

Documents from Antarctica

Kristie MacDonald

A DISSERTATION SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR
OF PHILOSOPHY

GRADUATE PROGRAM IN VISUAL ARTS
YORK UNIVERSITY,
TORONTO, ONTARIO

December 2022

© Kristie Lynn Anne MacDonald, 2022

Abstract

This paper investigates the history of human settlement on Antarctica from the perspective of an artist engaged in research-creation. It accompanies a body of artwork entitled *Documents from Antarctica*, which uses found photographs and papers as the source material for installation and photo-based images. This paper engages in a reading of the material culture used in my art practice as both documents and objects in the round. The result is a series of written vignettes that trace the development of Antarctic geopolitics, climate change and the Anthropocene, historiography of the South Pole, and art history from the Second World War through to the present. Collections and archival methodologies are investigated as a primary means by which humans understand and define themselves – responding to the conditions of their social and geographic surroundings through making, building, and recording. Unpacking the past and present contexts of material culture used in *Documents from Antarctica* results in a reflection on Antarctica as a highly mediated space, with an increasing socio-cultural presence in the Anthropocene.

Acknowledgments

Thank you to:

My partner Harris, whose encouragement and support has helped me see this project through.

My parents, Anne and Dan.

My committee, Barbara Balfour, Jennifer Fisher, and Nina Levitt.

My colleagues at the University of Guelph.

My peers in this programme whose work has been inspiring.

Table of Contents

Abstract	ii
Acknowledgements	iii
Table of Contents	iv
List of Figures	v
Introduction:	1
When One Thing Leads to Another	4
Antarctica	8
Chapter 1: The Social Life of Photographs	12
Paper Ice: Recto / Verso	18
Photographic Transmission	24
Chapter 2: Architecture of the Uninhabitable	26
Cargo	28
Photographing Antarctica	36
McMurdo at Night	43
Making Work in Situ: Artists on the Ice	47
Observing from Afar: Dispersed Archives and Uncertain Provenance	54
Chapter 3: Headlands that may or may not be there	61
White Out	64
Canada: Arctic Parallels	71
Anthropocene	75
Art in the Anthropocene	80
Drifts and Lines: Revisioning	88
Conclusion: Near Term Future / Near Term Past	95
Atoms for Peace and War	98
2049 / 2050	103
1956	106
Bibliography	111

List of Figures

Introduction

- Fig. 1 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (detail)
- Fig. 2 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (detail)

Chapter 1

- Fig. 3. Kristie MacDonald, Source Images for *Paper Ice*, 2022
- Fig. 4 Sarah Charlesworth, *Modern History (April 21, 1978)*, 1979
- Fig. 5 Taryn Simon, *The Picture Collection (Folder: Express Highways)*, 2013

Chapter 2

- Fig. 6 Kristie MacDonald, *Cargo*, 2017
- Fig. 7 Source Image for *Cargo*
- Fig. 8 Kristie MacDonald, *Cargo*, 2017 (detail)
- Fig. 9 Kristie MacDonald, *Cargo*, 2017 (detail)
- Fig. 10 Screenshot of Amundsen-Scott Station in Google Earth, taken by the Author
- Fig. 11 Herbert Ponting, *Grotto in berg, Terra Nova in the distance*, 1911
- Fig. 12 Frank Hurley, *Picturesque shore ice, Cape Denison & the 'Aurora' at anchor*, 1912
- Fig. 13 Eliot Porter, *Ice Cave, near Scott Base, Ross Island, Antarctica*, 1975
- Fig. 14 Eliot Porter, *The Crater and Lava, Deception Island, Antarctica*, 1975
- Fig. 15 Lisa Blatt, *Untitled*, 2008
- Fig. 16 Lisa Blatt, *Untitled*, 2008
- Fig. 17 Diane Tuft, *Ultra violet reflections, Scott Base Pressure Ridges*, 2012
- Fig. 18 Diane Tuft, *Snow Grains, South Pole*, 2012
- Fig. 19 An-My Lê, *Fuel Storage Tanks, McMurdo Station, Antarctica*, 2008
- Fig. 20 An-My Lê, *Storage Berms, South Pole, Antarctica*, 2008
- Fig. 21 Kristie MacDonald, Source Images for *McMurdo at Night*
- Fig. 22 Kristie MacDonald, *McMurdo at Night*, 2022 (installation view)
- Fig. 23 Kristie MacDonald, *McMurdo at Night*, 2022 (installation view)

- Fig. 24 Lita Albuquerque, *Stellar Axis: Antarctica*, 2006
- Fig. 25 Lucy + Jorge Orta, *Antarctic Village – No Borders*, 2007
- Fig. 26 Paul Rosero Contreras, *Arriba!*, 2017
- Fig. 27 Lou Shepard, *Requiem for the Antarctic Coast*, 2017
- Fig. 28 Kristie MacDonald, *The snow doesn't fall, but it moves with great speed*, 2021
- Fig. 29 Tacita Dean, *Floh*, 2000 (detail)

Chapter 3

- Fig. 30 Kristie MacDonald, *Whiteout*, Digital Print, 2021
- Fig. 31 Kristie MacDonald, *Floated out to Sea*, Digital Print, 2021
- Fig. 32 Kristie MacDonald, *Whiteout*, Digital Print, 2021 (detail)
- Fig. 33 Sherrie Levine, *After Walker Evans 4*, 1981
- Fig. 34 Zacharias Kunuk and Ian Mauro, *Inuit Knowledge and Climate Change*, 2010
- Fig. 35 Kelly Jazvac, *Rock Record*, 2017 (detail)
- Fig. 36 Katie Paterson, *Vatnajökull (the sound of)*, 2007-8
- Fig. 37 Roni Horn, *Vatnasafn/ Library of water*, (2007 – Ongoing)
- Fig. 38 Kristie MacDonald, Source photograph for *Drifts and Lines*, 2018
- Fig. 39 Kristie MacDonald, *Drifts and Lines*, 2018 (installation view)
- Fig. 40 Kristie MacDonald, *Drifts and Lines*, 2018 (detail)
- Fig. 41 Connie Samaras, *Dome Interior*, 2005

Conclusion

- Fig. 42 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (detail)
- Fig. 43 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (detail)
- Fig. 44 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (installation view)
- Fig. 45 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (installation view)
- Fig. 46 Process documentation for *Pole Station Antarctica: December 15th 8am 1956* (2012 – Ongoing), Screenshot of Google Earth, taken by the Author

Introduction



Fig 1. Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (detail)



Fig 2. Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956, 2012 – Ongoing* (detail)

When One Thing Leads to Another

Browsing bins of miscellaneous paper at a flea market. Flipping through sheets of ledger paper, letters, photographs, and pamphlets. Not really looking for anything in particular, I happen upon something that catches my eye. A sparsely marked envelope, with slight yet colourful details. An address in indigo blue ink next to a green postage stamp, hints of a bright purple bleed through the paper from a rubber stamp applied on the back.

Why is a thing such as this kept? What can be culled from it, made meaningful, known?

Looking closer, I notice this envelope had been mailed to Keswick, Ontario – the small town I lived in as a child. And, even more surprisingly, it was postmarked at ‘Pole Station Antarctica’ in 1956. This was an unlikely and lengthy trajectory to be sure – it seemed peculiar to imagine a post office at the South Pole preparing mail for delivery to small town Ontario. In this moment I realized that I had no concept of what human infrastructure was on Antarctica. What was Pole Station? Why and how was it possible to process mail there in 1956?

I brought the envelope home with me, to act as a prompt for further reflection. A common starting point for my visual and material research is eBay – the platform has become an integral if unlikely research tool. Not only is it a frequent source of acquisition for the primary materials used in my art practice – but the seller-posted images and keyword tags make it a critical resource for understanding what things circulate in the world.

Starting with what limited information could be gleaned from the envelope itself, I began to search combinations of words included in the postal markings – points of reference for the object at hand:

Antarctica

South Pole 1956

Pole Station

Pole Station Antarctica

DeepFreeze

Deep Freeze

Operation Deep Freeze

Operation DeepFreeze

Operation Deep Freeze 1956

During my first search, I was astonished to find another envelope with exactly the same postmark – not only had it been mailed from the same place, but at the same time, on the same day. I bid immediately, excited by the prospect of setting these two objects together in the same place after having been apart for so long. The resulting reunion of these objects, which had once shared a physical location (yet have no intended long-term connection) created a strange affect that points towards the importance of object interrelationships and the effects of physical proximity. Collections bring objects together with intention. Archival Studies is a discipline that is focused on provenance; it revolves around the concept of *archival bond* within collections, an intangible quality that constitutes a connective link in the network of relationships one object has with others. Archival bond is an immaterial attribute that suggests one can observe context and build meaning through association.¹

eBay is a platform that allows one to reach out across vast expanses of geography, linking disparate objects through metadata, collective labour, and refined search functionalities. eBay makes the speed and success of my searches considerably more fruitful than they would be if undertaken off-line, visiting only local venues. As I search, depending on the day and the keywords I use, there might be dozens or even hundreds of results to my query.

Stamp collectors, also known as philatelists, are particular. They are observers of minutia, and this works in my favour. eBay listings for stamps and postal ephemera are always posted with the date and location from which an envelope was mailed embedded in the title. The consistency of this descriptive practice, combined with the infrequency of mail delivery from Antarctica,

1. Luciana Duranti, "The Archival Bond," *Archives and Museum Informatics* 11, no. 3 (September 1997): 215.

allows me to seek out these envelopes with considerable effectiveness. To amass a sample of a batch of mail from nearly any other time or location would be next to impossible.

I set out to generate an artwork that revolved around these envelopes – what I envisioned as a slowly growing collection, with a focus on cumulative affect. Not wanting to set an arbitrary limit for the scale of my collection, I decided to search for as many envelopes bearing this postmark as possible. Something seemingly inconsequential can set you on a path that lasts longer than expected – I have been looking ever since. Now, ten years on, I’ve now located over 140 envelopes. Each time the work is exhibited it changes scale, linking an increasing number of people and places to this particular historical moment. The resulting work, *Pole Station Antarctica: December 15th 8am 1956* (2012 – Ongoing), is titled using the information contained in the postmark, the shared detail that indicates the special kind of connectivity between these objects.

When I acquire envelopes, they are mailed to me from across the globe – from France, Italy, New Zealand, Great Britain, the United States, and Canada. I receive them tucked inside slightly larger envelopes, reengaging the very system of their distribution to set them back in motion. I use the postal system in reference to itself – interjecting myself into a chronology of movements, redirecting the paths of these objects to bring them back into a physical relationship and discern what their bond might illuminate.

Envelopes collected for their postal markings are referred to as covers. The Pole Station envelopes consistently arrive empty, and I imagine many of them to be philatelic covers, envelopes that have been mailed expressly for the purpose of creating a collectible item with a particular combination of stamps and cancellations. It is mail for the sake of mail – intended to trace a path and mark time rather than carry a message. Philatelic mail marks arrivals and departures, linking geographic locations. Communications scholar Ester Milne has described mail as a “technology of presence,” which serves both personal and social needs to feel connectivity across expanses.² It relies on a relationship between time taken and geography

2. Esther Milne, *Letters, Postcards, Email: Technologies of Presence*, Routledge Research in Culture and Media Studies, vol. 24 (New York: Routledge, 2010), 4.

traversed, culminating in a prolonged haptic interaction. Sender and recipient are connected by the activation of the object at disparate times and places.

Sometimes my collection stays static, and at others it grows quite quickly. The work changes in accordance with the success and failure of my eBay searches. Inevitably, I miss some envelopes; it can't be helped. This lack of control is embedded within the process, and I've come to embrace it. It will never be every envelope – it will be those I can find. Likewise, there is a sense of risk in entrusting the mail systems to deliver each envelope, (perhaps more intensely felt in the digital age). The process of exchange is much less immediate than the online transfers so constantly engaged through email and ever-present cloud storage. If an envelope gets lost in the mail, there is no replacing it, no copy on a back-up server.

As Pole Station Antarctica: December 15th 8am 1956 began to grow, I set out to learn more about the historical context of this mailing. I would learn that this was the first batch of mail postmarked at Pole Station. It was processed just a few weeks prior to the completion of the station, which was first permanent architecture at the Geographic Pole, and the first encampment since Roald Amundsen and Robert Scott raced to the pole more than four decades earlier.

When this project began in 2012 the markings on a single envelope led me to consider a place I knew little about. Antarctica has since become a daily topic of news and reporting, with polar tourism booming and global warming changing the Antarctic ice sheet with increasing speed. The chance discovery of an envelope has led me to explore the extent of human presence on Antarctica at a moment when it is shifting in its geographic and cultural significance.

Pole Station Antarctica: December 15th 8am 1956 has become a starting point, from which all of the artwork and writing produced for this dissertation emerges. It has led to a body of work entitled *Documents from Antarctica* that explores objects as material culture, their evidentiary role as a primary source, and their ability to lead one on often serendipitous paths. *Documents from Antarctica* consists of artworks that use found objects as a starting point for installation and photo-based collage. The production of each artwork is rooted in an analysis of objects, which are brought into new juxtapositions within the gallery or through digital manipulations, in order to reveal a history of this moment and its effects. This project has allowed me to reflect on the

way sustained observation and research can draw out linkages between previously unconnected materials based on a given mode or moment of inquiry.

In formal settings (such as archives, libraries, and museums) where collections are curated and finite vaults must be carefully maintained, things aren't allowed to accumulate without justification. Elsewhere, the makeshift repositories of flea markets and eBay storefronts adopt nearly anything into their holdings. Material evidence of recent human activities on Antarctica exists in surplus. I am interested in the origins of these things (however uncertain they may be), as well as their attributions (even if slightly incorrect). The ways these objects circulate speaks to communal desires to hold a piece of something far away, the kind of folk DIY categorization that leads to keywords and eventual discovery.

Material culture is one of the primary means by which humans understand and define themselves – responding to the conditions of their social and geographic surroundings by making, building, and recording. As artworks are produced, I make agreements with strangers to trade PayPal transactions for something yet unseen, provenance uncertain. A kind of trust based on an acceptance of possible inaccuracies and assumptions, reflecting an impromptu categorization. Holding things and pulling them together. Stacking and piling and pinning them up side-by-side.

Antarctica

Antarctica is a storied landmass, a site of anthropogenic fascination and anxiety. Its coastline changes drastically with annual seasonal shifts in ice accumulation. Similarly, the cultural geography of the continent shifts in relation to the evolution of human settlements, and successive efforts to map its topography with ever higher resolution. For much of human history Antarctica remained a hypothetical proposition. It was not until 322 BCE that Aristotle named the speculative southern region *Antarktikos* (the Anti-Arctic), a yet unseen continent that served to counterbalance the known *Arktos* (Arctic) territory in the north.³ Antarctica was an imagined

3. Michael Pearson, Andres Zarankin, and Melisa A. Salerno, "Exploring and exploiting Antarctica: The Early Human Interactions," in *Past Antarctica: Paleoclimatology and Climate Change*, ed. Marc Oliva, and Jesús Ruiz Fernández (London: Academic Press, 2020), 252.

place before it was observed. In many ways, it remains an imagined place – mythologized but removed from the embodied experience of most people.

With no indigenous population, Antarctica has always been defined from the outside, predominantly described by efforts to map its geography and stake physical claims on behalf of distant nation states (notably Britain, Norway, the United States, New Zealand, Australia, and Chile). Cultural theorist Elena Glasberg has suggested that “Antarctica has never been an easy place for humanity to attach to pre-existing flows of culture,” in part, because it has never been defined as a national space.⁴ In her book *Antarctica as Cultural Critique: The Gendered Politics of Scientific Exploration and Climate Change*, Glasberg describes Antarctica as the most mediated place on earth, understood primarily through images that are filtered by geopolitical agendas. Very few people have access to the actual physical place – while popular and scientific representations of the South Pole are increasingly abundant.

A key text in recent scholarship on the continent, *Antarctica as Cultural Critique* resists and unpacks popular globalist conceptualizations of Antarctica “...as either a laboratory or repository of data, or as a pure wilderness.”⁵ Glasberg provides an integral account of Antarctica from a feminist and decolonial perspective in order to re-theorize a place overwhelmingly contextualized by male, military, western, and colonial perspectives. As likeminded scholar Klaus Dodds has observed, “...the Antarctic performs as a kind of fantasy space for white [North American and European] men, in particular, to perform ‘firsts’ and record their ‘achievements’ in the name of national and individual power.”⁶ Contemporary scholars engaged with Antarctica’s role in history, art, and culture owe a significant debt to Glasberg’s discourse of the South Pole as a place defined by contradictory dialogues of heroic colonial occupation and wilderness preservation.

4. Elena Glasberg, *Antarctica as Cultural Critique: The Gendered Politics of Scientific Exploration and Climate Change*, Palgrave Macmillan’s Critical Studies in Gender, Sexuality, and Culture (New York: Palgrave Macmillan, 2012), 4.

5. Glasberg, *Antarctica as Cultural Critique*, xviii

6. Klaus Dodds, *The Antarctic: A Very Short Introduction* (Oxford: Oxford University Press, 2012), 4.

The envelopes which make up *Pole Station Antarctica: December 15th 8am 1956* reveal the complexities of Antarctica's status as an idea and an actor in human lives away from the pole. When the collection is observed en masse, a complicated cultural and geo-political context is revealed through the cumulative minutia of place names, postage stamp designs, and decorative embellishments. Cryptic printed embellishments on many envelopes carry naval insignia, while postage stamps published by the United States Postal Service reveal national priorities for commemoration and propaganda (engraved images of sailors, maps of the Great Lakes region, and emblems for Eisenhower's postwar rebranding of nuclear technologies, *Atoms for Peace*). Foremost among these details is the distinct postmark each envelope bears, its cancellation lines embedded with the all-caps text: U.S. NAVY OPERATION DEEP FREEZE.

Operation Deep Freeze was an American military mission devised to produce infrastructure, architecture, and logistics networks in advance of the International Geophysical Year (IGY). The IGY was a worldwide geophysical research initiative designed to produce systematic studies of earth systems. Among its initiatives was an Antarctic research expedition that took place between July 1957 and December 1958. Twelve participating nations (Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, the United Kingdom, the United States, and Russia) sent scientists to collaboratively study geophysical phenomena such as aurora, airglow, cosmic rays, geomagnetism, glaciology, gravity, ionospheric physics, longitude and latitude determinations, meteorology, oceanography, seismology, and solar activity in the uniquely isolated polar region.⁷

The simultaneous establishment of scientific research bases by the IGY's participating nations was made possible by technological innovations in flight and logistics developed during the Second World War. Given the magnitude of resources expended, many of these nations remained active on the continent beyond the confines of the expedition. This prolonged presence would prompt the signing of the Antarctic Treaty in 1959. The treaty symbolically and legally defines the continent

7. Dian Olson Belanger. *Deep Freeze: The United States, the International Geophysical Year, and the Origins of Antarctica's Age of Science* (Boulder, CO: University Press of Colorado, 2006), 26.

as a supranational demilitarized zone, preserved for scientific research.⁸ The resulting Antarctic Treaty System (ATS) of governance was designed to protect the continent from legal territorial claims until the year 2049, neutralizing conflicting pre-IGY territory claims by Chile, Britain, and Argentina, among others. Then a distant point in the future, 2049 no longer feels so far away.

It was precisely this mid-twentieth century period of economic and ideological investment that would result in today's year-round occupation of Antarctica. South Pole Station (now Amundsen-Scott South Pole Station) was originally a camp of modular and tented military buildings that quickly became buried under drifting snow. Station architecture has since been reimagined several times. In 1975, a gigantic geodesic dome was erected to protect a series of smaller purpose-built structures. In 2008, a silted building-complex was completed – designed to hover above the ground and withstand shifting ice for decades.

How humans inhabit Antarctica (as well as *which* humans inhabit Antarctica), and the material culture produced as a result of this occupation, are the means by which the continent is historicized, publicised, and understood. *Documents from Antarctica* is a body of work that relies on the availability of artifacts and images from the mid-twentieth century, which now circulate within networks of ephemera collectors. Since the infrastructure projects of the IGY there has been a steady flow of material culture produced in and about Antarctica. My practice of tapping into these networks is as much the artwork as the collected objects themselves.

8. Secretariat of the Antarctic Treaty, *The Antarctic Treaty*, The United Nations, December 1, 1959, <https://www.ats.aq/e/antarctic treaty.html>.

Chapter 1:

The Social Life of Photographs

ANTARCTIC EXPEDITIONS
("OPERATION DEEPFREEZE")

Public Information Division
U. S. Coast Guard
Washington 25, D. C.

3 of 14

Photo Feature—JANUARY
International Geophysical Year
1955-56 "Operation Deepfreeze 2"
Filed: June 7, 1956
FOR RELEASE

OFFICIAL U. S. COAST GUARD PHOTOGRAPH — 5718

JUN 13 1956

PEACEFUL ANTARCTIC WEATHER

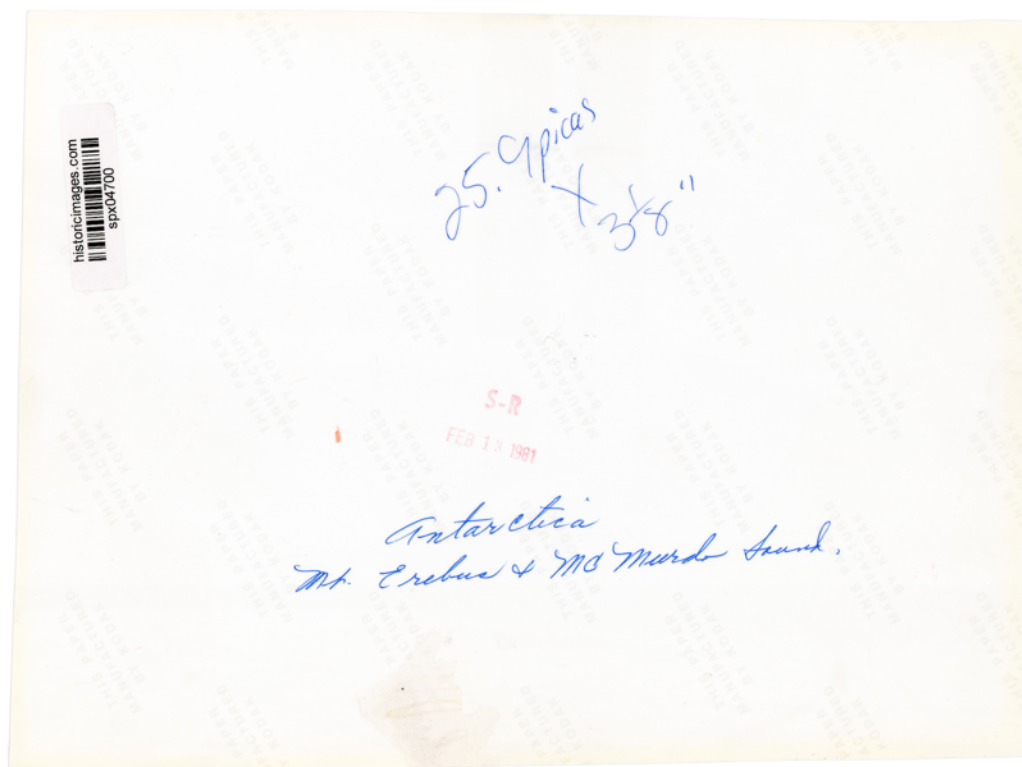
Heavy clouds of drifts reflected in snow covered 13,200 ft. high Mt. Erebus, ice shattered like glass, stirred by a dark area of open water gives the appearance of a mild day at North Sound, Antarctica. It was, except that Task Force 43 men learned from experience that a day like this means a great deal of turbulence was brewing. Extreme high winds swept the clouds into these beautiful formations. Usually twenty-four hours later there followed a furious blizzard.

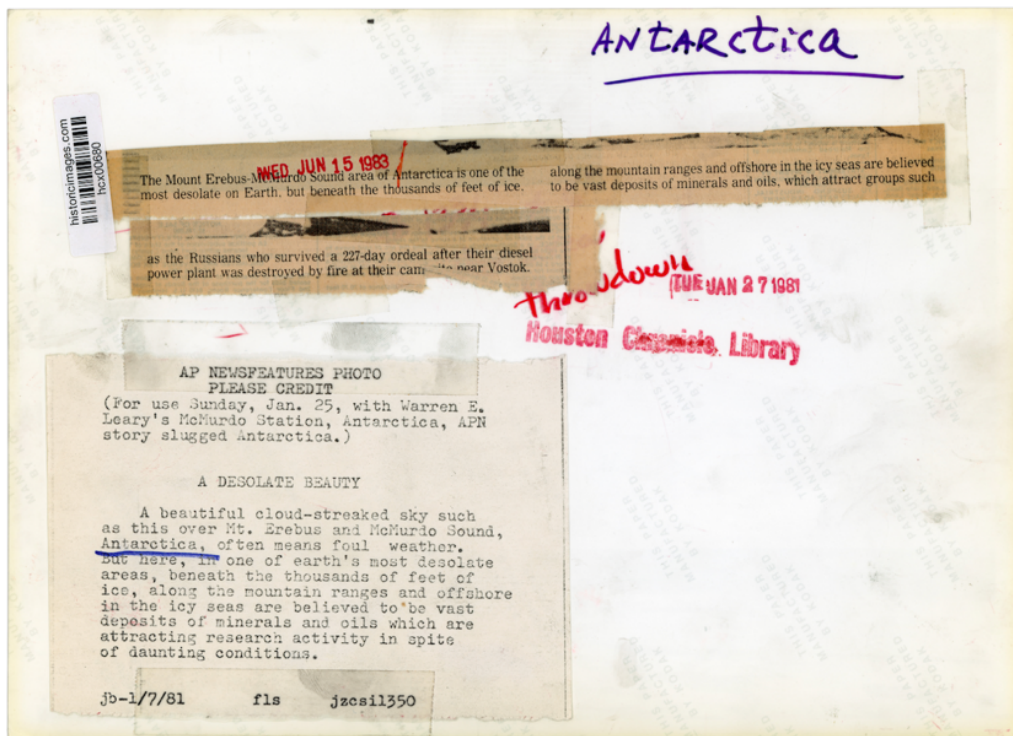
Winds driving between 70 and 90 knots and blizzards often held up operations. The men had only two months from late December into February to complete construction work at Hut Point and Little America Base 5.

