within critical environmental practice question the moral dilemmas around production methods. It can be well understood through the following answer “I'm aware of how production is not as environmentally friendly as I wish it could be” (Heidi Morstand, personal communication, April 5, 2022). Furthermore, in my findings considering critical environmental photography, there seems to be a strong link of the

practice to the concept of time. Anne Noble shared, “I like to build projects over time. So more and more, those projects are absolutely dependent on relationships with people, with communities and with larger issues related to the environment, but that is involved in shifting political and nuanced understandings of our relationships to place.” (personal communication, April 25, 2022). Heidi Morstand similarly reflected on environmental photography’s commitment to “long-time perspective and the need to document” (personal communication, April 8, 2022). Mark Klett has concluded “photographs can show the effects of environmental change, but these changes sometimes occur at rates that are difficult to capture. Projects must often be conceived in the long term, to include multiple images made over time” (personal communication, April 5, 2022). Whereas Tyrone Martinsson revealed that with his collaborator Mark Klett “we have started to work with a concept that we call the ‘long story’. This enables us to see what we do as something that is not only addressing time and long historical perspectives but the future and the present” (personal communication, April 22, 2022). The findings on the theme have also showcased that a major challenge is to shift the long-term awareness. Ramade has suggested “I’m thinking more and more photographers and video artists today are working on this relationship with time to try to go out to get rid of a crisis time. That is, the commotion, this trekking time, and try to be in the duration, because it’s still a question of duration of going deeper and longer with the issue” (Bénédicte Ramade, personal communication, April 5, 2022).

4.3 Photography as a means to generate environmental awareness

In my interview findings Bénédicte Ramade has revealed that “since the development of ecological conscience and movements in the 60s, the relationship with pictures and artists is quite unfair and sometimes quite useless. (...) since the beginning, most of the artists were involved in the ecological issues from the scientific perspective because it was safer rather than being used and manipulated by lobbies from each part. (...) I think they choose science, and that shows really cold facts to be sure to be not manipulated”. She added that „artists still struggle with this today because they don’t want to be the spokesperson for a political party or a political cause. And that’s why most artists hate this word; ecological art. They don’t want to be ecological artists, because ecology has a double meaning; its science, but it’s also politics” (Bénédicte Ramade, personal communication, April 5, 2022). Through the discussion with Anne Noble, I found out that photographers could influence to contributing a greater awareness through “building an archive of pictures” (personal communication, April 25, 2022). Noble

further reflected based on her work “I want other people to be able to access them (...) this is an indigenous archive of images, so I'm generating something in which I surrender for a purpose. (...) there's a way that you remove it's the artifact itself having value or way you ascribe the value to it is through the processes of creating a project” (ibid.). Photographers have a close “relationship between visibility and the invisible resonance that you can speak to through photography.”, and they can be advocates for illustrating issues based on the context of “cultural narratives, the complexity of the cultures speaking against each other, the notion of cultural deafness when it comes to what is glaringly obvious when you read the histories when you listen to the kind of conflicting voices, their histories that need to be brought to the fore through what photography can do in a complex way” (personal communication, April 25, 2022). Following on that, some of the data led to the conclusion that since our world is oversaturated with visuals, critical environmental photography can “educate the public to be more suspicious regarding images and to be more conscious that it can add the power looking at these pictures” (Bénédicte Ramade, personal communication, April 5, 2022). As described in the background of my research paper, photography has a strong link to memory (Markwell, 1997; van Dijck 2008). In the findings, Liz Wells reflected upon that bond “I do think the photographs, strong photographs well, the photographs where form and content are carefully integrated stay in your mind.”, she adds, “(...) if they tell us something uncomfortable that can be quite disturbing and stay around for quite long while (...). There's a lot about that in ecology. (...) it certainly testifies to the fear of the photographs provoking nightmares, or the video footage, because they're all provoking nightmares and extensive unease that goes beyond the information that they do feel they want to know. (...) And that's possibly, obviously because we can't solve anything” (Liz Wells, personal communication, April 21, 2022). Consequently, Wells notes an important issue “Well, maybe some people don't want to look, but if you don't try and say something through photographs as well as by any other means, then nobody is going to be alerted to issues” (ibid.). Furthermore, from my findings I could discover a pattern that environmental photographers do not focus on solely producing the work itself, they also aim to create a higher awareness of the issue’s discussed and they do that through active participation in a variety of events, talks, workshops, etc. (Hales & Spaulding, 1997; Elliot, 2006; Corbett, 2006; Wells, 2011). Heidi Morstand has stated in our discussion “the works I make, and they're not commercial, the works are shown in exhibitions, film festivals, academic conferences and variety of events” (personal communication, April 5, 2022). Additionally, critical environmental photography brings a different perspective to communicating the climate emergency, as opposed to looking at it from a purely scientific point of view. Martinsson has

