Documentary as Data Visualization: The Politics of Contemporary Documentary Filmmaking

Abirami Logendran
Master's Thesis in Screen Cultures

Department of Media and Communication
University of Oslo

15 June 2022

ABSTRACT

This thesis is a conceptual study that bridges “documentary studies” and “critical discourse on data.” Over the past few decades, the landscape of documentary filmmaking has undergone significant changes, influenced by the advent of digital technologies, the proliferation of various media platforms, and evolving methods of distribution. In this context, data visualizations have emerged as a distinct *form of documentary*, drawing upon the shared rhetorical function of data and documentary to visually depict the relationship between the material world and its representation. The concept of documentary as data visualization arises from the fact that a significant portion of documentary content is rooted in data. Today, almost any subject matter can be translated into numeric measurements, aiming to quantify, classify, and provide meaning to vast amounts of information. In this thesis, I offer critical insights on the role of data and databases as organizing principles in various modes of documentary and explore filmic concepts such as “montage,” “interactivity,” “archive,” and “remixing” to emphasize the inherent link between form, interpretation, and political impact. Through the presentation of case examples, such as Arthur Jafa’s *The White Album* (2018), Jeppe Lange’s *Abyss* (2021), Alisa Lebow’s *Filming Revolution* (2018), and Basel Abbas & Ruanne Abou-Rahme’s *May Amnesia Never Kiss Us on the Mouth* (2020-), I highlight documentary films that embody a database logic and offer commentary on the age of information overload. Moreover, I place particular emphasis on the political potential of documentary, showcasing how contemporary filmmakers adopt a reflexive approach in order to confront the inherent biases and harms embedded within data.

ACKNOWLEDGMENTS

Supervisor: Pasi Väliaho (Autumn 2021 – Spring 2023)

First of all, I want to thank my main supervisor Pasi Väliaho for guiding me through this process, providing valuable input and literature, and for encouraging and believing in my ideas.

I also want to thank Taina Bucher for pushing me in the right direction during my first year, as well as Timotheus Vermeulen and Jon Inge Faldalen for all the lectures and conversations about film, art and screen aesthetics. In addition, many thanks to professors at the Fine Arts department at Oslo National Academy of the Arts, Mike Sperlinger and Jan Verwoert for insightful conversations on the thesis.

My sincerest thanks to the artists and filmmakers whose work I admire. Jeppe Lange for being so kind, sending me his film and manuscripts and answering questions. Basel Abbas and Ruanne Abou-Rahme for replying to my emails, and the generous staff at Moderna Museet in Stockholm, for arranging a screener for Arthur Jafa's film.

Further, this thesis is totally indebted to inspiring work done by many scholars, researchers, critics, and artists.

Thanks to my three proofreaders: Nicholas, Mina and Agel.

My friends and family are my backbone, and I am grateful for each and every one – for support and love throughout these past months. I want to mention some people in particular: Nicholas for always believing in me and for all the patience, comfort, and reassurance along the way; My best friend Mina for being an inspiration and my most trusted advisor in everything; my two brothers Aumkar and Vishnu for being a steady support; Agel for great insights and constant encouragement; Finn and Christine for motivation and care; and not least, my classmate Kevin for sticking with me, having lunch with me every day and for making the whole process more tolerable and fun.

Finally, I am who I am, because of my parents. They sacrificed so much to give us a good life. I will always make them proud.

CONTENTS

Abstract

Acknowledgments

Introduction **(1)**

Chapter 1: Literature review **(5)**

- **Part 1: Data** **(5)**
  - **History of data**
  - **Unrepresentability of data**
  - **Interpretation of data**
  - **Datavisualization**
  - **Bias in data**
  - **Data and images**
- **Part 2: Documentary** **(18)**
  - **Modes of documentary**
  - **Data visualizations in documentary**
  - **Expanded understanding of documentary**
  - **Documentary and the real**
  - **Reflexivity**
- **Summary and discussion** **(30)**

Chapter 2: (32)

- **Abyss (2021)**
- **Potemkin AI**
- **Powers of Ten (1977)**
- **Smooth subjectification**
- **APEX (2013)**
- **The White Album (2018)**

Racism in data
Remix
Supercut
Discussion (53)

Chapter 3: (56)
Database and narrative
Filming Revolution (2018)
i-docs
A walk through the site
A metadocumentary
May Amnesia Never Kiss Us on the Mouth (2020)
The Website: May Amnesia Never
Spatial montage
The exhibition: May Amnesia Never
Performative archive
Dismantling and rebuilding
Remixing revisited
Discussion (81)

Conclusion (84)
Limitations and further research (85)

Bibliography

INTRODUCTION

The Argentinian artist David Lamelas moved to London in 1968 to study at Saint Martin's School of Art. While there, he produced the film *A Study of the Relationship Between Inner and Outer Space* for the exhibition 'Environments Reversal' at Camden Arts Centre in London in 1969 on a very limited exhibition budget.[1]

The film opens with a frame displaying the letter A, with a voiceover indicating that section A focuses on the interior space of the Camden Art Centre.[2] A diagram of the building appears, highlighting a particular gallery room, likely the one assigned to Lamelas for the exhibition. As the camera pans and zooms across the empty room with its white walls, the voiceover provides intricate details about various elements within the space, including lighting, switches, power outlets, doorknobs, as well as information about the ceiling and floor materials and noise levels. Subsequently, the film progresses to depict and narrate possible activities that could take place within the room. These activities include a person viewing an exhibition, a woman walking, a man cleaning, and someone operating the light switch. In the third part of this section A, which still takes place within the inner space of the Camden Art Centre, we are introduced to some of the staff members. At this point, the film adopts a different form, employing the conventional documentary technique of "talking heads" as the employees speak directly into the camera, describing their roles, work, and daily routines.

Section B transitions to the outer space of London, expanding its focus beyond the confines of the Camden Art Centre. It begins with a map of the city, highlighting Inner London in black. This is followed by a montage sequence that incorporates maps, footage, and voice narration, providing information about the city's transportation infrastructure and organization. Details are shared about Kings Cross station, various bus lines, the two airports, and more. The means of communication and information in London are also introduced, including daily newspapers, bookshops, city maps, radio channels, postal districts, television channels, and advertising posters. The film then presents a map illustrating the climatic

[1] Stuart Comer, "David Lamelas: The Limits of Documentary," *Afterall: A Journal of Art, Context and Enquiry* 11 (April 2005): 106–14, https://doi.org/10.1086/aft.11.20711576.
[2] David Lamelas, *A Study of the Relationship between Inner and Outer Space* , 1969, Video, 1969, London, Camden Art Centre.

regions of London, emphasizing the concentration of pollution in the inner city compared to the outer suburbs and showcasing temperature variations across different areas. In the third part of Section B, the film adopts a fresh yet familiar approach. A man equipped with a camera and microphone takes to the streets, engaging passers-by with questions about their opinions on the moon landing. The responses vary widely, with some expressing excitement for the scientific achievement, others considering it a wasteful expenditure of money, and still others demonstrating indifference. The film transforms into a survey, gathering data on public opinion.

A Study of the Relationship Between Inner and Outer Space exudes an innocent, nonchalant, and comical ambiance, yet beneath its surface lies a subtle sense of authority as it gathers and organizes information for its audience. The film effectively examines and presents the details of both the inner and outer spaces through the use of visual aids such as maps, charts, and accompanying footage. It operates as a documentary, but at the same time, it offers commentary and parodies the conventions of the genre. It appears that Lamelas initially sets out with the intention to structure the information surrounding him, encompassing both tangible sensory experiences and objective measurements and facilities.

As the film expands its scope beyond the confines of the building and ventures into the city, the structure becomes more rigid, introducing additional maps and necessitating the creation of groups and subgroups. However, this imposed structure seems to falter as the film progresses into its final part, spiraling infinitely into outer space. While the physical zooming out follows a logical progression, there is also a sense of an "informational zoom-out," resulting in a culmination of information overload. Thus, the film not only collects and gathers data but also visualizes it, highlighting the dual nature of its approach.

This thesis is a conceptual study that bridges "documentary studies" and "critical discourse on data." While Lamelas created his film in the late 1960s, our relationship with information has undergone profound transformations in recent decades. These shifts are driven by the emergence of digital technologies and evolving approaches to visualization. Presently, nearly any subject matter can be translated into numeric measurements, with the goal of quantifying, categorizing, and extracting meaning from extensive amounts of information. The purpose of this thesis is to contribute to the field of documentary studies by conducting an interdisciplinary study that examines the intersection of data and documentary. By exploring

how data informs documentary filmmaking, we can gain valuable insights into the ways in which filmmakers challenge the influence of data *through documentary filmmaking*. The inspiration for this study stemmed from a profound realization of the intriguing connection between data and documentary, particularly in the context of the interplay between visibility and invisibility.

Data can be invisible to humans, manifesting in various ways that hinder direct interpretation. Often, it exists in formats that are not immediately perceivable by humans and may be stored within intricate structures like databases, spreadsheets, or encoded files. The transmission, storage, and processing of data occur within complex technological systems and infrastructure, typically hidden from plain view, such as servers, networks, and relational databases. Moreover, data represents abstract concepts, measurements, or relationships that lack tangible or visible forms in the physical world. For instance, numerical data, statistical analyses, or algorithmic outputs may lack direct visual representations. Furthermore, the sheer volume of data can make it challenging to perceive or comprehend. Large datasets, commonly known as big data, contain vast amounts of information that surpass human perceptual capacities. However, it is crucial to acknowledge that despite data's inherent invisibility, its impact and influence often manifest visibly through the insights, decisions, and actions it informs. Therefore, critical discourse on data becomes essential to unveil the hidden forces at play.

On the other hand, documentary filmmaking possesses the ability to make the invisible visible. Documentaries have the potential to illuminate marginalized or obscured aspects of society, drawing attention to overlooked stories and perspectives that are frequently silenced. By capturing and presenting these narratives on film, documentaries can render invisible experiences and struggles accessible to audiences. They also possess the capacity to uncover and explore social issues that may be concealed or understated within mainstream discourse. In doing so, documentaries expose systemic injustices and inequalities deeply embedded in social, economic, or political structures. Moreover, documentaries can employ visual storytelling techniques to make complex data and abstract concepts more comprehensible and relatable. Through data visualization, interviews, graphics, and other visual elements, documentaries can present information in engaging ways that foster viewers' understanding of intricate subjects. By providing critical commentary on such matters, documentaries contribute to fostering social change.

The thesis is structured into three chapters, each addressing different aspects of the intersection between "data" and "documentary." The first chapter serves as a literature review, where I delve into existing studies on both data and documentary individually, before establishing their interconnectedness in the subsequent chapters.

Chapter 2 focuses primarily on two films: *Abyss* (2021) by Jeppe Lange and *The White Album* (2018) by Arthur Jafa. Through in-depth analysis, I explore how these filmmakers employ montaging and remixing techniques to create supercuts that are guided by principles closely related to data. Additionally, I discuss a historical example, *Powers of Ten* (1977) by Charles and Ray Eames, to emphasize that the symbiotic relationship between emerging technologies and documentary films predates the advent of AI technologies. The outcome of this relationship relies on the level of reflexivity in the filmmaking process.

Moving on to Chapter 3, I shift the focus from sequential montage to interactive, nonlinear, and participatory documentaries. Two specific films, namely *Filming Revolution* (2018-) and *May Amnesia Never Kiss Us on the Mouth* (2020-), both grounded in archival material, are examined in detail. This chapter raises important questions surrounding the visualization of (activist) archives and databases within the realm of documentary, the exploration of experimental approaches to challenge established narratives, and the exploration of political potentials inherent in filmmaking within the era of data.

By structuring the thesis in this manner, I aim to provide a comprehensive exploration of the relationship between data and documentary, spanning from historical contexts to contemporary examples. Through the analysis of specific films and the broader discussion of theoretical frameworks, I aim to shed light on the evolving landscape of documentary practices and their engagement with data-related themes.

Geoffrey Bowker raises an important concern about the "datafication" of knowledge and life.[3] He worries that it can potentially limit our ability to envision new possibilities and become trapped in a predictive loop. However, the role of filmmakers in imagining new worlds and possible futures is crucial. They have the power to challenge this predicament and offer alternative perspectives.

[3] Lisa Gitelman, *Raw Data Is an Oxymoron* (MIT Press, 2013), 167-171.

CHAPTER 1: literature review

"On the one hand, visualizations offer the potential to pull together large swaths of information and reveal otherwise hidden dimensions of the world. On the other hand, they can be manipulated to misrepresent reality and mislead observers. In other words, data and data visualizations are a lot like documentary film and photography."

- Kris Fallon in *Documentary Across Disciplines*[4]

PART 1: DATA

Data is everywhere and exists in heaps. The prevalence of data-related expressions, such as big data, datafication, sea of data, dataset, and database, highlights its pervasive nature in contemporary discourse. In this segment, I want to delve deeper into the historical and critical aspects of the term data, examining its development over time, conflicting interpretations, and distinctions from concepts like fact, information, and evidence. Furthermore, I aim to explore the visualization of data and its subjective reception. Finally, how do data visualizations relate to the realms of photography and moving images?

Hito Steyerl asserted that "not seeing is the new normal. Information is passed on as a set of signals that cannot be picked up by human senses."[5] Data visualizations undoubtedly play a crucial role in conveying information today, by extracting signals from all the noise; but can they also harbour potential harm? Intriguingly, many discussions surrounding data echo previous debates concerning photography. There are important parallels between data and the historical debates concerning photography's epistemic status. Like data, photography has been subject to scrutiny regarding its objectivity, subjectivity, and potential for manipulation. Both concepts grapple with questions of truth, and the authority of the visual image, while simultaneously posing questions of (in)visibility and (mis)representation.

[4] Erika Balsom and Hila Peleg, *Documentary across Disciplines* (Berlin: Haus Der Kulturen Der Welt ; Cambridge, Ma, 2016), 299.
[5] Hito Steyerl, "A Sea of Data: Apophenia and Pattern (Mis-)Recognition - Journal #72 April 2016 - E-Flux," E-flux.com, 2016, https://www.e-flux.com/journal/72/60480/a-sea-of-data-apophenia-and-pattern-mis-recognition/.

Documentary practices, which aim to capture and present reality, find themselves entangled in these debates. The connection between these inquiries and the realm of documentary lies in the shared pursuit of understanding and conveying truth, whether through data or visual documentation.

History of data

In the afterword to the book *"Raw Data" Is an Oxymoron*, Geoffrey Bowker presents a graph generated by Google's data visualization tool, "the Ngram Viewer."[6] This technology allows for the tracking of word frequencies and their combinations within millions of books published over extensive periods, ranging from years to decades or even centuries. The specific graph analyzed by Bowker presents a statistical decline in the usage of the terms "knowledge" and "wisdom," juxtaposed with the ascending prominence of the words "data" and "information" in recent decades. Bowker's examination of this graph sheds light on a significant shift in our linguistic and conceptual landscape.[7] The growing prevalence of the words data and information reflects the increasing emphasis on *quantifiable* and *organized* forms of knowledge in contemporary discourse.

When contemplating the term data, our initial associations often gravitate towards its computational aspects, its relevance to the internet, or its connection to modern computers. However, in 1788, a fascinating usage of the term can be found in the transcripts of John Priestly's *Lectures on History and General Policy*. In these lectures, Priestly, a polymath natural philosopher, theologian, and practitioner of graphical representations, referred to historical facts as "data." His approach focused on grappling with extensive constellations of information rather than fixating on individual facts. Through quantitative analysis, he grouped information, plotted it into timelines and charts, and observed patterns and occurrences, demonstrating his fascination with large-scale information exploration.
In his essay "Data Before Fact," Daniel Rosenberg highlights Priestly as an early adopter of the term 'data,' showcasing his pioneering use of graphical representations to present history.

[6] Lisa Gitelman, *Raw Data Is an Oxymoron* (MIT Press, 2013), 167.
[7] Ibid.

While the graphical representation of information is now a common practice, it was a groundbreaking methodology during Priestly's time.[8]

Rosenberg's examination of the historical usage of the term data enables an exploration of its evolution and sheds light on its distinctions from related terms like fact and evidence. The term data originates from the Latin word "datum," which means "that which is given." On the other hand, fact derives from the Latin word "facere," meaning "to do" or "to occur," indicating something that is already existing. Evidence, originating from the Latin verb "videre" meaning "to see," carries an epistemological function, signifying something witnessed or experienced. According to Rosenberg, historically, facts served an ontological function, referring to the existence of something, while evidence had an epistemological role, highlighting something witnessed or experienced. Datum, however, possessed a rhetorical status, being useful in arguments. These three terms formed a system where datum could be a fact, and a fact could be evidence. However, datum existed independently of ontological truth. Therefore, while a false fact ceases to be a fact, false data remains data.[9] So, already prior to the 20th century, "data" had acquired a pre-analytical and pre-factual status. The term predominantly appeared in the context of mathematics before expanding to empirical fields such as medicine and economics.[10]

Rosenberg notes that through history, the semantic function of data or datum has been *specifically rhetoric*. "From the beginning, data was a rhetorical concept. Data means – and has meant for a very long time – that which is given prior to argument. As a consequence, the meaning of data must always shift with argumentative strategy and context – and with the history of both," he writes.[11] This inherent rhetorical quality of data allows for its flexibility in interpretation and understanding, as it lacks a predetermined truth and instead assists us in constructing realities through its rhetorical aspects.

Larger epistemological developments created new conditions for all of these terms mentioned. However, due to data's pre-existing rhetorical nature, it possesses even greater adaptability. It is not bound by a fixed truth but rather serves as a tool for constructing

[8] Daniel Rosenberg, "Data before Fact," in *Raw Data" Is an Oxymoron*, ed. Lisa Gitelman (Ca, Massachusetts : MIT Press, 2013), 15.
[9] Rosenberg, "Data before fact", 17-18.
[10] Ibid, 18.
[11] Ibid, 36.

different interpretations and perspectives, depending on the specific rhetorical context in which it is employed. This flexibility is also why data can be understood differently across various disciplines, as each discipline employs its own argumentative strategies and contextual frameworks. And as we will see, this is a shared property of both data and documentary.

Unrepresentability of Data

The past years, the discussions around data and data visualization have been based on several competing ideas. In his nominal essay *Are Some Things Unrepresentable?* Alexander Galloway argues that data is inherently unrepresentable and ceases to be data when represented.[12] While Rosenberg focuses on a historical distinction between data, fact and evidence, Galloway fronts an ontological relationship between data and *information*. His understanding of data is linked to that of information, both connecting and disconnecting the two terms. Here I quote Galloway quoting Vilém Flusser: "the leaves that fall in the autumn have no information because they are scattered to and fro, but if one puts them into form – for example by moving them around to spell out a word, or simply by raking them into piles – the leaves *gain information*."[13] When data is sorted out, or given a form, it becomes information.

What Galloway essentially does, is to reduce data to their "purest form of mathematical values" and describes the distance from the mode of the mathematical to the mode of the visual as a leap. He argues that any visualization of data would be according to "an artificial form of translation" and that data is in essence unvisualizable. Information on the other hand is "almost tautologically bound up with the concept of form." Information needs form, it must convey a message and even the word information means "in formation" or "being put into form."[14] Data on the other hand is *given* and can gain form and thus becomes information when it enters the realm of aesthetics. Which is to say that data, in what he calls the purest form, does not exist in the visual realm at all.

[12] Alexander Galloway, "Are Some Things Unrepresentable?," *Theory, Culture & Society* 28, no. 7-8 (December 2011): 85–102, https://doi.org/10.1177/0263276411423038.
[13] Alexander R Galloway, *The Interface Effect* (Cambridge, Uk ; Malden, Ma: Polity, 2012), 82.
[14] Ibid.

He thereby presents his two theses: the first being that data has no necessary information, it exists prior to formation. And the second thesis: "only one visualization has ever been made of an information network." Galloway believes that this explains why various visualizations, such as charts, maps, graphs, and illustrations, tend to look similar. His argument stems from the idea that simple infographics and other forms of data visualizations fail to represent deeper social and political power structures, of what Deleuze called the "society of control." Galloway further contends that when information is consistently visualized in a uniform manner, and the visualizations themselves are overly simplistic, they have no valuable function. "What is really visualized are first and foremost the conversion rules themselves, and only secondarily are they a visualization of the raw data".[15]

Interpretation of Data

In the book *"Raw Data" is an Oxymoron* by Lisa Gitelman challenges the very idea of raw data.[16] What if what we perceive as raw data is really already *cooked*? Gitelman, along with Virginia Jackson, points out in the book's introduction that data serves as the foundation for our knowledge, identity, and communication. However, this shared understanding often leads to an implicit assumption that data is inherently transparent, and that information is self-evident.

They remind us that if we are not careful, our eagerness to gather increasing amounts of data can become a "faith in their neutrality and autonomy, their objectivity." They also ask us to think of how people talk and write about data as collected, entered, compiled, stored, processed, mined, and interpreted and emphasize the last one – interpretation. "Data needs to be *imagined as data*, to exist and function as such, and the imagination of data entails an interpretative base."[17] According to Gitelman and Jackson, data is inherently quantitative and rooted in empirical sciences, limiting its ability to incorporate insights from the social sciences and humanities. This reductionist approach neglects critical thought and diminishes our understanding of complex human experiences. As data is collected on individuals, the notion of a "quantified self" emerges, but unfortunately, the more nuanced and qualified

[15] Alexander R Galloway, *The Interface Effect* (Cambridge, Uk ; Malden, Ma: Polity, 2012), 83.
[16] Lisa Gitelman, *Raw Data Is an Oxymoron* (MIT Press, 2013).
[17] Lisa Gitelman, *Raw Data Is an Oxymoron* (MIT Press, 2013), 2-3.

aspects of the self, seem to fade away, overshadowed by a computational interpretation that fails to capture the richness of human interpretation.[18]

By highlighting the interpretive nature of data, Gitelman and Jackson challenge us to consider the limitations and biases inherent in data-driven approaches. They invite us to not only question the dominance of quantitative interpretations, but also advocate for a more inclusive and human-centered understanding of data. Through their critique, they encourage a re-evaluation of how we engage with and interpret data, fostering a deeper awareness of its potential implications and limitations.[19]

Interpretation should indeed serve as the foundation for data visualizations. While Galloway argues for the unrepresentability of data, there are several scholars who advocate for more *complex* visualizations. It is important to note that Galloway's notion of data as the "purest form" is not a useful definition in many disciplines. In this thesis, much of what is discussed as data visualization is what Galloway might term information visualization. However, his strict differentiation between data and information relies on a definition that does not align with the understanding of data in the humanities or its portrayal in popular media.

I align myself with Gitelman's critique of the concept of raw data and support the view of data as having a rhetorical function, as elucidated by Rosenberg. Other scholars such as Johanna Drucker also agrees with Galloway that many contemporary data visualizations are overly simplistic and fail to live up to the significant power ascribed to them. However, as we have explored, the notion of data as something pre-interpreted may inadvertently perpetuate assumptions of objectivity and neutrality, which hinder critical discourse. Later in the chapter I will discuss how this relates to the presumed objectivity of certain documentary practices.