A photographer on the Coast Guard icebreaker EASTWARD snapped this picture as the ship, buoy breaking ice in the Sound, passed this point 20 miles from the mountain. Not far from Mt. Erebus construction work was in progress on the Air Operation Facility and the Auxiliary Camp at Hut Point, Ross Island.

COURTESY - U. S. COAST GUARD PHOTOGRAPH







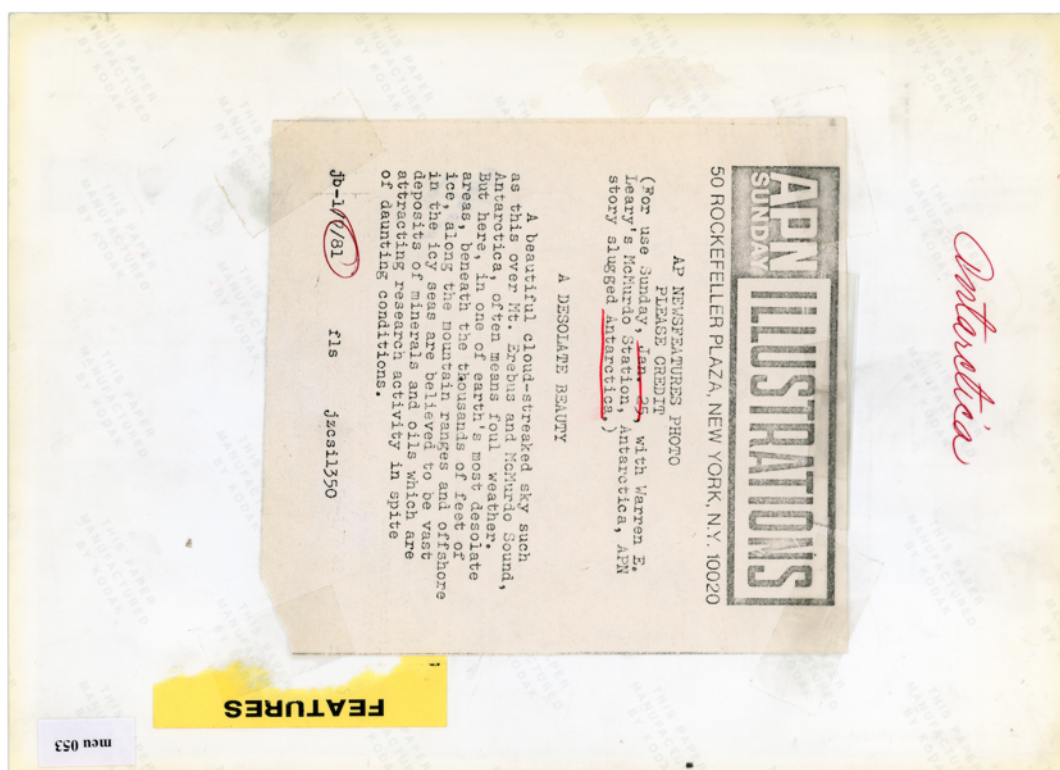


Fig 3. Kristie MacDonald, Source Images for *Paper Ice*, 2022

Paper Ice: Recto / Verso

Five copies of the same black and white photograph. Although each is printed on a glossy sheet of 8" x 10" paper, some prints have a standard white border, while others have been trimmed close to the edge of the image. Some copies suffer greater yellowing due to contact with acidic file folders or poorly developed prints. One has been marked-up on the front with a red grease pencil, crop lines, and the alphanumeric sequence of now unintelligible coding. Observing these copies in succession draws attention to their individual lives. Each verso describes a divergent set of circumstances.

This collection of photographic prints is the source material for my bookwork *Paper Ice* (2022), which reproduces each object at one-to-one scale. The front and back of every photograph is printed recto/verso, so that a page of the book turned is also an object maneuvered. This comparative study of reproductions foregrounds the print as a three-dimensional object. As the reader moves between iterations of the photograph a distinct series of notations materialize – captions, stamps, clippings, and traces of human handling. Every encounter with the photograph offers an opportunity to notice new details and variations – providing a tension between the duplicated and the distinct. The mutability of histories is made present, as readers observe different treatments of the same image according to its participation in multiple contexts.

The earliest copy is from 1956, the year *Pole Station Antarctica*'s envelopes were posted. A lengthy type-written caption on verso glows in hazy carbon-copy blue, describing the landscape pictured and the circumstance of the photograph's production. The photograph was taken in Antarctica's McMurdo Sound during the austral summer of that year, amidst Operation Deep Freeze. The image is distinguished by its "chiffon" clouds (as the caption writer romantically describes them), which stretch from background to foreground and beyond the frame of the print. One can see the impressive Mount Erebus in the distance, and fragments of ice floating in calm water that is starkly black, in high contrast. Attributed to the U.S. Coast Guard, the photograph is intended to act as a feature image in articles about the forthcoming IGY, publicising American expertise in navigating the Antarctic environment.

The image provides no indication of human presence aside from the implied photographer. The description, however, alludes to multiple construction projects, two naval bases, and provisional research stations. The extent to which this caption describes Antarctica as occupied territory aligns with the colonial motivations of this photograph's production, and military framework of Operation Deep Freeze. Yet, the composition perpetuates the myth of a vast unpopulated continent – a contradiction that lies at the heart of so many photographs produced during this period.

The remaining four copies are dated 1981 and 1983. This image was recirculated more than twenty-five years later in connection with another news story. This time, its publication coincided with discoveries of oil and mineral deposits on the continent, which sparked international attention and debates over environmental protection. In the 1980s, this photograph acted as a stand-in. Striking enough to be pulled from the archives for further use, the image performs as an all-purpose example of the Antarctic landscape rather than documentation of a specific site or event. As such, it is implied that the Antarctic landscape is unchanging, unchanged.

In part, the selection of images for publication and distribution has to do with aesthetic conditions. Art historian Hartwig Fischer suggests “[a] press photo is generally tailored to convey one main effect,” strategically presented with a given dialogue in mind.⁹ The presence of duplicates with differing captions and publication dates in *Paper Ice* allows one to observe the press's appropriation of the photograph in question. The image is asked to perform differently in the 1980s, separated entirely from its original context. Notations on the copies published during the 1980s reveal an evolving political discourse about resource extraction on Antarctica. All references to the IGY and now decades long occupation of the continent are ignored.

By 1988, the issue of extraction on Antarctica had come to a head, as the *Convention on the Regulation of Antarctic Mineral Resource Activities* (CRAMRA) was drafted by the parties to the Antarctic Treaty. If ratified, the agreement would have permitted mining on the continent,

9. Hartwig Fischer, “Untitled,” in *Covering the Real: Art and the Press Picture from Warhol to Tillmans*, ed. Hartwig Fischer (Basel : Kunstmuseum Basel, 2005), 302.

undermining earlier efforts to limit activities to scientific research.¹⁰ The captions on the images in *Paper Ice* project a discourse of mineral wealth, and the heroic efforts of nations seeking to reach it. What is not stated is the story of environmental activism taking shape at the time, thanks to the leadership of environmental advocates such as Lyn Goldsworthy. Goldsworthy and her colleagues would successfully lobby the Australian government to refuse ratification of CRAMRA. These efforts would result in the signing of the *Protocol on Environmental Protection to the Antarctic Treaty* (known as the *Madrid Protocol*) in 1991, an amendment to the Antarctic Treaty designed to protect the environment and its dependent ecosystems from damage due to human activities.¹¹ The *Madrid Protocol* includes an “indefinite prohibition on any activity relating to mineral resources, other than scientific research,” and has shaped interactions with the region ever since.¹²

Although extraction projects on the continent remain impermissible thanks to the *Madrid Protocol*, images of Antarctica (such as those referenced in *Paper Ice*) circulate thanks to mineral exploitation elsewhere. In her essay *Mining the History of Photography* Siobhan Angus draws out the intricacies with which images are materially connected to ecology. Angus anchors photographs in their physicalness, reorienting the discourse on photography which so often seeks to root images as “drawing with light” in accordance with the Greek root for the term. She asserts the primary role of silver halide particles in the production of analogue images – stressing that photography is in fact “light drawn in silver,” and that silver performs its magic only after extraction.¹³ By the 1910s, the Eastman Kodak Company’s Rochester, New York plant

10. Emma Shortis, “In the Interest of all Mankind: Women and the Environmental Protection of Antarctica,” in *Feminist Ecologies: Changing Environments in the Anthropocene*, ed. Lara Stevens, Peta Tait, and Denise Varney (Cham, CH: Palgrave Macmillan, 2017), 253.

11. Susan Barr, “Twenty Years of Protection of Historic Values in Antarctica Under the Madrid Protocol,” *The Polar Journal* 8, no. 2 (2018): 246, <https://doi.org/10.1080/2154896X.2018.1541547>.

12. Committee for Environmental Protection, *25 Years of the Protocol on Environmental Protection to the Antarctic Treaty*, Secretariat of the Antarctic Treaty, Accessed June 5, 2022, 7, <https://www.ats.aq/e/protocol.html>.

13. Siobhan Angus, “Mining the History of Photography,” in *Capitalism and the Camera: Essays on Photography and Extraction*, ed. Kevin P. Coleman and Daniel James (London: Verso, 2021), 55.

was using one ton of silver bullion per week to produce film emulsion.¹⁴ Angus builds a nuanced link between the mine and the darkroom – a continuum that enables the photographer to generate and distribute images. For example, the more copies of an image that are printed, the more resources (silver and otherwise) that are needed to sustain the extent of its distribution.

Using found press photos, which carry their own established history, enables me to tap into the pre-existing contexts that surround them, including the circumstances of their production and their intended use. This strategy is one that links *Paper Ice* to a recent history of conceptual and post-conceptual artists' appropriation of press images. Hartwig Fisher suggests that "[a]rt since 1960 has had a number of key moments in the treatment of the press photo. One salient strand is the transposition of the photograph into the artwork."¹⁵ A noteworthy example is Sarah Charlesworth's *Modern History* (1977 - 1979). In this sprawling body of work Charlesworth produces a visual case study on the reportage of a single photograph by numerous periodicals. In *Modern History* (April 21, 1978) for example, she reproduces the front page of forty-five different newspapers issued on that date, each at the same scale as the original publication. Charlesworth brings the image into focus by generating strategic absences, editing out everything but the masthead, the image, and its brief caption. Consequently, the priorities and biases of each publication are revealed through its layout design. As art historian Andre Gunthert has noted, "[t]he importance of a news item is measured first in terms of space – the surface area accorded to it – and position (or its equivalent, timing, in streamed media)."¹⁶ *Modern History* draws the viewers' attention to the role of image placement and scale, characteristics that provide primary visual cues about a photograph's value (and thus the event it references). As Verena Kuni has observed, Charlesworth's juxtaposition of these publications highlights the effect of journalistic design conventions on the construction of histories by setting "the daily political and public mindset" of each newspaper at odds.¹⁷

14. Angus, "Mining the History of Photography," 57.

15. Fischer, "Untitled," 300.

16. Andre Gunthert, "Visual Journalism, or the Hidden Narration," in *The "Public" Life of Photographs*, ed. Thierry Gervais, RIC Books (Toronto: Ryerson Image Centre, 2016), 160.

17. Verena Kuni, "[Ant-]Agonies of the Real: Observations on the works of Richter, Polke, Charlesworth and Baldessari," *Covering the Real: Art and the Press Picture from Warhol to Tillmans*, ed. Hartwig Fischer (Basel : Kunstmuseum Basel, 2005), 341.



Fig. 4 Sarah Charlesworth, *Modern History* (April 21, 1978), 1979

Artist Taryn Simon has similarly used repetition and reproduction as strategies to support analysis of image hierarchies in *The Picture Collection* (2013). In this series of photographs Simon engages the New York Public Library's Picture Collection, which includes hundreds of thousands of images – consisting of printed matter as varied as press photographs, book pages, newspaper and magazine clippings, prints, and postcards. The collection is a circulating image repository that has been available for public use for more than a century.¹⁸ Each of Simon's photographs feature the contents of a single subject folder – *Express Highways*, *Broken Things*, *Snow: Avalanches*, *Rear Views*, *Waiting*, and *Night Scenes* to name a few. The materials are arranged in idiosyncratic overlapping stacks and rows, echoing the formations they might take on a reading room table as one searches through the contents of a folder. Simon's art practice is one

18. Joshua Chang, "Pictures at Work," in *Taryn Simon: The Color of a Flea's Eye: The Picture Collection* (Paris: Cahiers d'Art, 2020), 11.

that often interrogates classification systems in order to reveal how they influence social structures. The classification of images in the Picture Collection is a result of curatorial decision making by library staff, whose evolving understandings of a subject heading influence the contents of a given folder. What is brought to a viewer's attention in *The Picture Collection*, as well as the works *Modern History* and *Paper Ice*, are the ways in which encounters with photographs are structured by the systems of their distribution.



Fig. 5 Taryn Simon, *The Picture Collection* (Folder: Express Highways), 2013

Photographic Transmission

When studying images of Antarctica, it is essential to consider the circulation of images – how they move from place to place and how, like their makers, they must travel across great distances. With the launch of the Associated Press' *AP Wirephoto* service in 1935, the use of wire photography steadily increased from the late 1930s through the 1980s.¹⁹ Press images could now be transmitted as quickly as the texts they were meant to accompany. In her essay *A Short History of Wire Service Photography* Zeynep Devrim Gürsel notes that wire photography began a process of substituting communication networks for transportation networks "...when it became possible to transmit images over telegraph wires, eliminating the need to wait for carriages, trains, and ships."²⁰ Until the early 1990s, when the quality of digital photography advanced enough make it viable, wire photographs remained a primary source of images for news publications.

Wire photographs are transmitted images. They originate as a physical print, which is then scanned for transfer as a dematerialized electronic signal, before being printed again elsewhere. Wirephotos were received and exposed line-by-line on the rotating drum of a wirephoto transmitter. On the sender's end, a scanning head moved across the surface of the image, and the reflected light was translated into an electrical signal that would be transmitted via telephone line. The boundary between the paper and signal is blurred in the circulation of wire images. This transitory quality is critical to their understanding – how they move, how they are copied and recopied, contextualized and re-contextualized. As Gürsel has noted, "their value was their speed," a sentiment that aligns with Hito Steyerl's notion of the "poor image":

The poor image is a copy in motion. Its quality is bad, its resolution substandard. As it accelerates, it deteriorates. It is a ghost of an image, a preview, a thumbnail, an errant idea, an itinerant image distributed for free, squeezed through slow digital connections, compressed, reproduced, ripped, remixed, as well as copied and pasted into other channels of distribution.²¹

19. Zeynep Devrim Gürsel, "A Short History of Wire Service Photography," in *Getting the Picture: The Visual Culture of the News*, ed. Jason E. Hill, and Vanessa R. Schwartz (London: Routledge, 2015), 207.

20. Zeynep Devrim Gürsel, "A Short History of Wire Service Photography," 207.

21. Hito Steyerl, "In Defense of the Poor Image," *E-flux Journal*, no. 10 (2009), 1, <http://www.e-flux.com/journal/in-defense-of-the-poor-image>.

Steyerl sets out a hierarchy of contemporary images – wherein rich sharp images with high resolution are prized above all.²² However, while the poor image lacks resolution it has “another form of value defined by velocity, intensity, and spread.”²³ The low resolution of a poor image means it becomes more accessible and moves more freely. From wirephotos to jpegs (with their lossy algorithmic compression), poor images continue to play a role in our transmission of photographs.

22. Hito Steyerl. “In Defense of the Poor Image,” 7.

23. Hito Steyerl. “In Defense of the Poor Image,” 7.

Chapter 2:

Architecture of the Uninhabitable



Fig. 6 Kristie MacDonald, *Cargo*, 2017

Cargo

Scientific research undertaken on Antarctica requires substantial resources to operate in harsh conditions, far afield from established power grids and necessary supplies. According to a recent study on the environmental impact of human activity in Antarctica by Tina Tin et al., 240 research stations, refuges, and field camps have been constructed to date. Approximately 190 of these facilities are currently in use, with roughly 5,400 people residing in Antarctica during the austral summer, and 1,100 people overwintering each year.²⁴ As the number of people traveling to Antarctica increases, so too does the human footprint. Consequently, there are few areas where regional biodiversity can be studied without anthropogenic interference and environmental contamination.²⁵ It would seem that the effect of scientific work is invasive enough to make one question whether or not the well-meaning agenda of the Antarctic Treaty is counterproductive in its aim to protect the environment by promoting active scientific study.

Anthropologists Jessica O'Reilly and Juan Salazar have observed that "all life in [Antarctica], from food, to energy, to satellite communications, to the movement of people and infrastructure, is intricately connected to global supply chains that link Antarctic places to cities and regions across the globe."²⁶ Basic necessities must travel great distances to reach those living and working at the Pole because nothing can be produced or procured locally. In 1956, the year South Pole Station was constructed, the shipping container was introduced. A product of the times, it tapped into post World War II cultural shifts towards automation, standardization, and globalization. The first containerships were repurposed war ships, which had been sold off

24. Tin et al., "Setting the Scene: Human Activities, Environmental Impacts and Governance Arrangements in Antarctica," in *Antarctic Futures: Human Engagement with the Antarctic Environment*, ed. Tin et al. (New York: Springer-Dordrecht, 2014), 4, https://doi.org/10.1007/978-94-007-6582-5_1.

25. Tin et al., "Setting the Scene," 4.

26. Jessica O'Reilly and Juan Francisco Salaza, "Inhabiting the Antarctic," *The Polar Journal* 7, no. 1 (January 2017), 11, <https://doi.org/10.1080/2154896X.2017.1325593>.

cheaply by the American government.²⁷ Vessels of war would become a means to conquer capital and enact new kinds of violence for the sake of ever larger market shares.

The shipping container would change the shape of the world economy and global expectations for access to goods. It would create what economist Marc Levinson has called a new “economic geography” dependent on the long-distance redistribution of manufacturing centres and circulation of commodities.²⁸ It is the circulation of these goods within the established network of manufacturing and logistics infrastructure that enables those inhabiting Antarctica today to expect and receive much of what they can access at home.

To use Anna Lowenhaupt Tsing’s turn of phrase, the present state of global connectivity is best understood through the “sticky materiality of practical encounters,” which unfold at the intersection of cultures and geographies that are often at odds.²⁹ In the twenty-first century “all human cultures are shaped and transformed by long histories of regional-to-global networks of power, trade, and meaning.”³⁰ The messy and dynamic movement of goods across the globe is inescapable in its effects no matter how isolated a people or place might be. The severe limitations of the Antarctic environment bring the known, albeit generally unobserved infrastructure of international shipping into plain sight, revealing the complex interconnectivity of our most basic and cherished daily necessities. Like the containership, the origins of this system of supply originate in the military. It was not until the 1980s, when container shipping had become an established norm that “logistics” became a routine business function on a global scale.³¹ As defined by Deborah Cowen, logistics is not just the practice of moving goods but rather the “...entire network of infrastructures, technologies, spaces, workers, and violence that makes the circulation of stuff possible [and strategically] remains tucked out of sight.”³² The corporate iteration of logistics is advertised as a system dedicated to effortless access; this

27. Marc Levinson, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger* (Princeton, NJ: Princeton University Press, 2006), 213,

28. Levinson, *The Box*, 3.

29. Anna Lowenhaupt Tsing, *Friction: An Ethnography of Global Connection* (Princeton, NJ: Princeton University Press, 2005), 1.

30. Tsing, *Friction*, 3.

31. Levinson, *The Box*, 266.

32. Deborah Cowen, *The Deadly Life of Logistics: Mapping Violence in Global Trade* (Minneapolis: University of Minnesota, 2014), 1.

perspective makes it easy to associate the practice with the capital and goods for sale. However, at its core logistics is a complex network that determines the subsistence of populations.³³



Fig. 7 Source Image for *Cargo (detail)*

On February 23, 1956 the above U.S. Navy photograph was transmitted via wire by the Associated Press.

(WX12 – Feb.23) – – A “WEASEL” IN THE ANTARCTIC – – The Dog teams don’t do it all in the Antarctic any more. Here, the Navy’s “weasel” tows two heavy cargo sleds near Hut Point, McMurdo Sound. Hut Point is the Advance air operating base established during Operation Deepfreeze at Ross Island, Antarctic.

(U.S. Navy Photo via AP Wirephoto) (ee51607dod)1956³⁴

33. Cowen, *The Deadly Life of Logistics*, 3.

34. U.S. Navy, *A “Weasel” in the Antarctic*, Associated Press Wirephoto, 1956.

The first time I saw this photograph, I was instantly curious about the tightly wrapped sleds of provisions, protected using canvas and rope. They seemed to be an indicator of the immense quantity of goods being moved to and across the continent. The photograph has since been adopted into my work *Cargo* (2017), which pairs a digitally modified version of the image with an original print of the first plane landing at the South Pole. In my version of A “WEASEL” IN THE ANTARCTIC the image is reoriented and extends the weight of these provisions across a repeating landscape. The content of the photograph is stretched beyond the dimensions of the standard 8” x 10” print format for seven and half feet, still bearing the horizontal bands that the wire duplication process has traced upon it. Photoshop’s capacity for seamless collage enables the new and exaggerated image to read as simultaneously real and unreal. Physical things and landforms are restaged within the software as though photographed, then printed out again for exhibition. Presented on paper, this modified image maintains its reference to the material photographic object as well as the original version’s status as a physical record and communiqué.

Developed during the Second World War, the “weasel,” featured at the center of the photograph is a tracked military vehicle designed to be used in snow. Subsequently, weasels would be adopted to new uses, including conquests of Antarctic territory. At the conclusion of World War II naval admiral Richard Byrd advised the American government that they should immediately make an expedition to the South Pole. Byrd, who made his name by performing the first flight over the South Pole in 1929 and establishing the “Little America” encampment, was perpetually invested in establishing an American presence on the continent. It was his proposal that would see much of America's post-war military resources and personnel invested in Antarctic exploration, and thus, provide a basis for the infrastructure building of future IGY and the United States’ present day Antarctic programmes.³⁵ Long sought out as a frontier to be claimed, Antarctica was thus reengaged as a territory to be acquired in the post-war period. Tsing observes that “the frontier then is not a natural or indigenous category. It is a travelling theory, a foreign form requiring translation.”³⁶ In essence, it is a mode of categorizing from the outside based on interpretations from within one’s own worldview and for one’s own benefit.

35. Glasberg, *Antarctica as Cultural Critique*, 56.

36. Tsing, *Friction*, 31.



Fig. 8 Kristie MacDonald, *Cargo*, 2017 (detail)
 Fig. 9 Kristie MacDonald, *Cargo*, 2017 (detail)

The second photograph employed in *Cargo* is included as it was found – a factual punctuation mark after the elaboration of the weasel and its cargo. Pictured is the historic event of October 31, 1956, when, at 8:34 pm the American military landed the first airplane at 90° south – stopping just long enough to make it count and taking off again before the engines could freeze. An aerial photograph, taken from an accompanying airplane passing overhead, it captures the blurred still-spinning propellers, and the geometry of the landing gear’s cutting path across previously uninterrupted drifts in the snow. The “successful” landing of this airplane (named *Que Sera Sera*) was intended to prove that the people and supplies required to build Pole Station could be efficiently transported to the remote locale. Together, the images included in *Cargo* collectively speak to the military technology requisite to position oneself in such a place, and the excess of effort and resources necessary to survive there.

Today, flights to the Pole are far more common. On November 26, 2015, *Antarctic Logistics & Expeditions*, an American tour operator, landed the first commercial flight to Antarctica.³⁷ Among their offerings is a twelve-day guided trip to summit Mount Vinson (Antarctica’s highest peak) – in 2022 this comes at a cost of \$47,495 USD. Marketing materials seek to position prospective customers as explorers looking down upon conquered territory:

Imagine yourself on the summit of Mount Vinson 16,050 ft (4892 m), the highest peak in Antarctica and one of the coveted Seven Summits. Majestic, snow-covered peaks stand guard over vast glaciers below and in the distance, snow meets sky along a noticeably curved horizon. This is a moment to savor. All of the challenges you faced to get here only highlight the vast beauty before you and the sense of accomplishment that comes from achieving the extraordinary.³⁸

Wealthy climbers and adventure seekers can now camp beneath Mount Vision in modern tents and take crisp digital photographs using portable drones.

37. Antarctic Logistics & Expeditions, “First Boeing 757 Airliner Landing on Blue-Ice Runway in Antarctica,” Boeing 757 Lands at Union Glacier, November 26, 2015, <https://antarctic-logistics.com/2015/11/23/boeing-757-lands-at-union-glacier/>.

38. Antarctic Logistics & Expeditions, “Mount Vinson,” Mount Vinson, accessed September 15, 2022. <https://antarctic-logistics.com/trip/mount-vinson>.

Aerial photographs, first produced using planes and now additionally by drone and satellite, have remained fundamental to picturing and understanding Antarctica. The first known photograph taken from a plane was produced by L. P. Bonvillain near Le Mans, France in 1908. The technology would be advanced by European militaries soon after for reconnaissance during the First and Second World Wars, quickly embedding photographic surveillance in the practice of aerial warfare.³⁹ Since that time, the prevalence of aerial imaging has increased exponentially. Hito Steyerl has suggested that this has contributed to a paradigm shift in human spatial understanding. Our photographic perspective has slowly changed from the handheld lens to the technologically facilitated view from above. She argues:

Our sense of spatial and temporal orientation has changed dramatically in recent years, prompted by new technologies of surveillance, tracking, and targeting. One of the symptoms of this transformation is the growing importance of aerial views: overviews, Google Map views, satellite views.⁴⁰

Platforms such as Google Maps and Google Earth have become a primary means of visualizing, understanding, and locating geographical points on the earth, and Antarctica is no exception. These satellite reliant images function as what Lisa Parks has called a “structuring absence,” informing our perspective and virtual access from far away and out of sight.⁴¹ Users can pivot from one perspective to another by scrolling and clicking – as if the view from the ground and above were part of one continuous vantage point.