reflected on this “I believe it challenges artists and photographers alike. This is art with a purpose and beyond mere aesthetics or creating value for the art market. I see this as a practice more related to the research community and similar institutions and outcomes. I believe they can provide an alternative view in collaboration with the fact-driven scientific fields. I believe there is even a need for the storytelling and visualizations possible through art and photography that in collaboration can benefit from each other. I don’t think that they necessarily work against each other but rather talk about these issues from different perspectives and with different tools” (personal communication, April 22, 2022). Whilst a conflicting thought came from Liz Wells’s “I get very cross about is the idea that art exists to illustrate science. So, when you get collaborative projects as scientists think it's their project and the artist is the icing on the cake (...). I was talking with one of the scientists who was involved in initiating artist residencies in Antarctica at the British Antarctic Survey Base. (...) he said very clearly, that art contributes to us scientists seeing things differently and creativity is fundamental to science, new ideas, experiments, creative conclusions, and so on. So again, he's refusing the two cultures binary” (Liz Wells, personal communication, April 21, 2022). Mark Klett has also expressed his opinion on the topic of photography’s relationship to science in communicating environmental crisis “The science of climate change alone, for example, does not seem to be enough to convince people to demand that drastic action is necessary. People do not assimilate data very well unless it affects them directly. I do think these important shifts require a change in culture.”, he adds that artistic practices “(...) can help people to move past the numbers and towards the daily changes that will come with that. In the end, art and science can work together to achieve progress in addressing environmental challenges. Neither one is likely to do the job alone” (Mark Klett, personal communication, April 5, 2022). Consequently, the topic came up in my discussion with Noble “I work with scientists, so I have been very privileged to devise an installation that involved a live colony of bees inside a photographic artwork, and the idea, the premise was quite absurd, that I could use photography's capacity to speak about loss and imminent loss and to create an elegy for loss in advance of losing something” (Anne Noble, personal communication, April 25, 2022). Additionally, she mentioned that there lies an important distinction between how artists and scientists pose questions. Scientists have ways to answer questions through investigations, mainly based on an analytical and experimental approach, whereas artists use the notion of language metaphorically, “artists narrate, they speculate they expand the possibility of the questions that we ask” (Anne Noble, personal communication, April 25, 2022). Hence, artistic imagination and creativity should be equally valued alongside the scientific approach (Liz Wells, personal communication, April 21, 2022).

Through my gathered data it could be established that what is needed is the mutual respect between Art and science, and such an approach can encourage collective thinking, practice, and experimentation.

4.4 Limitations

Whilst the data gathered for this research paper is educational and stimulating; given the people I had a chance to be in dialogue with, the results must be read with cautiousness. I have reflected in my methodology section that online interviews have many benefits for qualitative data collection, but they can often be flawed given the virtual nature of discussions. My analysis has been limited to the group of scholar-practitioners, all connected through my initial contact with Tyrone Martinsson, and who are based in the Global North. It would have been beneficial for the study to include other voices, people based in the Global South. Unfortunately, given the time constraints, it wasn't possible to do this in this study.

5 CONCLUSION

“I couldn't say that Art will solve everything; it won't solve anything. But there has to be a kind of amalgamation of everybody all looking in the same direction.” (Max Eastley, 2020)

Since the emergence of the environmental photography movement, the photographic medium has been utilized as a vessel to communicate the climate emergency, and environmental degradation embarked on the environment by human activity. The mirroring practice has both visualized the beauty, through the contemplative aspect of engaging with nature, though it also showcased the unsettling imageries which influenced the socio-political dimension and often led to stirring societal discussions. Photography's storytelling ability can communicate the act of seeing, whilst it can influence the way we comprehend the world, and contribute to shifting the stale narratives. Furthermore, powerful visuals can stay in one's memory for a long time, which has proven useful for advocating environmental concerns.