Data visualization

Johanna Drucker also calls for a humanities-oriented approach to data visualization. Drucker strongly criticizes the notion of data as mere descriptions of pre-existing conditions, emphasizing the need to reframe data through a humanistic lens. She distinguishes between

[18] Gitelman, *Raw Data Is an Oxymoron*, 1-15.
[19] Ibid, 1-15.

realist and humanist perspectives on data and data visualization, aiming to break away from the realist perspective that characterizes data as simple observations, assuming transparency and equivalence. This understanding of data "collapses the critical distance between the phenomenal world and its interpretation," she writes.[20]

Drucker points out that the current charts and models we employ often prioritize certainty and observer-independence, neglecting the inherent complexity and ambiguity necessary to achieve more nuanced representations.[21] However, the challenge does not lie solely in creating more complex data visualizations through additional considerations and modifications. Drucker contends that the more profound challenge lies in embracing the *ambiguity of knowledge* and recognizing that data is fundamentally constructed through interpretation.[22]

To address this, Drucker proposes rebranding data as "capta," highlighting the fact that data is always captured and constructed rather than simply given. This conceptual shift reframes data as something actively taken and shaped, acknowledging the role of human agency in its creation. Drucker's understanding of capta emphasizes its situated and partial nature, asserting that this forms the foundation for knowledge production.[23] By reconceptualizing data as capta and data visualization as capta visualization, we acknowledge that all knowledge is constructed and rooted in humanistic interference. This approach prompts a more nuanced understanding of data and encourages *critical* engagement with its production and visualization processes.

For instance, when visualizing gender distribution with the conventional approach of two bars or blocks, we inherently reinforce the notion that gender exists in a binary form. However, contemporary understanding largely acknowledges that gender is a social construct, challenging the binary framework.[24] Bowker reminds us that our acceptance of concepts that align with our worldview leads us to perceive them as natural, yet this

[20] Johanna Drucker, "Humanities Approaches to Graphical Display," *Digital Humanities Quarterly* 5 (2011), 1.
[21] Drucker, "Humanities Approaches to Graphical Display, 3.
[22] Ibid.
[23] Ibid.
[24] It must be noted that not everyone accepts an alternative to the binary gender definition, even if it feels like it is largely accepted within the humanities.

perception is socially constructed. This illustrates that what we consider natural is always influenced by societal factors.[25]

Data visualizations, due to their association with empirical sciences, can mask their epistemological biases behind a veil of familiarity. For instance, when charts assume a binary gender framework, they exclude representation of other genders and nuances. Such visualizations may not align with humanistic perspectives, yet, visually they are familiar. To overcome these harmful assumptions and deceptions, it is crucial to approach data visualization within the humanities with critical awareness, for example in domains like documentary discourse.

In her essay, Drucker proposes more intricate visualizations and a humanistic approach. These visualizations acknowledge the interpretative nature of knowledge and are designed to embody qualitative expressions. She examines an example comparing the percentage of men and women in different national populations at present. While a basic bar chart that depicts this comparison may hold an “appearance of certainty” at first glance, it raises numerous questions.[26] What defines a nation? What timeframe constitutes the "present"? Are transient and immigrant populations accounted for? Additionally, the binary gender definition employed by the chart reinforces fixed categories.

To challenge the premises underlying the conventional chart, Drucker presents an *alternative* visualization. In this alternative chart, gender representation is depicted as a *sliding scale*. It demonstrates that visualizing a dataset is not a direct one-to-one correspondence but rather an interpretation shaped by specific perspectives. This exemplifies the importance of recognizing the interpretative nature of data visualization and embracing alternative approaches that allow for more nuanced and inclusive representations.[27]

Gitelman and Jackson write that “data visualization amplifies the rhetorical function of data, since different visualizations are differently effective… and all data sets can be multiply visualized and thereby differently persuasive”.[28] Just as data itself can be shaped and

[25] Gitelman, *Raw Data Is an Oxymoron*, 169.
[26] Drucker, “Humanities Approaches to Graphical Display.
[27] Drucker, “Humanities Approaches to Graphical Display.
[28] Gitelman, *Raw Data Is an Oxymoron*, 12.

interpreted within different rhetorical contexts, data visualizations can also be subject to interpretation and manipulation, and by rhetorical objects. The design choices, visual encoding techniques, and narrative elements employed in data visualizations all contribute to the message conveyed. They can prioritize certain aspects of the data, highlight specific narratives, thus influencing the audience's understanding and response, rather than mere conveyors of truth. By recognizing data visualizations as rhetorical objects, we acknowledge the inherent subjectivity and potential for bias in their creation and interpretation.

Bias in data

Gitelman and Jackson further ask us to "look under" the data in question so we can ascertain how, why and by who it was defined, acquired, processed, and interpreted.[29] In *Technologies of Vision: The War Between Data and Images*, Steve Anderson builds on that and asks us to look under the systems and assumptions by which data and images are positioned in relation to each other as well.[30] Before delving into the intricate relationship between data and images, it is important to further look under data itself.

Understanding datasets as inherently situated, motivated, and partial is crucial for several reasons. In recent years, concerns about bias in datasets have gained prominence, particularly due to the harmful consequences they can lead to, such as wrongful arrests and discriminatory hiring practices.[31] Kate Crawford reminds us to question the exclusions present in every dataset: Which individuals or groups are being excluded? Which places or perspectives remain less visible? What are the implications for those who live in the shadows of large datasets?[32]

When individuals or groups are excluded from a dataset, any technology trained on that dataset may not effectively work for them. This is evident in the case of facial recognition technology highlighted in the documentary film *Coded Bias* (2020). Due to a lack of diverse training data, facial recognition technologies often struggle to recognize dark-skinned faces.

---

[29] Gitelman, *Raw Data Is an Oxymoron*, 12.
[30] Steve Anderson, *Technologies of Vision : The War between Data and Images* (Cambridge, Massachusetts: The Mit Press, 2017), 9.
[31] Several good examples discussed in: Ruha Benjamin, *Race after Technology: Abolitionist Tools for the New Jim Code* (Cambridge: Polity, 2019).
[32] Kate Crawford, *The Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence* (Yale University Press, 2021).

The problem of discriminatory technology can often be traced back to the biases inherent in the datasets upon which they are built.[33] Each dataset is embedded within a pre-existing social hierarchy that predates the era of digital data mining. This historical context of data and information collection necessitates a critical examination. Echoing Michel Foucault's call for an archaeological dig into social categories and their consequences, Geoffrey Bowker and Susan Star further emphasize the need to closely scrutinize the invisible forces at play within categories and standards in our modern built world.[34,35]

In the current technological landscape, we observe that these categories and classification systems, although often hidden from public view, permeate every facet of society. As we navigate through an AI-driven world that shapes our contemporary existence, also images and videos become enmeshed in these categorization and classification systems. While humans still hold a significant role in training computers to recognize visual content, the value of their contributions largely depends on their ability to translate complex visual information into computable data.[36]

In the comprehensive study *Racism in the Machine*, a group of scholars critically examine the harmful aspects of data visualizations by analyzing two digital mapping projects: *Racial Terror Lynchings* and *Map of White Supremacy Mob Violence*. Their analysis reveals that the former presents an incomplete depiction of racial lynchings, while the latter project acknowledges its own limitations, biases, and underlying assumptions. [37] By examining these case studies, the study highlights how data visualizations can inadvertently perpetuate biases and distortions if not critically evaluated and conscientiously designed. It underscores the importance of acknowledging the complexities and potential harms associated with data visualizations and emphasizes the need for transparency, self-reflection, and critical scrutiny in the creation and interpretation of visual representations of data. [38]

To address the issues of exclusion and violation within datasets, it is essential to investigate the individuals or groups that are being ignored or marginalized. While this thesis does not

---

[33] *Coded Bias* (Netflix, 2020).
[34] Geoffrey C Bowker and Susan Leigh Star, *Sorting Things out : Classification and Its Consequences* (Cambridge, Mass.: Mit Press, [Ca, 2008).
[35] Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London: Routledge, 1991).
[36] Anderson, *Technologies of Vision, 103.*
[37] Abstract for: Katherine Hepworth and Christopher Church, "Racism in the Machine: Visualization Ethics in Digital Humanities Projects," *Digital Humanities Quarterly* 12, no. 4 (2018).
[38] Ibid.

aim to provide an exhaustive examination of these complexities, there exist noteworthy artworks and films that tackle these questions. In the following chapters, some of these works will be discussed, shedding light on the intersection of data, classification, and societal implications.

Data and images

The role of photography in the realm of documentary politics has been a subject of extensive discourse. Susan Sontag, in her writings decades ago, astutely observed that photography entails an act of appropriation, where the photographer establishes a particular relationship with the world that imbues a sense of knowledge and therefore feels like power.[39] Parallel to that, Steve Anderson asks "what type of exchange is then implied by the capturing of data?"[40] In *Technologies of Vision*, Anderson presents valuable work in connecting the two discourses on image and data. Photographs today are basically data because every pixel holds information, and there are some important connections to be addressed.[41]

Today, it is evident that photography involves the subjective act of framing and selection, where each captured frame is chosen by the photographer from a larger experiential context. However, it took considerable time to arrive at this understanding. Since the turn of the century, mechanically produced images, and their potential to create "true-to-nature representations" have posed ethical and epistemic concerns for many scientists. These reproductions were initially believed to be entirely untouched by human intervention—an aspiration toward mechanical objectivity in scientific endeavors, striving for objective depictions by minimizing interpretative elements in the image reproduction process.

Drawing on Allan Sekula's *Body and the Archive*, we encounter an early example of how screen media and classification practices became entangled. The advent of photography gave rise to a visual documentation practice, wherein photographic portraiture found applications as medical illustrations. This led to the establishment of a generalized look, a typology and the identification of deviations and social pathologies.[42] This historical context highlights the

[39] Susan Sontag, On Photography (New York: Farrar, Straus and Giroux, 1977), 2.
[40] Anderson, *Technologies of Vision*,11.
[41] Ibid.
[42] Allan Sekula, "The Body and the Archive," *October* 39 (1986): 3–64.

trajectory of photography and its intricate relationship with objectivity, interpretation, and the pursuit of scientific fidelity. It serves as a reminder that the concept of photographic objectivity was a desired outcome, albeit one that was never fully realized.

When William Henry Fox Talbot introduced his book *The Pencil of Nature* (1844), featuring photogenic drawings, debates arose regarding the level of human intervention in the photographic process. Some asserted that the plates in the book were solely produced through the agency of light, without any involvement from the artist's pencil. These plates were perceived as direct impressions of the sun itself, dispelling the misconception that they were engravings imitating the originals. Talbot himself described them as images "impressed by nature's hand," attributing the process to the power of light alone.[43] However, the question of photography as an art form also emerged. It was believed that genuine art should bear the imprint of the creator's individuality and imaginative interpretation. A mere mechanical copy of nature was deemed inadequate in qualifying as true art.[44]

This distinction between art and science fostered the perception that objective, scientific photography, and subjective, artistic photography should remain separate domains. Notably for this paper, in the realm of filmmaking, the English photographer Eadweard Muybridge played a role in these discussions. As a commercial photographer, Muybridge was known to retouch his photographs, including his renowned series capturing galloping horses, which was initially regarded as part of a scientific project. The ability to retouch the images, a common practice at the time, raised questions about whether they could still be considered mechanical or objective, ultimately highlighting the fact that photographs were subject to interpretation and intervention by the human hand. [45]

Anderson highlights the extensive historical trajectory of photography, which has involved instrumental applications in scientific, military, territorial, and criminological contexts. This complex history prompts us to recognize that photography is intricately "enmeshed in a tangled web of ideology and state power as much as in the eye of the beholder," as articulated

[43] Lorraine Daston and Peter Louis Galison, *Objectivity* (New York: Zone Books, 2015), 131.
[44] Ibid, 131-133.
[45] Ibid, 133.

by Sekula.[46] On the other hand, Anderson asserts that data has always been *explicitly* instrumental and characterized as such.[47]

While discussions on photography cannot be directly transposed to data visualization due to their inherent differences, they can be valuable in examining data visualizations and the relationship between data and images. It is crucial to remember that today's imaging and data systems are just as ideologically infused as their predecessors, and that critical frameworks from visual culture theory have always delved into systems of power and knowledge, as well as the politics and pleasures of perception.[48] These insights remain highly pertinent to the study of digital culture.

One useful approach is to comprehend data within the framework of cultural terms as an integral part of visual culture. Mark Nash, an art critic and curator, contends that in our increasingly mediated world, social processes possess an aesthetic dimension, making it challenging to identify areas of personal and social life unaffected by art or visual culture.[49] Documentary, data visualizations, and photography all play roles in social processes, and their functions are intertwined. Therefore, by acknowledging the interplay between data visualization, photography, and documentary, we can gain a deeper understanding of their significance within social dynamics and the ways in which they shape and are shaped by cultural contexts.

---

[46] Allan Sekula, "The Body and the Archive," *October* 39 (1986): 3–64.
[47] Steve F Anderson, *Technologies of Vision : The War between Data and Images* (Cambridge, Massachusetts: The Mit Press, 2017).
[48] Anderson, *Technologies of Vision.*
[49] Mark Nash, "Reality in the Age of Aesthetics | Frieze," Frieze, April 1, 2008, https://www.frieze.com/article/reality-age-aesthetics.

PART 2: DOCUMENTARY

In the essay *Machines of the Visible*, Jean-Louis Comolli argues that the significance of cinema apparatus lies not merely in its technological aspects, but in its integration into social practices and needs. While inventions and advancements in cinema technology came and went, what truly mattered was how they were shaped by and integrated into the broader social context. [50] For instance, the emergence of commercial cinema, a relatively new phenomenon at the time of Comolli's writing, was rooted in decades of image culture that had prepared audiences for this new form of entertainment. Thus, the cinematic experience was not solely determined by technological possibilities, but also by the prevailing popular demand and the broader social, cultural, and historical factors that enveloped it.

This understanding of cinema as rooted in social factors also applies to documentary films, whether they exist within the commercial cinematic sphere or as more experimental works. Documentaries often centre around social awareness and have the goal of instigating change. For example, the most notable films in 2022 include *Navalny* (2022) which critically examines Putin's regime amidst Russia's invasion of Ukraine[51]and *All the Beauty and the Bloodshed* (2022), which not only portrays the life of artist Nan Goldin but also explores the role of the art world in the ongoing global Opioid crisis, exemplify the genre's engagement with pressing social issues.[52]

Documentary as a genre has been important because of its ability to make us see important issues. Filmmakers can approach subjects and situations and find specific ways of representing them. Because of the very close bond between documentary and the perception of historical, certain films largely contribute to our popular memory, not only by showing images but by showing perspectives on and interpretations of historical issues and events. In his seminal textbook *Representing Reality* (1992) Bill Nichols starts by acknowledging that while there are numerous scholarly works on fiction film, a comprehensive work on documentary film is yet to be fully realized.[53] To bridge this gap, Nichols draws heavily from

---

[50] Jean-Louis Comolli, "Machines of the Visible," in *The Cinematic Apparatus*, ed. Teresa De Lauretis and Stephen Heath (New York: St. Martin's Press, 1980), 121–42.
[51] *Navalny* (Warner Bros. Pictures, 2022).
[52] *All the Beauty and the Bloodshed* (Neon, 2022).
[53] Bill Nichols, *Representing Reality : Issues and Concepts in Documentary* (Bloomington, Ind.: Indiana Univ. Press, 1991), 1.

research conducted on narrative, rhetoric, realism, ideology, power, and knowledge as they relate to documentary film. By incorporating these interdisciplinary perspectives, Nichols strives to provide a comprehensive understanding of the documentary form and its multifaceted nature.

Modes of documentary

Over time, the landscape of documentary films has expanded from predominantly "observational film," characterized by their non-interventionist style of capturing reality, to a diverse array of subgenres. The emergence of reflexive films, which offer commentary on the properties of the film medium itself, and experimental films that challenge our perception and explore new possibilities, has significantly enriched the documentary genre. Throughout history, documentary films have served multiple roles, such as a source of knowledge, a means of providing visual evidence, and more, and therefore encompasses a wide range of genres, methods and formal strategies.

Despite being categorized alongside other nonfictional systems like science, education, and policy, documentaries have often struggled to achieve equal recognition. They rather appear as pale *reflections* of the dominant and instrumental discourse on social issues. According to Nichols, documentaries are concrete, material, and specific. They encompass images, sounds, and narratives that bring the real world to life. However, film as a medium continues to be viewed as *illusionistic*, even though it possesses the ability to reflect our society in significant ways.[54]

Given the impact that documentary films can have on society, it becomes essential to analyse not only their *content* but also their *form* and rhetoric. While discussions often arise around the content of documentary films, particularly when they address pressing issues in contemporary society, it is equally important to delve into the rhetorical strategies employed by filmmakers. Consider the critically acclaimed film *The Thin Blue Line* (1988), which explores the real trial of a murdered police officer. [55] The film exposes the inconsistencies and incongruities within the trial process, highlighting the role of recidivism and the possibility of exonerating an innocent person. However, it is equally crucial to examine the

[54] Nichols, *Representing Reality*.
[55] *The Thin Blue Line* (Miramax Films, 1988).

rhetorical strategies employed by the filmmaker Errol Morris. This includes the use of recreations of events and the skilful integration of narrative and fiction into the documentary, which traverse the boundaries of poetics. Exploring the film's own patterns and preoccupations further enhances our understanding of its impact and the artistry involved.

Bill Nichols recognized the limited attention given to discussions regarding documentary form and stylistic strategies during the 1980s and 1990s. To some extent, this situation persists today. However, it is crucial to acknowledge the importance of analysing the rhetoric, and stylistic choices in documentary films considering the current landscape where filmmakers have access to vast amounts of data and images. Access to data and images has brought about significant changes in the form of documentaries and their relationship not only to fiction films, but also to other data visualization methods.

Before we delve into the impact of data, it is useful for the sake of the thesis to revisit some of the documentary modes of representation identified by Nichols several decades ago.[56] These modes—observational, interactive, reflexive, and expository—arise as responses to perceived *limitations*, as well as technological *possibilities*, and changing social contexts. As we have seen, the significance of questioning the ontology of photography and the true representation of images was not limited to the digital era. Even before the advent of digital images, documentaries played a role in challenging the notion of photography as a *record,* especially in what Nichols referred to as the "interactive mode."[57] Movements like Kino-Pravda in the Soviet Union used the camera to unveil the illusory absence, introducing a sense of partialness, situated presence, and local knowledge. This approach was continued by other movements such as French Cinéma Vérité and North American Direct Cinema, where filmmakers not only observed and recorded but also interacted and intervened in the documentary process.

Another significant mode of experimental documentary identified by Nichols is the 'reflexive mode.' In this mode, filmmakers shift their focus from directly discussing historical events to exploring the process of representation itself. It examines the *how* of presentation rather than

[56] Nichols, *Representing Reality*.
[57] Historically, photography played an important role in forming a scientific record: e.g., in atlases, handbooks, reports etc. For example discussed in Lorraine Daston and Peter Louis Galison, *Objectivity* (New York: Zone Books, 2015), 131.

the *what,* being self-conscious about form, style, strategy, structure, conventions, expectations, and effect. [58] What distinguishes this mode is its emphasis on the filmmaker and the viewer. Filmmakers operating in the reflexive mode prioritize the relationship with the viewer over the subject matter. A prime example of this approach is Dziga Vertov's *Man With a Movie Camera* (1929).[59] The film presents a range of signifiers—people, social actors—that extend beyond the frame, representing historical contexts and ideologies. By doing so, the film challenges viewers to grapple with complex issues and poses thought-provoking questions.[60]

A noteworthy filmmaker in this mode is Trinh T. Minh-ha, a Vietnamese American filmmaker. Minh-ha explores experimental ways of representing native culture as the subject of her films, but she also acknowledges her intention "not to speak about/just speak nearby."[61] This statement addresses the concerns surrounding ethnographic documentary film, while also suggesting alternative approaches for navigating those concerns. By foregrounding the process of representation and the relationship between filmmaker and viewer, the reflexive mode invites critical engagement and prompts viewers to question their assumptions and preconceptions. I believe that the reflexive mode is important for this thesis question, as it encourages an active and self-reflective stance towards the documentary form, pushing the boundaries of storytelling and challenging traditional documentary conventions. I elaborate on this mode later in the chapter, when discussing a more expanded, and updated understanding of documentary than the one presented by Nichols in the 90s.

Data visualizations *in* documentary

The rest of this thesis is mostly concerned with films that are either in the interactive or the reflexive mode. I am interested in documentaries, that themselves function *as* a data visualization. However, it is important to acknowledge that data visualizations are often merely employed *in* documentaries. Originating in the 1930s, the expository mode aimed to shape public opinion and provide educational content. These films typically feature a narrator who directly addresses the viewer, presenting a specific argument about the historical world.[62]

---

[58] Nichols, *Representing Reality*, 56-57.
[59] Dziga Vertov, *Man with a Movie Camera*, 1929, Film, 1929.
[60] Nichols, *Representing Reality,* 57.
[61] Trinh T. Minh-ha, *Reassemblage*, 1982, Film, 1982.
[62] Nichols, *Representing Reality*, 34-36.

In the context of data visualization in documentary films, it is important to recognize that the expository mode frequently employ data visualizations to bolster their arguments and present information in a persuasive manner. By incorporating charts, graphs, infographics, and other visual representations of data, these films enhance their ability to effectively convey complex information effectively. Data visualizations serve to support the filmmaker's specific viewpoint and contribute to persuading viewers. The knowledge which is presented is often epistemic knowledge in Foucault's sense —knowledge that conforms to established categories and concepts accepted as true within a specific time and place. These categories and concepts typically align with prevailing ideologies and commonly held beliefs, appealing to what is perceived as common sense. In expository films, data visualizations help reinforce these accepted categories and concepts, reinforcing the dominant ideology and shaping viewers' perspectives.[63]

For instance, the short film *If You Love This Planet* (1982) by Terre Nash, which is associated with the Peace Movement, can be considered an exemplar of the expository mode. It juxtaposes footage and voiceover of Dr. Helen Caldicott's warnings about nuclear holocaust with black and white images depicting the bombings of Hiroshima and Nagasaki. The film employs formal elements to underscore a distinct anti-nuclear stance, and the images are already imbued with interpretation.[64]

Another example of such usage can be found in the documentary *13th* (2016) by Ava DuVernay, which exposes the intersection of racial injustice and mass incarceration in the United States.[65,66] The film heavily relies on graphs and illustrations, which prove instrumental in communicating the film's message. These visualizations not only facilitate understanding but also create an impression of objectivity and well-substantiated judgment regarding the subject matter.