Google Earth’s captures of Antarctica are surprisingly blank. When zooming in on Pole Station within the application, the geography lacks even basic topographical features. The Pole exists merely as a faint and pixelated grey-pink colour field – apparently void of all human intervention. The undulating snow drifts apparent in the 1956 photograph of *Que Sera Sera* are replaced by the limits of square pixels repeating across the screen.

39. Denis E. Cosgrove and William L. Fox, *Photography and Flight* (London: Reaktion Books, 2010), 33.

40. Hito Steyerl, “In Free Fall: A Thought Experiment on Vertical Perspective,” *E-flux Journal*, no. 24 (April 2011): 1, <http://www.e-flux.com/journal/24/67860/in-free-fall-a-thought-experiment-on-vertical-perspective/>.

41. Lisa Parks, *Cultures in Orbit: Satellites and the Televisual* (Durham, NC: Duke University Press, 2005), 34.

The virtual Antarctic spaces of Google Maps and Google Earth serve as experiential connective points – a means of connecting people with a largely unreachable place. From a practical standpoint, as far as Google is concerned, the poor image quality of these captures outweighs the importance of their formal composition due to their accessibility, ease of streaming, upload, and download.⁴² Yet, these emptied out digital images have come to play a significant role in the way Antarctica is accessed and understood by the larger public. Despite the democracy they offer a virtual navigator in understanding distance and location, one is deprived of the geopolitical knowledge that might be communicated by absent architecture.



Fig. 10 Screenshot of Amundsen-Scott Station in Google Earth, taken by the Author

42. Hito Steyerl, "In Defense of the Poor Image," 1.

Photographing Antarctica

The “Heroic Age” of Antarctic exploration (1898 – 1916) was characterized by the race to the Pole, and efforts to map still uncharted terrain. Explorers funded by nations, industrialists, and scientific societies set forth to claim various firsts and bestow their names upon geographic landmarks.⁴³ Herbert Ponting and Frank Hurley were the first photographers recruited to travel to Antarctica. Ponting accompanied Robert Scott’s ill-fated British expedition to the South Pole (1910–1913), while Hurley was enlisted by Douglas Mawson’s Australian expedition (1911–1914) that sought to map the coastline directly south of Australia. At the time, Roald Amundsen’s Norwegian expedition (1910–1912) was also on the continent and would be the first party to reach the Pole in December of 1911. Although Amundsen’s party also took photographs to document their journey, the group did not include a photographer tasked with producing a cohesive series of images.

Working simultaneously on different areas of the continent, Ponting and Hurley would each generate a body of photographs that reflected the task of documenting a government-sanctioned expedition.⁴⁴ Both photographers would generate a heroic black and white aesthetic, which would set the tone for photographs of the Antarctic to come. Ponting and Hurley produced highly formal images that illustrate an Antarctica traversed by foot and sled, referencing the human bodily experience of a largely uninhabited landscape and perpetuating a colonial worldview. Their most iconic images contain distant ships and humans dwarfed by snowy expanses. In addition to their photographs of the landscape, Ponting and Hurley produced photographs of expedition members at work and inside crowded camp architecture. Even these photographs, which are filled with people and provisions, are not intended to point towards the human imprint on Antarctic space, but towards the heroic explorers conquering the uninhabited.

43. Dodds, *The Antarctic: A Very Short Introduction*, 28.

44. Robyn Mundy, “Pioneering Antarctic Photography: Herbert Ponting and Frank Hurley,” *The Polar Journal* 4, no. 2 (July 2014): 390, <https://doi.org/10.1080/2154896X.2014.954880>.

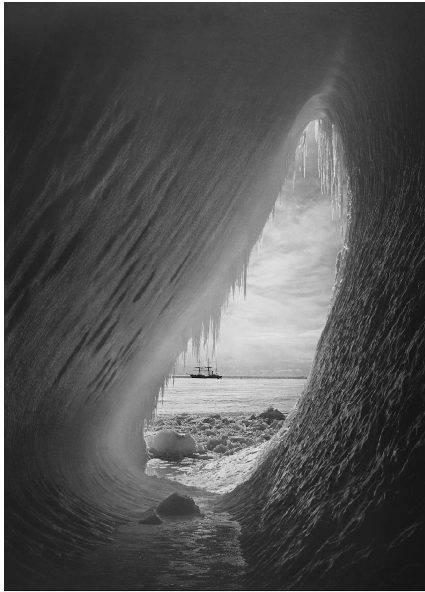


Fig. 11. Herbert Ponting, "Grotto in berg, Terra Nova in the distance," 1911 (left)

Fig. 12 Frank Hurley, "Picturesque shore ice, Cape Denison & the 'Aurora' at anchor," 1912 (right)



Fig. 13 Eliot Porter, "Ice Cave, near Scott Base, Ross Island, Antarctica," 1975 (left)

Fig. 14 Eliot Porter, "The Crater and Lava, Deception Island, Antarctica," 1975 (right)

Photographic projects that participate in a heroic treatment of Antarctica tend to erase, minimize, or romanticize the built environment.⁴⁵ This tendency is well demonstrated by the output of American National Science Foundation (NSF) *Antarctic Artists and Writers Program* (AAWP) participants. Most bodies of work produced by participants identifying as photographers can be defined as straightforward landscape or nature photography, which tends to avoid the now pervasive architectural footprint. In 1975, Eliot Porter, an early recipient of the AAWP, was one of the first non-science researchers to see the South Pole in person. Porter was flown to various locations across the continent in order to produce a series of images that would circulate widely thanks to the popularity of a coffee-table book he published in 1978, entitled simply *Antarctica*. His photographs, like those of Ponting and Hurley, picture pristine landscapes. Porter avoids the technological and industrial infrastructure that facilitated his project to focus on texture and color in the natural environment.

The popularity of Porter's images, alongside the canonical work of Ponting and Hurley, would highly influence later AAWP recipients. From the 1990s through the present, one can observe similar tendencies in bodies of work produced by Jody Forster (1992 and 1995), Norbert Wu (1997, 1999, and 2001), Joan Myers (2002), Yann Arthus-Bertrand (2004), Lisa Blatt (2008), and Diane Tuft (2012), to name a few.⁴⁶ Over time, one can observe the same images being taken again and again – views through ice formations and sculpted patterns produced by wind and drifting snow. These images often feature bright white and blue tones, produced under pristine conditions during the austral summer. Consequently, most of the art photographs produced on the continent perpetuate a limited understanding of present-day Antarctica, and a denial of the heavily occupied research stations. The striking contrast between Antarctica's built and natural environments can make it difficult to locate a middle ground between the aesthetic allure of the landscape and the complex reality of research station operations.

45. Glasberg, *Antarctica as Cultural Critique*, 94.

46. National Science Foundation, "Antarctic Artists & Writers Program: Past Participants," National Science Foundation, accessed September 25, 2022, <https://www.nsf.gov/geo/opp/aawr.jsp>.

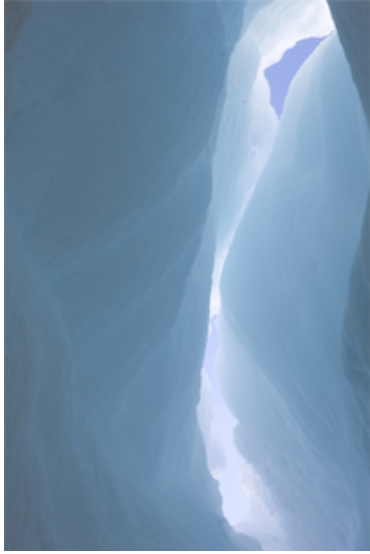


Fig. 15 Lisa Blatt "Untitled," 2008



Fig. 16 Lisa Blatt "Untitled," 2008

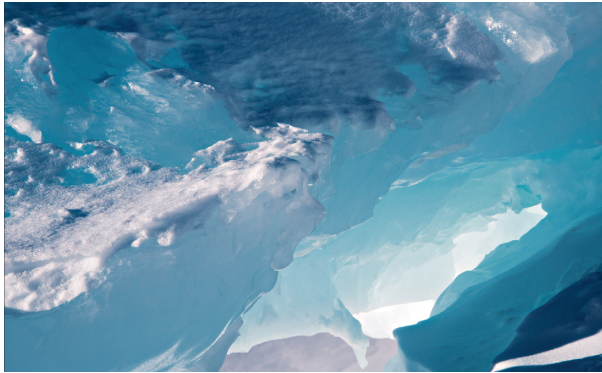


Fig. 17 Diane Tuft, "Ultra violet reflections, Scott Base Pressure Ridges," 2012 (left)



Fig. 18 Diane Tuft, "Snow Grains, South Pole," 2012 (right)

Artist An-My Lê is a notable exception to this trend, as her photographs break with the particular brand of aestheticization associated with the Heroic style. At the heart of her “anti-heroic” depiction of Antarctica lies the impact of human activity.⁴⁷ Lê’s photographs seek to address the conflicted relationship between environmental research, resource consumption, and the scope of human presence. She purposefully trains her lens on the built environment and the military infrastructure required to operate the NSF’s research bases. As Glasberg has astutely observed:

Le’s vision of Antarctica as a site in the global economy emphasizes the posthuman, the corporate, and industrial features of contemporary Antarctica. Refusing the overexposed, official view, Lê shifts away from what [one] might call an Antarctic exceptionalism. Antarctic exceptionalism, modeled on American exceptionalism, creates a separate sphere for Antarctica. Antarctic exceptionalism abounds in nature channel canards: Antarctica has never known war; it lacks people and history; it lacks political turmoil. Yet, Antarctica is no space of elemental nature, and is only obscured as a list of negatives, or blanks. Keeping Antarctica blank has its costs.⁴⁸

Since the 1990s, Lê’s practice has been concerned with landscapes transformed by war and military activity. She travelled to Antarctica in 2008 to document the United States Antarctic Program for her series *Events Ashore* (2005-2014). Produced over nine years, this body of work documents the American military’s “non-combative” activities across the globe in locals including Antarctica, Greenland, Senegal, Haiti, Iraq, Vietnam, and Hawaii. By including Antarctica within a critical project on military activity Lê situates the continent as a site of military occupation, complicating the mandated narrative of the NSF’s peaceful pursuit of scientific discovery. Her images not only illustrate the current anthropogenic state of Antarctica, but the means by which geopolitical forces shape the landscapes they subjugate.

Lê has a particular interest in the relationship between the micro and macro, geographic and human scales. In photographs such as *Storage Berms, South Pole, Antarctica* (2008) and *Fuel Storage Tanks, McMurdo Station, Antarctica* (2008), she succeeds in producing photographs of the Antarctic terrain, while focusing the viewers’ attention on the sprawling human presence. Lê achieves a vital balance in her photographs, which read as both beautiful and precarious. The

47. Glasberg, *Antarctica as Cultural Critique*, 95.

48. Glasberg, *Antarctica as Cultural Critique*, 96.

Antarctic depicted by Lê “is a combination of (post) industrial office park and (de)militarized base,” which as Glasberg notes, emphasizes the extent to which the NSF’s scientific endeavours position “Antarctica within a map of globalization and capital flows at odds with depictions of the ice as pure, empty, or even as heroic and sublime.”⁴⁹ Lê’s approach has a human population at its center; her photographs are concerned with the activity of a place.

Lê is indebted to the documentary tradition, capturing what occurs around her whilst asserting an analytical perspective. Yet, her work is not immune to the fundamental tension of documentary photography – the irresolvable conflict between artifice and authenticity.⁵⁰ Lê’s artistic project, which seeks to make visible the ways American military operations strategically occupy global space, is affected by the realities of her government-facilitated endeavor. In *Reconsidering the Documentary and Contemporary Art* Maria Lind and Hito Steyerl suggest it is the documentary’s failure to fulfill its ambitions of certainty and authenticity that continues to make it pertinent in political and conceptual art practices:

The experiences of the 20th century, its large-scale enterprises of propaganda and disinformation, have created an attitude, which could be called habitual distrust as well as advanced media literacy. Documentary modes still appeal to institutional modes of power/knowledge and cite their authority, but the effect is rather a perpetual doubt; a blurred and agitated documentary uncertainty, which paradoxically is extremely pertinent as an image of our times.⁵¹

Uses of documentary within the visual arts since the emergence of conceptual art in the 1960s have developed alongside the growth of global mass media and the information age, wherein data is currency. The tension generated in Lê’s work between facts presented and the staging of her expedition contribute to a larger understanding of an image’s mutability across different contexts of encounter.

49. Glasberg, *Antarctica as Cultural Critique*, 99.

50. Maria Lind and Hito Steyerl, “Introduction: Reconsidering the Documentary and Contemporary Art,” in *The Greenroom: Reconsidering the Documentary and Contemporary Art*, ed. Maria Lind and Hito Steyerl (Berlin: Sternberg Press, 2008): 16.

51. Lind and Steyerl, “Introduction: Reconsidering the Documentary,” 16.



Fig. 19 An-My Lê, "Fuel Storage Tanks, McMurdo Station, Antarctica," 2008
Fig. 20 An-My Lê "Storage Berms, South Pole, Antarctica," 2008

McMurdo at Night

Today, the United States functionally occupies the South Pole and boasts the largest and most well-funded base on the continent – McMurdo Station. Glasberg suggests that within the United States the study of Antarctica has been distorted “...by exceptionalism that refuses to see US interest in Antarctica as connected to discourses of empire....”⁵² The constancy of year-round human presence has been enacted through a built environment that continues to grow and modernize at great expense. In 2012, the report *More and Better Science in Antarctica Through Increased Logistical Effectiveness* was published by a “blue ribbon panel” of American government consultants.⁵³ Within the report, they call for grand investments in station infrastructure to solidify scientific operations. Reports such as this make one acutely aware that staking physical claim to the geographic space is of utmost importance to nation states who have invested capital and rhetoric in the continent. Although climate change and sustainable energy are discussed in the report, these dialogues are veiled by a discourse of greater efficacy and cost savings.

My work *McMurdo at Night* (2022) is a photo-based installation featuring two large transparencies, illuminated by an autonomous infrastructure dedicated solely to the functioning of the installation. A set of rechargeable batteries housed within a steel box generates all required power, allowing the installation to remain untethered from gallery wall sockets during daily operations. Extension cords running from the “power station” loop across the floor towards a series of spotlights. Each light sits atop a tripod, with its height adjusted in relation to points of light within the photograph. The power station generates a quiet but perceptible hum as cooling fans exchange air through vented panels. The equipment that makes up this system of light and power provide visual references to the portable generators used in remote encampments and construction sites, as well as studio photography.

52. Glasberg, *Antarctica as Cultural Critique*, 56.

53. Norman R. Augustine et al., *More and Better Science in Antarctica through Increased Logistical Effectiveness: Report of the U.S. Antarctic Program Blue Ribbon Panel at the Request of the White House Office of Science and Technology Policy and the National Science Foundation* (Washington, D.C.: White House Office of Science and Technology Policy & National Science Foundation, 2012). <http://purl.fdlp.gov/GPO/gpo26025>

Each transparency is an enlarged reproduction of a photograph of McMurdo Station at night. The uncommon nature of night photography emphasizes the human infrastructure, visible through the bright points of lights and the illumination of roadways and buildings. The spotlights activate the transparencies and mimic the infrastructure pictured within the photographs. Viewers enter the gallery, perhaps perceiving the objects as light boxes, only to move through the room to discover a much more exposed and complicated system of illumination. Viewers encounter images as a microcosm of the place itself – overcomplicated and not what it first appears to be.

This set of photographs shows the infrastructure of McMurdo Station glowing in the darkness. McMurdo appears as a series of roadways and buildings illuminated by conspicuous streetlamps. Sheds, Quonset huts, and other small, prefabricated buildings become a series of geometric curves and sharp edges set against the dark sky. Perhaps it's evening, or austral winter? In each image the infrastructure that powers the station takes centre stage. The surrounding geography is largely hidden in the dark, the landscape recedes behind lampposts, wires, and roadways.

McMurdo is in reality a coastal city, located in one of the most accessible locations on the continent. A facility constructed on volcanic rock and ash, it acts as port and airport alike. The mean annual temperature is -18°C, fluctuating between highs of 8°C in summer and -50°C in winter. The average wind speed is 13.8 miles per hour, at times exceeding 115 miles per hour.⁵⁴ Already expansive in the mid-twentieth century, it has continued to grow haphazardly. Architect Sam Jacob describes McMurdo as “a piece of Antarctica given over to the North American sprawl,” a reflection of the ways architecture is linked to the socio-political conditions of its context and its makers.⁵⁵ Presently, Denver-based firm OZ Architecture has been tasked with rethinking the 105-building Station (currently spread across 164 acres).⁵⁶ OZ will condense the

54. Augustine et al., *Report of the U.S. Antarctic Program Blue Ribbon Panel*, 37.

55. Sam Jacob, “High Tech Primitive: The Architecture of Antarctica,” in *Ice Lab: New Architecture and Science in Antarctica*, ed. Sandra Ross (London: The British Council, 2013), 66.

56. Elizabeth Fazzare, “How One Architecture Firm Is Building Sustainably in the Antarctic,” *Architectural Digest*, December 7, 2018, <https://www.architecturaldigest.com/story/how-one-architecture-firm-building-sustainably-antarctic>.

current site in order to “reduce operating costs and increase overall efficiency”⁵⁷ With a budget of seven years and \$300 million OZ will produce a 300,000 square foot “campus” of six connected buildings.⁵⁸

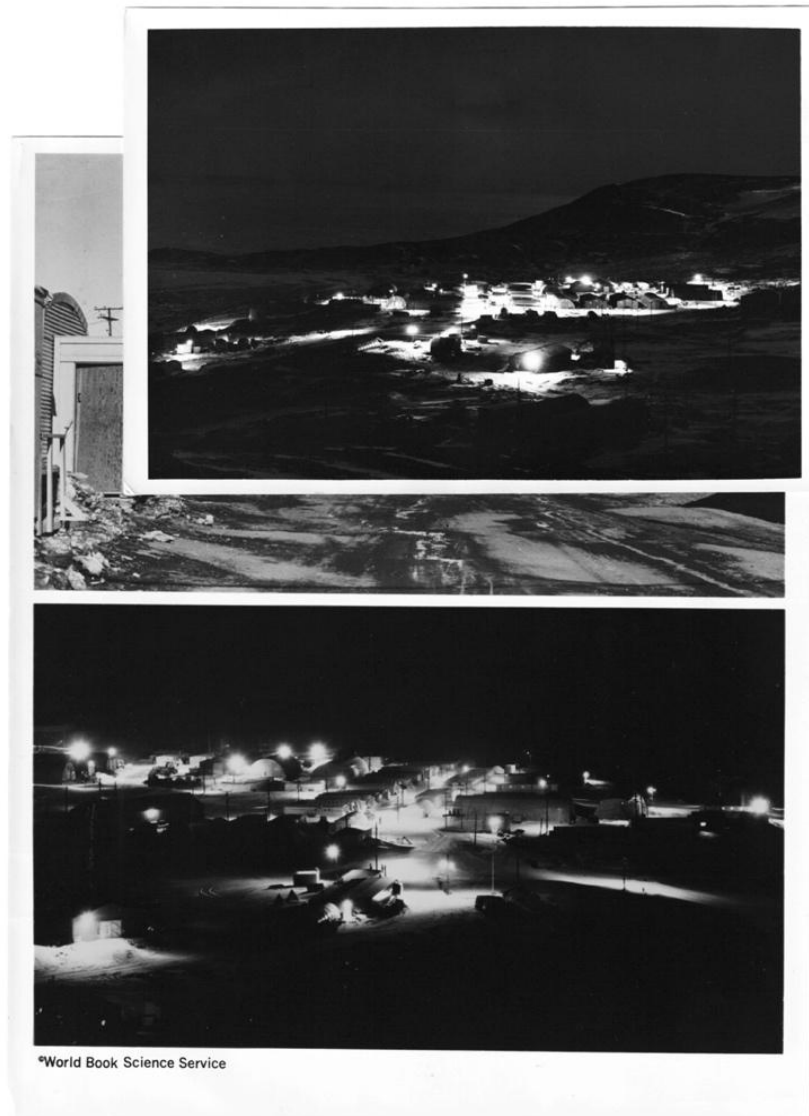


Fig. 21 Kristie MacDonald, Source Images for *McMurdo at Night*

57. “Updated Plans for McMurdo Station Modernization,” United States Antarctic Program, accessed September 5, 2022, <https://future.usap.gov/updated-plans-mcmurdo-modernization/>.

58. OZ Architecture, “McMurdo Station,” Our Work, accessed September 25, 2022, <https://ozarch.com/our-work/mcmurdo-station>.



Fig. 22 Kristie MacDonald, *McMurdo at Night*, 2022 (installation view)

Fig. 23 Kristie MacDonald, *McMurdo at Night*, 2022 (installation view)

After the IGY ended, most nations began to scale back their activities. However, the 1960s brought a period of growth for the United States Antarctic Program (USAP).⁵⁹ At the time, the USAP underwent a process of demilitarization in accordance with newly instated Antarctic Treaty requirements. However, demilitarization has taken place in name rather than actuality. The government continues to outsource increasing responsibility for USAP logistics to military sub-contractors. In 1968 Holmes and Narver (H&N) a subsidiary of Ashland Oil Company was hired as the first private contractor to oversee the station. H&N would be followed by ITT Antarctic Services, Antarctic Support Associates (ASA) a joint venture between Holmes and Narver and Edgerton, Germeshausen, and Grier, Inc (EG&G) a known as a US defence contractor, Raytheon Technologies an American international weapons builder, and most recently Lockheed Martin an American arms and defense corporation.⁶⁰ Logistics staff supporting the USAP outnumber researchers at a ratio of 9:1, robust evidence of the people and funding dedicated to maintaining presence.⁶¹

Making Work in Situ: Artists on the Ice

National science programmes have been the primary source of funding and support for artists visiting Antarctica. The American National Science Foundation's *Antarctic Artists & Writers Program* (AAWP) was the first formally established annual fellowship and has a robust history of project support. Other notable programmes include the Australian Antarctic Division's *Antarctic Arts Fellowship*, as well as the *Artists and Writers Programme* fellowships offered jointly by the British Antarctic Survey and Arts Council of England.⁶² The primary aim of funding programmes such as these has not been artistic merit but rather, as William L. Fox has noted, to produce images demonstrating that the public funds spent on Antarctic research are worthwhile. He suggests that "much of the science conducted [on Antarctica] is far too abstruse to be of genuine interest to laypeople, but the presentation of a sublime and pristine wilderness

59. Georgina A. Davis, "A History of McMurdo Station Through its Architecture," *Polar Record* 53, no. 2 (March 2017): 177, <https://doi.org/10.1017/S0032247416000747>.

60. Davis, "A History of McMurdo Station Through its Architecture," 177-182.

61. Augustine et al., *Report of the U.S. Antarctic Program Blue Ribbon Panel*, 4.

62. Adele Jackson, "A Changing Cultural Climate: Realising the Value of Artists Working in Antarctica," *Polar Record* 55, no. 5 (2019): 351, <https://doi.org/10.1017/S0032247419000470>.

establishes an emotional loyalty to the continent that serves the cause.”⁶³ The utility of a given artist’s visual production within these programmes fundamentally performs as a means to promote “public enthusiasm for funding future explorations.”⁶⁴ As such, artistic projects undertaken on the continent have largely been limited to painting, photography, film, and writing – traditional and favoured media of state-sponsored work.

Over the past two decades this has begun to change, as a small number of artists and events have seen installations and time-based works realized within the Antarctic environment. Notable examples in this recent lineage include work produced by Paul Rosero Contreras and Lou Shepard during the *Antarctic Biennale (2017)*, Lita Albuquerque’s *Stellar Axis: Antarctica* (2006) facilitated by the AAWP, and Lucy + Jorge Orta’s *Antarctic Village – No Borders* (2007) commissioned by the *End of the World Biennial* of Ushuaia, Argentina. Limited in their actions, artists working in situ are required to produce projects that do not leave any lasting effect, in accordance with Antarctic Treaty regulations.

Albuquerque’s *Stellar Axis: Antarctica*, the first example of large-scale installation created on the continent, is a stylized diagram of the ninety-nine brightest stars in the southern hemisphere. Installed on the Ross Ice Shelf for the 2006 December solstice, *Stellar Axis* makes constellations visible while stars are obscured by the 24-hour daylight of austral summer. Imagined as bright ultramarine spheres that appear to hover on the surface of the snow, each star is relative in scale and location to the others. Wonderfully poetic, the figure-ground relationship of a night sky is inverted – dark stars are observed in a bright field of snow. Positioned with the help of astronomer Simon Balm, the installation represents “the entire dome of the ‘night’ sky from horizon to horizon, translated into polar coordinates, and scaled within [a] 400-foot circle.”⁶⁵ In this work Albuquerque seeks “a way to connect what was beneath her feet and above her head,” orienting the human body in relationship to land and sky in unfamiliar terrain.⁶⁶ *Stellar Axis*:

63. William L. Fox, “Every New Thing: The Evolution of Artistic Technologies in the Antarctic – or How Land Arts Came to the Ice,” in *Far Field: Digital Culture, Climate Change, and the Poles*, ed. Jane D. Marsching and Andrea Polli (Bristol: Intellect Books, 2012), 29-30.

64. Fox, “Every New Thing,” 21.

65. Fox, “Every New Thing,” 33.

66. Fox, “Every New Thing,” 28.



Fig. 24 Lita Albuquerque, *Stellar Axis: Antarctica*, 2006

Fig. 25 Lucy + Jorge Orta, *Antarctic Village – No Borders*, 2007

Antarctica engages the notion of 90 degrees south as a symbolic global anchor in cultural imaginaries, while Albuquerque's work utilizes mapping and mathematics, central disciplines to the ongoing traditions of navigation on the continent. However, *Stellar Axis: Antarctica*'s use of colour and its graphic departure from the surrounding landforms emphasizes the foreignness of the place rather than anchoring viewers in an aesthetic certainty.