This research paper inquired whether the group of scholar-practitioners working with critical environmental issues view the practice of photography as a medium to raise awareness about environmental concerns. Furthermore, it aimed to examine how they engage themselves with these complex subjects. Based on my qualitative analysis of the conducted interviews it can be concluded that they consider photography to be a powerful medium, if it is used

mindfully, with honest intentions, and informed by careful research; which I argue in my conclusion to be accurate.

Through my findings, I gathered that the world is sophisticated visually but it's important to consider the incentive and purpose behind the production of images, whilst photography itself is known to be an unsustainable practice, creating pollution, and relying on mining minerals and use of chemicals. Nonetheless, photographs provide a sensory engagement in the world which is equally beneficial for communicating climate-related issues. Whilst, it can inspire the public to act, or at least raise the levels of awareness or engagement in these issues. Photographers can contribute their technical skills to create pressure since a photographer's eye for detail can be a good enhancement to communicating scientific data. Furthermore, the interview outcomes have highlighted that critical environmental photography needs to be created with a thoughtful approach, especially considering the subjects and people they are involved with. Nevertheless, I strongly believe that the world requires imaginative solutions to address the multifaceted environmental challenges facing humanity, and a variety of creative practices are essential to improve our society. The scientific approach is known to deliver cold facts concerning the environmental metamorphosis but it often fails to communicate the data in a way that is inclusive, comprehensible and would provoke reflection and encourage an individual to act. Whilst "photography and art [can] be a bridge between ethics and politics. (...) its aesthetics and politics. And there is this bridge that's possible for art" (Anne Noble, personal communication, April 25, 2022).

Even though my study on the topic has had a narrow scope, due to the limited group of scholarly voices, there are plenty of possibilities to gather more research in the field and I would highly encourage further explorations. Still, I believe that my findings have contributed to the transdisciplinary fieldwork of human ecology since they established that critical environmental photography has a high potential to be used as a communication apparatus that can enable an alternative outlook on environmental issues, as opposed to the solely scientific point of view, and to shift relations to cultural dialogues which is a notion frequently discussed within the field of human ecology. Though, it requires the long-term perspective to create transformation and influence the politics of representation of who, what, and how is being represented, through the photographic medium. Whilst environmentally-oriented projects can benefit from a slow and reflective pace. Considering all of the above, I would like to end with the words of photographer Mark Klett about the collective thinking that is essential in fighting the battle

against environmental degradation “I also see myself as one person in a much larger group of artists and writers who contribute to parallel efforts. Together, I hope the cumulative effect of our work has a much larger effect than any one person could create by themselves” (personal communication, April 5, 2022).

BIBLIOGRAPHY

- Adamson, J., & Davis, M. (Eds.). (2016). Environmental rephotography: Visually mapping time, change and experience. In *Humanities for the Environment: Integrating Knowledge, Forging New Constellations of Practice*. Taylor and Francis, 120–145. <https://doi.org/10.4324/9781315642659>
- Barthes, R. (1981). *Camera Lucida: Reflections on Photography* (1st American ed) Hill & Wang Pub.
- Chadwick, R. (2001). Ethical assessment and the human genome issues. In P. Shipley & D. Moir (Eds.), *Ethics in practice in the 21st century*. Proceedings of the Interdisciplinary Conference of the Society for the Furtherance of Critical Philosophy. Oxfordshire, England: Society for the Furtherance of Critical Philosophy.
- Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide through Qualitative Analysis (Introducing Qualitative Methods series)* (1st ed.). SAGE Publications Ltd.
- Charmaz, K., & Bryant, A. (2011). Grounded theory and credibility. In D. Silverman (Ed.), *Qualitative research: Issues of theory, method and practice* (3rd ed., pp. 291–309). London, England: Sage.
- Cooper, H. (2010). *Research synthesis and meta-analysis: A step-by-step approach* (4th ed.). Thousand Oaks, CA: Sage.
- Corbett, J. B. (2006). *Communicating nature: How we create and understand environmental images*. Washington, DC: Island Press.
- Creswell, J. W. (2013). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications Inc, 4th Edition
- Diehl, K., Zauberman, G., & Barasch, A. (2016). How taking photos increases enjoyment of experiences. *Journal of Personality and Social Psychology*, *111*(2), 119–140. <https://doi.org/10.1037/pspa0000055>
- Dominguez, D., Beaulieu, A., Estalella, S., Gomez, E., Schnettler, B., & Read, R. (2007). Virtual ethnography. *Forum: Qualitative Social Research*, *8*. Retrieved from <http://www.qualitative-research.net/fqs-texte/3-07/07-3-E1-e.htm>
- Eastley, M. (2020, January). *Thin Ice: Arts and Climate Change* [Network]. Thin Ice: Arts and Climate Change, -, -. <https://www.bunker.si/en/events/on-thin-ice/>
- Edwards, R., & Miller, K. (2007). Putting the context into learning. *Pedagogy, Culture & Society*, *15*(3), 263–274. <https://doi.org/10.1080/14681360701601887>
- Elliot, N. L. (2006). *Mediating nature*. London, UK: Routledge.
- Elkins, J. (2011). *What Photography Is*. Routledge.
- Ess, C., & Association of Internet Researchers. (2002). *Ethical decision-making and Internet research*. <http://aoir.org/reports/ethics.pdf>
- Franklin, A. (2006). The humanity of wilderness photography? *Australian Humanities Review*, *38*, online. Retrieved from <http://australianhumanitiesreview.org/2006/04/01/the-humanity-of-wilderness-photography/>
- Foucault, M. (1977). *Discipline & Punish: The Birth of the Prison*. Vintage Books.
- Gabrys, J., & Yusoff, K. (2012). Arts, Sciences and Climate Change: Practices and Politics at the Threshold. *Science as Culture*, *21*(1), 1–24. <https://doi.org/10.1080/09505431.2010.550139>
- Gibson, W., & Brown, A. (2009). *Working with Qualitative Data* (1st ed.). SAGE Publications Ltd.