In expository films like these, expert interviews and voiceovers are often effective strategies for providing a generalized interpretation of the presented images and visual material, thereby

---

[63] Nichols, *Representing Reality,* 35.
[64] Terre Nash, *If You Love This Planet*, 1982, 1982.
[65] Manohla Dargis, "Review: '13TH,' the Journey from Shackles to Prison Bars," *The New York Times*, September 30, 2016, https://www.nytimes.com/2016/09/30/movies/13th-review-ava-duvernay.html.
[66] *13th* (Netflix, 2016).

eliminating extraneous contextual elements. Points can be made succinctly and emphatically by eliminating surrounding circumstances such as references to the process by which knowledge is produced, organized, regulated and so on.[67]

Finally, data visualizations have emerged as a crucial component in certain documentaries, particularly those seeking to raise awareness about pressing issues. One notable example is, *An Inconvenient Truth: A Global Warning* (2006), by Al Gore.[68] In this documentary, climate data is presented through the use of graphs and charts. These visual representations are combined with sequential images of climate catastrophes, employing a range of rhetorical strategies to elicit conviction and urgency. In essence, what *An Inconvenient Truth* accomplishes is not merely persuasion through rational argumentation, but rather the mobilization of viewers at an affective level. By evoking emotions and stirring a sense of urgency, the film aims to galvanize action and spur individuals to address the climate crisis. The film strategically employs the indexical claim of data visualization, suggesting that seeing the visual evidence equals acquiring knowledge. The inclusion of the word "truth" in the title further underscores the film's intention. [69]

Expanded understanding of documentary

The book *Documentary: Witness and Self-revelation* by John Ellis opens with the sentence: "documentary is easy to identify, but difficult to define." Ellis goes on to point out how the documentary genre has undergone many changes, a major one happening right now.[70] Today, the concept of documentary extends beyond traditional film-based formats and encompasses a diverse range of media. It exists within a complex media environment that is characterized by nonlinearity, being more open-ended, and a multiplicity of platforms. In this contemporary landscape, cinema can no longer be regarded as the dominant medium it once was in the twentieth century, or the "cultural dominant" in Fredric Jameson's sense, which opens up for new possibilities.[71]

---

[67] Nichols, *Representing Reality,* 34-38.
[68] *An Inconvenient Truth* (Paramount Vantage, 2006).
[69] Sean Cubitt (chapter 1, note 47 KIM)
[70] John Ellis, *Documentary: Witness and Self-Revelation* (New York: Routledge, 2011), 1.
[71] According Fredric Jameson, postmodernism transformed the historical past into "emptied-out stylizations" or "pastiche" than can be commodified and consumed. He ties mass-media and media culture to a form om "hegemony." In this context, the cultural dominant is the postmodern mode of production, which for Jameson means the "different styles" that fit into the logic of late capitalism. Cinema was also regarded as mass culture in this sense. I argue in this thesis that when cinema is no longer the dominant medium, it also becomes more

The emergence of the "post-cinematic condition" can be attributed to the rise of computer-based media, as articulated by scholars such as Lev Manovich and Anne Friedberg. Friedberg identified the postmodern in a mobilization of our virtual gaze through the repeatability – where the cinematic apparatus can quote itself, repeat its earlier form. [72] Manovich, in his seminal work *The Language of New Media*, explores this intricate relationship, primarily focusing on formalist aspects across various mediums.[73] Technological developments have forged a close relationship between networks, interfaces, databases, and the cinematic. However, his critics argue that Manovich's approach is purely formalist and lacks a thorough examination of the *political* and *social* dimensions inherent in these media transformations.[74]

In the next two chapters, I present films that delve into the interplay between networks, interfaces, and the cinematic medium, with the aim of effecting *social change*. These films exemplify the exploration of this relationship and demonstrate the potential for documentary to operate within this post-cinematic framework. By embracing new media technologies, documentary filmmakers can leverage the power of networks, interfaces, and databases to engage audiences, challenge dominant narratives, and foster social and political dialogue. The availability of extensive data and visual resources has revolutionized the documentary landscape, empowering filmmakers to integrate data visualizations, infographics, and interactive elements into their films. This convergence of data and visual storytelling blurs the boundaries between traditional documentary filmmaking and other data visualization methods, allow possibilities for conveying information and engaging audiences.

By drawing from techniques derived from data visualization, documentary filmmakers can effectively communicate complex concepts and data-driven narratives in a compelling and accessible manner. Visual representations such as charts, graphs, and infographics help distil intricate information into digestible visual formats, enabling viewers to grasp the significance and implications of the data presented. However, the integration of data and images in documentaries also raises important ethical considerations. Filmmakers must navigate the

---

open-ended and can function as a mediun of resistance.
For example: https://newleftreview.org/issues/i146/articles/fredric-jameson-postmodernism-or-the-cultural-logic-of-late-capitalism, or https://www.marxists.org/reference/subject/philosophy/works/us/jameson.htm.

[72] Anne Friedberg, *Window Shopping: Cinema and the Postmodern* (Berkeley: University Of California Press, 1993).

[73] Lev Manovich, *The Language of New Media* (Cambridge: Mit Press, 2001).

[74] Alexander R Galloway, *The Interface Effect* (Cambridge, Uk ; Malden, Ma: Polity, 2012), 5-7.

challenges of data selection, ensuring the accuracy and reliability of the information portrayed. They must critically examine the interpretation and potential biases embedded in the visualization of data, striving for transparency and fairness.

The documentary genre, while often existing outside the commercial cinematic sphere, is not immune to the influence of the post-cinematic era. In his book *Documentary's Expanded Fields: New Media and the Twenty-first-Century Documentary* (2022), Jihoon Kim highlights the notion of expansion within the documentary field, which can be understood in two ways.[75] Firstly, the concept of "expanded cinema" as articulated by Gene Youngblood,[76] refers to cinematic practices that go beyond the conventional boundaries of the cinematic image, apparatus, and spectatorship. This expansion is a result of the emergence and impact of electronic and digital media. With the advent of new technologies, such as television, computers, synthesizers, and more, the possibilities for non-standardized cinematic forms have expanded. This allows for a broader range of creative expression and experimentation within the documentary genre.

Secondly, Kim draws on the idea of the "expanded field" proposed by art critic Rosalind Krauss. In this context, the notion of expansion refers to art practices that are not limited to a specific medium but instead engage in logical operations using various cultural terms. Any medium, whether it be photography, books, lines on walls, mirrors, or sculpture, can be employed to create artistic expressions within this expanded field.[77] This concept also extends to cinematic components that exist outside the traditional movie theatre setting, such as moving image installations in galleries, biennials, and museums. By embracing these expanded notions of cinema and engaging with diverse mediums and contexts, the documentary genre is able to transcend traditional boundaries. It allows for a more fluid and dynamic engagement with the audience, blurring the lines between cinema and other forms of artistic and cultural practices.

---

[75] Jihoon Kim, *Documentary's Expanded Fields : New Media and the Twenty-First-Century Documentary* (New York, Ny: Oxford University Press, 2022).
[76] Gene Youngblood, *Expanded Cinema* (New York: E. P. Dutton, 1970), 58.
[77] Krauss' text considers how the understanding of "sculpture" has evolved alongside the expansion of the art field. While this notion, also fits with the expanding field of documentary.
Rosalind Krauss, "Sculpture in the Expanded Field," *October* 8 (1979): 30–44, https://doi.org/10.2307/778224.

Craig Hight acknowledges that the impact of digital technologies will disrupt established technical and ontological binaries that have shaped the traditional categorization of images in documentary cinema. The distinctions between lens-based and found images, production and post-production, inscription and manipulation, observation and imagination, and between photographic and graphic are being challenged. For instance, animations can be employed to represent reality while the camera manipulates the viewer's perception. These expanded possibilities in image-making techniques offer a range of relationships between the photographic and the graphic, blurring the boundaries between them.[78,79]

Jihoon Kim expands the discussion beyond images, emphasizing the importance of viewer perception, textuality, memory formation, archives, and the reinvention of documentary forms and their effects on audiences in the context of social change and activism. This multidimensional approach to documentary filmmaking explores how viewers engage with the textual elements, how memories are constructed through documentary archives, and how the medium can be reinvented to mobilize audiences and catalyze social movements.

In Patricia Zimmerman's book *Documentary Across Platforms: Reverse Engineering Media, Place and Politics* (2019) she advocates for a more profound approach, urging a process of dismantling and rebuilding the world through conceptual redesign, within a multi-platformed media landscape by which she refers to the contemporary media environment characterized by the proliferation of various platforms and technologies through which media content is produced, distributed, and consumed.[80] Zimmerman also argues that traditional boundaries between different media forms and platforms have become increasingly blurred. The advent of digital technologies and the internet has enabled new modes of storytelling, interaction, and engagement with media content across multiple platforms, such as television, film, websites, social media, mobile devices, and interactive installations. She thereby embraces

---

[78] Craig Hight, "The Field of Digital Documentary: A Challenge to Documentary Theorists," *Studies in Documentary Film* 2, no. 1 (March 28, 2008): 3–7, https://doi.org/10.1386/sdf.2.1.3_2.

[79] André Bazin described this pursuit as a desire for a cinematic/photographic realism, where the aim is to present audiences with a faithful representation of reality. However, it's important to distinguish this pursuit from the objective of realism and the documentation of reality, which is the primary concern of documentary filmmaking. Instead, the aim of commercial cinema is to create the illusion of representation, allowing viewers to fully immerse themselves in the narrative. For instance, through the use of computer imagery, the audience can readily accept the concept of a cyborg from the future, while the rest of the film remains recognizable and familiar. André Bazin, "The Myth of Total Cinema," in *What Is Cinema? Volume I* (Berkeley: University of California Press, 2004).

[80] Patricia Rodden Zimmermann, *Documentary across Platforms : Reverse Engineering Media, Place, and Politics* (Bloomington, Indiana: Indiana University Press, 2019).

films that are produced outside what she calls "the documentary industry," films that vary in length, duration, budget, and most importantly formats. These works are often idealistic and often attempt to comment on the documentary format itself. "Through excavation, exhumations, and archaeologies, these various documentary practices posit history not as laden with artifacts of the past, but as a series of active renegotiations to create new imaginaries of possible futures," she writes.[81]

Documentary and the real

The documentary genre has long relied on its claim to reality, truth, and objectivity. However, Hito Steyerl challenges this notion, highlighting the perpetual doubt and nagging insecurity that accompanies contemporary documentary as a shadow, "whether what we see is true, real, factual and so on".[82] But at the same time, she does not think this uncertainty is a "shameful lack which has to be hidden," but rather it is the core quality of contemporary documentary mode.

In their book *Documentary Across Disciplines* (2016), Erika Balsom and Hila Peleg mention several threats to the documentary genre. One is from the spurious reality-effects of mass media, and another is from theoretical discourse, from the diminished importance of the referential dimension of the image. Rather than perceiving an image as a reflection of reality, it has been subjected to reductive modes of interpretations. In our contemporary era, characterized by the proliferation of simulated reality effects as Jean Baudrillard argued, questions regarding the real and the referent have become outdated. All images are now understood as products of codes and conventions, blurring the line between fictional and documentary images, as they are equally constructed.[83,84]

However, Balsom and Peleg suggest that there are instances when we need to *believe* in what we see, to establish a trust between the maker and the viewer. This creates a space in which documentary, art, and film can thrive, as explored in this thesis. Because today, we are no

---

[81] Zimmermann, *Documentary across Platforms,* 3.
[82] Hito Steyerl, " Documentary Uncertainty," *A Prior Magazine*, 2007.
[83] Erika Balsom and Hila Peleg, *Documentary across Disciplines* (Berlin: Haus Der Kulturen Der Welt ; Cambridge, MA, 2016), 14.
[84] Jean Baudrillard's philosophical concept of simulation as the imitation of the operation of a real-world process over time.

less concerned about the real and the reality. In fact, a couple of years ago, Erika Balsom described a contemporary preoccupation with the "collapse of the reality" due to post-truth politics, fake news, deep-state conspiracies and so on. Yet, according to Balsom, documentary reflects on its relationship to truth more frequently than any other form of image-making, and precisely because of its indexical bond to the real, it is simultaneously a battleground, and a terrain upon which commitments to reality are challenged and interrogated.[85]

The constant challenges to the realness of documentary have compelled the genre to reinvent itself. Therefore, documentary's commitment to reality is constantly challenged and questioned *within the realm of documentary* through various subcategories. Balsom argues that these films often employ unconventional formal strategies and reflexive techniques that disrupt the conventional notion of documentary as a straightforward representation of reality. [86] Linda Williams also proposes a form of "new documentary," which responds to technological change, and epistemological uncertainty by turning to methods such as artifice, performativity and reflexivity.[87] She emphasizes that many films took the postmodern critiques seriously and foregrounded contingency and used strategies like essayism, docufiction and re-enactment to "blur boundaries."[88] So when, for example contemporary art was succumbed to what is described as a "documentary turn," in art, it was precisely because of these more sophisticated approaches to questions of truth.[89,90]

Reflexivity

Expanding on Balsom's and Williams' insights, Jihoon Kim delves further into the exploration of the constructed nature of documentary images. Kim argues that this

---

[85] Erika Balsom, "The Reality-Based Community - Journal #83 June 2017 - E-Flux," E-flux.com, 2017, https://www.e-flux.com/journal/83/142332/the-reality-based-community/.
[86] Erika Balsom, "The Reality-Based Community - Journal #83 June 2017 - E-Flux," E-flux.com, 2017, https://www.e-flux.com/journal/83/142332/the-reality-based-community/.
[87] Linda Williams, "Mirrors Without Memories: Truth, History, and the New Documentary," *Film Quarterly* 46, no. 3 (Spring 1993): 9–21.
[88] What is the postmodern critique?
[89] Balsom, "The Reality-Based Community".
[90] Filmmakers like Harun Farocki and Chris Marker are exemplary in this regard, as they navigate the boundary between fiction and documentary, prompting viewers to engage critically with the constructed nature of images while still compelling them invest in the depicted realities. Documenta 11 also explored the documentary turn athe curator Okwui Enwezor has underlined the importance of documentary in art several times.

interrogation of reality extends beyond purely lens-based capture and encompasses digitally manipulated films as well. These films aim to reveal the constructed and often concealed nature of the images that frequently function as evidentiary material in documentary filmmaking.[91] By manipulating and deconstructing the images, *filmmakers themselves* challenge the presumed objectivity and authenticity of documentary representation, emphasizing the role of construction and mediation in shaping our understanding. Filmmakers also encourage critical engagement with the constructed nature of documentary representation, inviting viewers to question and reevaluate their own perceptions of truth and reality.

In his analysis of reflexive documentary films, Jay Ruby emphasizes the importance of providing audiences with a comprehensive understanding of the three fundamental components of filmmaking: the producer, the process, and the product. According to Ruby, a reflexive documentary is structured in a way that allows the audience to perceive these components as an integrated whole, urging them to recognize the significance of this knowledge. It is through this integration that viewers can engage with the film in a complex and critical manner.[92]

Further, Ruby acknowledges that the documentary genre often tends to overly emphasize its ability to be objective, neutral, and unbiased. Yet, he distinguishes reflexivity in film from mere self-consciousness. In his article *The Image Mirrored*, written in the late 1970s, he highlights the prevalence of reflexivity in fiction films, particularly in parodies and comedies, compared to documentary films. Nevertheless, he cites notable examples, such as Soviet filmmakers of the 1920s and 1930s and French filmmakers of the 1950s and 1960s, as instances where reflexivity thrived. For instance, Vertov, who focused more on revealing the filmmaking process rather than the self in his works. Vertov aimed to demystify the creative process by exposing the mechanical, technical, methodological, and conceptual aspects of film. His intention was to foster a more sophisticated and critical audience capable of perceiving the world through a new lens. Vertov's approach aligns with the notion that revolutionary filmmakers throughout history have been at the forefront of reflexive filmmaking. By equipping audiences with technical and structural competence about the

[91] Kim, page number.
[92] Jay Ruby, "The Image Mirrored: Reflexivity and the Documentary Film," *Journal of the University Film Association* 29, no. 4 (1977): 3–11, https://www.jstor.org/stable/20687384.

workings of film, these filmmakers sought to inspire radical thinking and a fresh perspective on the world. They recognized that by revealing the inner mechanisms of film production, viewers could develop a heightened awareness of the constructed nature of reality and challenge prevailing narratives.[93]

Summary and discussion

In this chapter I have outlined two different discourses, on data and data visualization, and documentary. As Steve Anderson argues, the relationship between data and images has become increasingly intertwined in contemporary media, as images today are also data.[94] This interconnectedness suggests that different combinations and constellations of images can be considered forms of data visualization. We have seen in this chapter that discourse around data is increasingly relevant for documentary discourse and there are some important parallels and connections. Both data [visualizations] and documentary are rhetorical strategies and rhetoric, in this context, is less concerned with the inherent meaning of a message and more focused on achieving a desired effect on the audience.[95]

According to the Aristotelian notion of rhetoric, arguments can gain persuasive support through various means, and one effective strategy is the presentation of evidence.[96] In the context of documentary, evidence often relies on the indexical bond between the film image and its representation of reality. However, in today's landscape, reliability on the image is challenged and evidence is frequently presented in other forms, such as data visualizations. Throughout this chapter, the relationships between data and evidence, data and image, image and evidence, and documentary and image have been explored.

We touched on how biased datasets, make some people invisible. Kris Fallon raises an important question about the limitations of the camera's gaze in capturing invisible subjects.[97]

---

[93] Jay Ruby, "The Image Mirrored: Reflexivity and the Documentary Film," *Journal of the University Film Association* 29, no. 4 (1977): 3–11, https://www.jstor.org/stable/20687384.
[94] Steve Anderson, introduction pages
[95] Nichols, *Representing Reality,* 134.
[96] Christof Rapp, "Aristotle's Rhetoric," *The Stanford Encyclopedia of Philosophy* Spring 2022 Edition (May 2, 2002), https://plato.stanford.edu/archives/spr2022/entries/aristotle-rhetoric/.
[97] Kris Fallon, "Data Visualization & Documentary's (In)Visible Frontiers," in *Documentary across Disciplines*, ed. Erika Balsom and Hila Peleg (Cambridge, Massachusetts : The MIT Press, 2016), 294–312.

Documentary filmmakers often face the challenge of dealing with entities that no longer exist, such as people, places, and events from the past. However, with the advancements in digital technologies, filmmakers now have the opportunity to make the previously invisible, visible. In the forthcoming chapters, these elements will be further explored, shedding light on the expansion of documentary practices beyond traditional boundaries and their evolving relationship with viewers, textuality, archives, and social impact.

CHAPTER 2

"We are beginning to recognize that human beings construct and impose meaning on the world. We create order. We don't discover it. We organize a reality that is meaningful for us. It is around these organizations of reality that filmmakers construct films."[98]

The emergence of new technologies has led to significant transformations in visual culture, introducing novel forms of representation and redefining the ways in which we perceive, extend, and organize the realm of the visible. This has inevitably challenged the previous notion of trust in vision and visualization, particularly with the widespread implementation of artificial intelligence (AI) technologies.

The impact of AI on visual culture can be observed through three profound changes.[99] Firstly, the further development of machine/computer vision based on neural networks as distinctive from human vision. Initially as an imitation of the human visual system, the role of the human psycho-physiological process of seeing is reduced to entirely automated operations of pattern recognition. This advancement enables the interpretation of images that may not be visible to the human eye. Secondly, there is now an abundance of machine-readable images, amounting to trillions of data points. These images can be tagged, classified, and analysed based on visual cues such as colour, shape, size, and the recognition of patterns. This data-driven approach enables a new level of image organization and categorization. Lastly, the process of machine learning facilitates the creation of entirely new types of images, resulting in an explosion of AI-generated content. Examples include portraits of non-existent people, the circulation of fake images depicting bombings, movie stills from non-existing films, and the reanimation of deceased individuals.[100]

---

[98] Ruby, Jay. "The Image Mirrored: Reflexivity and the Documentary Film." *Journal of the University Film Association* 29, no. 4 (1977): 3–11. http://www.jstor.org/stable/20687384, 4.

[99] Based on the three phenomena identified in: Greg DeCuir, "Film, Media, and Visual Culture Studies, and the Challenge of Machine Learning - NECSUS," necsus-ejms.org, December 13, 2021, https://necsus-ejms.org/film-media-and-visual-culture-studies-and-the-challenge-of-machine-learning/.

[100] E.g: Mohammed Haddad, "Fake Pentagon Explosion Photo Goes Viral: How to Spot an AI Image," www.aljazeera.com, May 23, 2023, https://www.aljazeera.com/news/2023/5/23/fake-pentagon-explosion-photo-goes-viral-how-to-spot-an-ai-image or Brigit Katz, "The Controversial Resurrection of James Dean," Smithsonian Magazine, November 8, 2019, https://www.smithsonianmag.com/smart-news/controversial-resurrection-james-dean-180973513/.

All these advancements have a profound impact on the domains of film and art, fundamentally altering our comprehension of visual culture and shaping the way we interpret and produce visual content. In the following section, I will delve into the analysis of two films that have emerged as a consequence of integrating machine learning technologies into search engines. Through this exploration, we will uncover their implications within the realm of visual culture. However, it is important to recognize that visual culture has always been closely intertwined with technological advancement. Therefore, I will also examine an earlier work that exemplifies the existing relationship between computer interfaces and potential filmmaking techniques, predating the advent of AI.

Foucault contends that discrete statements should always be examined within a broader field of discourse, taking into account disruptions, discontinuities, thresholds, mutations, and limits.[101] In the previous chapter, I observed the existence of various competing definitions of data, highlighting its primary utility as a rhetorical concept. To facilitate the discussion in this chapter, it is advantageous to perceive data as discrete statements in a broad sense. For instance, within a video database, each video constitutes its own data entity, which can then be further fragmented into more data, into frames, slices, bits, bytes, pixels, and so forth. This approach reveals the existence of data repositories and video content scattered throughout the internet, which filmmakers and artists harness to create meaningful artistic expressions. I will therefore consider the mutations and limitations inherent in each element, as well as their relationships and disruptions, when analysing the subsequent case examples.

Abyss (2021)[102]

Jeppe Lange's documentary film *Abyss* has artificial intelligence at its core. The film combines the cinematic qualities of the image, with the computational aspects of them. What does Lange communicate to us about contemporary image culture, both through content and form? In what ways can *Abyss* be regarded as data visualization? Which data is visualized?

[101] Steve Anderson, "Past Indiscretions: Digital Archives and Recombinant History," in *Transmedia Frictions: The Digital, the Arts, and the Humanities*, ed. Marsha Kinder and Tara McPherson (Oakland, CA: University of California Press, 2014), 107.
[102] Jeppe Lange, *Abyss*, 2021, Film, 2021.

Abyss starts with the words "The film you are about to watch is a chain of 10 000 images. Each image is found to resemble the one before it by an artificial intelligence," followed by the credentials "A film by Google Image Recognition AI & Jeppe Lange." A couple of seconds later, a rapid stream of 10 000 images kicks off, and ends with a completely white screen after about 12 minutes – which means that we see almost 170 images per minute, or 13-14 images per second. Due to their rapid succession, the images transcend a mere slideshow, and rather move – like a video – and seamlessly morph into one other. The images traverse from micro to macro cosmoses, from the natural world to the artificial one; colourful fishes are recognized as Christmas lights, pink roses turn into skin cells, teeth become tapestry and convicts and famous people are interchangeable.

Google recognizes images through its Cloud Vision, an application programming interface (API) which operates through computer vision and the computer's ability to acquire, process, and comprehend digital images. This process aims to achieve "automated visual understanding" by extracting data from the real world and transforming it into numerical and symbolical information. The software streamlines the search process by leveraging the power of machine learning and artificial intelligence in image recognition. Firstly, the software dissects the image into individual pixels, considering factors like size and resolution. Since some images can consist of millions of pixels, this step allows for a detailed analysis of each pixel's colour and characteristics and a further recognition patterns and gradients in a group of pixels.[103]

Once the pixel analysis is complete, the software assigns labels to the image from a comprehensive set of over a thousand predefined labels. This labelling process significantly narrows down the search parameters. The machine learning software is trained on these categories and classifications, enabling it to independently label and classify images. Consequently, when users perform a search, the software can provide relevant and accurate results based on its learned knowledge. In summary, by dissecting images into pixels, analysing colour and patterns, and utilizing a vast set of labels, the software can classify and retrieve images based on user queries.[104]

---

[103] Shannon Flynn, "How Does Google Image Recognition Work?," ReHack, March 30, 2020, https://rehack.com/data/ai/google-image-recognition/.
[104] Ibid.

In *Abyss*, there is a convergence of images depicting outer space, Persian carpets, fractals, fabrics, fireworks, and microscopic organisms. This mixing occurs due to shared complex patterns and vibrant colours. However, *our* reading of these images is probably more socially influenced – we might relate the decorative fabrics to fireworks because they both remind us of certain festivities, for example. The contrast between human vision and machine vision becomes evident when considering how images are processed. Machine vision relies on quantifiable properties, such as colour and shape, to recognize and group images together. Meanwhile, human perception involves semiotics, interpretation, association, and other personalized meaning-making processes rooted in memory and experience.