One year later, Lucy + Jorge Orta's *Antarctic Village – No Borders* similarly dotted the Antarctic landscape, this time with temporary human shelters. Fifty silver tents made of contemporary poly-fabric are adorned with an assortment of national flags, bright neon fastenings, fragments of clothing and gloves – all quivering in the wind. Tapping into the discourse that situates Antarctica as a site of hopeful international cooperation, the Ortas have described this installation as a vibrant and populous encampment for all people, an embodiment of the United Nations notion of the “Global Village,” a planetary commons.⁶⁷ However, *Antarctic Village* also recalls the Ortas' ongoing series *Refuge Wear*, a decades long exploration of social and ecological unrest. *Refuge Wear Habitant* (1992 - 1993) for example uses the same tent structure as *Antarctic Village*, but here it becomes the basis for a hybrid jacket-shelter – the top of the tent is capped with a hood fit for a human head, and pockets line the front panel on either side of the entry zipper. A consideration of their practice at large brings additional references to light. The provisional and portable nature of *Antarctic Village*'s shelters make reference to global patterns of climate of migration, the plight of homeless and stateless people, and the role of responsive architecture.⁶⁸

The first (and only) occurrence of the *Antarctic Biennale* was staged in March of 2017, when an international group of artists, scientists, and architects spent two weeks travelling aboard the Russian Academy of Sciences research ship *Akademik Sergey Vavilov*. They departed from the port at Ushuaia, Argentina, travelling through the Drake Passage before making numerous stops along the coast of the Antarctic Peninsula. At each location, temporary artworks and

67. Lucy + Jorge Orta, “Antarctica Dome Dwelling,” Studio Orta, accessed September 17, 2022, <https://www.studio-orta.com/en/artwork/136/antarctica-dome-dwelling>.

68. Corina L. Apostol and Nato Thompson, “Lucy + Jorge Orta,” in *Making Another World Possible: 10 Creative Time Summits, 10 Global Issues, 100 Art Projects*, ed. Corina L. Apostol and Nato Thompson (London: Routledge, 2019), 282.

performances were presented – unpacked and repacked, all materials returning with the artists to the ship.



Fig. 26 Paul Rosero Contreras, *Arriba!*, 2017

Fig. 27 Lou Shepard, *Requiem for the Antarctic Coast*, 2017

The biennale was positioned as a global event, which aimed to situate Antarctica as an international site of cultural production. The biennale model was engaged by project organizers as a means to generate interdisciplinary dialogue in a supranational shared space – a worthy goal in theory.⁶⁹ However, problematic governance, a lack of sufficient and accessible documentation, and an invitation only model, ultimately resulted in an event that fell short of its potential to engage in a cultural analysis of Antarctica or the biennale as a structure.

Despite the structural problems of the event at large, several participating artists generated critically engaged work. Significant among them was Paul Rosero Contreras, who placed a living cocoa plant from his home country of Ecuador within Paradise Bay. His installation *Arriba!* activates a site where fossils of tropical plant life have been discovered below the surface of the ice. Through this gesture Contreras generates a relationship between contemporary, past (and possibly future) climate states on the continent through the placement of a single artifact. The plant is housed in a carefully sealed temperature-controlled vessel. The container keeps the plant alive, and manages to cleverly illustrate the Antarctic Treaty’s regulation which restricts the introduction of alien flora and fauna to the region.

Much like the scientists who study atmospheric warming and sea ice conditions around Antarctica, artists in situ labour is performed as a kind of necessary sacrifice for contributions to knowledge. This inherent contradiction is at stake in the production of any project on Antarctica, and is a condition that cannot be discounted. For example, the *Antarctic Biennale*’s two-week timeframe and mode of travel mirrors the model (and thus CO₂ emissions) of contemporary Antarctic tourism quite closely. The average two-week tourist trip to Antarctica “results in 5 tonnes or more of carbon dioxide (CO₂) emissions per passenger ... This is more than the 4.2 tonne-per-person average of annual global CO₂ emissions from the combustion of fossil fuels....”⁷⁰ As is the case for all scientific and cultural production on the continent, any examination of global warming is realized at the expense of Antarctic climate.

69. Nadim Samman, “Towards the Antarctic Biennale,” Antarctic Biennale, accessed September 17, 2022 <http://www.antarcticpavilion.com/the-antarctic-biennale.html>.

70. Tin et al., “Setting the Scene,” 10.



Fig. 28 Kristie MacDonald, *The snow doesn't fall, but it moves with great speed*, 2021

Observing from Afar: Dispersed Archives and Uncertain Provenance

The nature of my work differs substantially from the in situ interventions of artists producing work on Antarctica. My methodologies are designed to facilitate observations from afar. Making use of the abundant material culture that has migrated from the continent, I engage in a process of collecting and repositioning the viewpoints of others. In doing so, I perform a simultaneous analysis of the place itself and the material archive it motivates. What can I see from here, alongside most everyone else?

Interested in the ways objects change hands over time, I scroll through search results on eBay. Items are filtered through a haphazard metadata applied by hobbyists and ephemera dealers – with each individual seller naming and attributing items according to their own experience and without a responsibility to archival methodologies. This mode of locating historical materials sits adjacent to that used to create the formal image collections available in institutional collections. It provides me with a pool of material culture that has actively moved and changed hands in the public sphere, up to and including my interventions. Moreover, these objects are accessible in a way that allows me to bring them into the studio, so that I can observe them over time.

In *The snow doesn't fall, but it moves with great speed* (2021), I group three found photographs. They are scanned in their entirety and laid out at full-scale on a large white ground. The quality of the prints (and darkroom light leaks in the borders) reveal the quick processing of news images that are bound to be reproduced at an even lower resolution. Each photograph highlights the weight and scale of weather in relationship to architecture and the human body. The images feature curved structures, designed to help snow drift over and away, yet inevitably they are engulfed by snow. People are pictured removing snow build-up with tractors and snowblowers – bodies moving in the constant performance of maintenance required to inhabit this place. The photographs featured in *The snow doesn't fall, but it moves with great speed* were almost certainly intended to be technical and straightforward images of procedure. Yet today, they read differently, appear more Sisyphean. I can imagine the sense of military ambition surrounding these activities and their demonstration for the camera, but can't help see them as unsettling in the present moment.

As recently as 2012, it was observed by inhabitants of Antarctic research stations that outdoor storage of supplies is still prevalent, with materials often found by digging through deep piles of snow. Gaps loom large at the bottom of doorways, allowing wind to blow snow drifts into buildings.⁷¹ Antarctica isn't an easy place to be. An environment is designated as extreme when local parameters approach the limits for human habitability. Yet, since the mid-twentieth century technologies of transportation and architectural design have sought to make deserts, sub-aquatic, and extraterrestrial spaces habitable.⁷² As human presence in these places increases so too do they gain an increasing presence in distant human lives – through media, scholarship, and archival production.⁷³

I spent a good deal of my twenties learning and then unlearning how to be an archivist, reconciling extended labours of care and preservation with the inevitability of deterioration and likelihood of historiographic disinterest. After completing an undergraduate degree in studio art, I enrolled in an Archival Studies graduate programme. I didn't exactly want to be an archivist, but I did want to know what it meant to be one. As someone with a penchant for repetition I was drawn into the field's methodical processes, but ultimately found them to be lacking. Idealistic in their aspirations, the practices at hand were often too expensive, not to mention space and time consuming, to be enacted at the not-for-profit artist-run centres in which I would later work.

Today, as someone located outside the discipline proper (who holds insider knowledge), I find writing about archives that occurs from outside archival studies compelling for its affordances. External voices have an unencumbered ability to push boundaries and definitions without an obligation to the strict methodologies that root archival theory in applied preservation practice. A young field of study (all things considered), archival studies seemed to be going through an identity crisis during my education. Its disciplinary origins are rooted in the *Manual for the Arrangement and Description of Archives* published in 1898. Herein, a relationship between

71. Augustine et al., *Report of the U.S. Antarctic Program Blue Ribbon Panel*, 7.

72. Annick Bureau, "Inhabiting the Extreme or Making Antarctica Familiar," in *Far Field: Digital Culture, Climate Change, and the Poles*, ed. Jane D. Marsching and Andrea Polli (Bristol: Intellect Ltd, 2012), 189.

73. Jane D. Marsching and Andrea Polli, eds., Introduction to *Far Field: Digital Culture, Climate Change, and the Poles* (Bristol: Intellect Ltd, 2012), 9.

theory and practice is fashioned that comes to frame a standardization of arrangement and description that now typifies the profession.⁷⁴ However, the question at hand for contemporary practitioners and scholars remains: how does one embody the continuity of established principles (a hierarchical adherence to artifact arrangement by provenance and original order) while embracing the postmodern lens of contemporary culture and decolonial standpoints? How to achieve this while confined by the reality of the profession's relegation as "women's work" and the socio-political realities this qualification entails?

Jacques Derrida's *Archive Fever* is a turning point in literature about archives and their roles in arts and humanities scholarship, a text that Marlene Manoff suggests impacted both archival theory and external scholarship alike. Published in 1996, Manoff proposes *Archive Fever* was distinct from anything originating in the professional literature at the time.⁷⁵ She notes that Derrida's discourse contributed to a broader cultural recognition "of the contingent nature of the archive—the way it is shaped by social, political, and technological forces."⁷⁶ Manoff thus brings to the fore the problem of inclusion: "If the archive cannot or does not accommodate a particular kind of information or mode of scholarship, then it is effectively excluded from the historical record."⁷⁷ *Archive Fever* calls into question the root and role of the archive, proposing that "nothing is less reliable, nothing is less clear today than the word 'archive.'"⁷⁸ An archive is a place, a controlled space of ordered things. It is there, one can touch it. Yet it persistently eludes definition. As enticing as the archival artifact remains, it is what can't be pinned down, or touched, that is most captivating. Things are prompts which allow one to speculate, to sense the space between one object and another, to feel for ambiguities and certainties – while imagining the possibilities at stake between them.

74. Peter Horsman, Eric Ketelaar, and Theo Thomassen, "New Respect for the Old Order: The Context of the Dutch Manual," *The American Archivist* 66, no. 2 (September 2003): 269. <https://doi.org/10.17723/aarc.66.2.452235k813568872>.

75. Marlene Manoff, "Theories of the Archive from Across the Disciplines," *Portal: Libraries and the Academy* 4, no. 1 (January 2004):11, <https://doi.org/10.1353/pla.2004.0015>.

76. Manoff, "Theories of the Archive from Across the Disciplines," 12.

77. Manoff, "Theories of the Archive from Across the Disciplines," 12.

78. Jacques Derrida, *Archive Fever: A Freudian Impression*, trans. Eric Prenowitz (Chicago: University of Chicago Press, 1996), 90.

Hal Foster's essay *An Archival Impulse* is another foundational dialogue framing 'the archive' as an ideological notion. Foster articulates the pull of the archive within contemporary art, identifying methodologies being used by artists since the turn of the twenty-first century, which are indebted to conceptual art, institutional critique, and feminist art.⁷⁹ Foster suggests that the artist-as-archivist uses strategies that make historical information physically present through the reframing and production of archives, often aligned with a postmodernist drive to complicate originality and authorship.⁸⁰ These strategies persist in accordance with a widespread change in how archives are defined and understood across the twentieth and early twenty-first century – shifting from sites of stasis to active sites of construction and excavation.⁸¹ Similarly, art historian Sven Spieker suggests that the archival impulse is a reaction to the nineteenth century conception of the archive as dead, while the contemporary notion of a living archive is seen as an active discursive system.⁸² The living archive advocates for the collection as a store of raw materials, from which a researcher can formulate their own interpretation of the events represented.

Foster observes that contemporary practices informed by direct engagements with the archive demonstrate an "idiosyncratic probing into particular figures, objects, and events in modern art, philosophy, and history" by seeking to draw out alternative knowledge or create a might-have-been.⁸³ This is a critical reinterpretation, which undermines the notion of the archive as complete and possessing a singular interpretation. Redefining archives as living and fragmentary, this interpretation proposes a collection's contents are contingent, speculative, and relative. It is this contingency that I wish to activate through my work, the postulation of *what if*.

Museologist Eilean Hooper-Greenhill suggests that "the radical potential of material culture, of concrete objects, of real things, of primary sources is the endless possibility of rereading".⁸⁴

79. Hal Foster, "An Archival Impulse," *October* 110 Fall (2004): 3, <https://www.jstor.org/stable/3397555>.

80. Foster, "An Archival Impulse," 4.

81. Foster, "An Archival Impulse," 22.

82. Sven Spieker, *The Big Archive: Art from Bureaucracy*, (Cambridge: MIT Press, 2008), 6.

83. Foster, "An Archival Impulse," 3.

84. Eilean Hooper-Greenhill, *Museums and the Shaping of Knowledge* (New York: Routledge, 1992), 215.

Within my practice artwork becomes a place for objects to emit multiple meanings, in a way that underscores Foster's understanding of the "nature of all archival materials as found yet constructed, factual yet fictive, public yet private."⁸⁵ I intend to highlight the ways interpretations of material culture are not constant; instead they are inevitably subjective and variable, bound to be rewritten according to evolving social and theoretical values.⁸⁶

Similarly, feminist media theorist Kate Eichhorn notes that "contemporary theorizing on the archive and even much of the recent research carried out in archives suggests that the archival turn has been motivated by anything but a desire to unequivocally recover the past." This is a tendency she ascribes to the primacy of neoliberalism's influence over global cultures, as well as the ways and places they intersect. Eichhorn proposes that neoliberalism has "...eroded [a communal] sense of political agency, which compelled [one] to look for new ways of manipulating the present through a turn to the past."⁸⁷ She engages Marxist scholar David Harvey's definition of neoliberalism as an economic practice that proposes "human well-being can be best advanced by the maximalization of entrepreneurial freedoms within an institutional framework characterized by private property rights, individual liberty, unencumbered markets, and free trade."⁸⁸ It is a structure that overwhelmingly devalues and destabilizes anti-economic and community-centric endeavours. Eichhorn argues that alternative and grassroots archives provide the ability to restore "what is routinely taken away under neoliberalism – not history itself but rather the ability to understand the conditions of our everyday lives...."⁸⁹ This line of questioning can be connected back to Foster's *Archival Impulse*, wherein he speculates that archival art emerges in response to a social crisis of cultural memory, leaving readers with the question "...why else connect so feverishly if things did not appear so frightfully disconnected in the first place?"⁹⁰

85. Foster, "An Archival Impulse," 5.

86. Hooper-Greenhill, *Shaping of Knowledge*, 215.

87. Kate Eichhorn, *The Archival Turn in Feminism: Outrage in Order* (Philadelphia: Temple University Press, 2013), 6.

88. David Harvey, *Spaces of Neoliberalism: Towards a Theory of Uneven Geographical Development* (Stuttgart: Franz Steiner Verlag, 2019), 72, <https://doi.org/10.25162/9783515115223>.

89. Eichhorn, *The Archival Turn in Feminism*, 6.

90. Foster, "An Archival Impulse," 21.

Artist Tacita Dean is understood by Foster to exemplify the enactment of an archival impulse in contemporary art.⁹¹ Her work brings a focused attention to objects, places, and historical figures through practice-based research resulting in artworks that rely on the accumulation of images found and produced. Her work often takes forms that are sparse, slow, and repetitive in nature. As such, she invariably asks the viewer of her work for a level of attentiveness that parallels her own. Dean's 2001 artist book *Floh* is one such work. Floh, 'flea' in German, is short for flea market. The book exists without text – a flow of found photographs acquired at flea markets is presented to the viewer so that they might build relationships based on the visual information at hand.

The images Dean includes in *Floh* are largely personal photographs, snapshots, and portraits. Spending time with them reveals the conditions of everyday life that Eichhorn suggests is so important in contemporary archival work, as an antidote to neoliberalism. Dean has written, "I do not want to give these images explanations: descriptions by the finder about how and where they were found, or guesses as to what stories they might or might not tell. I want them to keep the silence of the flea markets...."⁹² They are a kind of familiar and yet open-ended image that does not lead one to a concrete conclusion, but rather invites one to return, speculate, and build connections to like experiences.

Dean's process of searching flea markets with the aim of collecting by chance, not looking for any specific subject matter, is wholeheartedly engaged with the idea of happenstance.⁹³ By comparison, my project, and engagement with images for a work such as *The snow doesn't fall, but it moves with great speed*, is somewhat more pointed. While Dean's intention is to search undirected, by intuition and aesthetic draw, my own searches are limited to Antarctica as a subject. Yet, I find ways to search intuitively, that sit within the limits of this geographic boundary. Both *Floh* and *The snow doesn't fall, but it moves with great speed* respond to available material within the limits of their context – be they expansive or constrained.

91. Foster, "An Archival Impulse," 3.

92. Tacita Dean, "Press Release," Marian Goodman Gallery, 2001, <https://www.mariangoodman.com/exhibitions/247-tacita-dean-part-i-floh-part-ii-fernsehturm/>.

93. Mark Godfrey. "Photography Found and Lost: On Tacita Dean's Floh," *October* 114, no. 3 (2005): 101, <https://www.jstor.org/stable/3397626>.



Fig. 29 Tacita Dean, *Floh*, 2000 (detail)

Mark Godfrey suggests that *Floh* utilizes “a mode of photographic *finding* that is nearing extinction.”⁹⁴ He poses the question “Will there still be flea markets full of old photographs in the near future? Will there be jumbles of unedited snapshots?” The extent of printed material produced during the late twentieth century alone will see this phenomenon persist for some time; indeed, it is probably still more active than Godfrey might have anticipated, writing in 2005. eBay, the platform where my work begins, has become a type of virtual flea market. It holds materials of the same ilk. The discarded photographs inhabiting flea markets and eBay alike call for a kind of trust, or acceptance of the unknown. Serendipitous accumulations of images found within flea markets or platforms like eBay provide an opportunity to see what is not included in the archive proper, a sense of what skirts its edges.

94. Godfrey, “Photography Found and Lost” 114.

Chapter 3:

Headlands that may or may not be there



Fig. 30 Kristie MacDonald, *Whiteout*, 2021



Fig. 31 Kristie MacDonald, *Floated out to Sea*, 2021

Whiteout

In 1956, Bette Nesmith Graham founded “Mistake Out,” which would become the Liquid Paper company. She conceived of the idea for a typist’s correction fluid during her time as an Executive Secretary at the Texas Bank and Trust.⁹⁵ Graham used a state-of-the-art electric typewriter, the process of typing being sped up and simplified, but in this pre-digital age there was no function to address typographical errors or make amendments. Liquid Paper (or “Whiteout” as it is colloquially known) was invented using her kitchen blender to mix a water-based tempera paint, which she tinted to match the colour of the bank’s stationery. It began as a home-made solution, secretly distributed amongst her female colleagues in nail polish bottles. Influenced by her training as a painter, she applied the logic of overpainting an image to the reworking of typed text. Liquid paper as a phrase suggests a kind of fluidity wherein the document loses its solid structure, and the notion of documentation is made malleable.

Whiteout (2021) features two press photographs of Antarctica, overlaid in a manner that simultaneously connects and interrupts each image. Each camera was focused on opposing stories of the place – one on the landscape and another on human infrastructure. A continuous horizon line links the two images, suggesting a continuity between the spaces pictured. These photographs point away from and towards human presence with a great difference in effect. On the right sits a photograph picturing stockpiles of shipping crates lining the shore. On the left is a view of mountains that are doubled by their reflection in calm water – notable not just for its aesthetic draw, but the thickly applied whiteout crop marks interrupting the image. On closer inspection, one can see even further manipulation. Whiteout has been painted along the water’s edge, and adds textured highlights to the snowcaps on the highest peaks. The availability of this ready-at-hand office supply made it attractive to art department staff at newspapers and periodicals, who used it to take quick liberties which permanently altered image composition and content.

95. “Three Every-Day Items Invented by Women,” National Women’s History Museum, August 1, 2013, <https://www.womenshistory.org/articles/three-every-day-items-invented-women>.

Whiteout is a decisive act of re-photography. It duplicates photographic prints that are at odds with a controlled and composed view of Antarctica. Each print contains devices that obscure the existing topography – be it objects in the landscape or painted lines and embellishments. The title of this work alludes not only to correction fluid, but to the phenomenon of “Antarctic Whiteout” — an optical condition brought about by environmental conditions characterized by a combination of wind, snow, and light. Antarctic whiteout causes disorientation, resulting in a loss of perspective and sense of direction – it becomes impossible to distinguish landmarks or identify the horizon. Both forms of whiteout have the potential to obscure and alter the nature of perception.



Fig. 32 Kristie MacDonald, *Whiteout*, 2021 (detail)

What is of primary interest to me in photographic acts of reproduction is the marking of time – the positioning of a now and then. The prints that are re-photographed in *Whiteout* show their age, calling attention to the span of time between their initial production and the present. The photographs are reproduced as objects with dimension – their edges, the quality of the paper, surface markings, and discolouration all become legible. In his book *In Praise of Copying*, Marcus Boon notes that:

Even the most “perfect” copies are different because their spatial situation and thus their relationship to their environment must be different—they cannot be identical. Also, they cannot be composed of exactly the same physical matter—the molecules of which they are made are not the same.⁹⁶

Boon directs the reader towards an obvious but underappreciated fact – no two things have exactly the same history or longevity. Anthropologist Igor Kopytoff has referred to this as the “biography of things;” individual objects have the capacity to shift in their context and socio-cultural values over time.⁹⁷ In *Whiteout* the prints exert distinct biographical information through their physical state, and a shift in their cultural value takes place through their appropriation, thus shifting their meaning. In juxtaposition with one another, a fuller picture of the place and the treatment of the image becomes clear.

Artists of the Pictures Generation have rooted appropriation within artistic methodologies, as a means of analyzing cultural artifacts and subverting their context. Emerging in the 1970s, this group of American artists is best known for their critical analysis of mass media. Through individual practices, they sought to expose “how pictures of all kinds not only depict but also shape reality.”⁹⁸ They adapted a postmodern scepticism of consumer culture, and the ways art and advertising were structured within it. They re-purposed the very mechanisms of production

96. Marcus Boon, *In Praise of Copying* (Cambridge, MA: Harvard University Press, 2010), 193.

97. Igor Kopytoff, “The Cultural Biography of Things: Commoditization as Process,” in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge: Cambridge University Press, 1986), 90, <https://doi.org/10.1017/CBO9780511819582.004>.

98. Douglas Eklund. *The Pictures Generation 1974-1984* (New York: Metropolitan Museum of Art and Yale University Press, 2009), 6.

they sought to critique – using tools such as photography and collage to adopt and reposition existing images.⁹⁹

Sherrie Levine's re-photographic projects of the 1980s are a key example of this practice. Her series *After Walker Evans*, reproduces images from his Farm Security Administration (FSA) portfolio. Canonized as a social documentary record of depression era American life between 1935 and 1944, the FSA photography project was designed to persuade Americans that the government's New Deal programmes were effective relief initiatives.¹⁰⁰ In his analysis of the FSA photographs, Michael L. Carlebach asserts that the images produced were both documentary and propaganda. He asserts that "[o]bjectivity was not the goal of the documentary movement in the thirties; in fact, interpretation and comment were understood to be essential to the act of photographing."¹⁰¹ As such, the FSA images straddle a categorical line that is no doubt extremely appealing to Levine.

After Walker Evans 4 (1981) reproduces a 1936 photograph originally titled *Alabama Cotton Tenant Farmer's Wife* (now referred to as *Allie Mae Burroughs, Hale County, Alabama*). Hillel Schwartz has framed Levine's copies in this body of work as acts of provocation.¹⁰² Her positionality as a young woman subverts the male gaze, and her performance of rephotography shifts the location of these images in the lineage of the patriarchal western cannon. Levine reproduces Evans' images for original their social-historical position, asking viewers to reapproach them from a different standpoint some five decades later.

Levine explicitly set out to duplicate images by canonical modernist photographers including Edward Weston, Walker Evans, and Alexander Rodchenko. Levine's photographs of photographs "sought to revisit particular historical forms as a means of deconstructing their

99. Eklund, *The Pictures Generation*, 16.

100. Michael L. Carlebach, "Documentary and Propaganda: The Photographs of the Farm Security Administration," *The Journal of Decorative and Propaganda Arts* 8, no. 2 (Spring, 1988): 6.

101. Carlebach, "Documentary and Propaganda," 12.

102. Hillel Schwartz, *The Culture of the Copy: Striking Likenesses, Unreasonable Facsimiles*, rev. ed. (New York: Zone Books, 2016), 205.

legitimation within a broader cultural milieu.”¹⁰³ Photography is engaged as both the subject and material of this work. Levine’s copies are distinct in time, material, motivation, and authorship from those they copy. Levine employs photography strategically and conceptually, as a medium that is built for duplication – photographic editions amplify and spread outwards.