- Gubrium, J. F., Holstein, J. A., Marvasti, A., & McKinney, K. D. (2012). *The SAGE Handbook of Interview Research: The Complexity of the Craft* (Second ed.). SAGE Publications, Inc.
- Hales, P. B., & Spaulding, J. (1997). Ansel Adams and the American Landscape: A Biography. *The Journal of American History*, 83(4), 1460.
<https://doi.org/10.2307/2953019>
- Hanisch, E., Johnston, R., & Longnecker, N. (2019). Cameras for conservation: wildlife photography and emotional engagement with biodiversity and nature. *Human Dimensions of Wildlife*, 24(3), 267–284.
<https://doi.org/10.1080/10871209.2019.1600206>
- Hornborg, A. (2019). Colonialism in the Anthropocene: the political ecology of the money-energy-technology complex. *Journal of Human Rights and the Environment*, 10(1), 7–21. <https://doi.org/10.4337/jhre.2019.01.01>
- J. Green, R., & Higginbottom, K. (2000). The effects of non-consumptive wildlife tourism on free-ranging wildlife: a review. *Pacific Conservation Biology*, 6(3), 183.
<https://doi.org/10.1071/pc000183>
- Kazmer, M. M., & Xie, B. (2008). QUALITATIVE INTERVIEWING IN INTERNET STUDIES: Playing with the media, playing with the method. *Information, Communication & Society*, 11(2), 257–278.
<https://doi.org/10.1080/13691180801946333>
- Kepes, G. (1972). Art and ecological consciousness, in: Arts of the Environment.
- Knobel, M. (2003). Rants, Ratings and Representation: ethical issues in researching online social practices. *Education, Communication & Information*, 3(2), 187–210.
<https://doi.org/10.1080/14636310303141>
- Lott, D. F. (1988). Feeding Wild Animals: The Urge, the Interaction, and the Consequences. *Anthrozoös*, 1(4), 255–257. <https://doi.org/10.2752/089279388787058326>
- Lundberg, G. A., Young, P. V., & Schmid, C. F. (1939). Scientific Social Surveys and Research. *Journal of the American Statistical Association*, 34(208), 752.
<https://doi.org/10.2307/2279821>
- Manfredo, M. J. (2002). *Wildlife viewing: A management handbook*. Corvallis: Oregon State University Press.
- Marks, R. B. (2019). *The Origins of the Modern World: A Global and Environmental Narrative from the Fifteenth to the Twenty-First Century (World Social Change)* (Fourth ed.). Rowman & Littlefield Publishers.
- Markwell, K. W. (1997). Dimensions of photography in a nature-based tour. *Annals of Tourism Research*, 24(1), 131–155. [https://doi.org/10.1016/s0160-7383\(96\)00053-9](https://doi.org/10.1016/s0160-7383(96)00053-9)
- Marshall, C., & Rossman, G. B. (2011). *Designing qualitative research* (5th ed.). Thousand Oaks, CA: Sage.
- Ohara, N., Yamanaka, Y., & Trencher, G. (2019). Understanding Nature through Photography: An Empirical Analysis of the Intents of Nature Photographers and the Preparatory Process. *Environmental Communication*, 13(8), 1053–1068.
<https://doi.org/10.1080/17524032.2019.1572638>
- Ortner, S. B. (1974). *Is female to male as nature is to culture?* In M. Z. Rosaldo and L. Lamphere (eds), *Woman, culture, and society*. Stanford, CA: Stanford University Press, 68- 87.
- Pasternak, G. (2021). *The Handbook of Photography Studies*. Routledge.
- Pauline, Y., V. (2022). *Scientific social surveys and research;: An introduction to the background, content, methods, principles and analysis of social studies (Prentice-Hall sociology series)* (4th ed.). Prentice Hall.