Which is not to say that human perception does not affect the choices made by a machine. Our ideas, ideologies and prejudices are ingrained in the technologies we create and utilize. We play a crucial role as providers and creators of the data that machines learn from, including the categories employed in machine learning. Star and Bowker, in their work, offer a clear demonstration of this point by tracing the genealogy of classification systems, such as the medical classification of tuberculosis patients in the 40s and 50s, or racial classification in apartheid South Africa.[105]

Hence, it is crucial to subject the classification systems used in machine learning to critical examination. In line with Foucault's call for an archaeological investigation into categories and their far-reaching implications, this task becomes all the more pressing in our present context.[106] The very categories that have shaped the foundation of the modern constructed world now underpin the artificial intelligence technologies that are actively reshaping contemporary society. It is essential to shed light on these classification systems, as they are both constructed and intentionally concealed.[107] A notable illustration of this can be found in the realm of Google Vision API and delving into the underlying categories remains of utmost importance.

---

[105] Geoffrey C Bowker and Susan Leigh Star, *Sorting Things out : Classification and Its Consequences* (Cambridge, Mass.: Mit Press, [Ca, 2008).
[106] Michel Foucault, *The Archaeology of Knowledge and the Discourse on Language*, trans. A. M. Sheridan Smith (New York: Pantheon Books, 1972).
[107] Important work on this matter has been done by the artist Trevor Paglen, in collaboration with the scholar Kate Crawford: In the exhibition Training Humans, they look at the evolution of training datasets from 1960s to today. Trevor Paglen and Kate Crawford, *Training Humans*, 2019, Photography, 2019, Milan, Fondazione Prada Osservatorio.

Abyss seems to reveal a peculiar arbitrariness in the constructed categories Google operates with. For instance, there is a part where an image of the Hindu God Shiva appears, subsequently triggering a cascade of religious iconography from various world religions. To me, this represents a portrayal of a globalized, transcultural, social world, whereas the algorithm merely identifies similar visual traits. It is therefore interesting to note that the filmmaker has purposefully made sure that, at times, the vast number of images tell a story by selecting elements that complement one another narratively. "The film is not meant to be an illustration, rather these are all connections made by the AI. However, I have cheated and sorted the photos to make sure the film moves smoothly," Lange says.[108] This creates distinctive 'pockets of stories' and 'narrative entities' within the overall arbitrary framework, demonstrating the hybridity of database and narrative (which will be further discussed in the next chapter).

Potemkin AI

The term "Potemkin AI," coined by Jathan Sadowski, draws its inspiration from the Russian minister who constructed artificial villages to impress Empress Catherine II. Sadowski astutely highlights the employment of wilful obscurantism, enabling AI systems to acquire coveted qualities such as "objectivity, neutrality, authority, efficiency, and other desirable attributes and outcomes."[109] He compares the deceptive methods of technology companies to magic tricks, because the system's actual functionality becomes less significant than people's belief in its efficacy and subsequent actions taken based on that belief – the ultimate aims are *profit* and *power*. One striking example of this deceptive practice is evident in China's surveillance systems—an ostensibly dehumanized monitoring apparatus that creates an illusion of inescapable control. However, investigations by The New York Times have revealed that the involved AI systems are more hype than real, and that they remain "more of a digital patchwork than an all-seeing technological network."[110] Thus, the 'Potemkin AI' is an efficient way of constructing a panopticon, establishing disciplining power.

[108] From e-mail correspondence with Jeppe Lange.
[109] Jathan Sadowski, "Potemkin AI," Real Life, August 6, 2018, https://reallifemag.com/potemkin-ai/.
[110] Paul Mozur, "Inside China's Dystopian Dreams: A.I., Shame and Lots of Cameras," *The New York Times*, July 8, 2018, https://www.nytimes.com/2018/07/08/business/china-surveillance-technology.html.

Media culture, and more specifically documentary films, can play a significant role in both bolstering and deconstructing the potential of data-driven technologies, depending on their level of reflexivity. *Abyss* blends elements of data visualization and documentary, presenting itself as ostensibly objective. With minimal human intervention in its creation, the film offers a detached perspective. However, it remains unable to completely escape the imprint of its filmmaker, Lange, who also reflects on his own role in its production.

Lange, aware of his audience, sought to convey a comprehensible message for human perception, showing how the machine works, while leaving it open for individual interpretation. He contemplates Werner Herzog's notion of objectivity, where a fictional portrayal can often capture reality more effectively than a wholly neutral depiction. Yet, Lange admits to uncertainties, acknowledging that while his intention was to demonstrate how the Image Recognition AI operates, he also manipulated and sorted the photos to enhance their visual appeal. “Nevertheless, I found the most intriguing transitions in the film to be those solely generated by the AI, as they often yielded unexpected connections. It became evident that the machine did not comprehend the material in the same way as I did. For instance, the AI's linking of a snake scale with an old map of Rotterdam,” he says. [111]

Likewise, it is crucial to recognize that hyping visual technologies and their capabilities can often serve the interests of the companies that produce them. An example that exemplifies this is Charles and Ray Eames' film, *Powers of Ten* (1977), which was commissioned by IBM with the explicit intention of captivating the audience by the marvels of the computer interface. In this case, the underlying motives were driven by the pursuit of profit and power. Formally and conceptually, *Abyss* bears some resemblance to *Powers of Ten*, not only in terms of the sequencing of images but, more significantly, in its relationship to data and scale – both films make the universe feel large and small at the same time. But while *Powers of Ten* marvels at the capabilities of the new technology, *Abyss* goes beyond showcasing planetary or microscopic scales to question the limits of human perception, emphasizing the magnitude of data collection. The film highlights the limitations and shortcomings of these technologies, rather than solely emphasizing their abilities.

[111] From e-mail correspondence with Jeppe Lange.

Powers of Ten (1977)

In response to growing concerns within IBM regarding public apprehension surrounding the company's commercial presence and its work for the U.S. Department of Defense, a concerted effort was made to reshape public opinion and foster a more personal connection with the computer. To achieve this goal, Charles and Ray Eames were commissioned to create films that would humanize the computer. The outcome of their collaboration was the 1958 short film, *The Information Machine*. According to Kyle Stine, Eames recognized that IBM's previous approach, which carried a somewhat threatening tone, needed to be replaced with a more open and approachable stance. [112] Thus, *The Information Machine* aimed to present the computer as a tool that aids humankind. The film sought to establish a connection between computing devices and human thought, emphasizing the potential benefits and assistance offered by this technology.

In the following years, The Eames Office made several exhibitions on behalf of IBM. In the beginning, these exhibitions were cinema-like, yet they moved on to be more elaborate presentations with multichannel video, overwhelming amount of data, walls full of information and so on. The goal was to promote the whole room as mirroring a home, as a system of communication. Stine goes on to assert that the Eames' exhibitions were in a way programmed, and that they were themselves organized as a computational experience, laid out by means of a flowchart. The exhibitions "exported representational techniques (used in computing) to organize the flow of people through a computationally organized environment," he writes.

Charles Eames was concerned by the sudden increase in data created by the computer. He believed that making data *beautiful* could solve much of the problem, due to a confidence in human understanding through vision.[113] [114] As mentioned, Eames eventually created the film *Powers of Ten* (1977) for IBM, essentially a project that takes a great amount of information, images and orders it into a simple visualization. The film begins with a bird's eye view of a man and a woman picnicking at a lakeside in Chicago, but then gradually zooms out. The

---

[112] Kyle Stine, "Other Ends of Cinema: Powers of Ten, Exponential Data, and the Archive of Scientific Images," *JCMS: Journal of Cinema and Media Studies* 59, no. 2 (2020): 114–37, https://doi.org/10.1353/cj.2020.0005, 117.
[113] Stine, *Other Ends of Cinema*.
[114] Eames's belief in making data beautiful echoes several data visualization enthusiasts. Such as Edward Tufte, Hans Rosling and others.

zoom occurs at a rate of one power of ten per ten seconds, moving into outer space. When reaching 10^{24}, the camera then rapidly zooms back to the picnic blanket, and when it reaches the man's hand, it moves again in a rate of power of ten per ten seconds, this time zooming inwards at the rate of one (negative) power of ten per ten seconds. We move from skin to skin-cells, to quarks and then reach an atom-level at 10^{-16}.

In many ways, *Powers of Ten* aimed to be deceptively simple while delivering vast amounts of information and seducing the spectator. Actually, the elegance and simplicity of *Powers of Ten* is the result of years of meticulous research, trial and error, collaboration, consultation, feedback, and adjustment. It also allows us to experience the new possibilities in imaging that were being developed in the sciences.[115] The film effectively showcases magnitude on multiple levels: first, by exploring the *size*, the vastness of the universe through a continuous zoom-out, providing a cosmic perspective; and second, by demonstrating the incredible *amount* of data required to create such a film, highlighting the capabilities of computers. In the post-war years, new scales of visual and textual information emerged. Extensive research was conducted to produce this film, despite its seemingly straightforward zooming approach, with much of the information cleverly embedded within the visuals.

Derek Woods offered a critique of the film, pointing out its deceptive nature in presenting a seamless and continuous world instead of acknowledging the inherent discontinuity and incommensurability of various levels of action. [116] The film's primary objective is to conceal the underlying data within it and serve solely as a data visualization tool. Its purpose is not to communicate the perspective of the computer, but rather to familiarize the audience with the computer interface. *Powers of Ten* demonstrates the exertion of power and control over information, implying that empirical data can be collected, stored, and manipulated to align with the filmmaker's desired message – which is here the ability of the software, rather than the researched science. Ultimately, the film creates an illusion that the intricacies of the world can be oversimplified and confined to a mere picture, neatly fitting within the frame.

As these films circulate among populations, they engage with human beings, leading to the emergence of new forms of subjectivity among the audience. This understanding of

[115] Woods, "Epistemic Things in Charles and Ray Eames's Powers of Ten," 61-92.
[116] Derek Woods, "Epistemic Things in Charles and Ray Eames's Powers of Ten," in *Scale in Literature and Culture*, ed. Michael Tavel Clarke and David Wittenberg (London: Palgrave Macmillan, 2017), 61–92.

subjectivity extends across diverse media technologies and aesthetic forms that foster its evolution over time. The interpretation of this subjectivity is contingent upon the relationship between the text and the underlying epistemic thing. Coined by Hans-Jörg Rheinberger, the term "epistemic things"[117] refers here to abstract entities or concepts that wield substantial influence over the development of knowledge and comprehension.[118] These things are not physical objects but rather embody underlying ideas or principles that mould our perception and understanding of the world. They can be regarded as the theoretical underpinnings, methodologies, or frameworks that inform the creation and interpretation of texts. As such, they serve as the conceptual structures that constitute the basis for knowledge and the attribution of meaning within specific disciplines or fields of study.[119]

In films, these concealed elements inform their deceptive nature and significantly influence our understanding. Even though the zoom technique explored in this chapter may appear scientific, it is also shaped by epistemic things that fundamentally influence the construction of scientific facts and significantly impact how we comprehend the imprints found within the film. How do we navigate the interpretation of these imprints?[120]

Hannah Arendt asserts that the data with which modern physical research is concerned, turn up like “mysterious messengers from the real world.” Unlike everyday phenomena or appearances, these data are not directly observable in our ordinary experiences or even within the confines of the laboratory. We become aware of their existence solely through their effects on our measuring instruments. [121] This notion of data can be related to the user-friendly interfaces prevalent in both computer systems and cinema. Just as the data in physical research are elusive and hidden from direct perception, user-friendly interfaces provide simplified and accessible ways for individuals to interact with complex technologies.

---

[117] Hans-Jörg Rheinberger, *Toward a History of Epistemic Things : Synthesizing Proteins in the Test Tube* (Stanford, Calif.: Stanford University Press, 1997).
[118] The concept “epistemic things” is closely related to Foucault’s episteme. Yet, I use “epistemic things” here because it assumes a discrete character, useful when studying scientific data as discrete objects. Every scientific phenomenon has hidden properties and abstract concepts that shape our understanding of them. In that way epistemic things add ambiguity to scientific objects. According to Rheinberger they are situated at the interface the material and concepts of science. Foucault’s episteme, which I also mention in this thesis when discussing the “the database episteme,” is more foundational and governing a whole epoch at a time.
[119] Rheinberger, *Toward a History of Epistemic Things.*
[120] Woods, “Epistemic Things in Charles and Ray Eames’s Powers of Ten,” 64.
[121] Woods, “Epistemic Things in Charles and Ray Eames’s Powers of Ten,” 68.

These interfaces serve as mediators between users and the underlying systems, enabling us to navigate and engage with the digital realm.

In this sense, both the "mysterious messengers" of data and user-friendly interfaces represent a mode of engagement with the world that involves abstraction, interpretation, and the integration of technology into our everyday experiences. They highlight the interplay between the hidden complexities of the real world and the human need for comprehensibility and usability in our interactions with technology and information. Arendt argues that the "older generation" of scientists, Einstein included, were "still firmly rooted in a tradition that demanded scientific theories fulfil certain definitely humanistic requirements such as simplicity, beauty, and harmony."[122]

As we explored in Chapter 1, data visualization practices align well with this idea and are often driven by the pursuit of comprehensibility and beauty. Among the influential figures in the field, Edward Tufte stands out as one of the foremost authorities on data visualization, having authored several foundational texts on the subject. In his book *Beautiful Evidence*, Tufte opens with a profound statement: "Evidence is evidence, whether words, numbers, images, diagrams, still and moving [...]. Science and art have in common intense seeing, the wide-eyed observing that generates empirical information."[123] Tufte emphasizes that the act of seeing, in its broadest sense, is equivalent to the process of gathering data. This perspective implies that transforming data into art, which Tufte refers to as beautiful data visualizations, is a natural extension of this practice.

By viewing the world through the lens of beauty and marvelling at our abilities, as well as the computer's capacity to capture and represent information, we engage in a profound act of appreciation. This sentiment aligns with the purpose of the Eames' film, which seeks to celebrate our ability to capture and convey the world's beauty. Lev Manovich makes clear how visual language is spread across separate media, and how certain aspects have become deeply ingrained in our collective consciousness and have come to be widely adopted across different forms of visual expression.[124] It is also important to note how the messages,

[122] Woods, "Epistemic Things in Charles and Ray Eames's Powers of Ten," 75.
[123] Edward R Tufte, *Beautiful Evidence* (Cheshire, Conn.: Graphics Press, Llc, 2006).
[124] Lev Manovich, *Software Takes Command* (New York: Bloomsbury, 2013).

ideologies, and cultural text embedded in those expression have also expanded into all parts of visual culture.

Smooth subjectification

The zoom in *Powers of Ten* created a sort of visual language that spread across culture. The film therefore serves as a testament to the aesthetic potential of both data visualization and documentary, highlighting the connection between seeing, gathering data, and transforming it into visually stunning representations.

The vast collection of texts employing smooth zoom and scale techniques to portray movement across different scales constitute a process of subjectivation, in Felix Guattari's sense of shaping collective imaginative possibilities in relation to social assemblages and the nonhuman environment.[125] Kees Boeke's book *Cosmic View: The Universe in 40 Jumps* (1957) in which each jump consists of a drawing and a verbal description of what is visible at the indicated scale (also from astronomical to atomical), or H.G. Wells' novel *Under the Knif*e (1896), a narrative out-of-body experience in which a perceiving subject floats away from earth, viewing greater and greater cosmic scales before falling back zoom-like into its convalescing body, are both early influences on *Powers of Ten*.[126] Projects such as *Cosmic Voyage* (1996) which was created to display the capabilities of IMAX cinema, and *Cosmic Eye* (2012) for iOS are also versions of the film, created for the purpose of showcasing new technology.

However, the most significant adaptation of the smooth zoom of *Powers of Ten*, is by Google Earth's interface, which is a direct adaptation of the Eames's animation. Google Earth stands out as a prime example of software that embodies power and control, as it aims to map and monitor the entire planet. This can be seen as emblematic of the desire for control and dominance and raises concerns about privacy, surveillance, and the potential for misuse of such extensive data. In the words of Google's procduct management vice president Jonathan Rosenberg, discussing the Keyhole software that became Google Earth, "we've always loved *Powers of Ten*, the classic 1977 film by Charles and Ray Eames that takes you on a visual

[125] Félix Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton (London: The Athlone Press, 1997), 27-37.
[126] Woods, "Epistemic Things in Charles and Ray Eames's Powers of Ten," 71.

ride from inside an atom to the edge of space in under ten min. It turns out Keyhole brings a similarly astonishing perspective to its visual mapping software."[127] What ultimately underscores the software nature of the film, is that it *is* the interface, and not just a documentary *about* it.

This example underscores the potential of documentary films to shape public perceptions and attitudes towards technology. Through careful framing and narrative construction, filmmakers can exert influence over the audience's understanding of data-driven technologies and their societal implications. By presenting information in a specific way, documentary films can steer the audience's interpretation and engagement with complex subjects. *Powers of Ten* serves as a powerful illustration of how documentary filmmaking can transcend traditional storytelling and become a medium for exploring and presenting scientific concepts, data, and technology. It demonstrates the capacity of film to convey not only visual and auditory experiences but also the intricacies of scientific knowledge, thus contributing to a broader understanding of the world around us. More importantly, this potential can be used to legitimize the technology, and the company's that own them.

Although *Abyss* serves as a showcase of how machines perceive images created by humans, it should be acknowledged that the film is ultimately a human interpretation of machinic vision, influenced by both the interpretation of the filmmaker and the audience. It does not purely embody a 'Mechanical-Turk-situation'[128] where human involvement is concealed, but instead presents a human-assisted demonstration of AI technology. The objective is not to deceive the audience, but rather to shed light on both the real and false promises as well as the legitimate and unfounded threats associated with this technology. Rather than suggesting that AI might render humanistic knowledge obsolete, or makes us marvel at AI's abilities, I believe *Aybss* emphasizes the necessity of humanistic knowledge in our engagement with AI.

[127] Woods, "Epistemic Things in Charles and Ray Eames's Powers of Ten," 73.
[128] Classic example from history to illustrate the relationship between human labour and machine. The A good example that sometimes we are expected to marvel at the wonders of the technology, while we do not comprehend how it works, and then it turns out that it involves quite some human labour.

APEX (2013)

The renowned American artist and cinematographer, Arthur Jafa, has also created a work that utilizes a sequence of still images. Titled *APEX*, this piece takes the form of an 8-minute-long video comprised of over 800 still images. These images encompass a range of subjects, including famous individuals, significant events, album covers, as well as contrasting depictions of violence and tranquillity. Some of these images resemble the telescopic and microscopic visuals seen in Lange's film, *Abyss*.

While *APEX* shares a similarity with *Abyss* in its form as a slideshow, it differs in its pace. *APEX* unfolds at a slower rhythm, allowing each image to be presented as distinct and discrete data. This deliberate approach encourages viewers to reflect upon each handpicked image, as opposed to the rapid succession that overwhelms the senses in Lange's film. Jafa's intention with *APEX* is to prompt viewers to truly observe his selection of images that prominently feature black people and black culture, in order to reflect on their underlying significance. As one critic aptly notes, *APEX* places African-American history "in your face." [129]

Arthur Jafa employs a similar approach in several other of his works, utilizing a combination of pictures, video clips, and music that he carefully selects and recombines. Unlike a computer-generated process, Jafa personally curates and sequences these images, although his work is not devoid of the influence of AI. While Jeppe Lange's *Abyss* demonstrates how the machine thinks, Jafa's works reveal how the machine *doesn't*. He consciously sifts through vast archives on the internet, extracting extensive amounts of visual evidence showcasing black culture and creativity, subsequently bringing these images to the forefront.

The White Album (2018)

The White Album is a gathering of self-published videos from online platforms, such as YouTube and Instagram, mixed with some of Arthur Jafa's own footage of people, of the staff of his gallery and outtakes from movies and music videos. We see clips of a distressed Robert Pattinson from the movie *Good Time* (2017), several lengthy YouTube confessionals,

[129] Malavassi, "Arthur Jafa. Face It: The 'Affective Proximity' of Imagery."

surveillance footage of the white supremacist and mass murderer Dylann Roof, as well as self-published videos by gun enthusiasts, footage of people singing or dancing, and so on.

Many of the clips in *The White Album* will be familiar to anyone that spends significant time online, as they depict so-called "internet phenomena".[130] The film's most lengthy clip is of Dixon White, a self-proclaimed former racist who posted a confession/reformation speech online which went viral.Here, he reflects on his relationship to race, his racist upbringing and white privilege. Another clip is of a white teenager who starts a lengthy monologue about reverse racism, starting with: "I am the furthest person from being a racist….." We see an excerpt of singer Erykah Badu and comedian Michael Blackson's contribution to "For the D Challenge,"[131] as well as clips of the rapper Plies, reality star Alana Thompson aka Honey Boo Boo and so on. The clips are not only grabbed *from an online repository* but are also a *reference to online culture*. When grouped together, they make a broader statement about contemporary media culture.

Arthur Jafa works with very specific themes. He is concerned with African-American history, which is both complex and ambivalent. His methods allow a shift in context, which opens the images to spaces of reflection. He explores questions and connections between black experience in the U.S. and audio-visual media, examining how black bodies are mediated and represented. This is also thematized in his previous work, for example in the aforementioned *APEX* (2013) or his most well-known video *Love is the Message, the Message is Death* (2016). By contrast, those works displayed almost exclusively black people, creating a sort of escape into a safe place where black representation, culture and politics could thrive; while in *White Album* it feels like Jafa had to give in to the external pressure of reality, and address an environment where racism persists in various forms.

As explored in the previous chapter, the history of documentary photography is deeply intertwined with scientific methods of racial categorization. Arthur Jafa's projects consistently delve into questions surrounding race and the intersection of race with visual

---

[130] Some occurrence on the internet, a picture or a video that for some reason captures the attention of numerous internet uses and develops a craze that spreads fast (goes viral). For example: https://en.wikipedia.org/wiki/List_of_Internet_phenomena

[131] Internet phenomena among celebrity rappers: for example: Avinash Bhunjun, "What Is the 'for the D' Challenge and Where Did It Come From?," Metro, October 5, 2017, https://metro.co.uk/2017/10/05/what-is-the-for-the-d-challenge-and-where-did-it-come-from-6979483/.

culture. John Akomfrah once described his own approach to filmmaking as "to take things and put them in some sort of affective proximity to one another," and Jafa shares a similar methodology.[132] Through the masterful combination of rhythm, music, and precise montaging, Jafa aims to evoke emotions, provoke thought, and challenge our preconceptions. He guides us through moments of comfort and then disrupts them, forcing us to confront uncomfortable truths.

In many ways, *The White Album* exemplifies the concept of "oppositional gaze" put forth by bell hooks. [133] This gaze challenges the dominant narratives and representations of Black people in visual culture and seeks to disrupt the power dynamics that marginalize and objectify them. Jafa's gaze instead turns our attention to the white perspective, inviting us to view white people through the lens of black and Afro-American experience. By doing so, he subverts the normative gaze and prompts us to critically examine the complexities of racial dynamics and representation.

Racism in data[134]

Bias in visual culture, which predates artificial intelligence technologies, have long been an issue discussed in media and cultural studies. Stuart Hall pointed out how Anglo-American media studies saw the media as producers of content that reflected the common sense of the larger public, and online later realized media's role in *producing*, rather than simply *reflecting* community values or common sense. Public discourse was framed through editorial choices such as which voices could reach across society, and which stories would be left untold.[135] These inherent values have later made their way into datasets and formed the basis for data visualizations.