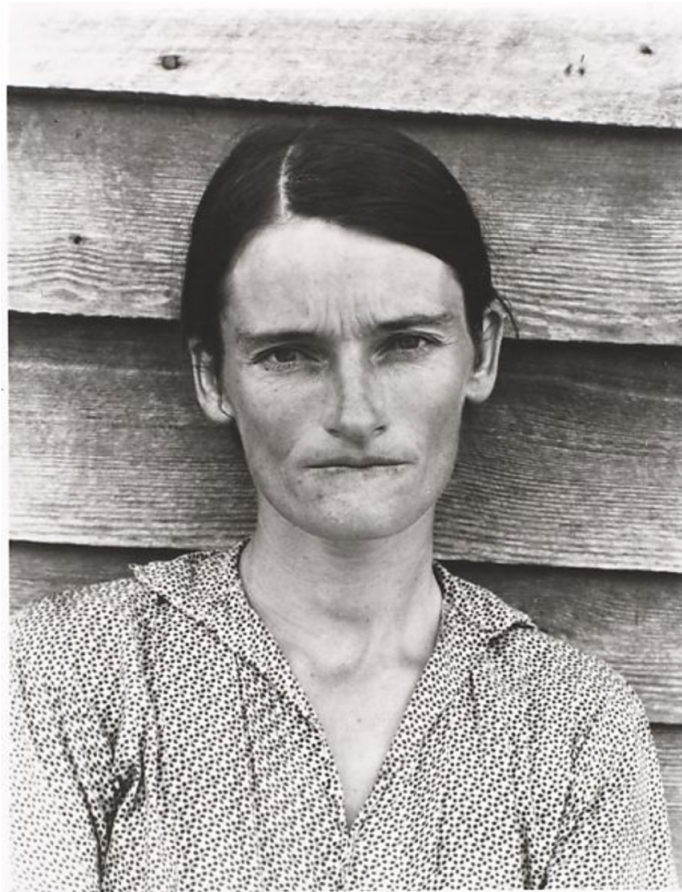


Fig.33 Sherrie Levine, *After Walker Evans 4*, 1981

Howard Singerman notes that the word “after” is a key indicator in Levine’s work, which is constituted not only of the object but the didactics of her title, and the performance of rephotographing. The use of “after” generates a chronology, and, he suggests, refers to the art

103. Craig G. Staff, *Monochrome: Darkness and Light in Contemporary Art* (London: I.B. Tauris & Co. Ltd: 2015), 57.

historical methodologies that use duplication as a means of contextualizing artistic production within an evolutionary chronology.¹⁰⁴

In *Floated out to Sea* (2021), a companion piece to *Whiteout*, another pair of photographs are stacked and reproduced. This time, an aerial photograph bearing coded markers of the United States Navy “USN” – with location measurements and dates lining the right-hand side of the print. Atop this image, with its high production values and finely focused details, sits a marked-up wirephoto of a “mound of trash” at McMurdo Station. Divided by the application of whiteout crop marks, only half the photograph (and therefore the trash) would have been published. Environmental accountability is symbolically reduced through strategic cropping and circulation. The caption of this photograph dated December 27, 1971, reads:

A mound of trash at McMurdo Station, Antarctica, waits for burning before it is floated out to sea on melting ice floes. This has been the method for removing man-made pollution at this main U.S. base in Antarctica but improvements to the system are under study.¹⁰⁵

When the trash heap becomes unwieldy it stands out, its overtness sits in stark contrast with waste management processes at home that work to obscure the extent of communal waste. Incineration is a hasty way to remove this issue from sight – out of sight, out of mind. In her paper *The Ethnography of Infrastructure*, sociologist Susan Leigh Star observes that infrastructure “becomes visible upon breakdown.”¹⁰⁶ It is relational and embedded in systems of human behaviour – part of the often-invisible backdrop that supports social structures.¹⁰⁷

Myra J. Hird and Alexander Zahara suggest that the introduction of waste into occupied territories, such as this one, is a colonial act that results in long-term anthropogenic consequences on environments and people. They assert that:

104. Howard Singerman, “Sherrie Levine’s Art History,” *October* 101, no. 1 (Summer 2002), 103, <https://www.jstor.org/stable/779195>.

105. Associated Press, *Antarctic Pollution Story: The New Wasteland*, Associated Press Wirephoto, 1971.

106. Susan Leigh Star, “The Ethnography of Infrastructure,” *American Behavioural Scientist* 43, no. 3 (November 1999): 382, <https://doi.org/10.1177/0027649921955326>.

107. Star, “The Ethnography of Infrastructure,” 380.

[p]oliticoeconomic practices characteristic of industrial capitalism and geopolitical processes stretching back through deep time whether in the form of mining, nuclear, industrial, hazardous, sewage, or municipal, and whether it is dumped, landfilled, incinerated, or buried deep underground, waste constitutes perhaps the most abundant and enduring trace of the human for epochs to come.¹⁰⁸

In a polar environment like Antarctica, where there is nowhere to hide trash – it must sit atop the frozen ground. After decades of incineration and ocean dumping, the Madrid Protocol established key frameworks for waste management and “inscribe[d] the emerging environmental norms of the mid to late 1980s upon Antarctica.”¹⁰⁹ However, contemporary environmental scholars suggest that the Madrid Protocol’s design is fraught with contradictions.¹¹⁰ Recent studies on the future of the Antarctic environment have determined that the existing system of governance “is insufficient to meet the obligations set out under the Madrid Protocol, let alone able to address the challenges facing a warmer and busier Antarctic in the twenty-first century and beyond.”¹¹¹ With no limit to the extent of human traffic, the Protocol’s directives have become more aspirational than plausible.

In both *Floated out to Sea* and *Whiteout*, press photographs are revealed in their pre-publication state, where mark-ups that are intended to remain hidden are exposed. The revealed whiteout mark-ups are the infrastructure of image editing made visible. Mark-making imposed on the surface of the photograph draws one’s attention to the systems of decision-making that are intended to remain behind the scenes. The difference between the photographer and the layout editor’s perspectives are brought into tension, and the notion of documentary is thereby brought into question. My reproduction of these photographs as partly obscured (overlapped) is yet another editing/cropping function, wherein portions of a photograph that do not reveal human occupation are interrupted by, or intersected by, photographs that do.

108. Myra J. Hird and Alexander Zahara, “The Arctic Wastes,” in *Anthropocene Feminisms*, ed. Richard Grusin (Minneapolis: University of Minnesota Press, 2017), 123.

109. Alan D. Hemmings, Klaus Dodds and Peder Roberts, “Introduction: The politics of Antarctica,” *Handbook on the Politics of Antarctica* (Cheltenham UK: Edward Elgar Publishing, 2017), 9.

110. Tina Tin et al., eds., *Antarctic Futures*, vii.

111. Tina Tin et al., eds., *Antarctic Futures*, 341.

The reproductions of *Floated out to Sea* and *Whiteout* float on a digital ground that is as absent as it is present. The photographs are physically in contact with one another – slight shadows are cast from the paper's edge, but they sit on no visible surface. The use of digital #FFFFFF, a white with no tint, refers to the screen, the space of Photoshop, and the scenario of duplication. Once printed, it then becomes the white of the ink-jet paper, and leaves the photographs as objects suspended outside any particular location referent beyond that of reproduction.

Canada: Arctic Parallels

The tactics used in the source photographs for *Floated out to Sea* and *Whiteout* engage in familiar strategies of blanking out and filling in. Land is emptied and occupied when needed, creating contradictory mythologies of wilderness and occupation in the service of geopolitics – a means of “using geographical frames to make sense of world affairs,” and the expression of “territorial interests and power of the state” in relation to geographical environment.¹¹² As someone born in Canada, I am no stranger to encountering narratives of polar beauty – a trope used to inspire awe while promoting and sustaining colonial ideologies. Canadian national identity has a complex and mythologized relationship to notions of wilderness and the circumpolar north. Entrenched national narratives seek to assert protection for “pristine” far northern environments, engage in resource extraction, and assimilate indigenous populations all in the same gesture. Siobhan Angus suggests that Canadian conceptions of nationhood are rooted in geographic exceptionalism: “[t]hrough recourse to the mythology of an ancient and unchanging nature, wilderness negates an understanding of land as historically produced and obscures the human and environmental costs of industrial development.”¹¹³ Such conceptions of wilderness have been embedded in Canadian visual culture and art history, at the expense of both land and people.

112. Klaus Dodds, *Geopolitics: A Very Short Introduction*, 3rd ed., vol. 171 (Oxford: Oxford University Press, 2019), np.

113. Siobhan Angus, “El Dorado in the White Pines: Representations of Wilderness on an Industrial Frontier,” *Radical History Review* 2018, no. 132 (October 2018), 47, <https://doi.org/10.1215/01636545-6942391>.

Landscape, as W.J.T. Mitchell has observed, is “both a signifier and a signified, both a real place and its simulacrum, both a package and a commodity inside the package.”¹¹⁴ Landscape is a fabricated instrument of power resulting from specific power relationships in a given cultural context.¹¹⁵ In his analysis of land and landscape in Canadian art history, John O’Brian asserts that:

The defining of Canada by way of northernness has had remarkable longevity. It dates from the earliest days of colonial contact. In the twentieth century it was advanced by the visual representations of Thomson, the Group of Seven, Emily Carr, and other artists, and then extended well beyond the lives of these artists and, in diluted form, on to the present.¹¹⁶

The Group of Seven’s particular vision of northernness as pure and unspoiled wilderness quickly became tied to national identity and commodified in its service. As Peter White notes, the Group of Seven were active when Canada was a “relatively new nation-state that was still very much attached through its imperial connection to Britain, Canada was actively in need of signs and symbols with which to assert a distinctive national identity.”¹¹⁷ The group was formalized as a collective in 1920 and used the subjectivity of expressionism to emphasize the distinct character of Canadian topographies and sub-arctic territories – and thus, as a means to distinguish their images from the sceneries and traditions British landscape painting.

A short time later, Canadian identity-building was again mobilized through myths and images of the north, as Canada sought to assert Arctic sovereignty during the Cold War. A series of infrastructure projects brought the American military across the border during the early to mid-twentieth century, resulting in the increased global visibility of Canada’s northern territories. During the Second World War, the United States built a series of airbases in the Canadian Arctic

114. W.J.T. Mitchell, *Landscape and Power*, 2nd ed. (Chicago: University of Chicago Press, 2002), 2.

115. Mitchell, *Landscape and Power*, 2.

116. John O’Brian and Peter White, “Wild Art History,” in *Beyond Wilderness: The Group of Seven, Canadian Identity and Contemporary Art*, edited by John O’Brian and Peter White (Montreal: McGill-Queen’s University Press, 2007), 22.

117. Peter White, “Out of the Woods,” in *Beyond Wilderness: The Group of Seven, Canadian Identity and Contemporary Art*, ed. John O’Brian and Peter White (Montreal: McGill-Queen’s University Press, 2007), 14.

for the purpose of refueling warplanes traveling to Europe. And, shortly afterwards, the Distant Early Warning (DEW) line was established, a radar missile detection system following the 69th Parallel from Alaska to Greenland, traversing across Canadian territory. Sarah Parsons suggests that during the 1950s, the “Canadian concern with state sovereignty amplified to hysterical levels, which can best be understood in the context of Cold War paranoia.”¹¹⁸ As a result, the Canadian government was anxious to establish recognized sovereignty in the far north, and maintain control of its international image. Notably, in March of 1956, Canada’s Governor General, Vincent Massey, undertook a highly publicized seventeen-day tour of the far north featuring a symbolic flight over the North Pole.¹¹⁹

A fundamental difference between colonization in the southern and northern Polar regions is the presence of indigenous populations. Parsons asserts that in Canada “the settler colonial state enlisted photography to highlight the visual presence of Inuit people as a means to establish sovereignty claims in the High Arctic during the global Cold War.”¹²⁰ Not only did the Canadian government document Inuit settlements, they engaged in a programme of forced relocation, moving Inuit families as far as 1500 km north of their traditional territories.¹²¹ Abandoned in unfamiliar and difficult environmental conditions, encampments at Resolute Bay and Grise Fiord were imposed in order to stake claim to the northern side of the Northwest passage.

In her essay *Settler Colonialism’s Container Technologies: Photographing Crates in the Canadian Arctic (1926-1953)*, Gabrielle Moser investigates the visual history of shipping crates in far northern settlements, and the legacy of their cultural and material effect. Like the stores of supplies pictured in photographs of Antarctic bases, settler-colonial outposts in the north required subsistence goods to be shipped in. Moser points out that “the crates’ materiality alerts one to the networks of trade that kept Canadian colonial bureaucracy in the North running.”¹²²

118. Sarah Parsons, “‘Planted there like human flags’: Photographs of Inuit in the High Arctic and Cold War Anxiety, 1951 -1956,” unpublished conference publication, last modified 2021, PDF, 2.

119. Parsons. “‘Planted there like human flags’,” 18.

120. Parsons, “‘Planted there like human flags’,” 4.

121. Parsons, “‘Planted there like human flags’,” 16.

122. Gabrielle Moser, “Settler Colonialism’s Container Technologies: Photographing Crates in the Canadian Arctic (1926–1953),” *Settler Colonial Studies* (February 2021): 8, <https://doi.org/10.1080/2201473X.2021.1884427>.

She observes crates as a consistent feature in photographs of the *Department of Indian Affairs and Northern Development* collections at the Canadian National Library and Archives. Crates and their contents import infrastructures and ways of life. They perform as material evidence of colonial occupation, which continues to suppress Inuit ways of life and promote Canadian sovereignty.

Canada's history of nation-building through narratives of wilderness and accompanying colonial violence is being called into question by new generations of citizens and artists. Indigenous artists, such as Inuit filmmaker Zacharias Kunuk, are contributing critical work to the contemporary canon. Kunuk is a founder of the revolutionary Isuma Productions and Uvagut TV, which use broadcast to mobilize Inuit culture and language nationally and globally. Kunuk has produced work in film and video since the 1980s. He describes these time-based media as a decolonial tool, aligned with the Inuit traditions of storytelling and oral history.¹²³

Inuit storytelling has a long tradition of describing the natural environment through “tacit knowledge embodied in life experiences,” an approach observed in Kunuk and Ian Mauro’s film *Inuit Knowledge and Climate Change* (2010).¹²⁴ The documentary provides key insights into settler-colonial forces in the Arctic – both those that originate in place and at a distance through changing earth systems. The first Inuktitut language film on the topic of climate change, it demonstrates the effects of global warming through the testimony of Inuit elders and hunters. As such, it is an exploration of the ecological and social impacts of the climate crisis from a collaborative community perspective. In 2020, reports published by the Inuit Circumpolar Council continue to echo issues raised within the film, citing that changing climate continues to “...impact every facet of life, including food, food security and food sovereignty, including culture, language, social issues and both traditional and contemporary economic activities.”¹²⁵

123. Zacharias Kunuk, “Biography,” Isuma TV, accessed September 17, 2022, <http://www.isuma.tv/members/zacharias-kunuk>.

124. Julie Cruikshank, *Do Glaciers Listen?: Local Knowledge, Colonial Encounters, and Social Imagination* (Vancouver: UBC Press, 2005), 11.

125. Carolina Beh, et al., “Policy Paper: Climate Change and Inuit Food Sovereignty,” Inuit Circumpolar Council Alaska (2022), 1, <https://www.inuitcircumpolae.com/project/policy-paper-climate-change-and-inuit-food-sovereignty/>.

This work highlights the continued tension between First Nations in the north and the settler government in the south.



Fig. 34 Zacharias Kunuk and Ian Mauro, *Inuit Knowledge and Climate Change*, 2010 (Film still)

Anthropocene

From the Greek words for *human* (anthropos) and *new* (cene), the term *Anthropocene* describes the contemporary global environment as one governed by human actions. The term was popularized in 2000 by Paul Crutzen and Eugene Stoermer, who proposed Anthropocene as the name of a new geological epoch triggered by the nature and scale of human activities that

“gradually grew into a significant geological, morphological force” during the Holocene.¹²⁶ In the words of geologist Jill S. Schneiderman, it was devised to denote that humans are “acting in ways that are out of sync with the pace of geological time” and have thus become the driving force behind most global change.¹²⁷ In order to be recognised as a formal “geological time term,” Anthropocene needs to be scientifically justified with the discovery of a significant and distinct geological signal “produced in strata now forming.”¹²⁸

Earth Scientists are accustomed to operating in relationship to deep time. Schneiderman describes the long view of the “geologic time scale,” a framework within which all research is conducted, and events made relative:

Geologic time cannot be grasped in units of measure for human history: months, years, decades, centuries, millennia are too short for geologic time. Instead, geologic time is measured in eons, eras, periods, epochs, and ages – divisions of billions of years into millions, hundreds of thousands, and thousands.¹²⁹

The question of whether to formally adopt the Anthropocene as an epoch in the geological time scale has been one of serious debate. For the ten years between 2009 and 2019, the Anthropocene Working Group (AWG), of the of the International Union of Geological Sciences (IUGS) was tasked with examining the Anthropocene’s validity, by seeking out evidence of its origins in “a precisely defined chronostratigraphic and geochronological unit with a globally synchronous base and inception.”¹³⁰ Schneiderman summarizes a series of important determinations published by the AWG in 2016:

126. Paul J. Crutzen and Eugene F. Stoermer, “The ‘Anthropocene,’” *IGBP Global Change Newsletter* 41, no. 1 (May 2000): 17-18.

127. Jill S. Schneiderman, “The Anthropocene Controversy,” in *Anthropocene Feminisms*, ed. Richard Grusin (Minneapolis: University of Minnesota Press, 2017), 184.

128. Working Group on the Anthropocene, “Results of Binding Vote by AWG 21st May 2019,” Subcommittee on Quaternary Stratigraphy, May 21, 2019, np, <http://quaternary.stratigraphy.org/working-groups/anthropocene/>.

129. Schneiderman, “The Anthropocene Controversy,” 180.

130. Jan Zalasiewicz et al., “The Anthropocene: Comparing Its Meaning in Geology (Chronostratigraphy) with Conceptual Approaches Arising in Other Disciplines,” *Earth’s Future* 9, no. 3 (2021): 1, <https://doi.org/10.1029/2020EF001896>.

...the majority of members of the AWG have voted that the Anthropocene is stratigraphically real and it should be formalized as an epoch of geological time. Most members of the AWG would take the time period around 1950, shortly after scientists exploded the first atomic bomb, as the beginning of the epoch and would expect plutonium fallout to be a primary signal of the onset of the Anthropocene.¹³¹

A short time later, in 2019, the AWG held a vote – resulting in the formal adoption of the Anthropocene as a “chrono-stratigraphic unit” originating in the stratigraphic signals of the mid-twentieth century.¹³² This is a determination that will radically change the nature of research in the field.

Geo-chemist Eric Wolff asserts that “[a]ll other epochs except the Holocene were defined only after they were complete, and their dominant characteristics were clear.”¹³³ As such, the defining qualities of the Anthropocene must be “...considered from the viewpoint of a geologist viewing sequences thousands or millions of years in the future” in order to be consistent with precursor classifications.¹³⁴ Present efforts to define the start of the Anthropocene from within its early stages brings the discipline into unfamiliar territory – necessitating a speculative geology, which asks scientists accustomed to looking backwards to look forwards.

Initially, Crutzen and Stoermer proposed that the Anthropocene might have begun with the increased fossil fuel emissions of the Industrial Revolution.¹³⁵ However, continued deliberation by the AWG and the broader Earth Sciences community advises that it is more accurately tied to the “Great Acceleration” in human activity arising around 1950, resulting in the dramatic rise in industrialization and globalization, a process that they argue has “fundamentally modified physical, chemical, and biological signals in geological archives” beyond dispute.¹³⁶

131. Schneiderman, “The Anthropocene Controversy,” 190.

132. Working Group on the Anthropocene, “Results of Binding Vote,” np.

133. Eric W. Wolff, “Ice Sheets and the Anthropocene,” in *A Stratigraphical Basis for the Anthropocene*, ed. Jan Zalasiewicz et al. (London: Geological Society, 2014), 261.

134. Wolff, “Ice Sheets and the Anthropocene,” 255.

135. Crutzen and Stoermer, “The ‘Anthropocene’,” 17.

136. Zalasiewicz et al., “The Anthropocene,” 1.

Of primary significance is the scale and extent of nuclear testing that proliferated at the beginning of the Great Acceleration. In a recent article published by the *Bulletin of the Atomic Scientists*, AWG members and their colleagues make an argument that the evidence of the Anthropocene's globally synchronous origin is in the radioactive particles resulting from nuclear bombing and tests that took place between 1945 and the early 1960s.¹³⁷ These events, which signal the beginning of the nuclear age, have created an "extremely distinctive radiogenic signature – a unique pattern of radioactive isotopes captured in the layers of the planet's marine and lake sediments, rock, and glacial ice," which can serve as a clear indicator.¹³⁸

The use of nuclear technology by the Americans and their allies increased exponentially during this time. On July 16, 1945, the American Military detonated the world's first nuclear bomb at the Trinity Test Site in New Mexico. Less than one month later, the second bomb was exploded over Hiroshima, Japan (August 6, 1945), and the third over Nagasaki (August 9, 1945). By 1956, the first commercial nuclear power plant opened at Calder Hall in northern England.¹³⁹ From its inception, Calder Hall was branded as a hopeful and economical use of nuclear technology. However, its primary purpose would later be revealed to be plutonium production for England's nuclear weapons programme.¹⁴⁰ This was yet another consequence of the quick transition between the Second World War and the Cold War.

The origins of the Anthropocene have now become clear, but many scholars invested in the study of climate change have questioned its nomenclature. Schneiderman stresses that this stems from the inequities of asserting a universal humanity is responsible for the Anthropocene, a premise that does not acknowledge the fact that some groups of humans have had much greater effects on the planet than others.¹⁴¹ In her essay *Indigenizing the Anthropocene*, Métis scholar Zoe Todd asserts that discourses surrounding the Anthropocene tend to dismiss "the complex and

137. Colin N. Waters, et al., "Can nuclear weapons fallout mark the beginning of the Anthropocene Epoch?," *Bulletin of the Atomic Scientists* 71, no. 3 (2015): 47, <https://doi.org/10.1177009634021558137>.

138. Colin N. Waters et. al., "Nuclear Weapons Fallout," 47.

139. Colin N. Waters et. al., "Nuclear Weapons Fallout," 49.

140. Paul Brown, "First nuclear power plant to close," *The Guardian*, 21 March 2003, <https://www.theguardian.com/uk/2003/mar/21/nuclear.world>.

141. Schneiderman, "The Anthropocene Controversy," 184.

paradoxical experiences of diverse people as humans-in-the-world, including the ongoing damage of colonial and imperialist agendas, [which] can be lost when the narrative is collapsed to a universalizing species paradigm.”¹⁴² She argues that not all humans are equally implicated in the forces that drive the Great Acceleration, nor are all humans invited to participate in the Euro-American Western academy’s theorization and response to anthropogenic climate change.¹⁴³ Todd suggests responses to the Anthropocene “cannot be constructed using one philosophical, epistemological, or ontological lens...” and must include diverse decolonial and place-based knowledges.¹⁴⁴ Critiques from outside the geosciences, such as this one, bring critical perspectives to the process of naming and the importance of nuanced definitions.

Notable alternatives to the term *Anthropocene* include Donna Haraway’s Chthulucene and Capitalocene, terms she describes as motifs that help complicate Anthropocene’s etymology and rid the prefix *anthrops* of its exceptionalist power. Both motifs are enmeshed in Haraway’s call to “stay with the trouble” a considered coexistence with the billions of human and other-than-human kin that cohabitate on earth.¹⁴⁵ *Chthulucene* is rooted in the Greek *chthonios*, meaning “of, in, or under the earth and seas,” as well as the Greek *Kanios*, which Haraway defines as a *timeplace* continuum embodying a simultaneous past-future temporality. Together they imply “ongoing multispecies stories and practices of becoming-with in times that remain” precarious.¹⁴⁶ *Capitalocene* implicates global capitalism and its exploitative relational networks of ideologies as a force imposed on human and non-human actors alike.¹⁴⁷

Regardless of the nomenclature used, Haraway suggests that humanity must reconfigure its relationship to the world by building livable futures in pace with both active grief and

142. Zoe Todd, “Indigenizing the Anthropocene,” in *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed. Heather Davis and Etienne Turpin (London: Open Humanities Press, 2014), 244,

143. Todd, “Indigenizing the Anthropocene,” 244.

144. Todd, “Indigenizing the Anthropocene,” 252.

145. Donna Jeanne Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, Experimental Futures: Technological Lives, Scientific Arts, Anthropological Voices (Durham, NC: Duke University Press, 2016), 4.

146. Donna Jeanne Haraway, “Tentacular Thinking: Anthropocene, Capitalocene, Chthulucene,” *E-flux Journal* 75 (September 2016), 11.

147. Haraway, *Staying with the Trouble*, 50.

hopefulness, “learning to live and die well with each other in a thick present.”¹⁴⁸ Despite the term’s imperfection, *Anthropocene* is broadly used and understood across many fields, adopted even by those who question it. Perhaps then, the best course of action might be to urge further critique and more equitable revisions of core definitions. Beyond its chrono-stratigraphic definition, the notion of an Anthropocene has become a “call to re-imagine the human through biology and geology.”¹⁴⁹ As Donna Haraway has said, it acts as a word capable of highlighting “the urgency of human impact on this planet, such that the effects of [humanity] are literally written into the rocks.”¹⁵⁰

Art in the Anthropocene

In their anthology, *Art in the Anthropocene*, Heather Davis and Etienne Turpin assert that art “is central to thinking with and feeling through the Anthropocene.”¹⁵¹ They suggest that:

...attuning [oneself], through poetry, art, and description, to pay attention to other times; developing techniques to begin to think through the limits of ... temporal frameworks, and then thinking beyond them – these are crucial practices; in fact they are matters of survival.¹⁵²

Artworks that engage with ecologies have the capacity to create an affective experience, which facilitates a physical and emotional relationship to environmental phenomena. Creative work that seeks to understand conditions of the Anthropocene is crucial, as Ursula K. Le Guin has suggested, to “save [humanity] from merely stockpiling endless ‘information’ that fails to inform

148. Haraway, *Staying with the Trouble*,” 1.

149. Heather Davis and Etienne Turpin, “Art & Death: Lives Between the Fifth Assessment & the Sixth Extinction,” in *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed. Etienne Turpin and Heather Davis (London: Open Humanities Press, 2014), 6.

150. Martha Kenney and Donna Haraway, “Anthropocene, Capitalocene, Chthulhucene: Donna Haraway in conversation with Martha Kenney,” in *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed. Etienne Turpin and Heather Davis (London: Open Humanities Press, 2015), 259.

151. Davis and Turpin, “Art & Death,” 3.

152. Davis and Turpin, “Art & Death,” 12-13.

our ignorance or our responsibility.”¹⁵³ She asserts that the communicative tools of both science and art are required to ensure multiple pathways to understanding, and a considered search for solutions to the climate crisis.