- PhotoResearcher. (2012). *Journal No. 18/2012*. <http://www.eshph.org/journal/category/no-182012/>
- Roosen, L. J., Klöckner, C. A., & Swim, J. K. (2017). Visual art as a way to communicate climate change: a psychological perspective on climate change–related art. *World Art*, 8(1), 85–110. <https://doi.org/10.1080/21500894.2017.1375002>
- Prigogine, I. (2003). *Is Future Given? ([edition missing])*. World Scientific Publishing Company. Retrieved from <https://www.perlego.com/book/849807/is-future-given-pdf> (Original work published 2003)
- The SAGE Handbook of Interview Research: The Complexity of the Craft* by Jaber F. Gubrium (Editor), James Holstein (Editor), Amir Marvasti (Editor), (4-Apr-2012) Hardcover. (2012). SAGE Publications, Inc; Second Edition edition (4 April 2012).
- Schneider, S. J., Kerwin, J., Frechtling, J., & Vivari, B. A. (2002). Characteristics of the Discussion in Online and Face-to-Face Focus Groups. *Social Science Computer Review*, 20(1), 31–42. <https://doi.org/10.1177/089443930202000104>
- Seelig, M. I. (2015). Advocating Environmental Issues Beyond Photography. *Qualitative Research Reports in Communication*, 16(1), 46–55. <https://doi.org/10.1080/17459435.2015.1086420>
- Sontag, S. (1989). *Susan Sontag On Photography*. The Noonday Press.
- Strauss, C. C. A. J. M. (1998). *By Juliet M. Corbin, by Anselm C. Strauss Basics of Qualitative Research: Second Edition: Techniques and Procedures for Developing Grounded Theory(text only)2nd(Second) edition[Paperback]1998* (2nd ed.). Sage Publications, Inc.
- Tarkovsky, A., & Hunter-Blair, K. (1989). *Sculpting in Time: Tarkovsky The Great Russian Filmmaker Discusses His Art* (Illustrated ed.). University of Chicago Press Chicago Distribution Center.
- Theron, J. C. (2014). The virtual community; finding connections in a computerized world Rheingold, H. *South African Journal of Libraries and Information Science*, 65(2). <https://doi.org/10.7553/65-2-1490>
- Thoreau, H. D., & Porter, E. (2020). *In Wildness Is the Preservation of the World*. Chronicle Chroma.
- University of Gothenburg*. (n.d.). Tyrone Martinsson. <https://www.gu.se/en/about/find-staff/tyronemartinsson>
- van Dijck, J. (2008). Digital photography: communication, identity, memory. *Visual Communication*, 7(1), 57–76. <https://doi.org/10.1177/1470357207084865>
- Warren, K. (2015, April 27). *Feminist Environmental Philosophy*. Stanford Encyclopedia of Philosophy. <https://plato.stanford.edu/entries/feminism-environmental/>
- Wells, L. (2011). *Land Matters: Landscape Photography, Culture and Identity (International Library of Cultural Studies Book 6)* (1st ed.). I.B. Tauris.
- Wilder, K. (2009). *Photography and Science (Exposures)* (Illustrated ed.). Reaktion Books.
- World Animal Protection. (2017). *A close up on cruelty*. <https://www.worldanimalprotection.org/close-up-on-cruelty>