---

[132] As quoted in conversation between Arthur Jafa and Hans Ulrich Obrist, and later cited in: P Paola Malavassi, "Arthur Jafa. Face It: The 'Affective Proximity' of Imagery," *Flash Art* 329, no. FEB–MAR 2020 (March 2, 2020), https://flash---art.com/article/arthur-jafa-face-it-the-affective-proximity-of-imagery/.
[133] Bell Hooks, *Black Looks : Race and Representation* (1992; repr., New York: Routledge, 2015), 115-31.
[134] In this part, I have included bits and pieces from my own essay for the course "Screen Technologies" at UiO. There are no direct quotes, yet the points are reworked from my essay, titled: *Racism ∩ AI =∅? A Genealogy of Racial Classification in Artificial Intelligence.*
[135] Stuart Hall, "The Rediscovery of 'Ideology': Return of the Repressed in Media Studies," *Routledge EBooks*, July 5, 2005, 61–95, https://doi.org/10.4324/9780203978092-9.

In support of this perspective, 67 scientists and researchers from diverse fields expressed in an open letter that race is not a biological determinant but rather a socially constructed distinction given significance through human choices and social interventions.[136] This highlights the artificiality and subjectivity of race as a concept, debunking the notion that it has any meaningful basis in genetics or biotechnology.[137] Achille Mbembe further underscores this point by noting that recent advancements in genetics and biotechnology confirm that racial categorizations are meaningless. Yet, contrary to the aspiration of fostering a world free from race-based divisions, current technology is paradoxically implementing the old classificatory and differentiating project.[138] Ian Hacking points out that many of the categories we now use to describe people are byproducts of the needs of enumeration. Sometimes it feels like little is left untouched by the camera, while Hacking claims that *nothing* is left untouched by the statistician.[139]

Denise de Ferreira da Silva reaches the very core of the issue and traces the notions of racial and cultural differences at least back to post-enlightenment Europe, when the very tools of scientific reason, concepts such as determinacy and ethics, were deployed to account for human difference. Because the European/White mind alone shared key qualities with universal reason, a differentiation between white and other races was perceived necessary, she writes.[140] These ideas are not exempt from digital technologies, and classification systems embedded into machine learning technologies, as the ones used in YouTube and Instagram. As we briefly touched upon in the last chapter, racial bias is coded within many of the platforms. This bias can manifest in various ways, influencing content recommendations, search results, and the visibility of marginalized communities. When Arthur Jafa utilizes these platforms as source material for his work, he appears to be deliberately challenging and countering the discriminatory tendencies towards black bodies that are ingrained within these systems. By recontextualizing the imagery and narratives, Jafa aims to bring them to the forefront of the discourse.

---

[136] BuzzFeed Opinion, "Opinion: How Not to Talk about Race and Genetics," BuzzFeed News, March 30, 2018, https://www.buzzfeednews.com/article/bfopinion/race-genetics-david-reich.
[137] David Reich, "Opinion | How to Talk about 'Race' and Genetics," *The New York Times*, March 30, 2018, sec. Opinion, https://www.nytimes.com/2018/03/30/opinion/race-genetics.html.
[138] Achille Mbembe, *Necropolitics* (Durham: Duke University Press, 2019), 180.
[139] Ian Hacking, "Biopower and the Avalanche of Printed Numbers," in *Biopower: Foucault and Beyond* (Chicago: University of Chicago Press, 2015).
[140] Denise Ferreira da Silva, "1 (Life) ÷ 0 (Blackness) = ∞ − ∞ or ∞ / ∞: On Matter beyond the Equation of Value," www.e-flux.com (E-flux Journal, February 2017), https://www.e-flux.com/journal/79/94686/1-life-0-blackness-or-on-matter-beyond-the-equation-of-value/.

Arthur Jafa's film serves as a powerful critique of racial categorization, particularly its connection to whiteness and its historical associations with scientific methods and objectivity. Through his deliberate inclusion of the clip featuring Dylann Roof, an extremist notorious for being radicalized online, Jafa highlights the potential dangers embedded within algorithmically-driven domains of discourse. He exposes the reinforcing effects that emerge in machine learning algorithms, which are further manifested in platforms like YouTube, where videos created by extreme or fringe groups such as gun enthusiasts are allowed to flourish. The inclusion of several self-pitying monologues by white people further raises important questions about representation in both data sets and documentaries. Who is included, given a voice, and who is excluded from a particular data set can impact the representation of certain individuals or groups within a documentary. *White Album* draws attention to both hidden data and hidden representation.

Remix

Arthur Jafa, when speaking about his work, said: "it's bound up with things like Duchamp's urinal and Larry Levan as a DJ. This whole idea of how you take givens, and without actually changing the material dimensions of those things, create a new thing?"[141] This process of creating new artworks based on existing ones is not a novel practice. Nicolas Bourriaud explores this connection in his book *Postproduction* where he delves into the intertwined nature of global culture and the information overload of our era. Bourriaud highlights the relationship between DJing and montage, suggesting that DJs have inherited principles from the historical avant-garde, such as detournement, the integration of past or present artworks into constructing something new, akin to the concept of ready-mades and other dematerialization practices.[142] In parallel, I argue that this genealogy operates in a cyclical manner, with numerous contemporary artists and filmmakers again drawing from DJing techniques and, notably, computational thinking. They adopt similar working methods and leverage computational approaches to create innovative and transformative artistic expressions. Arthur Jafa is a good example.

---

[141] Quoted from a conversation between the artist and curators Apsara Diquinzio and Kate Mackay, BAM/PFA, 2018, https://bamlive.s3.amazonaws.com/The%20exhibition%20brochure%20%28PDF%29%20for%20the%20program/MATRIX_Jafa-brochure_201912.pdf.

[142] Nicolas Bourriaud, *Postproduction: Culture as Screenplay; How Art Reprograms the World* (New York: Lukas Et Sternberg, 2010).

Jafa himself calls the various elements in his film for "finite units of creation" and the working process/method for "contextual resequencing."[143] This understanding of montaging, is very much connected to that of data visualization, where a specific interpretation of datapoints is visualized. Arthur Jafa's *The White Album* is one of the examples presented in the book *Dada Data* which explores the relevance of data and avantgarde art in the current moment – a period marked by post-truth politics, information floods and big data.[144][145] By delineating how the strategies of the avant-garde are useful when navigating through modern information spaces, the authors also connect data and data language with for example filmmaking practices, and specifically mention Jafa's *White Album*.[146]

Further, in line with how we discussed the rhetorical functions of data in the previous chapter, several scholars point to the overlapping rhetorical functions of remix culture.[147] A selection is always rhetorical, when choosing one sample over another and determining how the different motifs and samples relate to the main text. Scott Church also argued for remix as a rhetorical device, for example in how repetition is used to familiarize an audience with certain ideas[148] which is no less true for the filmic remixes, or montages. The goal of a "remixologist" is creating a coherent text, often to provoke an emotional response. Eduardo Navas argues that remix practices is a 'tendency' which now extends to all cultural spheres and changes the aesthetics of the new text at a 'meta-level.'[149] In the case of the *White Album*, it means that the work can be read both at the level of the intended emotional response, as a text about race, of white fragility. Or it can be read as a text on the meta-level, as a database visualization, which comments on its own affordances, own language.

The practice of working with found footage and remixing archive material is a diverse approach embraced by many artists. One notable figure in this realm is Adam Curtis, a British self-proclaimed journalist who is often referred to as a "remixologist." Curtis creates

---

[143] Quoted from a conversation between the artist and curators Apsara Diquinzio and Kate Mackay, BAM/PFA, 2018, (see link above).
[144] Sarah Hegenbart and Mara-Johanna Kölmel, eds., *Dada Data: Contemporary Art Practice in the Era of Post-Truth Politics* (Bloomsbury Publishing, 2023).
[145] This book was released in May 2023, after this paper was almost completed.
[146] Ibid.
[147] John Doyle, "Adam Curtis as Remixologist: The Case for Metajournalism as Radical Practice," *Studies in Documentary Film* 11, no. 1 (January 2, 2017): 45–63, https://doi.org/10.1080/17503280.2016.1266899. Several others are also quoted in the article.
[148] Scott Church, "A Rhetoric of Remix," in *The Routledge Companion to Remix Studies*, ed. Eduardo Navas, Owen Gallagher, and Xtine Burrough (London: Routledge, 2015), 43–54.
[149] Eduardo Navas, *Remix Theory : The Aesthetics of Sampling.* (Vienna: Springer-Verlag, 2012).

thought-provoking documentaries by reworking material from the BBC's own television archives, offering fresh perspectives on historical and contemporary events.[150] Göran Olson, who re-evaluates historical events like the Black Power movement by innovatively reusing Swedish television archive material in The Black Power Mixtape 1967-1975 (2011).[151] Frances Stark's work "U.S. Greatest Hits Mix Tape Volume I" (2019) uses YouTube clips to explore the history of US military intervention in various countries, such as Syria, Iran, Afghanistan, Libya, Ukraine, and Venezuela. The presentation of these clips on multiple tablets creates a sense of distanced distraction, emphasizing the overwhelming nature of the information.[152] The references to music and remix culture, such as the terms "mixtape" and "remixologist," highlight the close connection between this particular mode of documentary and remix practices. *The White Album*, is again a reference to music.[153]

While works like Stark's reflect on contemporary society and information overload, Arthur Jafa takes a different approach. Instead of directly addressing information overload, he focuses on the different spheres and closed bubbles of the internet and how they shape and reflect today's politics. Jafa's film is specific and confrontational, making it impossible to dismiss his message as mere information. Many of the clips he incorporates are very personal, and often self-published videos, which adds to the raw and authentic nature of his work.

Arthur Jafa himself describes the work as open-ended, allowing for the possibility of future changes and re-edits. The version I received from the Moderna Museet in Stockholm has a duration of 29 minutes and 55 seconds, while the one screened at the Venice Biennale was approximately 40 minutes long. This open-endedness reflects a collaborative and participatory approach, inviting viewers to engage with the work and actively respond and contribute to its ongoing evolution. By playing with the affordances of the medium, Jafa's work comments on the ever-changing nature of public discourse. The work’s fluidity and adaptability serve as a reminder that our understanding of the world is not fixed but shaped by ongoing conversations and interactions. It acknowledges the transformative power of dialogue and encourages viewers to embrace it.

---

[150] John Doyle, “Adam Curtis as Remixologist: The Case for Metajournalism as Radical Practice,” *Studies in Documentary Film* 11, no. 1 (January 2, 2017): 45–63, https://doi.org/10.1080/17503280.2016.1266899.
[151] Göran Olson, *The Black Power Mixtape 1967-1975* , 2011, 2011.
[152] Frances Stark, *U.S. Greatest Hits Mix Tape Volume I*, 2019, 2019.
[153] A reference to The Beatles album of the same name.

Supercut

All the examples in this chapter, in one way or other, exemplify a supercut. A filmic supercut is a genre of video editing that involves montage, typically incorporating short clips that share a common theme or visual appeal. Both *Abyss* and *White Album* are a result of a very extensive process of online *search*. Aesthetically supercuts resemble search results, by which I mean the software's listing of relevant results.[154] For example, if we Google something like "hit by a bus in movies," we will get a list of results, which is in many ways similar to watching the supercut "Hit by a Bus."[155], a 12-minute compilation of people being hit by a bus in movies.

The techniques employed in supercuts have a rich history within the realm of film, dating back to the 1920s and 1930s when montage techniques were utilized in newsreels, documentaries, and avant-garde filmmakers' found-footage works. Notably, filmmakers like Eisenstein and others have employed archival analysis threads in their works, further contributing to the legacy of supercut techniques.[156]

Eisenstein's exploration of montage techniques also encompasses notions of sound and music. In addition to his renowned theories on ideological montage, Eisenstein introduces concepts such as rhythmic montage and tonal montage. Rhythmic montage emphasizes the synchronization and coordination of movement and editing to create a specific rhythm within a film. It involves the careful arrangement of shots and their durations to align with the desired tempo or beat. Tonal montage, on the other hand, seeks to convey a specific emotional tone through montaging.[157] *The White Album* employs a composite method of montaging with a flexible relationship with the lengths of the pieces being edited, allowing for adjustments to fit a rhythm guided by either the soundscape or the conceptual intention of the film. Unlike *Abyss,* which adheres strictly to mathematical accuracy in the length of each piece, *The White Album* embraces a more fluid and adaptable approach to achieve its desired effect.

---

[154] Tohline, Supercut of Supercuts.
[155] hh1edits, "Hit by a Bus* - the Supercut," www.youtube.com, February 5, 2013, https://www.youtube.com/watch?v=tmYrWXhFf4c.
[156] Max Tohline, "A Supercut of Supercuts: Aesthetics, Histories, Databases," *Open Screens* 4, no. 1 (2021), https://doi.org/10.16995/os.45.
[157] Sergei Eisenstein, *Film Form: Essays in Film Theory*, ed. and trans. Jay Leyda (New York: Harcourt, Brace & World, 1949), 72-84.

According to Mark Tohline, the contemporary significance of supercuts extends beyond being a visual mode of experimental filmmaking or a product of fan culture on platforms like YouTube. Tohline argues that supercuts embody a new historical mode of knowledge and power, referred to as the "*database episteme*."[158] [159] Similar to how I previously used 'epistemic things' as *discrete* underlying concepts to describe data, Tohline argues for a more foundational 'database episteme' as a power-knowledge system that guides seemingly subjective processes of knowledge acquisition in a specific epoch.[160] The epoch we currently find ourselves in is characterized by the prevalence of data, databases, and data visualization. As a result, supercuts not only serve as artistic expressions but also reflect the underlying structures and dynamics of our knowledge systems in the age of data.

Tohline's ideas align closely with Manovich's concepts of the "database logic in cinema." As we recall from chapter 1, Manovich provokingly contends that every creative work in new media is basically the process of giving an interface to a database.[161] However, the notion of the database episteme proposed by Tohline delves further into the historical and ideological influences at play in filmmaking. Tohline describes the search engine process as akin to commissioning a computer to create a supercut, emphasizing that the supercut encompasses not just a mode of editing but also a mode of thinking. This mode of thinking mirrors the computational thinking employed by computers. Consequently, the supercut embodies both the promises and potential threats of the database and the extent to which these threats materialize is contingent on the intentions of the creator. Depending on the maker's objectives, the promises of the supercut can outweigh the threats.

Again, working reflexively with the database might be crucial. Both *Abyss* and *The White Album*, employ the supercut format as means to transcend and liberate from the ideological constraints imposed by the "database episteme" itself. By utilizing the supercut form, these films offer a response to the challenges posed by the database's influence and seek to

---

[158] Ibid.
[159] In computer science a database is often ordered, in this paper, 'database' is always defined as a mere collection of items.
[160] Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London: Routledge, 1991), 183. Episteme as It represents a new form of historical, non-temporal, a priori knowledge that constitutes "the condition of their possibility" within a specific epoch. "The condition of their possibility" used in the Kantian sense.
[161] Lev Manovich, 224-228.

navigate the tensions between creativity, ideology, and the structure of the contemporary information landscape.

Discussion

In the book *Post Cinematic Affect*, Steven Shaviro suggests that recent film and video works are "expressive," by which he means both symptomatic and productive; symptomatic in the sense that they provide indices of complex social processes, which they transduce and rearticulate.[162] They do not only represent social processes, but films are productive in the way that they participate actively in those processes as well. On the very technical level, the editing processes of digital video "belong directly to the computing and information technology infrastructure of contemporary neoliberal finance." Artists films and documentaries are no exception and rather than stalemating due to such awareness, many filmmakers use film as a medium to express concerns and thoughts on the matter.

Recalling Galloway's assertion that any data visualization primarily serves as a visualization of the conversion rules themselves, rather than solely the raw data, it becomes evident that reflexive documentaries can be viewed as a visualization of the underlying attitudes and principles governing the visualization techniques.[163] Jeppe Lange's film *Abyss* provides valuable insights into the capabilities offered by Google Image Recognition technology. Through this documentary, we gain a deeper understanding of the functionalities and possibilities afforded by this specific technological advancement. By examining the images, we unravel the implicit rules and potential biases of the image recognition system, thereby engaging with a visualization of the technology's underlying mechanisms. In a similar vein, by examining Arthur Jafa's film *The White Album*, we encounter a thoughtful exploration of self-publishing platforms like YouTube, which effectively function as databases. Here, the documentary serves as a visual manifestation of the rules and affordances inherent to these platforms.

Kris Fallon writes: "If we agree with Deleuze that the society of control has replaced the disciplinary regimes of the past and that this shift brings both new technologies and forms of

[162] Steven Shaviro, *Post-Cinematic Affect* (O-Books, 2010).
[163] Alexander R Galloway, *The Interface Effect* (Cambridge, Uk ; Malden, Ma: Polity, 2012), 83.

media, then political engagement with, and on, this plain of representation is inevitable."[164] The shift discussed by Fallon, has historically affected documentary filmmaking with the advent of moving image technologies. Similarly, the field of data visualization has undergone significant changes with the emergence of computer graphics. Both mediums have been influenced by the ongoing societal shift towards control and open surveillance. According to Fallon's argument, it is reasonable to expect that these tools can also be employed in political engagement, particularly as a means to challenge the surveillance society.[165]

In this chapter I have discussed remixing, supercuts and data visualizations as related phenomena through their rhetorical function and shared property of forming discrete objects into some meaningful text/visualization. This constitutes what Manovich described as the dominant aesthetic of the globalization era and can be understood as the 'cultural logic of networked global capitalism.'[166] By visualizing databases, both Jafa and Lange say something important about the direction our visual culture is headed. Tohline writes about supercuts: "just as capitalism treated workers as machines as a prelude to workers being replaced by machines, so also super-cutters simulate database thinking in apparent anticipation of a moment, perhaps in the near future, when neural networks will be able to search the entirety of digitized film history and create supercuts, themselves, automatically." [167] Today, we already see examples of so-called deep remixes, machine produced music, art and films and all three documentaries discussed in this chapter function as a formal prelude to cultural forms that will be more prevalent in the future.

As we have seen, both *Abyss* and the *White Album* display a specific relationship to power and control, communicating on at least two levels including one meta-level. Remixing and super-cutting can also be a critical tool to critically unpack and understand whatever information is presented. By showing an ability to manage large portions of information, both projects display an ability "to work and think like a machine" when image culture today is so machinic. Yet, this method is rooted in a *critique* of the idea that "the more information you have, the better you can understand the world."

---

[164] Kris Fallon, "Data Visualization & Documentary's (In)Visible Frontiers," in *Documentary across Disciplines*, ed. Erika Balsom and Hila Peleg (Cambridge, Massachusetts : The MIT Press, 2016), 294–312.
[165] Ibid.
[166] Lev Manovich, *Software Takes Command* (New York: Bloomsbury, 2013), 267.
[167] Max Tohline, "A Supercut of Supercuts: Aesthetics, Histories, Databases," *Open Screens* 4, no. 1 (2021), https://doi.org/10.16995/os.45.

Benjamin Bratton pointed out that when dealing with big data, or a "sea of data,"[168] we might see patterns that do not exist.[169] This type of pattern recognizing can be an exercise of apophenia. Apophenia refers to the tendency to perceive meaningful connections or patterns in unrelated or random information (for example seeing an animal in a cloud). In the context of digital technologies and image culture, this phenomenon becomes particularly relevant. Like in Lange's film, when the images move so fast and transition from an overview satellite image of the earth turning into a turtle in the ocean, it looks so seamless, that we might recognize a connection which is not there. In this chapter we have also seen how this applies to the categorization of people.

Finally, Tess Takashi poses an intriguing question in her essay *Data Visualization as Documentary Form*: Do data visualizations have a voice akin to the authoritative voice-overs commonly heard in documentaries? While the voice-over in documentaries serves as an instructive narrative tool, data visualizations communicate with viewers through a "speak to the eyes" approach.[170] This distinction reflects the contrast between the authoritative nature of voice-overs and the perceived authority of data visualizations, derived from their association with science and objectivity, as explored in this chapter. In fact, Takahashi argues that data visualizations have a "metaphorical guiding voice" and that whatever is lost in terms of embodied voice is these types of documentaries, is gained by the supposed epistemological clarity on the level of the visual[171] In *Abyss* and the *White Album*, this is achieved through more reflexive filmmaking practices.

---

[168] As formulated by Hito Steyerl in Hito Steyerl, "A Sea of Data: Apophenia and Pattern (Mis-)Recognition - Journal #72 April 2016 - E-Flux," E-flux.com, 2016, https://www.e-flux.com/journal/72/60480/a-sea-of-data-apophenia-and-pattern-mis-recognition/.

[169] Benjamin Bratton, "Some Trace Effects of the Post-Anthropocene: On Accelerationist Geopolitical Aesthetics," www.e-flux.com, 2013, https://www.e-flux.com/journal/46/60076/some-trace-effects-of-the-post-anthropocene-on-accelerationist-geopolitical-aesthetics/.

[170] Michael Friendly, "Visions and Re-Visions of Charles Joseph Minard," *Journal of Educational and Behavioral Statistics* 27, no. 1 (2002): 31–51.

[171] Tess Takahashi, "Data Visualization as Documentary Form: The Murmur of Digital Magnitude," *Discourse* 39, no. 3 (2017): 376, https://doi.org/10.13110/discourse.39.3.0376.

CHAPTER 3

While the montage-techniques and supercuts of Jafa and Lange are good examples of a data visualization in documentary form, the following two film projects take it a step further by offering interactive and participatory experiences. Alisa Lebow's project on the Egyptian revolution in 2011 is a documentary presented as a website that contains a diverse range of data, including images, text, videos, graphics, and more.[172] By structuring and presenting this data in an interactive format, Lebow provides viewers with a multidimensional exploration of the revolution, with the possibility for the viewer to actively engage with the material and shape their own understanding. In a similar vein, Basel Abbas and Ruanne Abou-Rahme's documentary and artwork addressing ongoing turbulence and conflicts in the Middle East takes a spatial approach to the archive.[173] Their project goes beyond the digital realm and extends into physical spaces, such as museums, where they lay out the information, videos, texts, and images. This creates an immersive and participatory experience for the audience, inviting them to interact with the material in both virtual and tangible settings. Both projects encourage viewers to critically engage with the complexities of the region.

The specific political and social context of these two projects, distinct from, for example, Jafa's American-focused work, highlights the need to move away from narrative conventions in documentary. Given that complex situations in this region are often represented simplistically and one-dimensionally in Western media, there is a heightened demand for complexity, nuance, and affective engagement. Walter Benjamin's dialectical and nonlinear concept of history emphasizes the importance of historical discontinuities and ruptures. For Benjamin, history is not a series of predetermined stages leading to an ultimate goal, but a interplay of past and present. He believed that the past is continuously reactivated in the present through the process of remembrance and interpretation. This aligns well with certain modes of documentary cinema, offering the potential for recycling images from the past and rupturing traditional narrative structures.[174] The past becomes a space for critical engagement

---

[172] Alisa Lebow, *Filming Revolution*, *Stanford Digital Project* (Stanford, California: Stanford University Press, 2018).
[173] Basel Abbas and Ruanne Abou-Rahme, "May Amnesia Never Kiss Us on the Mouth," mayamnesia.diaart.org, 2020, https://mayamnesia.diaart.org.
[174] Walter Benjamin, "Frankfurt School: On the Concept of History by Walter Benjamin," *Marxists.org*, 2005, https://www.marxists.org/reference/archive/benjamin/1940/history.htm.

and the importance of marginalized and forgotten voices can be emphasized. Many filmmakers therefore embrace the nonlinear possibilities of documentary to challenge dominant narratives and offer alternative perspectives. These approaches contribute to the broader discourse surrounding the Middle East, but also documentary cinema and its ability to capture the complexities of our world.