Artists engaged in practice-based research are uniquely positioned to collaborate with scientists and reach across boundaries of the art / science divide. In 2013, at the suggestion of oceanographer Charles Moore, artist Kelly Jazvac and geologist Patricia Corcoran travelled to Kamilo Beach Hawaii to study a new type of hybrid stone they have since designated Plastiglomerate, a “multi-composite material made hard by agglutination of rock and molten plastic.”¹⁵⁴ Specimens consist of materials including netting, ropes, packaging, and embrittled plastic fragments referred to as “confetti.”¹⁵⁵ Kamilo Beach sits within the North Pacific subtropical gyre, a large system of swirling ocean currents that acts as sink for plastic debris. The North Pacific subtropical gyre also happens to be home to the Great Pacific Garbage Patch. In an article published by The Geological Society of America Moore, Corcoran, and Jazvac suggest “this anthropogenically influenced material has great potential to form a marker horizon of human pollution.”¹⁵⁶ Thanks to the longevity of both the natural and anthropogenic materials included in the composite, Plastiglomerate has the potential to act as an indicator of the Anthropocene alongside the radiogenic signature of mid-twentieth century nuclear events.

In addition to co-authoring articles with her scientific colleagues, Jazvac has integrated Plastiglomerate objects in recent installations. Plastiglomerate specimens act as a productive visual shorthand for unintended anthropogenic effects on the natural world. In her exhibition *Rock Record* (2017), they are displayed as found objects in a salvaged jewelry display case. Within this vitrine they take on a multifaceted visual identity appearing as museological specimens, precious gems, and trendy throw-away products – all at once. The way these objects

153. Ursula K. Le Guin, “Deep in Admiration,” in *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, ed. Anna Lowenhaupt Tsing, Heather Swanson, Elaine Gan, and Nils Bubandt (Minneapolis: University of Minnesota Press, 2017), M16.

154. Patricia L. Corcoran, Charles J. Moore, Kelly Jazvac, “An Anthropogenic Marker Horizon in the Future Rock Record,” *GSA Today* 24, no. 6 (June 2014), 5, doi: 10.1130/GSAT-G198A.1.

155. Corcoran, Moore, and Jazvac, “Anthropogenic Marker Horizon,” 5.

156. Corcoran, Moore, and Jazvac, “Anthropogenic Marker Horizon,” 4.

hover between signifiers emphasises Plastiglomerate as inherently composite, opening up the possibility of readings across disciplines.



Fig. 35 Kelly Jazvac, *Rock Record*, 2017 (detail)

At present, “nowhere on earth can be considered free of plastic.”¹⁵⁷ In her essay *Life and Death in the Anthropocene: A Short History of Plastic*, Heather Davis outlines the swift integration of plastic into daily life shortly after its introduction at the turn of the twentieth century. A cheap alternative to natural materials, Davis describes plastic as both a motivation and consequence for the escalating commodity society emerging after the Second World War:

Plastic can be considered the substrata of advanced capitalism. It reveals [cultural] dependency upon petrochemicals. But its role in [human lives], unlike the more abstract relationship that we have with other oil products, such as gasoline or

157. Heather Davis, “Life and Death in the Anthropocene: A Short History of Plastic,” in *Art in the Anthropocene Encounters Among Aesthetics, Politics, Environments and Epistemologies*, ed. Etienne Turpin and Heather Davis (London: Open Humanities Press, 2015), 350.

electricity, is intimate. We'll use plastics to eat, clothe ourselves, as sex toys, as soothers for our babies.¹⁵⁸

Contemporary bodies are brought into constant relationship with plastic, a factor that is emphasized by the size of Jazvac's *Plastiglomerate* specimens. Each is hand-held in scale, recalling familiar household objects we encounter every day, providing a means by which to imagine the past and future lives of the objects we have consumed and disposed of.



Fig. 36 Katie Paterson, *Vatnajökull (the sound of)*, 2007-8

158. Davis, "Life and Death in the Anthropocene," 349.

Katie Paterson is another artist whose work generates relational experiences to contemporary ecological phenomena by establishing material and bodily encounters. Like Jazvac, she is interested in shared observation of natural objects and events. In 2007, Paterson placed an underwater microphone in the Jokulsarlon lagoon, an outlet of the Vatnajökull glacier in southwest Iceland. The largest glacier in Europe, it covers roughly eight percent of Iceland's landmass. The resulting work, *Vatnajökull (the sound of)*, broadcasts the sound of water pooling via an amplifier and a dedicated mobile phone. In doing so, Paterson generated a direct line to the sound of glacial melt that anyone could telephone (c.2007 – 2008). In the gallery, she placed a white and glowing neon sign reading "+44(0)7757001122." The sign's function as data was primarily informational, providing a means to engage in the immaterial experience of sound unfolding in real time.

The phone call is an intimate yet removed aural encounter enabling listeners to sit and focus on Vatnajökull's ongoing state of change, listening without a means of response. The broadcast serves as a connective thread between listeners who may be very far away, yet still bear witnesses to the circumstances of glacial melt. Hearing the gurgling underwater sounds, callers become aware of competing timescales – the brevity of a phone call and the much longer continuity of the glacier's lifespan intersect. Since Paterson's project ended, Vatnajökull has continued to melt, losing roughly one meter of its thickness annually over the past 15 years.¹⁵⁹ In a recent essay examining the "biography" of glaciers, scholars Elizabeth Leane and Ben Maddison suggest that:

Icebergs, like ice cores, can be thought of as cross-sections of this history; when they split, melt, crack, and overturn, they are, in a sense, fragmenting and liquefying this history; turning it on its head. Yet icebergs are not merely archives of deep time; they have lifetimes of their own, spanning periods not too dissimilar (in the case of large tabular bergs) to those of humans. Tracing their histories evokes an uncanny familiarity amid the strangeness of their incomprehensible bulk.¹⁶⁰

159. Guide to Iceland, "Vatnajökull Glacier Travel Guide," Guide to Iceland, accessed September 15, 2022, <https://guidetoiceland.is/travel-iceland/drive/vatnajokull>.

160. Elizabeth Leane and Ben Maddison, "A Biography of Iceberg B09B," *Australian Humanities Review* 63, no. 1 (November 2018): 112.

Leane and Maddison's analysis of ice brings it into relationship with human time scales, using an approach akin to Paterson's, they suggest we might find equivalences of human experience in the life of a glacier. And, that by considering the life-cycle of an iceberg we might learn something about the cause-and-effect relationship between the human species and a changing climate.¹⁶¹

Since 1978, the US Navy's *National Ice Centre* has used satellites to track all icebergs with an area greater than 20 square nautical miles.¹⁶² Large tabular icebergs that regularly break off the Antarctic continent, for example, are so enormous that they can persist for several decades.¹⁶³ Naming conventions for Antarctic icebergs indicate family lineages – encoded information that relates to their original ice shelf locations, and even suggest parent-child relationships when identifying substantial fractures.¹⁶⁴

Despite their distance from more habitable places, the geographic poles are intimately tied to populous regions, not only through globalized understandings of the world, but through the finite cyclical ecological systems that span the globe. Antarctica has come to occupy a new, or perhaps renewed, position in the popular consciousness. The study of polar ice has become a major focal point for scientific and popular understandings of global warming. Wolff suggests that the status of polar ice sheets is one of the primary signs of climate change. He proposes there are three ice-sheet issues significant enough to be used as indicators of a geological boundary for the Anthropocene: “the occurrence of glacial cycles affecting northern-hemisphere ice sheets; the stability of the Greenland Ice Sheet; and the stability of the Antarctic Ice Sheet.”¹⁶⁵

Images of melting ice have recently captured the collective popular imagination.¹⁶⁶ Jennifer Gabrys has observed that the scientific principle that ice will melt at zero degrees is both modest and rich territory, capable of resonating within a “complex set of global events that are simultaneously bound up with local ecologies” both local and global.¹⁶⁷ Ice loss in the sparsely

161. Leane and Maddison, “A Biography of Iceberg B09B,” 102.

162. Leane and Maddison, “A Biography of Iceberg B09B,” 102.

163. Leane and Maddison, “A Biography of Iceberg B09B,” 102.

164. Leane and Maddison, “A Biography of Iceberg B09B,” 104.

165. Eric W. Wolff “Ice Sheets and the Anthropocene,” 256.

166. Jennifer Gabrys and Kathryn Yousoff, “Arts, Sciences and Climate Change: Practices and Politics at the Threshold,” *Science as Culture* 21, no. 1 (2012): 2.

167. Gabrys and Yousoff, “Arts, Sciences and Climate Change,” 3.

populated Polar regions is a materially evident indicator of climate change, which is intimately tied to the abstract and intangible dialogues of climate change and the data driven world of scientific modeling.

Another example of melted ice in contemporary art is Roni Horn's *Vatnasafn/ Library of Water* (2007 - ongoing). In it, she sets up a space for observation, asking you to sit with and within water. Located in the former municipal library of Stykkishólmur in Iceland, the permanent installation overlooks the sea. Twenty-four glass columns fill the room, running floor to ceiling. Each contains water collected from a different Icelandic glacier. At least one of these glaciers no longer exists. The columns shift in relation to the light, weather, and the presence or absence of people in the space – they become bodies, bodies of water, test tubes, and ice cores.



Fig. 37 Roni Horn, *Vatnasafn/ Library of water*, 2007 - Ongoing

Horn has stated, “I chose to develop this piece aesthetically so that the physical installation has experiential qualities that are meaningful in themselves.”¹⁶⁸ This work asks you to move around things – through columns of water that take on meaning through their proximity as a physical collection. In her text *Making Being Here Enough*, Horn elaborates on this notion, of letting things be:

I don’t want to read. I don’t want to write. I don’t want to do anything but be here. Doing something will take me away from being here. I want to make being here enough. Maybe it’s already enough. I won’t have to invent enough. I’ll be here and I won’t do anything and this place will be here, but I won’t do anything to it. I’ll just let it be here.¹⁶⁹

Anna Lowenhaupt Tsing’s notion of *noticing* in the Anthropocene is much like Horn’s notion of *making being here enough*. In the anthology *Arts of Living on a Damaged Planet*, Tsing and her co-editors (Heather Swanson, Elaine Gan, and Nils Bubandt) call for humanity to humble themselves and reflect, reasoning that “...living in a time of planetary catastrophe begins with a practice at once humble and difficult: noticing the world around us.”¹⁷⁰ Tsing et al. propose an ethics of durational looking, sustained observation, and returning to look again at what might have been missed. They argue that observation, and the experience of the time-based connection that follows, is a key component of sympathetically being in the world – and, perhaps, the answer to living on a damaged planet.

168. Julie Ault and Roni Horn, *Roni Horn: Everything Was Sleeping as If the Universe Were a Mistake* (Barcelona: Fundació Joan Miró, 2014), 127.

169. Roni Horn, “Making Being Here Enough,” in *Vatnasafn / Library of water* (London: Artangel, 2009), 155.

170. Anna Lowenhaupt Tsing, Nils Bubandt, Elaine Gan, and Heather Anne Swanson, “Introduction: Bodies Tumbled into Bodies,” in *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene* (Minneapolis: University of Minnesota Press, 2017), M7.

Drifts and Lines: Revisioning

There are many aerial photographs of Antarctic environments that consist solely of landforms. These might only be legible thanks to captions, or to a few select specialists capable of identifying ice and rock formations. In an image like the one below, the landscape can seem to slip in and out of distinguishability.



Fig. 38 Kristie MacDonald, Source photograph for *Drifts and Lines*, 2018

This photograph functions as the source material for my work *Drifts and Lines* (2018). I engage with this image as a means to work through the anonymity of the location pictured. In a play on the uncertainty of its scale and perspective, and my inability to orient myself within the image, I engage in a process of seamless virtual collage, verging on forgery. By duplicating, cutting, pasting, and hiding the edges of my own digital artifacts within the photographed landscape, mountain peaks and snow drifts are repeated and extended – reappearing throughout the image, they make the landscape subtly impossible. Gestures occur in the process of photographic editing that undoes photography – as I rearrange pixels and portions of the image, it bends and breaks. Printed on cotton fabric, the pliability of the digital collage carries through as a physical quality of the work.

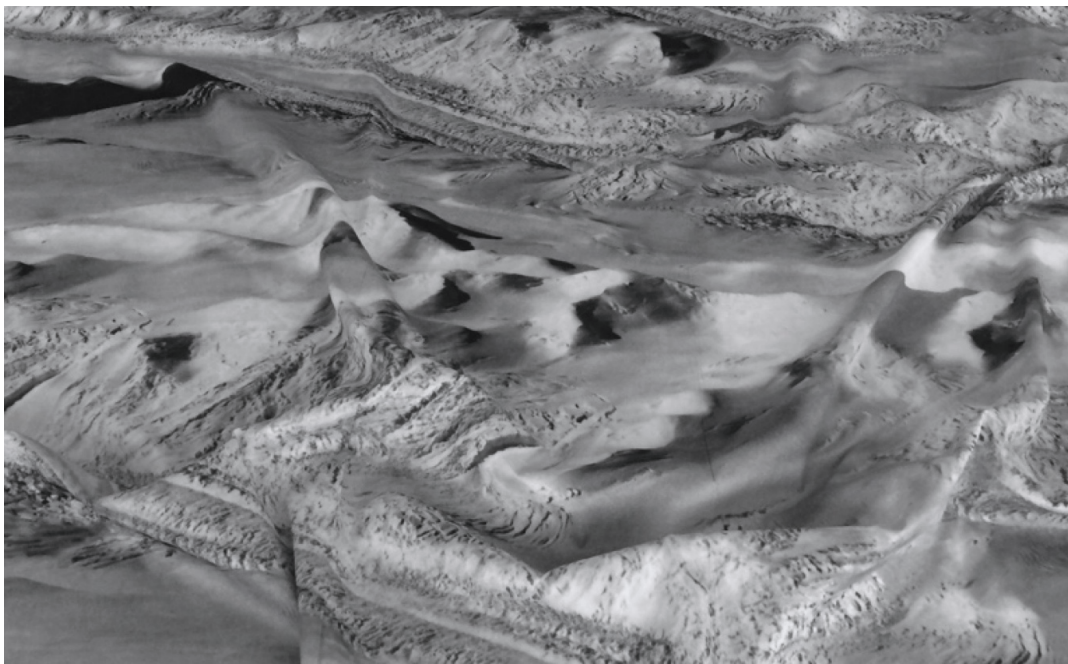


Fig. 39 Kristie MacDonald, *Drifts and Lines*, 2018 (installation view)

Fig. 40 Kristie MacDonald, *Drifts and Lines*, 2018 (detail)

Photographer Connie Samaras' *Dome Interior* (2005) engages in a related gesture of digital collage. Like myself, she works to smooth over the seams of combined photographic fragments, resulting in an image that benefits from close inspection and induces a kind of double-take when the trickery becomes apparent to a viewer. Samaras spent time photographing the South Pole during her tenure as a fellow of the *Antarctic Artists and Writers Program* (AAWP). However, *Dome Interior* is not concerned with documentary recording. Glasberg has described this work as having a “post-heroic positioning that implicates the camera in the human-generated scenes it depicts—but also frees it.”¹⁷¹ In her subtle digital manipulation of the photographed architecture, artificial geometries move outwards from the center of the image. A close look at the center of the work reveals a symmetrical doubling. In Photoshop parlance a *horizontal flip* action brings the content from the right side of the image over to the left. All lines extend outward from the centre, alerting the viewer to an obvious photographic manipulation.



Fig. 41 Connie Samaras, *Dome Interior*, 2005

171. Elana Glasberg, “‘Living Ice’: Rediscovery of the Poles in an Era of Climate Crisis,” *Women's Studies Quarterly* 39, no. 3/4 (Fall/Winter 2011), 213, <https://doi.org/10.1353/wsqs.2011.0072>.

The dome pictured was a 1970s addition to South Pole Station. In this image, the once-utopian icon of Buckminster Fuller’s geodesic dome sits submerged in the ice, soon to be abandoned for new construction. Two rows of red sleeping quarters are mirrored, the hard edges of their blocky construction draws viewers in toward the repeating triangular structure of the dome. Both the dome and prefabricated sleeping quarters are repetitions (or copies) in reality, as well as in the modified image. It is the ice formations and snow drifts on the steps and eaves that act as cues the image has been modified – as forms that aren’t naturally duplicated. Samaras’s use of symmetrical geometry in *Dome Interior* emphasizes the real-world strangeness of the dome through the fabricated strangeness of the digitally altered image.

Glasberg refers to Samara’s work as “impossible seeing,” a turn of phrase I like very much for its implications of bringing the illusory into focus. In *Drifts and Lines*, I too generate the impossible in order to unpack relationships to place. While Samaras uses hard-edged boundaries in the content of her photograph as the basis of her repetition, my interventions are meandering. I invent new topographies, and take greater liberties with reality. The fictitious portions of *Drifts and Lines* play on the existing repetitions within the landscape – turning singular or isolated details into motifs that undulate and extend. The image drapes onto the floor where the fabric substrate creates peaks that mirror those pictured. Extending from the wall onto the floor, the horizon is suggested within an image that may not have one.

In *Drifts and Lines* the environment pictured is destabilized, put into motion during the act of digital editing. It taps into the reality that Antarctica was never really the static unaffected place humans have so often imagined it to be. The naturally fluid Antarctic Ice Sheet was never “a fixed feature of the landscape, but a dynamic system of moving ice streams that has been in equilibrium in the current interglacial period.”¹⁷² Even the place marker which indicates ninety degrees south is pushed roughly ten metres annually towards the sea, before being picked up and ceremoniously walked back each year.¹⁷³

172. Tim Stephens, “The Antarctic Treaty System and the Anthropocene,” *The Polar Journal* 8, no. 1 (July 2018): 32, <https://doi.org/10.1080/2154896X.2018.1468630>.

173. David W.H. Walton, “Global Science at the End of the World,” In *Ice Lab: New Architecture and Science in Antarctica*, edited by Sandra Ross (London: The British Council 2013), Apple Books.

A literary parallel to the photographic iteration of “impossible seeing” can be found in Ursula K. Le Guin’s short story *Sur*. Le Guin’s speculative feminist revision of polar exploration recounts the journey of a group of South American women who reach the South Pole two years before Amundsen. Unconcerned with heroic recognition, the protagonists see no point in publicizing the event and resolve to keep their expedition secret. Glasberg makes the important observation that *Sur* “presents the possibility of non-European women’s prior claim to historical knowledge, considering them as actors in history even when they do not appear recognizable” in the writing of that history.¹⁷⁴ Le Guin’s speculative history is asserted without adhering to the patriarchal mode of historiographic claim-staking it critiques. Unpublicized in the fictional world of Le Guin’s female protagonists, their experiences remain no less real, and no less valid.

Le Guin writes of “dubious capes and suppositious islands” inventing her own image of a place she hasn’t encountered. First published in *The New Yorker* on February 1, 1982, the story stylistically mimics the first-person account of an explorer’s journal. It was published without an explanatory preface – leading some readers to mistake fiction for fact. Some regard the circumstances of this publication as a hoax – making both *Sur*’s content and delivery instances of historical manipulation.

The dualities of presence and absence, temporary and permanent, documented and undocumented – highlighted by Le Guin in *Sur* are all central to the many discourses surrounding Antarctica as a supranational space. Humans are there, and not there, photographs show and don’t show. Like Le Guin, I am interested in generating images that reframe the history of Antarctica from various speculative vantage points.

Sur’s unnamed narrator, enamoured by the idea of Antarctica, wishes “to see – no more, no less.”¹⁷⁵ After a long journey *Sur*’s protagonists finally reach the South Pole. Upon arrival, the women build an ephemeral camp, rejecting the imported architecture of the era’s actual explorers

174. Glasberg, *Antarctica as Cultural Critique*, 20.

175. Ursula K. Le Guin. “Sur,” in *The Compass Rose: Short Stories* (New York: Harper & Row, 1982), 257.

– particularly Scott’s infamous wood and canvas hut, which still marks the landscape over a century later. *Sur*’s narrator observes:

Nothing of any kind marked the dreary whiteness. We discussed leaving some kind of mark or monument, a snow cairn, a tent pole and a flag; but there seemed no particular reason to do so... we left no footprints, even.¹⁷⁶

Sur upsets the expectation that humans (namely the heroic male explorer) must effect a place through permanent or public historization, which tie accomplishment to ownership, notoriety, and monument. Glasberg suggests that *Sur* is “a meditation on the disciplinary limits of historiography for feminism.”¹⁷⁷ The woman’s refusal to leave evidence, not even footprints, is an “intervention into the rational linearity of the mode of history.”¹⁷⁸ A refusal to participate in historiography that relies on singular prestige, even in fiction.

At the end of the story, a woman named Teresa, unknowingly pregnant when they set out, goes into labour at the coastal base camp as they prepare for their journey home. With the assistance of the other women on the expedition, and thanks to the collective knowledge of the mothers and grandmothers around her, she gives birth to a baby girl.¹⁷⁹ In this moment, Le Guin wholeheartedly subverts the long-held notion that women were too fragile to handle the Antarctic environment.

In the late 1970s, just before *Sur* was published, the Argentinian and Chilean government flew pregnant women to Antarctica so that they could give birth to “Antarctic children.”¹⁸⁰ Whether or not Le Guin knew of these events I cannot say, but it is an uneasy instance of fiction and reality mirroring one another. Women have had to fight to overcome sexist assumptions about their capacity to participate in science, and even daily life, on Antarctica. But, as Klaus Dodds describes, they have also been used symbolically and physically to colonize the Antarctic:

176. Le Guin, “*Sur*,” 257.

177. Glasberg, *Antarctica as Cultural Critique*, 41.

178. Glasberg, *Antarctica as Cultural Critique*, 41.

179. Le Guin, “*Sur*,” 272

180. Klaus Dodds, “Settling and Unsettling Antarctica,” *Signs: Journal of Women in Culture and Society* 34, no. 3 (Spring 2009): 508.

“Women and their children were thus used to promote national awareness of territorial polar claims. While it was considered appropriate by the then-military regimes for women to come to the Antarctic to give birth, it was not deemed necessary for other women to perform as scientists in their respective bases. Both Chile and Argentina have developed human colonies in the Antarctic Peninsula that include women and children in order to maintain a physical presence. In other words, both men and women have performed gendered service to states.”¹⁸¹

While women were not architects of the colonizing apparatus, they were invoked in name as part of territorial appropriation.¹⁸² Territories and landmarks across the continent were named after female heads of state and the wives of male explorers – Marie Byrd Land, Queen Mary Land, Mount Caroline Mikkelsen.¹⁸³

The history of Antarctica still remains dominated by the accounts of men.¹⁸⁴ Despite this, as Emma Shortis has asserted, women have been present in sub-Antarctica since the 1770s, at which point they were only occasionally permitted to travel as the companions of male explorers and industrialists.¹⁸⁵ However, it was as late as 1935 when Caroline Mikkelsen, who accompanied her husband on a Norwegian whaling expedition, would be the first woman to set foot on the continent.¹⁸⁶ And it would not be until 1974 that women were first “permitted” to overwinter in a professional scientific capacity.¹⁸⁷

181. Dodds, “Settling and Unsettling Antarctica,” 508.

182. Dodds, “Settling and Unsettling Antarctica,” 506.

183. Dodds, “Settling and Unsettling Antarctica,” 506.

184. Shortis, “Women and the Environmental Protection of Antarctica,” 247.

185. Shortis, “Women and the environmental protection of Antarctica,” 252.

186. Shortis, “Women and the environmental protection of Antarctica,” 251.

187. Shortis, “Women and the environmental protection of Antarctica,” 251.

Conclusion:

Near Term Future / Near Term Past



Fig. 42 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (detail)



Fig. 43 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (detail)

Atoms for Peace and War

Pole Station Antarctica: December 15th 8am 1956 (2012 – ongoing), contains numerous envelopes mailed using an American “Atoms for Peace” postage stamp. Moving through the collection it reappears again and again – with an OPERATION DEEP FREEZE cancellation imprinted across it. At the center of the stamp, pathways of atomic energy encircle two strategically positioned globes. On the left, the earth is positioned so that North America and the 69th Parallel (location of the newly designed DEW line) are featured prominently. On the right, Russia (formerly the Soviet Union) sits directly opposite. The iconography of this postage stamp illustrates a tenuous but inescapable link between western and communist superpowers during the Cold War. A quote from President Dwight D. Eisenhower’s 1953 address to the UN General Assembly, which would come to be known as his *Atoms for Peace* speech, runs around the border of the stamp: “To find the way by which the ... inventiveness of man shall ... be consecrated to his life.”¹⁸⁸ These postage stamps are propaganda printed on pale blue paper – a means of rebranding nuclear technology after the Second World War as a scientific innovation for good.

Sometimes, the Atoms for Peace stamp sits solitary on the face of an envelope. At other times, it is accompanied by embellishments known as postal “cachet,” a decorative inscription made by rubber stamp or offset printing processes. One envelope, mailed to William Hoover of Tazwell Virginia, carries a brightly coloured cachet commemorating Washington DC’s 1950 sesquicentennial anniversary as the American capitol. It features an image of the capitol building and a dramatically enlarged illustration of the statue of Freedom that sits atop its central dome. Freedom, in this instance, takes the form of a neoclassical female figure resembling a Roman goddess. She is armed and militant, implying freedom comes from readiness for war.¹⁸⁹ The cachet and the stamp together present a complex self-made image of American military authority and global geopolitical dominance. Far from neutral, this envelope has carried propaganda

188. Dwight D. Eisenhower, “Atoms for Peace” (Speech, New York, NY, December 8, 1953), International Atomic Energy Agency, <https://www.iaea.org/about/history/atoms-for-peace-speech>.

189. Architect of the Capitol, “Statue of Freedom,” Explore the Capitol Campus Art, accessed September 17, 2022, <https://www.aoc.gov/explore-capitol-campus/art/statue-freedom>.

between national space and the burgeoning Antarctic colonial outpost. This object refers to the start of the Great Acceleration in so many ways – its dates of origin (1950 and 1956 respectively), the aesthetics of the United States identity-building during the Cold War, the International Geophysical Year (IGY) expedition as a means of territory making, and the global nuclear programmes that were coming into being as a result of the burgeoning *Atoms for Peace* programme.

Eisenhower's *Atoms for Peace* speech was a component of "Operation Candor," a propagandistic Cold War public relations campaign intended to alleviate widespread fear generated by the bombings of Hiroshima and Nagasaki, as well as the escalating nuclear arms race between the United States and Russia. At the same time, it was principally motivated by a desire to maintain the American monopoly over nuclear technology. The speech was broadcast globally and translated into thirty-four languages for rebroadcast within half an hour – intended to have wide-reaching effects on popular perceptions of the United States.¹⁹⁰

Eisenhower proposed that the United States would create a fuel bank of fissionable material for their international allies, which could be accessed for peaceful purposes including energy production, agriculture, and medicine.¹⁹¹ This system of controlled distribution was proposed as a means to reduce nuclear weapons production, which alongside an international regulatory body for the monitoring of global nuclear activity, would result in technological innovation for peaceful pursuits. Advocates of the resulting *Atoms for Peace* programme pushed to advance a positive view of nuclear technology, promoting the United States as a heroic harbinger of peace, a view that historian Mara Droган suggests led to "...fanciful predictions about the role of nuclear technology in the near future" and resulted in an intense period of nuclear testing and development.¹⁹²

In October of 1956, the International Atomic Energy Agency (IAEA) was established. Fulfilling the role of Eisenhower's proposed regulatory body, it was charged with monitoring the

190. Mara Droган, "The Nuclear Imperative: *Atoms for Peace* and the Development of U.S. Policy on Exporting Nuclear Power, 1953-1955," *Diplomatic History* 40, no. 5 (2016): 951.

191. Droган, "The Nuclear Imperative," 948.

192. Droган, "The Nuclear Imperative," 959.

dissemination of nuclear resources and technology.¹⁹³ In his analysis of the Atoms for Peace programme, political scientist Matthew Fuhrmann suggests that encouraging the diffusion of nuclear technology through the IAEA paradoxically undermines its core mission – to safeguard against nuclear warfare.¹⁹⁴ Similarly, Drogan has proposed that maintaining a balance between utopianism and realism was a core struggle during the Atoms for Peace era and the development of United States nuclear policy.¹⁹⁵ She asserts that, above all, the United States was committed to maintaining its advantage, regardless of economic cost or matters of health and safety.¹⁹⁶ While promising peace, the United States continued to drop bombs on the Marshall Islands in the central Pacific Ocean until 1958. Far from secret, these tests were a manufactured Cold War spectacle, intended to advertise military power, performed at the expense of the Marshallese people and their environment.¹⁹⁷

The detonation of nuclear bombs by the American military has long-lasting implications of local and global significance. The lasting radiogenic signature of these tests remains entangled with the wider world in ice, soil, and air as the Anthropocene progresses. Karen Barad has described the atomic age as one that emerged with great force of ideological and scientific change:

...[m]atter fell from grace during the twentieth century. It became mortal. Very soon after that it was murdered, exploded at its core, torn to shreds, blown to smithereens. The smallest of smallest bits, the heart of an atom, was broken apart with a violence that made the earth and the gods quake.¹⁹⁸

The results of nuclear testing, as well as its social and physical architecture, are still emerging. In her essay *After the End of the World: Entangled Nuclear Colonialisms, Matters of Force, and the Material Force of Justice* Karen Barad illuminates the devastating history of destructive nuclear

193. The Editors of Encyclopaedia Britannica, “International Atomic Energy Agency.” *Encyclopedia Britannica*, September 30, 2013, <https://www.britannica.com/topic/International-Atomic-Energy-Agency>.

194. Matthew Fuhrmann, *Atomic Assistance: How “Atoms for Peace” Programs Cause Nuclear Insecurity*, Cornell Studies in Security Affairs (Ithaca: Cornell University Press, 2012), 248.

195. Drogan, “The Nuclear Imperative,” 959.

196. Drogan, “The Nuclear Imperative,” 949.

197. Karen Barad, “After the End of the World: Entangled Nuclear Colonialisms, Matters of Force, and the Material Force of Justice,” *Theory & Event* 22, no. 3 (2019): 525.

198. Barad, “After the End of the World: Entangled Nuclear Colonialisms,” 527.

tests on the people of the Marshall Islands by the United States during the Atoms for Peace programme. The now infamous hydrogen bomb test at Biki Atoll was “1000 times the size of the bomb dropped on Hiroshima.”¹⁹⁹ Meanwhile, nearby Enewetak Atoll was subject to forty-three tests, leaving widespread damage and completely vaporizing four of its islands.²⁰⁰ Two of these thermonuclear blasts left two-kilometer wide impact craters on Enewetak’s Runit Island. One of these craters would become a dump site for radioactive waste in the late 1970s when the United States ceased their testing. The site was later covered over with a concrete dome, a makeshift solution for containing far too little of the contamination left behind. The dome is now at risk of failure thanks to climate change induced rising sea levels, which threaten to submerge the Marshall Islands altogether.²⁰¹ Barad describes the dome at Runit Island as a particularly poignant “crossroads between nuclear and climate catastrophes.”²⁰² The contamination from events such as these, which shaped the beginning of the Great Acceleration and triggered the Anthropocene, continue to produce compound threats as global warming takes effect.

The American weapons tests carried out in the Pacific Ocean during the 1950s and 1960s dispersed radioactive isotopes such as chlorine-36, which upon reaching the stratosphere traveled around the globe to locations including Antarctica. In 2019, the American Geophysical Union published a study that has found evidence of deposits in the Antarctic ice sheet, which are still releasing radioactive chlorine-36 from the Pacific Ocean weapons tests some 70 years later.²⁰³

The scientists of the IGY expedition were invested in the study of geophysical phenomena, as indicators of the earth’s history and future. Studies conducted on Antarctica promised to yield unique results given the site’s distance from large scale human habitation. During the IGY a scientific Working Group on Nuclear Radiation was founded – they sought to determine whether or not radioactive substances carried in the atmosphere from nuclear activities could reach the

199. Barad, “After the End of the World: Entangled Nuclear Colonialisms,” 525.

200. Barad, “After the End of the World: Entangled Nuclear Colonialisms,” 525.

201. Barad, “After the End of the World: Entangled Nuclear Colonialisms,” 526.

202. Barad, “After the End of the World: Entangled Nuclear Colonialisms,” 525.

203. S. Pivot et al., “A Comparison of ³⁶Cl Nuclear Bomb Inputs Deposited in Snow From Vostok and Talos Dome, Antarctica, Using the ³⁶Cl/Cl[−] Ratio,” *Journal of Geophysical Research: Atmospheres* 124, no. 20 (September 2019): 10974, <https://doi.org/10.1029/2018JD030200>.

South Pole.²⁰⁴ Throughout the expedition, the Working Group conducted tests that required them to mail samples of melted snow, microscopic debris caught by air filters, and sheets of gummed cellulose acetate film (that had been exposed to the air) back home for testing.²⁰⁵ The shipment of mail performed an important role during operation the IGY – moving philatelic covers, letters home, and scientific samples alike between Antarctica and distant places.

The Working Group's test results confirmed that radioactive signatures were in fact present in the Antarctic Environment during the IGY. Despite this, the United States installed the PM-3A Portable Nuclear Power reactor at McMurdo Station a short time later, in 1962. One of three mobile reactors built for the military as a result of the Atoms for Peace programme – its counterparts were installed at Fort Sundance radar station in Wyoming, and Camp Century research base in Greenland. The reactors were intended to herald a new era of remote power operations. However, McMurdo's PM-3A was in operation for just 10 years, decommissioned in 1972 due to a leak in the primary coolant piping. This resulted in the removal of the entire facility, along with seventy metric tons of radioactive waste, which was shipped back home to the United States.²⁰⁶ The dismantled reactor and fuel rods were shipped to Georgia for burial at a radioactive storage site, while the irradiated soil was excavated and transported to Port Hueneme California, a naval base north of Los Angeles.²⁰⁷

Camp Century, home of the PM-2 Portable Nuclear Reactor, was constructed beneath the Greenland ice sheet just after the IGY concluded, between June 1959 and October 1960. The nuclear-powered research station and Cold War era military base was a sprawling complex located eight meters underground. Today, much like the original Pole Station architecture in

204. National Research Council, *Report on the U.S. Program for the International Geophysical Year: July 1, 1957 - December 31, 1958* (Washington, DC: The National Academies Press. 1965), 543, <https://doi.org/10.17226/26118>.

205. National Research Council, *Report on the U.S. Program for the International Geophysical Year*, 543-544.

206. Belanger, *Deep Freeze*, 399.

207. Alexis Parks, "Antarctic Reactor Closing Leaves 'Hot' Cargo on Ice," in *The Washington Post*. December 31, 1978, <https://www.washingtonpost.com/archive/politics/1978/12/31/antarctic-reactor-closing-leaves-hot-cargo-on-ice/1a21caec-69e0-400c-b674-053a413cc88a>.

Antarctica, Camp Century lies abandoned under a thick layer of constantly moving ice. During its operation, the PM-2 produced over 47,000 gallons of radioactive waste, which have been left in situ.²⁰⁸ In recent years, climate scientists have expressed concern about the melting of Greenland's ice sheet and warned of severe consequences should the site emerge. Camp Century, like the dome at Runit island, is a site that threatens to expose nuclear waste as the climate changes. The assumed certainties of earth systems during the mid-twentieth century have been undone by the very events that defined the era.

2049 / 2050

The polar regions play an important role in the regulation of global climate systems.²⁰⁹ They are also known to be flagship areas of climate change, enduring some of global warming's most extreme impacts. In 1988, The *Intergovernmental Panel on Climate Change* (IPCC) was formed to provide governments with regular scientific information about climate change and help inform global climate policies. Effects of climate change that the IPCC has "...projected to occur by 2050 elsewhere in the world have already been observed in the Arctic and Antarctic."²¹⁰ The IPCC's 2019 Special Report *Ocean and Cryosphere in a Changing Climate* advises that under all warming scenarios (be they moderate or extreme) the Arctic and maritime Antarctic "...will become profoundly different in the near-term future (by 2050)."²¹¹ Since the late 1980s, expanding knowledge of global climate systems has changed scientific perceptions and undermined previous assumptions that "wilderness can simply be left undisturbed in order to be protected."²¹² All places are affected by human activities, even when humans are not present.

208. William Colgan et al., "The Abandoned Ice Sheet Base at Camp Century, Greenland, in a Warming Climate," *Geophysical Research Letters* 43, no. 15 (August 2016): 43, <https://doi.org/10.1002/2016GL069688>.

209. Andrew J. Constable et al., "Cross-Chapter Paper 6: Polar Regions," in *Climate Change 2022: Impacts, Adaptation and Vulnerability*, ed. H.O. Portner et al. (Cambridge: Cambridge University Press, 2022), 2323, <https://doi.org/10.1017/9781009325844.023>.

210. Constable et al., "Cross-Chapter Paper 6: Polar Regions," 2323.

211. Constable et al., "Cross-Chapter Paper 6: Polar Regions," 2321.

212. Stephens, "The Antarctic Treaty System and the Anthropocene," 34.

The IPCC has distinguished 2050 as the boundary of a near-term future, which is tied to goals for environmental policy change and the already unraveling effects of climate change. The polar regions will no doubt remain central to the IPCC's reporting in the coming years, play a key role in the visible unfolding of climate change, and effect the enactment of global geopolitics as 2050 approaches. The Antarctic Treaty will remain in effect until 2049, hovering at the edge of this near-term future. These dates are inextricably tied for reasons greater than their temporal proximity – they are both moments against which one can measure the fate of Antarctica in the Anthropocene. In 1959, when the Antarctic Treaty was initially conceived, its end point was a distant 90 years in the future. Today, 2049 is much closer, and the future looks vastly different. Glasberg suggests that perceptions of Antarctic ice have changed, at present “[t]he ice itself is under threat. It is no longer the enemy or the implacable outside force to be conquered,” having transformed into something fragile and in need of rescue.²¹³

Peter Schweitzer suggests that Antarctica has only recently been considered a site of anthropological analysis. This is understandable given the absence of permanent human populations.²¹⁴ Nevertheless, conceptions of Antarctica within the Anthropocene suggest that the “entanglements people have with other species, things, and entities around them, need to be included [in studies of Antarctic habitation] in order to better understand human lives.”²¹⁵ Antarctica can hardly be considered an accessible place, yet, over the past two decades there has been a considerable increase in tourism and non-scientific travel within the region. Most of the continent's commercial tourism occurs along the Antarctic Peninsula, and cruise ships traverse the shoreline there between October and March annually.²¹⁶ Antarctic tourism began at a modest

213. Glasberg, “Living Ice,” 222.

214. Peter Schweitzer. “Polar Anthropology, or Why We Need to Study More than Humans in order to Understand People,” *The Polar Journal* 7, no. 1 (July 2017), 2,

215. Peter Schweitzer, “Polar Anthropology,” 2.

216. Tin, Tina et al., “Setting the Scene: Human Activities, Environmental Impacts and Governance Arrangements in Antarctica,” in *Antarctic Futures: Human Engagement with the Antarctic Environment*, ed. Tina Tin, et al. (New York: Springer-Dordrecht, 2014), 274.

scale in the late 1960s. More recently, a total of 74,401 tourists visited Antarctica during the 2019-20 season, representing a 134% increase from the 2010-11 season.²¹⁷

All tourist visits are scheduled and monitored by the *International Association of Antarctic Tour Operators* (IAATO). Elaborate planning is undertaken to ensure “that there is as little contact as possible between different ships, thereby preserving the sense of isolation expected by polar tourists.”²¹⁸ The phenomenon known as *Last Chance Tourism* plays a part here – Arctic and Antarctic trips are among the most sought-after last chance locales – popularly perceived as the most at-risk regions due to climate change. Last chance tourists often seek out activities that raise their awareness of environmental issues through personal experience of place, while contributing significantly to climate change in order to do so.²¹⁹ In a 2019 study of last chance tourists and their experience of “place stewardship,” Mark Groulx et. al. note that last chance markets are “established around an ethical paradox.”²²⁰ Tourists are drawn to remote destinations because they “perceive that climate change will negate future opportunities to experience these places in their authentic, pristine form.”²²¹ In this gesture, last chance tourists are driven to engage in activities that can be framed simultaneously as a source of harm and perceived political practice.²²²

A similar study performed by Erik Eijgelaar et al. in 2010 surveyed the participants aboard an Antarctic Cruise – asking respondents about their awareness of climate change and if witnessing Antarctic nature would affect their future actions (regarding future travel and minimizing their carbon footprint). The study reported that “no signs were found that pointed to any change of

217. Pablo J. Tejedó et. al., “What are the Real Environmental Impacts of Antarctic Tourism? Unveiling Their Importance Through a Comprehensive Meta-analysis,” *Journal of Environmental Management* 308, no. 1 (February 2022): 1, <https://doi.org/10.1016/j.jenvman.2022.114634>.

218. Adrian Howkins, *The Polar Regions: An Environmental History* (Malden, MA: Polity Press, 2015), 177, Kindle.

219. Mark Groulx et. al., “Place Stewardship Among Last Chance Tourists,” *Annals of Tourism Research* 75, no. 3 (February 2019): 340, <https://doi.org/10.1016/j.annals.2019.01.008>.

220. Mark Groulx et. al., “Place Stewardship Among Last Chance Tourists,” 202.

221. Mark Groulx et. al., “Place Stewardship Among Last Chance Tourists,” 202.

222. Mark Groulx et. al., “Place Stewardship Among Last Chance Tourists,” 203.

attitude about travelling with regard to climate change and travel emissions.”²²³ This observation suggests that most last chance tourists are willing to engage in a type of productive denial about their own contributions to climate change.

1956

The envelopes of *Pole Station Antarctica: December 15th 8am 1956* have provided visual and material cues that led me to conduct contextual research on the mid-twentieth century origins of Antarctica’s permanent settlement. This work has allowed me to build an understanding of Antarctica’s occupation as a result (and a consequence) of evolving American geopolitical motivations, intricately tied to the country’s nation-building discourse at the end of the Second World War. Investigating the circumstances under which these letters were posted has led me to a new understanding of the world they inhabited – and the one I inhabit now.

Anke te Heesen suggests that “to understand paper as a thing, a three dimensional object that we work with and that we not only read, but handle, fold, glue and cut as well, necessitates taking a closer look at the practices associated with it.”²²⁴ I consider the collected envelopes in *Pole Station Antarctica: December 15th 8am 1956* alongside the acts of occupation, military activity, mailing, collecting, and exhibiting they have participated in, each an associated practice that is critical to their interpretation. A reading of this material culture – paper envelopes as objects in the round – results in an ability to trace and unravel the complex histories in which it participates. In this instance, a collection of envelopes purchased on eBay reveals that the early settlement of Antarctica has deep-rooted significance in the American Cold War, the production of colonial myths about simultaneously pristine and occupied polar territory, climate change in the Anthropocene, ongoing effects of the nuclear origins of the Great Acceleration, the

223. Eke Eijelaar, Carla Thaper, and Paul Peeters, “Antarctic Cruise Tourism: The Paradoxes of Ambassadorship, ‘Last Chance Tourism’ and Greenhouse Gas Emissions,” *Journal of Sustainable Tourism* 18, no. 3 (2010), 347, <https://doi.org/10.1080/09669581003653534>.

224. Anke te Heesen. “News Paper, Scissors: Clippings in the Sciences and Arts Around 1920,” in *Things That Talk: Object Lessons from Art and Science*, ed. Lorraine Datson (New York: Zone Books, 2008), 299.

disciplinary limits of misogynist historiography, and art practices as matters of critical and affective engagement with emerging historical and scientific information. My dedication to methodologies that rely on observation, slow processes of collecting, and physical juxtaposition are aligned with Anna Tsing's call for sustained observation in the Anthropocene "...a practice at once humble and difficult: noticing the world around [oneself]."225

When installed, *Pole Station Antarctica: December 15th 8am 1956* takes the form of a wall mounted grid. Each object is arranged according to the distance it traveled to reach its original recipient, from farthest to nearest. In order to determine these distances I use Google Earth's measurement tools to establish the number of kilometers between the Pole and a given address. Although the satellite imaging of the Admunson-Scott South Pole Station is insufficient to provide an understanding of the site topography or architecture, its location is identified by a digital marker within the software. With the marker as my starting point, I move outwards from the Pole – dragging bright red floating sightlines across the globe to link virtual connective nodes.

The connective nodes I generate within Google Earth are branching and overlapping in their trajectory, mirroring the interconnectivity of communications and earth systems that follow the same paths. As new envelopes are collected, new distances are calculated and added to an evolving list. The order of the envelopes changes as the collection grows, shifting the physical layout of the work with each new exhibition. The envelopes are primarily mailed to addresses in the United States, and much of the grid is inhabited by American iconography and place names. At present, the top right envelope and farthest point from the Pole is London, England (15,716 km), while the closest is Cashmere, New Zealand (5,174 km).

Each envelope in the installation is mounted in an archival polyester sleeve. Manufactured with inert material, the sleeves are intended to provide clarity and stability for encapsulated materials. Poly-sleeves are meant to be handled, and thus act as a reminder that these envelopes also have a history of being held. They are protected, yet not entirely rendered two dimensional.

225. Tsing et al., "Introduction," M7.



Fig. 44 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (installation view)
 Fig. 45 Kristie MacDonald, *Pole Station Antarctica: December 15th 8am 1956*, 2012 – Ongoing (installation view)

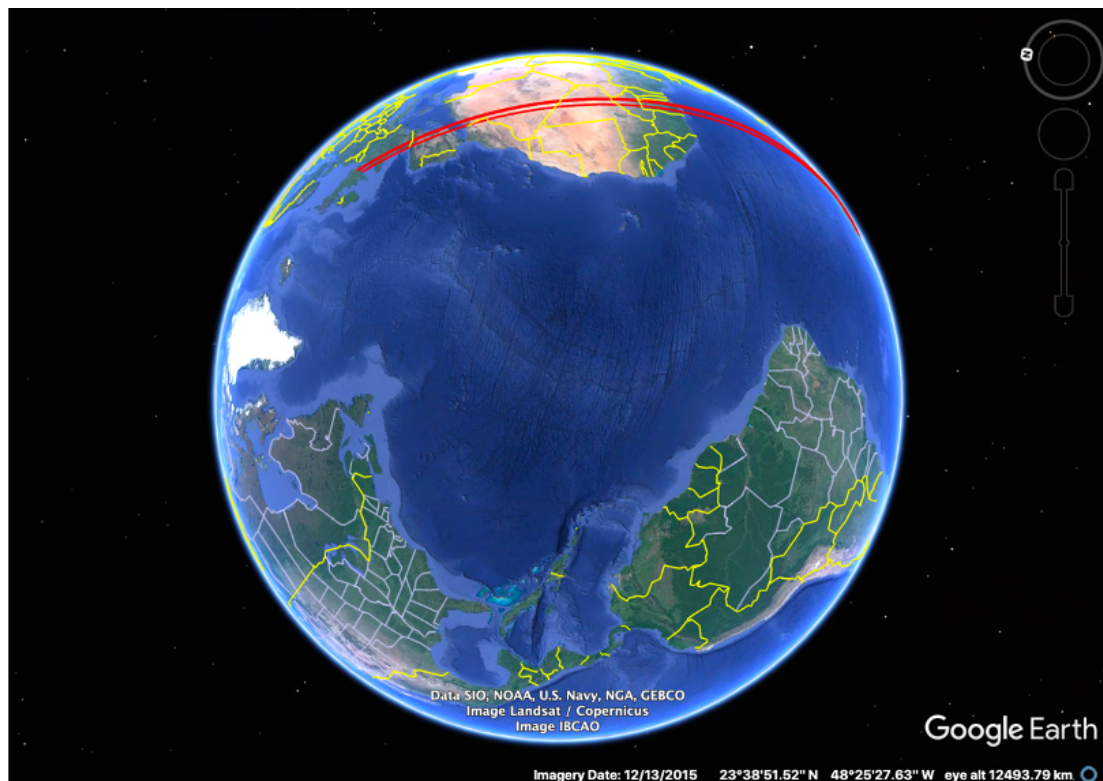
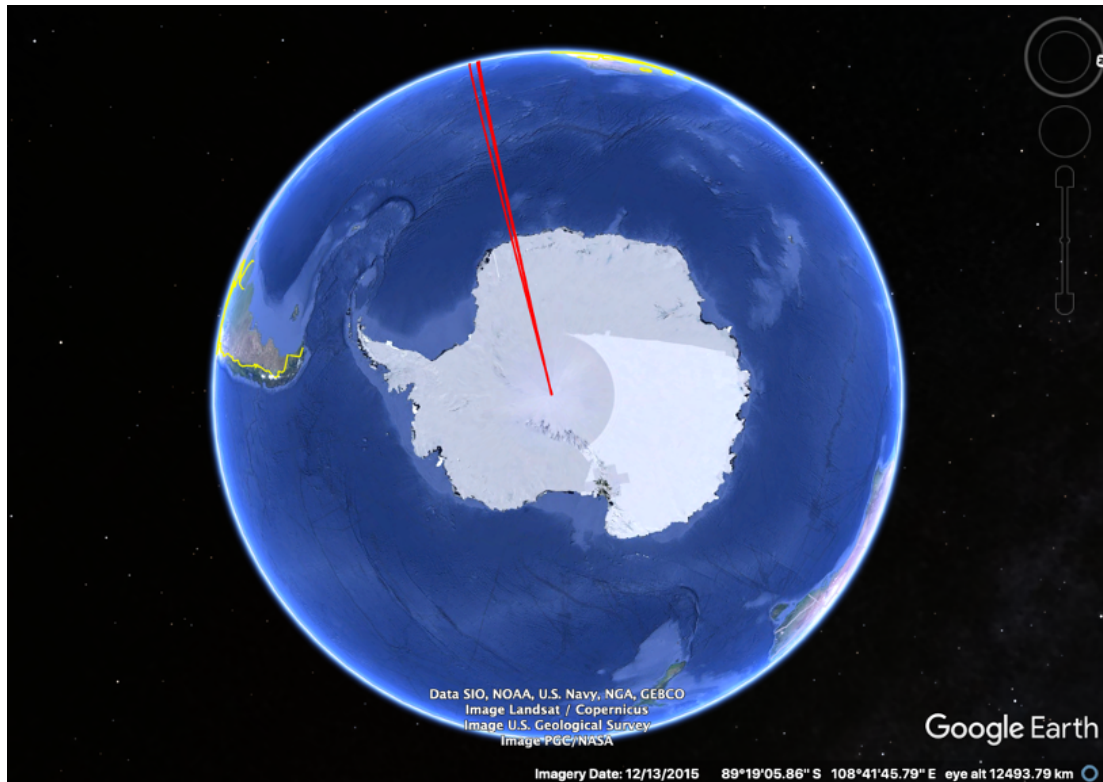


Fig. 45 Process documentation for *Pole Station Antarctica: December 15th 8am 1956* (2012 – Ongoing), Screenshot of Google Earth, taken by the Author

Methodologies such as sequencing, repetition, pairing, and collecting carry over into all the works in *Documents from Antarctica*. The context uncovered within the cumulative minutia of *Pole Station Antarctica: December 15th 8am 1956* and the tangled series of events occurring in 1956 link these envelopes to the nearly complete South Pole Station; the first plane that landed at the South Pole; the newly designed shipping container and container ship; the International Atomic Energy Agency and the dawn of the atomic age; and Vincent Massey's flight over the North Pole.

Glasberg's notion that "Antarctica has never been an easy place for humanity to attach to pre-existing flows of culture," still rings true, even in a moment when the continent is increasingly made visible through the change of global earth systems, and more people visit than ever before.²²⁶ For most, Antarctica remains highly mediated, observed only through material culture including press images about climate change, advertising and marketing by tourism operators, and historical documents. In the Anthropocene, the present is always tied to the past, and Antarctica is always tied to elsewhere.