The renowned Palestinian filmmaker Elia Suleiman said in an interview with Anne Bourlond in 2000 that he is trying to create a decentered image: "Every center point has a narrative, but I want to create an image without a specific center."[175] Palestinians have always been ghettoized, in a way, both geographically and historically and Suleiman wished to represent this in his film's structure. By using a nonlinear, decentralized mode of filmmaking, he wished to reflect on the history of Palestine, challenge the unified image and central narrative. "The nonlinear image, which is read through dispersed fragments, is the only way you can make the audience participate in the construction of the image and therefore in the construction of the story, of the discourse."[176] He wanted to challenge the notion of the director having the only authorized viewpoint, telling a specific version of the story which is supposed to impose itself as the "Truth." By creating an image that calls into question that "Truth," he believed it would be possible to rewrite the story. "I don't want to tell the story of Palestine; I want to open the way to multiple spaces that lend themselves to different readings."[177] With contemporary technological affordances this can be achieved in innovative ways.

Lebow and Juhasz's *Beyond the Story Manifesto* (2018) also reflects their deep engagement with documentary as a powerful tool for challenging dominant narratives and envisioning new possibilities for engagement with the world.[178] In the manifesto, they emphasize the importance of documentary in interpreting and transforming the world, and they highlight its diverse functions beyond storytelling. The authors recognize the potential of documentary to intervene in various realms, including revolution and war. They celebrate the manifold powers of the medium and argue that adhering to formulaic approaches to constructing films, particularly those centered around storytelling, can inadvertently reproduce established

---

[175] Elia Suleiman, "A Cinema of Nowhere," *Journal of Palestine Studies* 29, no. 2 (January 1, 2000): 95–101, https://doi.org/10.2307/2676539.
[176] Ibid, 97.
[177] Ibid, 98.
[178] Alexandra Juhasz and Alisa Lebow, "Beyond Story: An Online Community-Based Manifesto," *World Records* 2, no. 3 (2018), https://worldrecordsjournal.org/beyond-story-an-online-community-based-manifesto/.

narratives. Breaking free from these conventions and pushing the boundaries allows filmmakers to *revolutionize the form itself*, which becomes an act of resistance. By challenging the traditional norms of documentary, filmmakers can open up new possibilities for exploration and engagement.[179]

The manifesto also emphasizes the collaborative nature of documentary filmmaking, highlighting the potential for building relationships and collaborations between the filmmaker and the audience and the transformative potential of documentary beyond its role as a channel for the author's message. Through this collaborative process, they argue, new ways of transforming society can be imagined and pursued.[180] Two projects, *Filming Revolution* (2018) by Lebow and *May Amnesia Never Kiss Us on the Mouth* (2020) by Abbas and Abou-Rahme exemplify these principles in distinct ways, which I will discuss in this chapter. Both films break away from traditional storytelling and offer alternative approaches to documentary filmmaking. They aim to foster engagement, provoke critical thinking, and inspire viewers to imagine new ways of transforming society. By embracing experimentation and pushing the boundaries of the medium, these films embody the spirit of resistance and the desire to challenge established narratives.

Database and narrative

Even though Lebow encourages breaking away from traditional *story*telling, her project still maintains a sense of *narrative*. In this context, narrative extends beyond a linear story and encompasses specific combinations of elements (or data) within the documentary artifact. These can be understood as nonlinear narratives that constitute a basis for our sensemaking process.[181] How do these elements relate to each other? How can they be recombined and restructured? and most importantly, what messages do they convey?

There exists a synergistic relationship between the database and narrative in cinema. Like a database in computer science, where data is organized and networked in relational ways to

[179] Alexandra Juhasz and Alisa Lebow, "Beyond Story: An Online Community-Based Manifesto," *World Records* 2, no. 3 (2018), https://worldrecordsjournal.org/beyond-story-an-online-community-based-manifesto/.
[180] Juhasz and Lebow, "Beyond Story: An Online Community-Based Manifesto."
[181] Both *The White Album* and *Abyss* from the previous chapter, also exemplify nonlinear narratives in documentary.

construct different categories, narratives also operate within a similar framework. Lev Manovich, who defined database as mere "a collection of items," expressed surprise at the continued significance of narrative in a new media landscape dominated by databases.[182] However, Katherine Hayles refers to narrative and the database as "natural symbionts," emphasizing their interconnected nature.[183] Databases operate according to a formal logic, viewing the world through the lens of large-scale datasets and understanding it solely in terms that computers can comprehend. On the other hand, narrative has the capacity to encompass the unknown, aligning with the human inclination to seek meaning. Consequently, narrative becomes a *rhetorical strategy* employed by certain documentaries that deal with data.

Hayles points out that databases alone say nothing about how data is collected, which data qualifies for collection, nor indicate how the data should be parsed and categorized. She references the observations made by Bowker and Star, highlighting that constructing a database always involves assumptions about setting up relevant categories, which may have ideological implications.[184] Therefore, the narrative of a documentary, which is based on the database, might also adopt these underlying assumptions. Lebow and Juhasz further assert in their manifesto that documentary form shapes ways of thinking and seeing, as it both emerges from and shapes ideological assumptions. Politics and form are inherently intertwined, with each influencing the other's existence.[185] Considering the relationship between database documentary's and traditional documentary's rhetorical and argumentative frameworks, several factors come into play. It is essential to explore whether they present arguments and examine which rhetorical strategies are employed. Many aspects, such as the influence, viability, usefulness, and operational integrity of databases, overlap with the discussions on the integrity and viability of documentary.

---

[182] Lev Manovich, *Language of New Media.*
[183]Katherine N. Hayles, "Narrative and Database: Natural Symbionts," *PMLA* 22, no. 5 (2007): 1603–8, http://www.jstor.org/stable/25501808.
[184] Ibid.
[185] Juhasz, Alexandra and Lebow, Alisa (2018) *Beyond story: an online community-based manifesto.* World Records, 2 (a3). ISSN 2640-0065.

Filming Revolution (2018)[186]

Film has been an important tool in revolutionary propaganda for a long time. As mentioned before, styles and movements emerged in the wake of the Russian revolution, such as Kino-Pravda led by Dziga Vertov and others, which later inspired activist film collectives such as the Dziga Vertov Group formed by Jean-Luc Godard and Jean-Pierre Gorin. The group made and inspired films like *Struggles in Italy* (1971) or Godard's *Here and Elsewhere (1986),* about Palestinian freedom fighters.[187] But what about in more recent times? When the Arab spring broke out in North Africa and the Middle East in the early 2010s, also filmmakers went out to document whatever was happening.

In examining the role of documentary in the Egyptian revolution, documentary scholar Alisa Lebow became intrigued by the potential filmic expressions arising from this new wave of revolution. The revolution was often referred to as the "Facebook-revolution" or the "YouTube-revolution," due to the extensive use of social media and video material to mobilize support. While social media's participation in protests has become more familiar to us today, it was a relatively novel phenomenon over a decade ago. Lebow was interested in this shift but sought to explore the works created by filmmakers and artists during and after this transformative period. How did they fit into this sea of video material? Alisa Lebow's extensive project *Filming Revolution* deals with these types of more reflective works.[188]

Launched in 2015, *Filming Revolution* (www.filmingrevolution.org) takes the form of an online interactive database. Its primary objective is to document independent documentary filmmaking in Egypt since the revolution, encompassing over 400 distinct artifacts, including interviews with 30 filmmakers, archivists, artists, and activists. Lebow personally travelled to Egypt on two occasions in 2013 to collect the material. She refers to the project as a "metadocumentary," as it goes beyond a traditional documentary format, serving as a platform for Egyptian filmmakers to discuss their own projects and perspectives on filmmaking.[189]

---

[186] Alisa Lebow, *Filming Revolution*, *Stanford Digital Project* (Stanford, California: Stanford University Press, 2018).
[187] *Struggles in Italy* (Dziga Vertov Group, 1971).
Here and Elsewhere (Gaumont Film Company, 1976).
[188] Lebow, *Filming Revolution.*
[189] Yasmina Tawil, "Interview with Alisa Lebow of Filming Revolution: A Meta-Documentary about Filmmaking in Egypt," Arab Film and Media Institute (AFMI), November 11,

Additionally, we can consider another meta-understanding of this documentary project. How does the project's form, particularly its website structure, reflect the ongoing events in Egypt? While the format of the project may not be unique to this specific revolution, Lebow's choice to present it as a data visualization highlights a *particular* connection to the source material, a characteristic often found in interactive documentaries. By embracing this approach, Lebow invites audiences to engage with the material in a dynamic and interactive manner, mirroring the spirit of the revolution itself. I will get back to this point later in the chapter, after a close reading of the project.

i-docs

Interactive documentaries, often referred to as i-docs, occupy a space where the linear and the digital intersect, offering opportunities for audience participation and nonlinearity, as suggested by Suleiman. In scholarly literature, the definition of i-docs tends to be open-ended, encompassing any project that utilizes digital interactive technology to engage with real-world subjects.[190] According to Kate Nash, when analysing web-based documentaries, it is essential to go beyond a focus on technological affordances alone and instead closely examine how the form guides the user experience, engages the viewer, and influences the textuality of the project.[191]

In this context, i-docs can be seen as expanded textual forms of documentary cinema that emerge from various arrangements of a database as a collection of factual data, combined with different types of user interactivity. Unlike traditional durational films, i-docs often present the viewer with a database that is visually represented as an "archive visualization" or a "dataset map." The images, video clips, and other artifacts function as discrete data objects that form constellations and relationships. This approach gives the database a graphical form, akin to the data visualizations discussed in Chapter 1, where information is charted and organized. A prime example of this is Alisa Lebow's project, *Filming Revolution*.

2016, https://arabfilminstitute.org/interview-with-alisa-lebow-of-filming-revolution-a-meta-documentary-about-filmmaking-in-egypt/.

[190] For example in: Aston, Judith, Sandra Gaudenzi, and Mandy Rose, eds. *I-Docs: The Evolving Practices of Interactive Documentary*. Columbia University Press, 2017. http://www.jstor.org/stable/10.7312/asto18122.

[191] Nash, K. (2012). Modes of interactivity: analysing the webdoc. Media, Culture & Society, 34(2), 195–210. https://doi.org/10.1177/0163443711430758

By adopting this interactive approach, i-docs offer viewers an immersive and exploratory experience, allowing them to navigate and engage with the material in unique ways. The database structure of i-docs enables the construction of narrative connections and contextual frameworks that challenge traditional linear storytelling. Through interactive elements and the visual arrangement of data, i-docs invite viewers to actively participate in shaping their own viewing experience and uncovering the multiple layers of meaning within the documentary material.

Interactive documentaries not only diverge from traditional linear documentaries but also encompass *various* types of interactivities. Jihoon Kim, drawing on the research of several scholars, identifies three subgenres of i-docs distinguished by their unique forms of interaction, textual characteristics, and physical actions facilitated by the medium.[192] "The hypertext mode" represents a web-based collection of heterogeneous information that users can explore and navigate through. "Collaborative mode" i-docs are characterized by web 2.0 platforms that foster two-way relationships, enabling conversational, open-ended, and participatory experiences. Finally, "the experiential mode" relies on mobile media and GPS interfaces to create a continuous intersection between digital information and physical space.[193]

Filming Revolution (mostly) exemplifies a hypertext i-doc.[194] It offers interactivity and participation to users, but they are unable to alter the content of the site. In this regard, it shares similarities with other forms of data visualization, where the creator maintains authorship control, determining the information and its presentation. In contrast, projects like *18 Days in Egypt* (2011) a crowdsourced documentary also centred on the Egyptian revolution, fall under the category of collaborative i-docs.[195] Users are encouraged to create profiles, capture photos and videos, and upload them to the site, aiming to collect lived experiences and make them accessible to all. In the case of *Filming Revolution*, it operates more as a curated library of materials. The platform provides different pathways to access information, allowing users to engage with various data points, but they do not have the

---

[192] Judith Aston and sandra Gaudenzi, "Interactive Documentary: Setting the Field," *Studies in Documentary Film* 6, no. 2 (June 1, 2012): 125–39, https://doi.org/10.1386/sdf.6.2.125_1 and Kim, *Documentary's Expanded Fields, 148.*
[193] Kim, *Documentary's Expanded Fields,* 154-182.
[194] The project is collaborative in one manner, will get back to it soon.
[195] Yasmin Elayat and Jigar Mehta, "18 Days in Egypt," MIT - Docubase, 2011, https://docubase.mit.edu/project/18-days-in-egypt/.

ability to shape the content. To frame it within the context of this thesis, *18 Days in Egypt* represents an ongoing construction of a database, while *Filming Revolution* can be seen as a visualization of an existing database.

The documentary text in *Filming Revolution* goes beyond the confines of a traditional documentary, allowing for greater open-endedness and active engagement from the audience. It breaks with the distinction between the filmed, the filmer and spectator, creating space for more hybrid roles and figures. In an interview with the film scholar Anna Wiehl, Lebow talks about balancing usability of the website on one hand, and her documentary argument on the other. So, the idea of complexity must be conveyed in the design without complicating it too much for the viewer. "I do not want to overwhelm anybody, but I want the users to experience the breadth of possibilities. And, apart from that, I want to give them some tools to be able to then negotiate that breadth."[196]

A walk through the website

Recognizing the need to study software applications as the site for sociocultural transformations – *The Walkthrough Method*, developed by media scholars, proposes a way to critically study apps that largely impact our lives and at the same time present themselves as relatively closed technical systems. The method is supposed to reveal the app's expected forms of use and modes of governance. By using the method, the researcher will be able to collect data upon which a close analysis can be built of the intended purposes of the app, the embedded cultural meanings, and the implied ideal uses.[197] Filming revolution is of course not a software application with purposefully hidden technical aspects, neither is it intended for specific uses by the creator.[198] However, I come to think of the method when navigating through the website – and will therefore approach the website in a manner, loosely inspired by the walkthrough method. As we have seen throughout this thesis, no visualization is free

[196] Wiehl, Anna; Lebow, Alisa: Evidence from Living Documentary Archives. Authorship, Curation and editing in Interactive Database Documentary. An interview with Alisa Lebow on her interactive meta-documentary FILMING REVOLUTION. In: *AugenBlick. Konstanzer Hefte zur Medienwissenschaft*. Heft 65/66: Die Herstellung von Evidenz (2016), S. 119–125. DOI: https://doi.org/10.25969/mediarep/3645.
[197] Ben Light, Jean Burgess, and Stefanie Duguay, "The Walkthrough Method: An Approach to the Study of Apps," *New Media & Society* 20, no. 3 (November 11, 2018): 881–900, https://doi.org/10.1177/1461444816675438.
[198] Yet, documentaries can behave as software, as discussed in the previous chapter, with the example of *Powers of Ten*.

from its creator, and neither does this project claim to be. I will "walk through" the website and observe and analyse my steps along the way. Are there any instructive aspects to the website? What is implied in the design, the visualization? And how does this relate to the authorship of a traditional linear documentary?

When discussing reflexive filmmaking, the least I can do is to be reflexive about it. Recognizing that I was born in the 90s and was not old enough to roam around on the internet until late 00s, I am aware that I belong to a particular "net-generation". When interacting with a website, analysing its form and content, my personal relationship to the internet will matter: the fact that my family could afford a computer when I was a child, the fact that I barely got to experience the shift towards web 2.0 but am too young to have experienced very early internet, and the fact that I got to use social media and smartphones for more than half my life and so on and so forth, will all be a part my reading of the two examples in this chapter.

When you enter www.filmingrevolution.org, you get to an introduction-page, much like the colophon of a book. Here you find information about the publisher (Stanford University Press), year published, and date last updated, etc. There is also a short description of the project and quotes from three peer reviews. We see the project's own logo, and the publisher's logo. You have now two options, either to enter the main website or you can click on the 'archive', which leads you to the archival version of *Filming Revolution* that presents "descriptive, remediated, and/or restructured publication content," in case certain technologies do not support the code for the website.[199]

If you however click enter, and proceed to the main website, you are met with colourful dots in blue, yellow and red, seemingly illustrating datapoints, that move around on the page. They find a position, and become static, before text appears. Every point is now assigned titles which are names, genres, themes, and other categories. One dot is called "Tahrir cinema," another one is called "woman filmmakers," while several others are named after people such as "Aida Elkashef" or "Marouan Omara" and so on. On the bottom of the page, I am informed that red means "projects," yellow means "people" and blue means "topics."

After engaging with the material for a while, I reflect on the design. On my 14-inch laptop screen, all the dots and words on the website first feel as a clutter, they are cramped together

[199] Lebow, *Filming Revolution.*

and hard to distinguish. I wonder if this is done intentionally, as it indeed reflects the *information overload* that is characteristic for the Egyptian revolution. It may also reflect the fact that now, a lot of us, at least in Western societies feel like *we* live in a time of information overload.[200]

The website does in fact feel like an academic project, design-wise, as it lacks the trendy visual identity typical for an art or design project, and avoids the very seamless, user-friendly mode of (almost) all other market-oriented websites. And in this way the project places itself in a liminal zone. The design at first glance, on the surface, does not really make any effort to challenge the uniform aesthetic of "a word cloud equals a flow chart equals a map of the internet" that Galloway criticizes – but it does have layers of complexity beneath the surface. It resonates with some of the most conventional ideas we have about data visualizations, such as the ones made by the New York Times, which are mostly made up of colour-coded dotes and lines.[201]

If I now continue my walk and click on the point called "Aida Elkashef," lines are drawn from this datapoint to many others and a box appears with instructions that tells you that here you will find all of the video extracts from an individual's interview, which you can watch in any order by clicking on the yellow rectangles. You may also read the related article by clicking on the vertical rectangle, or click on any themes or projects that they participate in. By tracing the blue lines on the visualization, I see that Aida Elkashef is tied to topics and categories such as "gender/sexual violence," "film as weapon," "battle of the camels," and so

---

[200] The aesthetics of this "clutter" is reminiscent of another project about the Egyptian revolution, namely André Panisson's *The Egyptian Revolution on Twitter* (2011). The research project was presented as an animation showing the preliminary result of the network of retweets with the hashtag #jan25 at February 11 2011, after the 18 days, at the time of the announcement of Mubarak's resignation. https://www.youtube.com/watch?v=2guKJfvq4uI.

[201] We have seen similar use of data visualization in art, in works like Aaron Koblin's *Flight Patterns* (2011) or Fernanda Viégas and Martin Wattenberg's *Wind Map* (2012). Fallon conducts a lengthy analysis of the work of Viegas and Wattenberg, an interesting duo for many reasons, but for the sake of this paper for the fact that their work has two distinct purposes. One is that they see themselves as scientists, both with phd's and publish their work in academic journals etc. But on the other hand, they also exhibit their work as a creative expression, in museums such as MoMa and Whitney Museum. *Wind Map* is created based on data from the National Digital Forecast Database and is supposed to be aesthetically pleasing and does so by being a minimalistic representation and provides very little access to the data itself. Kris Fallon points out that aesthetically, *Wind Map* falls somewhere between affective engagement and lightly informative narrative (Fallon, "Data Visualization & Documentary's (In)Visible Frontiers," 304-305). These kinds of data visualization/documentary projects are the ones I criticize in this thesis, by showing counter examples.

on. There are also yellow lines that tell me that she has connection to people like Khalid Abdalla and a red line that links her to projects such as “The Square” or “Opantish.”

If I click on various parts of the interview with Aida Elkashef, each part is tied to a different topic. I first click on the clip called “documenting the event” and Elkashef starts talking: “When I am documenting the event, it is all about the event, I am not thinking artistically or planning how to edit it later. I am just there, in the moment. I don’t go in with a set mind. Sometimes you even just throw the raw footage out online, if it feels like it has to be published immediately. It doesn’t matter how it looks, as long as it captures the event, and there is information in it.”[202]

In another clip, “video activism demands something different than other films,” Elkashef explains. The goal is not just to produce a film, but to elicit a response from viewers, fostering understanding and prompting action. As a filmmaker engaged in political activism, you are not only an observer but an active participant in the political changes taking place, making it challenging to fully grasp the implications of what you are documenting in the moment. Understanding the full implications of the events you are capturing requires time and reflection. Only in retrospect, once many factors have fallen into place, can you gain a clearer understanding of what transpired.[203] This is where the i-doc format can be a valuable tool. It allows for flexibility and the ability to make changes along the way, adjusting the narrative and incorporating new insights as they emerge. It is important to note that the structure of the film may not reflect a specific point in history due to the potential for ongoing changes. However, the raw footage itself remains a testament to the specific moments it captures and can be referenced and analyzed even if the final documentary may evolve or adapt over time.

Reflecting on her experiences during the 18 days of revolution, Elkashef has derived valuable insights regarding the use of video in such transformative events. In today's world, where immediacy is highly valued, real-time footage proliferates on social media during protests and uprisings. However, by listening to the experiences of filmmakers and content creators involved in the Egyptian revolution, we come to realize that these practices may have unforeseen and harmful implications that become more evident over time.

---

[202] Paraphrased because of very oral language. Lebow, *Filming Revolution.*
[203] Lebow, *Filming Revolution.*

Many filmmakers interviewed in this project believe that the full implications of a political event are difficult to predict in the heat of the moment. As such, the mediation and representation of these events require careful consideration. Elkashef highlights the disparity between media representations and the work of activists, stating, "It's the media that glorified the 18 days, the archive will set it straight." She explains that while the revolution was often romanticized by the media, filmmakers themselves did not seek to idealize or embellish the reality. Although much of the material may not seem immediately relevant, it holds immense value as archival material that will contribute to a more comprehensive understanding in the future.[204]

As you watch the recorded testaments by Lebow, you may notice recommendations appearing on the right side of the screen. These recommendations function in a manner similar to the YouTube recommendation engine. They are algorithmically generated and tend to be related to the video you are currently watching. Unlike other databases and video repositories, however, the algorithm behind these recommendations operates based on the information available to viewers, such as tags and connections associated with each video.

Although *Filming Revolution* primarily falls under the category of "hypertext-doc," as previously mentioned, it possesses a distinctive feature that makes it a collaborative platform. This feature is the ability for users to create what Lebow refers to as a "pathway." By clicking on the "add to pathway" option, users can choose to either log in via Twitter or continue anonymously. Essentially, a pathway functions as a playlist, where users create an ordered list of videos from the archive. Examples of pathways include "Arab Spring Class Presentation" and "Curating Revolution." This feature allows users to curate their own narratives or thematic compilations within the website, enhancing the collaborative nature of the project. On the website's homepage, the left side provides access to all the pathways that have been previously created. This collaborative aspect transforms *Filming Revolution* from solely a "hypertext doc" into a "collaborative documentary," as users have the opportunity to contribute and modify the website to some extent.[205]

[204] Lebow, *Filming Revolution.*
[205] Lebow, *Filming Revolution.*

A metadocumentary

As mentioned, the term "meta-documentary" can be interpreted in various ways. It can refer to a documentary about documentary filmmaking, as discussed in interviews and articles. Yet, it can also encompass a documentary that comments on the nature of documentary itself, both in terms of content and form. In the case of *Filming Revolution*, it goes beyond being a mere documentary about documentaries and can be seen as a database about databases. After years of gathering video material, when Lebow is in Egypt two years after the events at Tahrir Square, many of the people interviewed are in the process of grappling with and comprehending the material they have collected by constructing an archive. Through a set of principles guiding the connections drawn between data points, *Filming Revolution* becomes a data visualization come to life.[206]

Lebow conducted an interview with Sherief Gaber, one of the individuals involved in the construction of an archive of all the collected footage. Gaber explains that the archive's inception took place in the media tent at the heart of Tahrir Square during the 18-day period. At that time, they recognized the potential value of the filmed material as evidence that could be submitted to independent international tribunals in the future. He also reveals that as they became aware of the historical significance of footage, they actively filmed themselves and collected footage from Tahrir Square and other locations. He emphasizes that the archive has not only grown in size over time but has also evolved in terms of its purpose and usage. He states, "It is not merely a record or a historical document preserved for later use. We continuously find ourselves using and referring to it as a valuable tool in our ongoing struggle to define the meanings behind these contemporary events."[207] Gaber explains that challenges faced today are similar to those faced a couple of years ago and that there are deliberate attempts to distort and redefine what transpired two years ago. Therefore, the gathered material serves as evidence to support their narrative. His insights highlight the archive's dual role as a historical document and an active resource for challenging alternative narratives.