226. Glasberg, *Antarctica as Cultural Critique*, 4.

Bibliography

- Antarctic Logistics & Expeditions. "Destinations: Mount Vinson," Mount Vinson, Accessed September 15, 2022. <https://antarctic-logistics.com/trip/mount-vinson>.
- Antarctic Logistics & Expeditions. "First Boeing 757 Airliner Landing on Blue-Ice Runway in Antarctica." Boeing 757 Lands at Union Glacier. November 26, 2015. <https://antarctic-logistics.com/2015/11/23/boeing-757-lands-at-union-glacier/>.
- Angus, Siobhan. "El Dorado in the White Pines: Representations of Wilderness on an Industrial Frontier." *Radical History Review* 2018, no. 132 (October 2018): 47–67. <https://doi.org/10.1215/01636545-6942391>.
- Angus, Siobhan. "Mining the History of Photography." In *Capitalism and the Camera: Essays on Photography and Extraction*, edited by Kevin P. Coleman and Daniel James, 55-73. London: Verso, 2021.
- Apostol, Corina L., and Nato Thompson. "Lucy + Jorge Orta." In *Making Another World Possible: 10 Creative Time Summits, 10 Global Issues, 100 Art Projects*, edited by Corina L. Apostol and Nato Thompson, 282-283. London: Routledge, 2019.
- Architect of the Capital. "Statue of Freedom." Explore the Capitol Campus Art. Accessed September 17, 2022. <https://www.aoc.gov/explore-capitol-campus/art/statue-freedom>.
- Associated Press. *Antarctic Pollution Story: The New Wasteland*. Associated Press Wirephoto. 1971.
- Augustine, Norman R., Thad Allen, Craig E. Dorman, Hugh W. Ducklow, Bart Gordon, R. Keith Harrison, Don Hartill, Gerard Jugie, Louis J. Lanzerotti, Duncan J. McNabb, et al. *More and Better Science in Antarctica through Increased Logistical Effectiveness: Report of the U.S. Antarctic Program Blue Ribbon Panel at the Request of the White House Office of Science and Technology Policy and the National Science Foundation*. Washington, D.C.: White House Office of Science and Technology Policy & National Science Foundation, 2012. <http://purl.fdlp.gov/GPO/gpo26025>.
- Ault, Julie, and Horn, Roni. *Roni Horn: Everything Was Sleeping as If the Universe Were a Mistake*. Barcelona : Fundació Joan Miró, 2014.
- Barad, Karen. "After the End of the World: Entangled Nuclear Colonialisms, Matters of Force, and the Material Force of Justice." *Theory & Event* 22, no. 3 (2019): 524–50.
- Barr, Susan. "Twenty Years of Protection of Historic Values in Antarctica under the Madrid Protocol." *Polar Journal* 8, no. 2 (2018): 241–64. <https://doi.org/10.1080/2154896X.2018.1541547>.

- Beh, Carolina, Dalee Sambo Dorrough, Robert Lekander, James Nicori, John Noksana, JakyLou Olemaun, Joanna Petrasek MacDonald, and Mary Sattler Peltola. "Policy Paper: Climate Change and Inuit Food Sovereignty." Inuit Circumpolar Council Alaska, 2022.
<https://www.inuitcircumpolar.com/project/policy-paper-climate-change-and-inuit-food-sovereignty/>.
- Belanger, Dian Olson. *Deep Freeze: The United States, the International Geophysical Year, and the Origins of Antarctica's Age of Science*. Boulder, CO: University Press of Colorado, 2006.
- Boon, Marcus. *In Praise of Copying*. Cambridge, MA: Harvard University Press, 2010.
- Brown, Paul. "First nuclear power plant to close." *The Guardian*. March 21, 2003.
<https://www.theguardian.com/uk/2003/mar/21/nuclear.world>.
- Bureaud, Annick. "Inhabiting the Extreme or Making Antarctica Familiar." In *Far Field: Digital Culture, Climate Change, and the Poles*, edited by Jane D. Marsching and Andrea Polli, 187-198. Bristol: Intellect Ltd, 2012.
- Carlebach, Michael L. "Documentary and Propaganda: The Photographs of the Farm Security Administration." *The Journal of Decorative and Propaganda Arts* 8, no. 2 (1988): 6-25.
- Colgan, William, Horst Machguth, Mike MacFerrin, Jeff D. Colgan, Dirk van As, and Joseph A. MacGregor. "The Abandoned Ice Sheet Base at Camp Century, Greenland, in a Warming Climate." *Geophysical Research Letters* 43, no. 15 (August 2016).
<https://doi.org/10.1002/2016GL069688>.
- Chang, Joshua. "Pictures at Work." In *Taryn Simon: The Color of a Flea's Eye: The Picture Collection*, Taryn Simon, 7-21. Paris: Cahiers d'Art, 2020.
- Committee for Environmental Protection. *25 Years of the Protocol on Environmental Protection to the Antarctic Treaty*. Secretariat of the Antarctic Treaty. Accessed June 5, 2022.
<https://www.ats.aq/e/protocol.html>.
- Constable, Andrew J., Sherilee Harper, Jackie Dawson, Kirstin Holsman, Tero Mustonen, Dieter Piepenburg, and Björn Rost. "Cross-Chapter Paper 6: Polar Regions." In *Climate Change 2022: Impacts, Adaptation and Vulnerability*, edited by H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, et al, 2319-68. Cambridge: Cambridge University Press, 2022.
<https://doi.org/10.1017/9781009325844.023>.
- Corcoran, Patricia L., Charles J. Moore, Kelly Jazvac. "An Anthropogenic Marker Horizon in the Future Rock Record." *GSA Today* 24, no. 6 (June 2014), 4-8. Doi:10.1130/GSAT-G198A.1.
- Cosgrove, Denis E., and William L. Fox. *Photography and Flight*. London: Reaktion Books, 2010.

- Cowen, Deborah. *The Deadly Life of Logistics: Mapping Violence in Global Trade*. Minneapolis: University of Minnesota Press, 2014.
- Cruikshank, Julie. *Do Glaciers Listen? Local Knowledge, Colonial Encounters, and Social Imagination*. Vancouver: UBC Press, 2005.
- Crutzen, Paul J., and Eugene F. Stoermer. "The "Anthropocene"." *IGBP Global Change Newsletter* 41, no. 1 (May 2000): 17-18.
- Davis, Georgina A. "A History of McMurdo Station through Its Architecture." *Polar Record* 53, no. 2 (March 2017): 167–85. <https://doi.org/10.1017/S0032247416000747>.
- Davis, Heather. "Life and Death in the Anthropocene: A Short History of Plastic." In *Art in the Anthropocene: Encounters among Aesthetics, Politics, Environments and Epistemologies*, edited by Etienne Turpin and Heather Davis, 347-358. London: Open Humanities Press, 2015.
- Davis, Heather, and Etienne Turpin. "Art & Death: Lives Between the Fifth Assessment & the Sixth Extinction." In *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, edited by Etienne Turpin and Heather Davis, 3-30. London: Open Humanities Press, 2014. <http://www.openhumanitiespress.org/books/titles/art-in-the-anthropocene/>.
- Dean, Tacita. "Press Release." Marian Goodman Gallery. 2001. <https://www.mariangoodman.com/exhibitions/247-tacita-dean-part-i-floh-part-ii-fernsehturm/>.
- Derrida, Jacques. *Archive Fever: A Freudian Impression*. Religion and Postmodernism. Chicago: University of Chicago Press, 1998. Paperback.
- Dodds, Klaus. "Settling and Unsettling Antarctica." *Signs: Journal of Women in Culture and Society* 34, no. 3 (Spring 2009): 505-509.
- Dodds, Klaus. *The Antarctic: A Very Short Introduction*. Oxford: Oxford University Press, 2012.
- Dodds, Klaus. *Geopolitics: A Very Short Introduction*. 3rd ed. Vol. 171. Oxford: Oxford University Press, 2019.
- Drogan, Mara. "The Nuclear Imperative: Atoms for Peace and the Development of U.S. Policy on Exporting Nuclear Power, 1953-1955." *Diplomatic History* 40, no. 5 (2016): 948-74.
- Duranti, Luciana. "The Archival Bond." *Archives and Museum Informatics* 11, no. 3 (September 1997): 213–18. <https://doi.org/10.1023/A:1009025127463>.
- Eichhorn, Kate. *The Archival Turn in Feminism: Outrage in Order*. American Literatures Initiative. Philadelphia: Temple University Press, 2013.

- Editors of Encyclopaedia Britannica, The. "International Atomic Energy Agency." *Encyclopedia Britannica*. September 30, 2013. <https://www.britannica.com/topic/International-Atomic-Energy-Agency>.
- Eijgelaar, Eke, Carla Thaper, and Paul Peeters. "Antarctic Cruise Tourism: The Paradoxes of Ambassadorship, 'Last Chance Tourism' and Greenhouse Gas Emissions." *Journal of Sustainable Tourism* 18, no. 3 (April 2010): 337–54. <https://doi.org/10.1080/09669581003653534>.
- Eisenhower, Dwight D. "Atoms for Peace." Speech, New York, NY, December 8, 1953. International Atomic Energy Agency. <https://www.iaea.org/about/history/atoms-for-peace-speech>.
- Eklund, Douglas. *The Pictures Generation, 1974-1984*. New York: Metropolitan Museum of Art, 2009.
- Fazzare, Elizabeth. "How One Architecture Firm Is Building Sustainably in the Antarctic." *Architectural Digest*. December 7, 2018. <https://www.architecturaldigest.com/story/how-one-architecture-firm-building-sustainably-antarctic>.
- Fischer, Hartwig. "Untitled." In *Covering the Real: Art and the Press Picture from Warhol to Tillmans*, edited by Hartwig Fischer, 296-304. Basel: Kunstmuseum Basel, 2005.
- Foster, Hal. "An Archival Impulse." *October* 110 (October 2004): 3–22. <https://www.jstor.org/stable/3397555>.
- Fox, William L. "Every New Thing: The Evolution of Artistic Technologies in the Antarctic – or How Land Arts Came to the Ice." In *Far Field: Digital Culture, Climate Change, and the Poles*, edited by Jane D. Marsching and Andrea Polli, 19-40. Bristol: Intellect Books, 2012.
- Fuhrmann, Matthew. *Atomic Assistance: How "Atoms for Peace" Programs Cause Nuclear Insecurity*. Cornell Studies in Security Affairs. Ithaca: Cornell University Press, 2012.
- Gabrys, Jennifer and Kathryn Yusoff. "Arts, Sciences and Climate Change: Practices and Politics at the Threshold." *Science as Culture* 21, no. 1 (2012): 1-24.
- Glasberg, Elena. "'Living Ice': Rediscovery of the Poles in an Era of Climate Crisis." *Women's Studies Quarterly* 39, no. 3/4 (Fall/Winter 2011): 221–46. <https://doi.org/10.1353/wsq.2011.0072>.
- Glasberg, Elena. *Antarctica as Cultural Critique: The Gendered Politics of Scientific Exploration and Climate Change*. Palgrave Macmillan's Critical Studies in Gender, Sexuality, and Culture. New York: Palgrave Macmillan, 2012. <http://www.library.yorku.ca/e/resolver/id/2427138>.

- Godfrey, Mark. "Photography Found and Lost: On Tacita Dean's Floh." *October* 114, no. 3 (2005): 91–119. <https://www.jstor.org/stable/3397626>.
- Groulx, Mark, Karla Boluk, Chris J. Lemieux, and Jackie Dawson. "Place Stewardship among Last Chance Tourists." *Annals of Tourism Research* 75, no. 3 (February 2019): 202–12. <https://doi.org/10.1016/j.annals.2019.01.008>.
- Guide to Iceland. "Vatnajökull Glacier Travel Guide," Guide to Iceland. Accessed September 15, 2022. <https://guidetoiceland.is/travel-iceland/drive/vatnajokull>.
- Gunthert, Andre. "Visual Journalism, or the Hidden Narration." In *The "Public" Life of Photographs*, edited by Thierry Gervais, 111–127. RIC Books. Toronto: MIT Press & Ryerson Image Centre, 2016.
- Gürsel, Zeynep Devrim. "A Short History of Wire Service Photography." In *Getting the Picture: The Visual Culture of the News*, edited by Jason E. Hill and Vanessa R. Schwartz, 206–211. London: Routledge, 2015.
- Haraway, Donna Jeanne. *Staying with the Trouble: Making Kin in the Chthulucene*. Experimental Futures: Technological Lives, Scientific Arts, Anthropological Voices. Durham, NC: Duke University Press, 2016.
- Haraway, Donna Jeanne. "Tentacular Thinking: Anthropocene, Capitalocene, Chthulucene." *E-flux Journal* 75, (September 2016). <https://www.e-flux.com/journal/75/67125/tentacular-thinking-anthropocene-capitalocene-chthulucene/>
- Harvey, David. *Spaces of Neoliberalization: Towards a Theory of Uneven Geographical Development*. Stuttgart: Franz Steiner Verlag, 2019. <https://doi.org/10.25162/9783515115223>.
- Hemmings, Alan D., Klaus Dodds and Peder Roberts, "Introduction: The Politics of Antarctica." *Handbook on the Politics of Antarctica*. Cheltenham UK: Edward Elgar Publishing, 2017.
- Hird, Myra, and Alex Zahara. "The Arctic Wastes." In *Anthropocene Feminisms*, edited by Richard Grusin, 121–145. Minneapolis: University of Minnesota Press, 2017.
- Horn, Roni. *Roni Horn: Vatnasafn / Library of Water*. London: Artangel, 2009.
- Hooper-Greenhill, Eilean. *Museums and the Shaping of Knowledge*. New York: Routledge, 1992.
- Horsman, Peter, Eric Ketelaar, and Theo Thomassen. "New Respect for the Old Order: The Context of the Dutch Manual." *The American Archivist* 66, no. 2 (September 2003): 249–70. <https://doi.org/10.17723/aarc.66.2.452235k813568872>.
- Howkins, Adrian. *The Polar Regions: An Environmental History*. Malden, MA: Polity, 2015. Kindle.

- Jacob, Sam. "High Tech Primitive: The Architecture of Antarctica." In *Ice Lab: New Architecture and Science in Antarctica*, edited by Sandra Ross. London: The British Council, 2013. Apple Books.
- Jackson, Adele. "A Changing Cultural Climate: Realising the Value of Artists Working in Antarctica." *Polar Record* 55, no. 5 (2019): 351–57.
<https://doi.org/10.1017/S0032247419000470>.
- Kenney, Martha, and Donna Haraway. "Anthropocene, Capitalocene, Chthulucene: Donna Haraway in Conversation with Martha Kenney." In *Art in the Anthropocene: Encounters among Aesthetics, Politics, Environments and Epistemologies*, edited by Heather Davis and Etienne Turpin, 255-70. Critical Climate Change. London: Open Humanities Press, 2015.
- Kopytoff, Igor. "The Cultural Biography of Things: Commoditization as Process." In *The Social Life of Things: Commodities in Cultural Perspective*, edited by Arjun Appadurai, 64-92. Cambridge: Cambridge University Press, 1986.
<https://doi.org/10.1017/CBO9780511819582.004>.
- Kuni, Verena, "[Ant-]Agonies of the Real: Observations on the works of Richter, Polke, Charlesworth and Baldessari." *Covering the Real: Art and the Press Picture from Warhol to Tillmans*, edited by Hartwig Fischer, 338-343. Basel: Kunstmuseum Basel, 2005.
- Kunuk, Zacharias. "Biography." Isuma TV. Accessed September 17, 2022.
<http://www.isuma.tv/members/zacharias-kunuk>.
- Leane, Elizabeth and Ben Maddison. "A Biography of Iceberg B09B." *Australian Humanities Review* 63, no. 1 (November 2018): 99-115.
- Le Guin, Ursula K. "Sur." In *The Compass Rose: Short Stories*. New York: Harper & Row, 1982.
- Le Guin, Ursula K. "Deep in Admiration." In *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, ed. Anna Lowenhaupt Tsing, Heather Swanson, Elaine Gan, and Nils Bubandt, M15-M21. Minneapolis: University of Minnesota Press, 2017.
- Levinson, Marc. *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*. Princeton, NJ: Princeton University Press, 2006.
<https://press.princeton.edu/books/paperback/9780691170817/the-box>.
- Lind, Maria, and Hito Steyerl. "Introduction: Reconsidering the Documentary and Contemporary Art." In *The Greenroom: Reconsidering the Documentary and Contemporary Art*, edited by Maria Lind and Hito Steyerl, 11-26. Berlin: Sternberg Press, 2008.
- Manoff, Marlene. "Theories of the Archive from Across the Disciplines." *Portal: Libraries and the Academy* 4, no. 1 (January 2004): 9–25. <https://doi.org/10.1353/pla.2004.0015>.

- Marsching, Jane, and Andrea Polli, editors. Introduction to *Far Field: Digital Culture, Climate Change, and the Poles*. Bristol: Intellect Ltd, 2012.
<http://ebookcentral.proquest.com/lib/york/detail.action?docID=845840>.
- Milne, Esther. *Letters, Postcards, Email: Technologies of Presence*. Routledge Research in Cultural and Media Studies. Vol. 24. New York: Routledge, 2010.
- Mitchell, W.J.T. *Landscape and Power*. 2nd ed. Chicago: University of Chicago Press, 2002.
- Moser, Gabrielle. "Settler Colonialism's Container Technologies: Photographing Crates in the Canadian Arctic (1926–1953)." *Settler Colonial Studies* (February 2021): 1–35.
<https://doi.org/10.1080/2201473X.2021.1884427>.
- Mundy, Robyn. "Pioneering Antarctic Photography: Herbert Ponting and Frank Hurley." *The Polar Journal* 4, no. 2 (July 2014): 389–406. <https://doi.org/10.1080/2154896X.2014.954880>.
- National Research Council. *Report on the U.S. Program for the International Geophysical Year: July 1, 1957 – December 31, 1958*. Washington, DC: The National Academies Press, 1965.
- National Science Foundation. "Antarctic Artists & Writers Program: Past Participants." National Science Foundation. Accessed September 25, 2022. <https://www.nsf.gov/geo/opp/aawr.jsp>.
- National Women's History Museum. "Three Every-Day Items Invented by Women." National Women's History Museum. August 1, 2013. <https://www.womenshistory.org/articles/three-every-day-items-invented-women>.
- O'Brian, John, and Peter White. "Wild Art History." In *Beyond Wilderness: The Group of Seven, Canadian Identity, and Contemporary Art*, edited by John O'Brian and Peter White, 30–46. Montreal: McGill-Queen's University Press, 2007.
- O'Reilly, Jessica, and Juan Francisco Salazar. "Inhabiting the Antarctic." *The Polar Journal* 7, no. 1 (January 2017): 9–25. <https://doi.org/10.1080/2154896X.2017.1325593>.
- Orta, Lucy + Jorge. "Antarctica Dome Dwelling." Studio Orta. Accessed September 17, 2022. <https://www.studio-orta.com/en/artwork/136/antarctica-dome-dwelling>.
- OZ Architecture. "McMurdo Station." Our Work. Accessed September 25, 2022. <https://ozarch.com/our-work/mcmurdo-station>.
- Parks, Alexis. "Antarctic Reactor Closing Leaves 'Hot' Cargo on Ice." *Washington Post*, December 31, 1978. <https://www.washingtonpost.com/archive/politics/1978/12/31/antarctic-reactor-closing-leaves-hot-cargo-on-ice/1a21caee-69e0-400c-b674-053a413cc88a/>.
- Parks, Lisa. *Cultures in Orbit: Satellites and the Televisual*. Durham, NC: Duke University Press, 2005.

- Parsons, Sarah. "Planted There like Human Flags: Photographs of Inuit in the High Arctic and Cold War Anxiety, 1951 -1956." Unpublished conference publication, last modified 2021. PDF.
- Pearson, Michael, Andres Zarankin and Melisa A. Salerno. "Exploring and exploiting Antarctica: The Early Human Interactions." In *Past Antarctica: Paleoclimatology and Climate Change*, edited by Oliva, Marc, and Jesús Ruiz Fernández, 259-278. London: Academic Press, 2020.
- Pivot, S., M. Baroni, E. Bard, X. Giraud, and Aster Team. "A Comparison of ^{36}Cl Nuclear Bomb Inputs Deposited in Snow from Vostok and Talos Dome, Antarctica, Using the $^{36}\text{Cl}/\text{Cl}$ -Ratio." *Journal of Geophysical Research: Atmospheres* 124, no. 20 (September 2019): 10973–88. <https://doi.org/10.1029/2018JD030200>.
- Samman, Nadim. "Towards the Antarctic Biennale." Antarctic Pavilion. Accessed September 17, 2022. <http://www.antarcticpavilion.com/the-antarctic-biennale.html>.
- Schneiderman, Jill S. "The Anthropocene Controversy." In *Anthropocene Feminisms*, edited by Richard Grusin, 169–95. Minneapolis: University of Minnesota Press, 2017.
- Schwartz, Hillel. *The Culture of the Copy: Striking Likenesses, Unreasonable Facsimiles*. Rev. ed. New York: Zone Books, 2016.
- Schweitzer, Peter. "Polar Anthropology, or Why We Need to Study More than Humans in Order to Understand People." *Polar Journal* 7, no. 1 (July 2017): 1–8. <https://doi.org/10.1080/2154896X.2017.1351783>.
- Secretariat of the Antarctic Treaty. *The Antarctic Treaty*. The United Nations. December 1, 1959. <https://www.ats.aq/e/antarctic treaty.html>.
- Shortis, Emma. "'In the Interest of All Mankind': Women and the Environmental Protection of Antarctica." In *Feminist Ecologies*, edited by Lara Stevens, Peta Tait, and Denise Varney, 247–61. Cham: Springer International Publishing, 2017.
- Singerman, Howard. "Sherrie Levine's Art History." *October* 101, no. 1 (Summer 2002): 97–121. <https://www.jstor.org/stable/779195>.
- Spieker, Sven. *The Big Archive: Art from Bureaucracy*. Cambridge, Mass: MIT Press, 2008.
- Staff, Craig G. *Monochrome. Darkness and Light in Contemporary Art*. London: I.B. Tauris & Co. Ltd, 2015.
- Star, Susan Leigh. "The Ethnography of Infrastructure." *American Behavioral Scientist* 43, no. 3 (November 1999): 377–91. <https://doi.org/10.1177/00027649921955326>.

- Stephens, Tim. "The Antarctic Treaty System and the Anthropocene." *Polar Journal* 8, no. 1 (July 2018): 29–43. <https://doi.org/10.1080/2154896X.2018.1468630>.
- Steyerl, Hito. "In Defense of the Poor Image." *E-Flux Journal*, no. 10 (November 2009). <http://www.e-flux.com/journal/in-defense-of-the-poor-image/>.
- Steyerl, Hito. "In Free Fall: A Thought Experiment on Vertical Perspective." *E-Flux Journal*, no. 24 (April 2011). <http://www.e-flux.com/journal/24/67860/in-free-fall-a-thought-experiment-on-vertical-perspective/>.
- Te Heesen, Anke. "News Paper, Scissors: Clippings in the Sciences and Arts Around 1920." In *Things That Talk: Object Lessons from Art and Science*, edited by Lorraine Daston, 297–328. New York: Zone Books, 2004.
- Tejedo, P., J. Benayas, D. Cajiao, Y.-F. Leung, D. De Filippo, and D. Liggett. "What Are the Real Environmental Impacts of Antarctic Tourism? Unveiling Their Importance through a Comprehensive Meta-Analysis." *Journal of Environmental Management* 308, no. 1 (February 2022): 114634–114634. <https://doi.org/10.1016/j.jenvman.2022.114634>.
- Tin, Tina, Machiel Lamers, Daniela Liggett, Patrick Maher, and Kevin Hughes, eds. "Setting the Scene: Human Activities, Environmental Impacts and Governance Arrangements in Antarctica." In *Antarctic Futures: Human Engagement with the Antarctic Environment*, 1–24. New York: Springer-Dordrecht, 2013. https://doi.org/10.1007/978-94-007-6582-5_1.
- Todd, Zoe. "Indigenizing the Anthropocene." In *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*, edited by Heather Davis and Etienne Turpin, 241–54. London: Open Humanities Press, 2014. <http://www.openhumanitiespress.org/books/titles/art-in-the-anthropocene/>.
- Tsing, Anna Lowenhaupt. *Friction: An Ethnography of Global Connection*. Princeton, NJ: Princeton University Press, 2005.
- Tsing, Anna Lowenhaupt, Heather Swanson, Elaine Gan, and Nils Bubandt. "Introduction: Bodies Tumbled into Bodies." In *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, edited by Anna Lowenhaupt Tsing, Heather Swanson, Elaine Gan, and Nils Bubandt, M1–M14. Minneapolis: University of Minnesota Press, 2017.
- United States Antarctic Program. "Updated Plans for McMurdo Station Modernization." United States Antarctic Program: Station News, 2020. <https://future.usap.gov/updated-plans-mcmurdo-modernization/>.
- U.S. Navy. *A "Weasel" in the Antarctic*. Associated Press Wirephoto. 1956.
- Walton, David W.H. "Global Science at the End of the World." In *Ice Lab: New Architecture and Science in Antarctica*, edited by Sandra Ross. London: The British Council, 2013. Apple Books.

Waters, Colin N., James P. M. Syvitski, Agnieszka Gałuszka, Gary J. Hancock, Jan Zalasiewicz, Alejandro Cearreta, Jacques Grinevald, Catherine Jeandel, J. R. McNeill, Colin Summerhayes, et al. "Can Nuclear Weapons Fallout Mark the Beginning of the Anthropocene Epoch?" *Bulletin of the Atomic Scientists* 71, no. 3 (2015): 46-57.
<https://doi.org/10.1177/0096340215581357>.

White, Peter. "Out of the Woods." In *Beyond Wilderness: The Group of Seven, Canadian Identity and Contemporary Art*, edited by John O'Brian and Peter White, 20-29. Montreal: McGill-Queen's University Press, 2007.

Wolff, Eric W. "Ice Sheets and the Anthropocene." In *A Stratigraphical Basis for the Anthropocene*, edited by Jan Zalasiewicz, Colin N. Waters, Mark Williams, Michael A. Ellis, and Andrea M. Snelling, 255-63. London: Geological Society, 2013.

Working Group on the Anthropocene. "Results of Binding Vote by AWG 21st May 2019." Subcommission on Quaternary Stratigraphy. <http://quaternary.stratigraphy.org/working-groups/anthropocene/>.

Zalasiewicz, Jan, Colin N. W Waters, Davor Vidas, and Will Steffen. "The Anthropocene: Comparing Its Meaning in Geology (Chronostratigraphy) with Conceptual Approaches Arising in Other Disciplines." *Earth's Future* 9, no. 3 (2021).
<https://doi.org/10.1029/2020EF001896>