The archival scholars Andrew Flinn and Ben Alexander recognize archiving as a political craft and examine the intersections between contemporary archival practice and activism, introducing the terms "activist archiving" and "archiving activism." The concept of "active

[206] Lebow, *Filming Revolution.*
[207] Lebow, *Filming Revolution.*

archiving" refers to an archival practice that rejects the traditional notion of neutrality and passivity. Instead, it recognizes the active role of the recordkeeper in actively participating in the creation, management, and diversification of archives. This approach seeks to understand and guide the impact of the recordkeeper's active involvement.

On the other hand, "archiving activism" refers to the actions of archivists or archival institutions, whether formal or independent, who engage in the collection and documentation of political, social movement, and other activist groups and campaigns. These individual archivists or institutions actively work to preserve and document the records and materials related to these movements and campaigns, recognizing their historical and social significance. [208] The act of creating and preserving an archive (or database) can serve as a powerful political statement. Furthermore, it can lay the groundwork for visualizing the contents of the archive or database in various forms. These visualizations can manifest as documentary films, websites, or even combinations of different mediums, as demonstrated by projects like *Filming Revolution*.[209]

The form of documentary we are observing deviates significantly from traditional linear documentaries, resulting in a shift in the relationship between the author and the spectator/reader. Marie-Laure Ryan characterizes the mode of interactivity in text-based or multimedia-based artifacts as "exploratory," wherein the user exists external to the virtual world's time and space. The user's interactivity is constrained to selecting routes through the textual space, allowing them to choose and rearrange audiovisual and textual components to create new meanings without disrupting the project's internal structure.[210] As Kim aptly notes, this interactivity influences the ways in which the events are coherently linked in the user's mind.[211]

---

[208] Andrew Flinn and Ben Alexander, "'Humanizing an Inevitability Political Craft': Introduction to the Special Issue on Archiving Activism and Activist Archiving," *Archival Science* 15, no. 4 (October 20, 2015): 329–35, https://doi.org/10.1007/s10502-015-9260-6.
[209] Another example of creating a database as a political act is examined in this article: Points to why Assata Zerai, Joanna Perez, and Chenyi Wang, "A Proposal for Expanding Endarkened Transnational Feminist Praxis," *Qualitative Inquiry* 23, no. 2 (August 20, 2016): 107–18, https://doi.org/10.1177/1077800416660577. Here the scholars propose a "Africana feminist methodology" to build a "activism database."
[210] Kim, *Documentary's Expanded Fields,* 155.
[211] Ibid, 155.

May Amnesia Never Kiss Us on the Mouth (2020-)[212]

The artist duo Basel Abbas and Ruanne Abou-Rahme, both with background from Palestine have worked together since 2007. They have been conducting a decade long research project, which has culminated in several exhibitions, web-based projects, and books. They work with sound, image, text, performance, and installation. One of these works is *May amnesia never kiss us on the mouth,* the title a reference to Roberto Bolaño's "Infrarealist Manifesto." The project is ongoing, and the first part is titled *Postscript: after everything is extracted*, launched as a part of Dia Art Foundation's Artist Web Projects Series in 2020 – and has been updated several times since. The second part was an exhibition, where the footage and collected material was brought into the gallery in the form of a multimedia installation titled *Only sounds that tremble through us*. In 2023, the duo's collected artistic practice is shown in a large-scale exhibition at the Astrup Fearnley Museum in Oslo titled *An echo buried deep deep down*.

In Oslo, one of the featured works is an iteration of the ongoing project *May amnesia never kiss us on the mouth*, which I will discuss in relation to both its web-based version on Dia's platform and its physical presentation at Astrup Fearnley Museum. These works showcase individuals singing and dancing within various political contexts and landscapes, specifically in Palestine, Syria, Iraq, and Yemen. The inception of these works coincided with significant political events such as the Arab Spring in 2011 and subsequent protests in Iraq and Palestine in 2015. During this time, a plethora of video footage began circulating on the internet, finding its way onto social media platforms like YouTube. Basel Abbas and Ruanne Abou-Rahme embarked on a collecting endeavor, amassing a repository of over 170 videos sourced from the internet. These videos were transcribed and translated as part of their artistic process. [213]

The majority of these videos were captured during moments of political tension, often at weddings, funerals, or spontaneous gatherings. They were anonymously posted online, offering a unique glimpse into the experiences of individuals in these regions. Many of the videos include songs with political undertones, featuring lyrics that address themes of

[212] Basel Abbas and Ruanne Abou-Rahme, "May Amnesia Never Kiss Us on the Mouth," mayamnesia.diaart.org, 2020, visit the visit the webisite at (https://mayamnesia.diaart.org)
[213] Dina A. Ramadan, "Basel Abbas & Ruanne Abou-Rahme: May Amnesia Never Kiss Us on the Mouth," The Brooklyn Rail, June 1, 2022, https://brooklynrail.org/2022/06/artseen/Basel-Abbas-Ruanne-Abou-Rahme-May-amnesia-never-kiss-us-on-the-mouth.

separation, loss, abandonment, and exile. Through their curation and presentation, Abbas and Abou-Rahme provide a platform for these voices and expressions of collective experience.[214]

The Website: May Amnesia Never[215]

The website gives a combined feeling of a book and the web. It is structured as a scroll, allowing users to navigate from one "page" to another, similar to scrolling through a PDF. Each page occupies the entire screen, inviting readers to immerse themselves in the content before proceeding to the next section. The website's visual layout features collages that bring together videos, texts, and images. These collages are thoughtfully curated, presenting a harmonious blend of multimedia elements. The background colours are vibrant and purposefully chosen to complement the content displayed on each page. For instance, a page with a strong purple background includes a video clip showcasing purple flowers, while another page with a light orange background depicts people silhouetted against a captivating sunset. This intentional colour coordination enhances the aesthetic appeal and thematic coherence of the website.

A typical page in this artwork is not only meant to be viewed on a computer screen, but also designed to *resemble* a desktop screen. Each page features 5-10 tabs that can be easily closed or minimized, allowing you to focus on one image or video at a time. Additionally, you have the flexibility to play multiple videos simultaneously. However, the inability to move the boxes around leads to an unavoidable overlap, which, although sometimes annoying, adds to the powerful representation of the displacement and fragmentation experienced by the individuals depicted. Caroline Levine writes that in a context of many overlapping forms, the challenge for political actors is the fact that "complicating any single form one might advocate are multiple organizing principles always already at work often clashing and interrupting and rerouting one another."[216] She goes on to say that precisely these overlaps open up unfamiliar opportunities for political action, showing non-traditional routes to social change.

---

[214] Martha Joseph, "Basel Abbas and Ruanne Abou-Rahme: Echoes of Resistance | Magazine | MoMA," The Museum of Modern Art, May 25, 2022, https://www.moma.org/magazine/articles/737.
[215] Basel Abbas and Ruanne Abou-Rahme, "May Amnesia Never Kiss Us on the Mouth," mayamnesia.diaart.org, accessed June 2, 2023, https://mayamnesia.diaart.org.
[216] Caroline Levine, *Forms : Whole, Rhythm, Hierarchy, Network* (Princeton ; Oxford: Princeton University Press, 2017).

Each page of this artwork adopts the layout and design elements reminiscent of note-taking apps like iOS Notes, Adobe Acrobat, or Google Docs and you find yourself experiencing a screen that feels remarkably similar to your own computer's multiple window aesthetic. This quality of the work feels like it is meant to deceive you into believing that you are navigating within your own computer environment and provides a specific kind of immersion which goes beyond mere replication and captures the essence of a typical desktop experience. It takes Anne Friedberg's notion of the screen as a window and elevates it to another level by incorporating several windows within the window itself.

In our current reality, our lives revolve around screens, and it has become commonplace to engage with multiple screens simultaneously, such as using a phone, laptop, and TV all at once or having multiple windows open on a laptop. The computer-based multitasking is characterized by the multiple window graphical user interface, working several computer programs at one time.[217] In this web project, Abbas and Abou-Rahme provide a distinct sensation of engaging in multiple tasks simultaneously, both akin to the experience of real-world multitasking and computer-multitasking. In doing so, they manage to evoke the occasional distress that can accompany such digital environments. While we observed how Arthur Jafa works with a sort of rhythmic editing, and how seamless the supercut by Lange flows, here the spatial editing allows for different temporalities to occur within each tab and box. The result is a compilation of rhythms that foregrounds intensity over smoothness.

May Amnesia Never fits into the tradition of essay filmmaking, video installations and desktop documentaries, which often employ similar multi-window layouts to present their narratives and explore the complexities of the subject matter. As you navigate through the artwork, you will notice that when scrolling to the bottom of the page, it seamlessly jumps back to the top, creating a loop-like effect. This intentional design choice is reminiscent of

[217] Mulitasking as a computer logic is theorized by Anne Friedberg in Anne Friedberg, *The Virtual Window : From Alberti to Microsoft* (Cambridge, Mass.: Mit Press, 2009). She asserts that to comprehend the subjective implications of computer multitasking, it is essential to delve into the technical foundation of multiple-screen windows. Multitasking on a computer does not involve simultaneous execution of tasks but rather a sequential process performed at a high speed (resembling cinema). The parallel processing capabilities and the selective sequencing between programs introduce a multidimensional temporal framework that shapes the user's perception and interaction with digital environments. The computer user's engagement with time is fundamentally transformed, prompting new questions about the nature of their experience.

how video works are often presented in exhibitions or installations, where the looping nature allows for continuous engagement with the content. The physical installation functions as a guiding principle for the web-based exhibition. In addition, the loop can also be seen as a reference to cinema's material history, emphasizing the "wheeling" motion which serves as the material base of the filmic motion of a film stock, or even the cinematic duration experienced by the viewer. The loop is also reminiscent of a "wheel of memory," where documentary's ability to combine past and present comes to mind.

Further, the binary distinction between independent and corporate media, which was previously characterized by aesthetic, ideological, and structural differences, has become less clear-cut. Films now circulate within complex networks that span across platforms, users, and diverse economies. Both big-budget productions and independent films are part of these circulating networks, with the independent film sector playing a crucial role within the profit-generating entertainment complex.[218] The pandemic has further accelerated the dissolution of boundaries, with online platforms playing an increasingly prominent role. Online film festivals and other virtual events have become common, contributing to the convergence of different media spaces. Additionally, media corporations have expanded their reach across national borders, operating on a transnational scale. It is noteworthy that the web edition of *May Amnesia Never* was made and released during the pandemic. The project is updated a couple of times, in fact Wendy Chun argues that the process of constant updating is the defining condition of contemporary networked life, which means that there is no end to be reached in networked interactivity.[219] The open-ended nature of both projects in this chapter show that this condition is widespread in contemporary society.

Spatial montage

As discussed in the previous chapters, temporal montage has long been recognized as a pivotal technology for "ideological manipulations." It has been employed in newsreels, propaganda films, and continues to be utilized today. Yet, the films in this chapter, exemplify how by organizing images *both spatially and temporally*, filmmakers can achieve a heightened level of political commentary. Manovich recognized that the new compositing

[218] Zimmerman, *Documentary Across Platforms*, 115-116.
[219] Wendy Hui Kyong Chun, *Updating to Remain the Same : Habitual New Media* (Cambridge, Massachusetts: The Mit Press, 2017).

tools of the 2000s allowed for breaking with the one-frame-one-image principle of earlier. He suggested the concept of split screen as a form of spatial montage in film.[220] While split screen remains a relevant technique, contemporary interactive films have evolved to incorporate far more intricate and sophisticated approaches that explore spatiality. In both *Filming Revolution* and *May Amnesia Never*, the viewer becomes an active participant, assuming the role of an editor who can make their own connections and create their own narrative within the multiple windows.

Harun Farocki theorized a notion of "soft montage," a multi-image concept which comprises a general relatedness of images, rather than a strict equation of opposition produced by a linear montage of sharp cuts.[221] For Farocki, the soft montage had a political function. While Sergei Eisenstein's dialectical montage operates on a binary logic that tends to exclude alternative perspectives not captured within its pervasive dualism, soft montage, operates on a logic of *difference*. In soft montage, the cut serves as a metaphorical conjunction of "and," allowing multiple images to coexist within the same spatial field and giving rise to new configurations and associations.[222] "Imagine three double bonds jumping back and forth between the six carbon atoms of a benzene ring; I envisage the same ambiguity in the relationship of an element in an image track to the one succeeding or accompanying it," Farocki explained.[223] Images in his work do not take the place of, but supplement, reevaluate, and balance those that preceded them. In this way, Farocki emphasized what was normally absent and invisible, mirroring the politics of in/visibility in data culture analysed throughout this thesis.

I recall Johanna Drucker's inquiry into the data that remains unrepresented in data visualizations, and believe a similar argument can be made regarding what the filmmaker chooses to include "in the frame" of a film. Deleuze emphasized the notion of an "out of frame" or "out of field" within the screen frame. "In one case, the out-of-field designates that which exists elsewhere, to one side or around; in the other case, the out-of-field testifies to a more disturbing presence, one which cannot even be said to exist, but rather 'insist' or

---

[220] Lev Manovich, *The Language of New Media* (Cambridge: Mit Press, 2001), 130-150.
[221] Harun Farocki, *One Image Doesn't Take the Place of the Previous One*, ed. Michèle Thériault (Leonard & Bina Ellen Art Gallery / Agnes Etherington Art Centre, 2008).
[222] Nora M. Alter, "Two or Three Things I Know about Harun Farocki," *October* 151 (January 2015): 151–58, https://doi.org/10.1162/octo_a_00206.
[223] Farocki, *One Image Doesn't Take the Place of the Previous One*.

‘subsist;’ a more radical elsewhere, outside homogenous space and time,” he explained.[224] In a spatial montage, this insistence can be multiplied, juxtaposing images to create another dimension of “out of frame” and different arrangements of images that convey messages. This is precisely what Abbas and Abou-Rahme achieve in their work. By showing images of people singing and dancing, while the context of the dancing, the ongoing revolution is “out of frame.” Such a multi-image display provides a “disturbing presence” as formulated by Deleuze, and thus evoke the political potential suggested by Farocki.

Manovich recognized the suitability of an information-dense cinematic aesthetic for the internet age already in 2001. In our current reality, we find ourselves living among highly dense information surfaces, and might expect a similar logic to be applied in cinema. This can be manifested in a presentation of multiple streams of audio-visual information simultaneously, mirroring the multi-layered nature of the digital information landscape.

The Exhibition: May Amnesia Never[225]

As you step into the exhibition *An echo buried deep deep down but calling still* (2023) at the Astrup Fearnley Museum in Oslo, you are immersed in another iteration of *May amnesia never kiss us on the mouth*. The space is filled with vibrant, colorful light emitted by numerous projectors. The projections encompass the entire room, creating an environment where you feel surrounded and almost trapped between the projections. Your shadow is casted on screens and canvases scattered throughout the room, further enhancing the immersive experience. The seduction of the screen manifests in its fragmented and dissolved state, captivating viewers at the core of their viewing position. This opens up avenues to explore various aspects of montage, narrative intersections, and the artistry of framing.

Within the space, you encounter significant elements such as large screens, canvases, and imposing monolithic structures crafted from concrete or steel. These structures act as barriers to the projections, causing the video to fragment as it hits the walls. The placement of the structures within the room intentionally disrupts the complete picture, offering glimpses of

[224] Gilles Deleuze, *Cinema I: The Movement-Image*, trans. Hugh Tomlinson and Barbara Habberjam (Minneapolis: University of Minnesota Press, 1986), IS.
[225] Astrup Fearnley Museum, “Basel Abbas / Ruanne Abou-Rahme,” Astrup Fearnley Museet, accessed June 3, 2023, https://www.afmuseet.no/utstillinger/basel-abbas-ruanne-abou-rahme/.

multiple images instead. The landscapes depicted in the video become dissected and movement feels thwarted, reminiscent of navigating checkpoints in a war zone. The reference to the walls in Gaza is evident, and the presentation of fragmented images reflects the shattered lives of people in Palestine and beyond. This material usage adds to the phenomenological experience of the represented situation. The irregular surfaces contribute to a sense of disorientation, much like the experiences of those represented.

The work approaches viewers in an affective manner, through its sounds, colours, depiction of people dancing on the streets, and most notably, the interplay of shadows created by visitors in the room. This allows us to intimately feel the complexity, displacement, and fragmentation present in the lives of the individuals represented. While fragmentation is often expected in web-based platforms, the manner in which it is executed in this artwork is more unusual. The exhibition invites viewers to engage with the work on both sensory and emotional levels, thus it is in many ways an interactive, collaborative documentary.

In her essay collection *Public Intimacy*, Giuliana Bruno explores the relationship between exhibition architecture and the moving-image art installations. She claims that the plurality of viewpoints is enhanced in moving-image installations, by the asynchronicity of the editing, referring to how the cuts come at different times on the different screens in the space. [226] This characteristic can be found in *May Amnesia Never* as well, where the artwork functions as a materialization of the visual multiplicity and fragmentation found in the subject matter. Bruno explains that this is characteristic for the montage of modern spatio-visuality.[227]

As implied by its title, *May Amnesia Never* delves into themes of memory and loss. It captures various scenes of people engaged in dance, each carrying its own significance. Men dancing in circles, a woman dancing on stage with knives, another woman dancing alone in the desert, and an older woman with a headscarf singing – all providing a nostalgic sensation. The work goes beyond depicting oppression and also aims to foster a sense of solidarity. Instead of solely focusing on acts of violence, the videos emphasize shared mourning and collective dreams among people from different countries. In this way, it both connects and disconnects, revealing the intricacies and variations within political contexts. The movements

[226] Giuliana Bruno, *Public Intimacy: Architecture and the Visual Arts* (Cambridge, Ma: MIT Press, 2007).
[227] Bruno, *Public Intimacy,* 65.

of the individuals across diverse landscapes can be interpreted as a means of reclaiming space, asserting their presence in the face of adversity. The added physical fragmentation in the room allows it to become a form of collaborative interactive documentary, inviting viewers to partake in the narrative.

The decision to incorporate clips sourced from the internet aligns with the political aesthetics of the Arab Spring, a movement characterized by the use of social media and online platforms to disseminate information and organize protests. By utilizing these clips, the artwork taps into the collective memory and shared experiences of that specific time. Friedberg argued that the overlapping layers of the computer screen tend to suppress depth perception.[228] On the "May Amnesia Never"-website, the movements and overlapping of each window already create a sense of higher dimensionality, than what Friedberg ascribed to the computer window. However, the physical version of the installation adds another layer to its impact, creating an even more heightened sense of depth and dimension.

Permformative archive

Kim introduces the concept of a performative archive which involves a dynamic interplay between two forms of performativity: the user's active engagement and expanded abilities to interact with data, and the performative nature of software itself, encompassing codes, algorithms, and interfaces.[229]

The argument put forth is that a performative archive not only shapes the documentary text and its construction of knowledge and memory, but also fosters a mutually influential relationship between the digital technologies at play and the user's behaviors of searching, navigating, and producing data. This coevolutionary process highlights how the archive and the user's interactions respond and adapt to each other, creating a space where knowledge and memory are continually connected and transformed through the operations of digital technologies.[230]

---

[228] Anne Friedberg, *The Virtual Window : From Alberti to Microsoft* (Cambridge, Mass.: Mit Press, 2009), 2-4.
[229] Jihoon Kim, *Documentary's Expanded Fields : New Media and the Twenty-First-Century Documentary* (New York, Ny: Oxford University Press, 2022), 148-54.
[230] Ibid.

In the realm of interactive documentaries, the technologies employed, including algorithms, code, and interfaces, play a crucial role in shaping how data is organized and influencing the behavior of the user. These technological components have a significant impact on how users' access and retrieve data related to the real world, as well as how they assemble this information into a coherent and meaningful chain. Furthermore, the user's response to the data is heavily influenced by the technological affordances offered by the documentary interface, extending beyond the textual content alone.[231]

According to José van Dijk, computers function as performative agents that impact the way we perceive and construct our pasts and reality through multimedia modes.[232] This challenges the binary distinction between passive recipients of old media and active participants in new media, instead positioning the user in a fluid space of mutual influence. An illustrative example of this is the Netflix algorithm, which collects extensive data on user preferences and viewing habits, actively shaping the films we choose to watch. This demonstrates how technology can actively intervene in our decision-making processes and shape our media consumption experiences.[233]

Dismantling and rebuilding

In chapter one I presented Patricia Zimmerman's notion of a reverse engineering of media, place, and politics. She advocated for a more profound approach in dealing with new technologies, urging a process of dismantling, and rebuilding the world through conceptual redesign.[234] Zimmerman herself reviewed Lebow's project and wrote that "the power of Filming Revolution lies in the fact that it operates exactly accord with the argument advanced within it: open-ended and counter monumental."[235]

Zimmerman's idea of reverse engineering is motivated by a search for an alternative to the binary categorizations of mainstream versus oppositional, commercial versus independent,

---

[231] Kim, *Documentary's Expanded Fields,* 146-84.
[232] José Van Dijck, "From Shoebox to Performative Agent: The Computer as Personal Memory Machine," *New Media & Society* 7, no. 3 (June 2005): 311–32, https://doi.org/10.1177/1461444805050765.
[233] Kim, *Documentary's Expanded Fields,* 148-50.
[234] Patricia Rodden Zimmermann, *Documentary across Platforms : Reverse Engineering Media, Place, and Politics* (Bloomington, Indiana: Indiana University Press, 2019), 2.
[235] Lebow, Alisa (2016) *Seeing revolution non-linearly: www.filmingrevolution.org.* Visual Anthropology, 29 (3). pp. 278-295. ISSN 0894-9468

and documentary versus experimental. The concept of reverse engineering posits that ideas, as well as physical objects, can be considered material and be disassembled. It involves breaking something down to understand its inner workings and then reconstructing it into something new and improved. While derived from software and technology, this idea offers fresh perspectives on how documentary work can be conceptualized across various platforms.

In the previous chapter, we explored a concept closely related to "reverse engineering" called "remixing" within artistic and documentary practices.[236] These two concepts share significant similarities, yet the definition of reverse engineering is valuable as it directly relates to information science as well as new media. The emergence of reverse engineering was driven by the recognition that new media is often, wrongly believed to be immaterial.[237] So, reverse engineering emphasizes materiality, the historical world, and entails deconstructing and analyzing a concept or object to uncover aspects of its form, function, operation, and structure. The concept of reverse engineering posits that ideas, as well as physical objects, can be considered material and be subjected to disassembly. It involves breaking something down to understand its inner workings and then reconstructing it into something new and improved. While derived from software and technology, this idea offers fresh perspectives on how documentary work can be conceptualized across various platforms.

Filming Revolution reveals the profound interconnectedness and network logics that underpin revolutionary movements. Through its exploration of the Egyptian revolution and its aftermath, the project highlights the ways in which ideas, information, and mobilization spread and circulate through networks of individuals. It uncovers the inherent interconnectivity of these movements, illustrating how various actors, from filmmakers to activists, contribute to and shape the narrative of the revolution.

In terms of digital media, film, and video practices, *Filming Revolution* explores how these tools are deployed and utilized within the context of the revolution. It delves into the experimental and innovative approaches employed by filmmakers and artists in capturing and representing the events and emotions surrounding the revolution. The aesthetics of

[236] Nicolas Bourriaud, *Postproduction : Culture as Screenplay ; How Art Reprograms the World* (New York: Lukas Et Sternberg, 2010).
[237] Zimmermann, *Documentary across Platforms*, 2.

visualization, including the use of data visualizations, are carefully crafted to enhance the viewer's engagement, and understanding of the complex socio-political landscape.

The artistic and documentary practice of Bassel Abbas and Ruanne Abou-Rahme aligns with the multi-platformed media landscape, embracing the fluidity and interconnectedness characteristic of contemporary media environments. Their work transcends traditional linear narratives, inviting viewers to engage in a dynamic and participatory experience. Abbas and Abou-Rahme prioritize nonlinearity and rupturedness, creating affective connections with their audience.

Further, their practice aligns with the media logic rooted in the multi-platformed media landscape as conceptualized by Zimmerman. This landscape goes beyond the confines of traditional broadcasting and cinema, encompassing a wide range of mediums including games, internet platforms, and streaming services. In this interconnected ecosystem, the boundaries between different platforms have become increasingly blurred, allowing works to seamlessly transition across multiple interfaces and platforms.[238]

Remixing revisited

As discussed in the preceding chapter, remixing stands as a defining characteristic of the contemporary networked logic. The global interconnection of culture, and the overflow of information that characterizes our era, both have remix-potentiality. Bourriaud highlighted the connection between deejaying and montaging, which features prominently in the work of Abbas and Abou-Rahme. Bourriaud suggests that DJs have, in essence, inherited their principles from the history of the artistic avant-garde.[239] *May Amnesia Never* not only shares similarities with deejaying but could be considered a form of it to some extent. The visual elements in the exhibition harmonize with the soundtrack, where the layered audio consists of electronic beats, synths, recordings, and singing. While the visuals are fragmented, the sound acts as a unifying force, creating a sense of formal solidarity. As Bourriaud states, “The work

[238] Zimmermann, *Documentary across Platforms,* 1-71.
[239] Nicolas Bourriaud, *Postproduction : Culture as Screenplay ; How Art Reprograms the World* (New York: Lukas Et Sternberg, 2010).

of the DJ consists in conceiving linkages through which the works flow into each other, representing at once a product, a tool, and a medium."[240]

Abbas and Abou-Rahme an approach that blends elements of montage, remix, and the avant-garde tradition, challenging the conventional boundaries between artistic. The vision of the project is reflected in its fractured composition with a disjointed pulse. While the visuals embody different beats, also the sound adds another layer of a composite and unstable rhythm.[241] By weaving together fragmented visuals and a cohesive sound design, their work becomes a testament to the power of connectivity and the potential for artistic expression within a networked world.

Discussion

Building upon the influential teachings of Michel Foucault and Jacques Derrida, Jihoon Kim notes that the concept of the archive encompasses not only a collection of historical or contemporary documents or objects, but also the intricate framework of techniques, discourse, and institutions that govern the classification, organization, access, and interpretation of these materials. From this perspective, it is not surprising to consider documentary cinema as more than just the assembly of archival documents; it becomes an embodiment of the archive itself.[242]

In this thesis, I have encountered instances where databases have served as the foundational material for documentary films and both examples in this chapter show that visualizing archives becomes a means to interrogate and reimagine the world, transcending the potential limitations of data-driven predictions. It enables artists and filmmakers to offer alternative perspectives, fostering a deeper understanding of complex issues and encouraging audiences to contemplate diverse futures. We have explored how these tools are deployed and utilized within the context of the revolution.

---

[240] Nicolas Bourriaud, *Postproduction : Culture as Screenplay ; How Art Reprograms the World* (New York: Lukas Et Sternberg, 2010), 40.
[241] The phrasing "disjointed pulse" is borrowed from Giuliana Bruno, *Public Intimacy,* 65.
[242] Kim, *Documentary's Expanded Fields*, 151.

In *Filming Revolution*, various interviewees discuss the process of constructing archives, the extensive utilization of video as a means of expression during the revolution, the significance of these videos as historical records, and the artistic possibilities inherent in the archive itself. Abbas and Abou-Rahme tap into the creative potential of the archive, transforming it into visually captivating artworks. Through the incorporation of an overwhelming influx of information, they incite the *feeling* of information overflow allowing viewers to explore complex narratives through the application of data visualization techniques.

Judith Aston, an advocate for the political potential in i-docs, argues that interactive media fosters dynamic relationships between authors, users, technology, and the environment. These relationships enable fluidity, emergence, and, most importantly, the co-emergence of reality.[243] Unlike linear narratives, interactivity introduces feedback loops that facilitate both the participants and the artefact the opportunity to redefine themselves and effect *change*. This capacity for change aligns with the goals of revolution and political upheavals, making the interactive format particularly well-suited for projects like *Filming revolution*. Farocki's notion of soft montage, already offering possibilities for political change can be combined with interactive media and create further new possibilities. Also, Manovich predicted that with the multiple windows of graphical user interfaces, offers an opportunity to move away from a "a logic of replacement" towards "a logic of addition and co-existence."[244] In the work of Abbas and Abou-Rahme, they effectively achieve this by adding layers on top of each other, allowing each image to exist in relation to another, thereby mutually influencing each other.

Further, non-linear cinema, as understood in the Benjaminian sense[245,246], challenges the traditional linear narrative structure of cinema and opens up possibilities for fragmented and disrupted narratives. Tom Gunning also recognizes a connection in this regard, noting that while new image technologies may appear to blur the definition of cinema and "create a postmodern haze," the contemporary cinematic landscape actually echoes the chaotic origins

---

[243] Judith Aston and sandra Gaudenzi, "Interactive Documentary: Setting the Field," *Studies in Documentary Film* 6, no. 2 (June 1, 2012): 125–39, https://doi.org/10.1386/sdf.6.2.125_1, 135.
[244] Manovich, *Language of New Media*.
[245] Werner Hamacher, "'Now': Walter Benjamin on Historical Time," in *The Moment: Time and Rupture in Modern Thought*, ed. Heidrun Friese (Liverpool: Liverpool University Press, 2001), 161–96.
[246] Benjamin argued that history should not be seen as a linear progression of events leading to a predetermined end. Instead, he proposed a fragmented and discontinuous approach to history, emphasizing the importance of individual moments and the ruptures and disjunctures within historical narratives.

of cinema a century ago, in its languages, techniques, and ideas. The cinematic present reflects the non-linear nature of cinematic history, revealing the "the shards of a future discarded and disavowed."[247] Interactive documentaries, along with the various subgenres discussed earlier, embody this spirit of breaking away from conventional linearity in documentary filmmaking.

When exploring an interactive documentary, Kim raises two important considerations. Firstly, as a platform for knowledge production, it must be assessed whether the interface design goes beyond a hierarchical narrative structure and explores alternative ways of organizing and presenting data. Secondly, it is vital to determine whether the interface has the capacity to provide users with experiences that are distinct to digital objects, where computational performativity and user interaction intersect to offer unique encounters with factual documents and social/historical realities. These experiences go beyond what traditional documentaries can achieve, harnessing the potential of digital technology and interactive storytelling.[248] Both *Filming Revolution* and *May Amnesia Never* organize the data in alternative ways, and allow for modes of participations that are specific for the medium.

Upon revisiting the two works and considering Johanne Drucker's critique of interfaces, it becomes evident that these works exhibit the complexity in visualizations that Drucker emphasizes. The interface design of *Filming Revolution*, for instance, showcases a non-hierarchical arrangement of its data. Points are dispersed across the page in a manner that suggests randomness rather than strict order. Even when a specific point is selected, and a list of related content is displayed, there is no discernible sequence or structure to the list, maintaining a sense of user freedom and avoiding excessive instructiveness. Similarly, *May Amnesia Never* also embraces complexity and non-linearity in response to Drucker's call. While the work remains open-ended, it also implies a particular interpretation of the material. The content is not presented in a chronological fashion, but rather as fragmented and scattered, mirroring the subject matter of the documentary itself.

---

[247] Tom Gunning, "Animated Pictures': Tales of Cinema's Forgotten Future, after 100 Years of Film," in *Reinventing Film Studies*, ed. Christine Gledhill and Linda Williams (Bloomsbury Academic, 2000), 316-331.
[248] Kim, Documentary's Expanded Fields, 157.

Conclusion

In the introduction I quoted Geoffrey Bowker who raised a valid concern about the "datafication" of all aspects of life, suggesting that it may limit our ability to imagine alternative futures and alternative realities. However, throughout this thesis we have seen that artists and filmmakers actively engage with the logics of "datafication" to imagine and construct alternative political futures. These artists and filmmakers recognize that the power of data lies not only in its predictive capacity but also in its potential to inspire critical thinking. By harnessing the logics of "datafication," they challenge dominant narratives and envision alternative possibilities. They employ data as a tool for subversion, utilizing it to imagine different political realities and prompt meaningful societal transformations. Hence, a historical lineage, spanning from Vertov to the present day, showcases the inherent capacity of documentaries to unveil hidden aspects of society, shedding light on untold stories and challenging conventional narratives.

Throughout this thesis, we have come to understand that every visualization carries the imprint of its creator. Rather than attempting to conceal this fact, many projects deliberately draw attention to it. They embrace the subjectivity inherent in visualization processes as a valuable aspect of their work. Documentary's reputation for trying to be objective, unbiased, neutral etc seems to be somewhat unprecedented and as I started researching this thesis, tons of films that are self-reflexive about their standpoints came to my awareness.

While the notion of seeing as knowing has faced challenges and critical discussions in the humanities, it holds a foundational position in the field of visualization. This connection between seeing and understanding is crucial for scientists, designers, and artists alike. One artist who actively engages with data visualization, Sey Min, offers valuable insights into the experience of encountering data, highlighting its sometimes unsettling nature as it requires us to confront reality directly.[249] According to Min, human cognition is not always accurate, and our memories can be malleable, distorted, and subjective, whereas digital data, to a certain extent, remains pure and objective. She emphasizes that, on a surface level, the data world

[249] Sey Min, "MoMA | Data Visualization Design and the Art of Depicting Reality," Moma.org (MoMA, 2015), https://www.moma.org/explore/inside_out/2015/12/10/data-visualization-design-and-the-art-of-depicting-reality/.

lacks fantasy or illusion. [250] This quote exemplifies the complexity of representing reality, and the possible trap. Min's inclination to base her visualizations on the belief that she is conveying something that is "almost pure," is understandable to some extent, but can be harmful.

Documentary images also impose a demand on their viewers, requiring them to trust what they see. Serge Daney, in his thought-provoking piece *The Tracking Shot in Kapo*, argues that there comes a critical moment when the viewer must pay their debt to the "cash-box of sincere belief" and dare to believe in the visual evidence presented to them.[251] However, this belief is not blind acceptance; viewers engage with the evidence and arrive at their own conclusions. Daney further emphasizes that the ability to "read visual cues" and "decode" messages would be futile without the minimal, yet deep-seated conviction that seeing holds a superior position to not seeing. In the introduction, I put forward the notion that documentary possesses the power to bring the obscure into visibility, which becomes particularly relevant when confronting the influence of data. The intersection of visualization and documentary further compels us to dig deeper into the intricate connection between belief, perception, and the interpretation of visual information. It prompts us to question how our understanding is shaped, challenged, and influenced by the visual representations we encounter in both realms.

Limitations and further research:

This thesis has barely scratched the surface of the vast possibilities that lie within the interconnection of data and documentary. As evident throughout this study, scholars in the field of documentary have been actively examining the intricate relationship between technology and the genre, and much of the literature I have used reflects recent advancements in the past 2-3 years. Meanwhile, it is important to acknowledge that technological developments are occurring at an accelerated pace, opening up new avenues for exploration while also presenting potential challenges and pitfalls.

---

[250] Ibid.
[251] Serge Daney, "The Tracking Shot in Kapo," Senses of Cinema, 2004, https://www.sensesofcinema.com/2004/feature-articles/kapo_daney/ inspired by how the work is quoted in Erika Balsom and Hila Peleg, *Documentary across Disciplines* (Berlin: Haus Der Kulturen Der Welt ; Cambridge, Ma, 2016).

I have specifically focused my attention on documentaries that navigate the realm of data with a conscious awareness. However, it is important to acknowledge that not all documentaries share this approach. In fact, many films tend to conceal the underlying processes on which they are built. Consequently, I believe that conducting critical studies, similar to those carried out on Eames' *Powers of Ten*, can yield valuable insights into a film's relationship with the data it presents, its connection to truth and reality, and its underlying intentions and ideological implications.

By examining films that operate with a heightened reflexivity, we gain a deeper understanding of the key aspects to look for in our analysis. This allows us to delve further into the study of additional films and explore various filmic elements in greater detail. By undertaking this critical approach, we enhance our ability to decode and interpret the intricate layers of meaning embedded within documentary films, shedding light on their complex relationships with data and the broader socio-political context in which they exist.

I have also employed various approaches to examining the case examples in this chapter, such as adopting a “walk-through” approach borrowed from software studies. These methodological approaches hold potential for further development and research. Additionally, there are probably other methods grounded in software analysis that could prove valuable for studying documentaries. Exploring these methodologies in the context of documentary analysis could offer valuable insights and contribute to the *interdisciplinary* study of the genre. By embracing diverse research methodologies and forging connections between different disciplines, we can foster a richer understanding of documentary as a multifaceted and ever-evolving field of study.

At the time of writing this paper, we have witnessed the emergence of new AI-driven visualization tools that have quickly gained traction in the mainstream. Notably, technologies like DalE and MidJourney have garnered attention and sparked concerns within the field. Questions regarding authorship, authenticity, and the integrity of the visual content produced by these tools have all been raised, provoking important discussions. As these technologies continue to evolve, it is crucial to critically examine their implications and engage in a thoughtful discourse surrounding their use in the realm of visualization.

BIBLIOGRAPHY

13th. Netflix, 2016.

Abbas, Basel, and Ruanne Abou-Rahme. "May Amnesia Never Kiss Us on the Mouth." mayamnesia.diaart.org, 2020. https://mayamnesia.diaart.org.

All the Beauty and the Bloodshed. Neon, 2022.

Alter, Nora M. "Two or Three Things I Know about Harun Farocki." *October* 151 (January 2015): 151–58. https://doi.org/10.1162/octo_a_00206.

An Inconvenient Truth. Paramount Vantage, 2006.

Anderson, Steve. "Past Indiscretions: Digital Archives and Recombinant History." In *Transmedia Frictions: The Digital, the Arts, and the Humanities*, edited by Marsha Kinder and Tara McPherson, 100–115. Oakland, CA: University of California Press, 2014.

Anderson, Steve F. *Technologies of Vision : The War between Data and Images*. Cambridge, Massachusetts: The Mit Press, 2017.

Aston, Judith, and sandra Gaudenzi. "Interactive Documentary: Setting the Field." *Studies in Documentary Film* 6, no. 2 (June 1, 2012): 125–39. https://doi.org/10.1386/sdf.6.2.125_1.

Astrup Fearnley Museum. "Basel Abbas / Ruanne Abou-Rahme." Astrup Fearnley Museet. Accessed June 3, 2023. https://www.afmuseet.no/utstillinger/basel-abbas-ruanne-abou-rahme/.

Balsom, Erika . "The Reality-Based Community - Journal #83 June 2017 - E-Flux." E-flux.com, 2017. https://www.e-flux.com/journal/83/142332/the-reality-based-community/.

Balsom, Erika, and Hila Peleg. *Documentary across Disciplines*. Berlin: Haus Der Kulturen Der Welt ; Cambridge, Ma, 2016.

Bazin, André. "The Myth of Total Cinema." In *What Is Cinema? Volume I*. Berkeley: University of California Press, 2004.

Benjamin, Ruha. *Race after Technology: Abolitionist Tools for the New Jim Code*. Cambridge: Polity, 2019.

Benjamin, Walter. "Frankfurt School: On the Concept of History by Walter Benjamin." *Marxists.org*, 2005. https://www.marxists.org/reference/archive/benjamin/1940/history.htm.

Berger, Israel. "YouTube as a Source of Data." *PsyPag Quarterly* 1, no. 83 (June 2012): 9–12. https://doi.org/10.53841/bpspag.2012.1.83.9.

Bhunjun, Avinash. "What Is the 'for the D' Challenge and Where Did It Come From?" Metro, October 5, 2017. https://metro.co.uk/2017/10/05/what-is-the-for-the-d-challenge-and-where-did-it-come-from-6979483/.

Bourriaud, Nicolas. *Postproduction : Culture as Screenplay ; How Art Reprograms the World*. New York: Lukas Et Sternberg, 2010.

Bowker, Geoffrey C, and Susan Leigh Star. *Sorting Things out : Classification and Its Consequences*. Cambridge, Mass.: Mit Press, [Ca, 2008].

Bratton, Benjamin. "Some Trace Effects of the Post-Anthropocene: On Accelerationist Geopolitical Aesthetics." www.e-flux.com, 2013. https://www.e-flux.com/journal/46/60076/some-trace-effects-of-the-post-anthropocene-on-accelerationist-geopolitical-aesthetics/.

Bruno, Giuliana. *Public Intimacy: Architecture and the Visual Arts* . Cambridge, Ma: MIT Press, 2007.

BuzzFeed Opinion. “Opinion: How Not to Talk about Race and Genetics.” BuzzFeed News, March 30, 2018. https://www.buzzfeednews.com/article/bfopinion/race-genetics-david-reich.

Chun, Wendy Hui Kyong. *Updating to Remain the Same : Habitual New Media*. Cambridge, Massachusetts: The Mit Press, 2017.

Church, Scott. “A Rhetoric of Remix.” In *The Routledge Companion to Remix Studies*, edited by Eduardo Navas, Owen Gallagher, and Xtine Burrough, 43–54. London: Routledge, 2015.

Coded Bias. Netflix, 2020.

Comolli, Jean-Louis. “Machines of the Visible.” In *The Cinematic Apparatus*, edited by Teresa De Lauretis and Stephen Heath, 121–42. New York: St. Martin’s Press, 1980.

Crawford, Kate t. *The Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. Yale University Press, 2021.

Daney, Serge. “The Tracking Shot in Kapo.” Senses of Cinema, 2004. https://www.sensesofcinema.com/2004/feature-articles/kapo_daney/.

Dargis, Manohla. “Review: ‘13TH,’ the Journey from Shackles to Prison Bars.” *The New York Times*, September 30, 2016. https://www.nytimes.com/2016/09/30/movies/13th-review-ava-duvernay.html.

Daston, Lorraine, and Peter Louis Galison. *Objectivity*. New York: Zone Books, 2015.

DeCuir, Greg. “Film, Media, and Visual Culture Studies, and the Challenge of Machine Learning - NECSUS.” necsus-ejms.org, December 13, 2021. https://necsus-ejms.org/film-media-and-visual-culture-studies-and-the-challenge-of-machine-learning/.

Deleuze, Gilles. *Cinema I: The Movement-Image*. Translated by Hugh Tomlinson and

Barbara Habberjam. Minneapolis: University of Minnesota Press, 1986.

Deleuze, Gilles. “Postscript on the Societies of Control.” *October* 59, no. Winter (1992): 3–7.

Deleuze, Gilles. and Félix Guattari. *A Thousand Plateaus : Capitalism and Schizophrenia*. Translated by Brian Massumi. 1980. Reprint, London [U.A.] Bloomsbury, 2017.

Doyle, John. “Adam Curtis as Remixologist: The Case for Metajournalism as Radical Practice.” *Studies in Documentary Film* 11, no. 1 (January 2, 2017): 45–63. https://doi.org/10.1080/17503280.2016.1266899.

Drucker, Johanna. “Humanities Approaches to Graphical Display.” *Digital Humanities Quarterly* 5 (2011).

Eisenstein, Sergei. *Film Form: Essays in Film Theory*. Edited and translated by Jay Leyda. New York: Harcourt, Brace & World, 1949.

Elayat, Yasmin, and Jigar Mehta. “18 Days in Egypt.” MIT - Docubase, 2011. https://docubase.mit.edu/project/18-days-in-egypt/.

Ellis, John. *Documentary: Witness and Self-Revelation*. New York: Routledge, 2011.

Fallon, Kris. “Data Visualization & Documentary’s (In)Visible Frontiers.” In *Documentary across Disciplines*, edited by Erika Balsom and Hila Peleg, 294–312. Cambridge, Massachusetts : The MIT Press, 2016.

Farocki, Harun. *One Image Doesn’t Take the Place of the Previous One*. Edited by Michèle Thériault. Leonard & Bina Ellen Art Gallery / Agnes Etherington Art Centre, 2008.

Ferreira da Silva, Denise. “1 (Life) ÷ 0 (Blackness) = ∞ − ∞ or ∞ / ∞: On Matter beyond the Equation of Value.” www.e-flux.com. E-flux Journal, February 2017. https://www.e-flux.com/journal/79/94686/1-life-0-blackness-or-on-matter-beyond-the-equation-of-value/.

Fighter, Darlene. “What Is a Mashup?” *University of Saskatchewan Library*. Accessed May 22, 2023. https://books.infotoday.com/books/Engard/Engard-Sample-Chapter.pdf.

Flinn, Andrew, and Ben Alexander. “‘Humanizing an Inevitability Political Craft’: Introduction to the Special Issue on Archiving Activism and Activist Archiving.” *Archival Science* 15, no. 4 (October 20, 2015): 329–35. https://doi.org/10.1007/s10502-015-9260-6.

Flynn, Shannon. “How Does Google Image Recognition Work?” ReHack, March 30, 2020. https://rehack.com/data/ai/google-image-recognition/.

Foucault, Michel. *The Archaeology of Knowledge and the Discourse on Language*. Translated by A. M. Sheridan Smith. New York: Pantheon Books, 1972.

Foucault, Michel. *The Order of Things: An Archaeology of the Human Sciences*. London: Routledge, 1991.

Friedberg, Anne. *The Virtual Window : From Alberti to Microsoft*. Cambridge, Mass.: Mit Press, 2009.

Friedberg, Anne. *Window Shopping: Cinema and the Postmodern*. Berkeley: University Of California Press, 1993.

Friendly, Michael. “Visions and Re-Visions of Charles Joseph Minard.” *Journal of Educational and Behavioral Statistics* 27, no. 1 (2002): 31–51.

Galloway, Alexander R. *The Interface Effect*. Cambridge, Uk ; Malden, Ma: Polity, 2012.

Geenfield, Sam. “Picture What the Cloud Can Do: How the New York Times Is Using Google Cloud to Find Untold Stories in Millions of Archived Photos.” Google Cloud Blog, November 9, 2018. https://cloud.google.com/blog/products/ai-machine-learning/how-the-new-york-times-is-using-google-cloud-to-find-untold-stories-in-millions-of-archived-photos.

Gitelman, Lisa. *Raw Data Is an Oxymoron*. MIT Press, 2013.

Guattari, Félix. *The Three Ecologies*. Translated by Ian Pindar and Paul Sutton. London: The Athlone Press, 1997.

Hacking, Ian. "Biopower and the Avalanche of Printed Numbers." In *Biopower: Foucault and Beyond* . Chicago: University of Chicago Press, 2015.

Haddad, Mohammed. "Fake Pentagon Explosion Photo Goes Viral: How to Spot an AI Image." www.aljazeera.com, May 23, 2023. https://www.aljazeera.com/news/2023/5/23/fake-pentagon-explosion-photo-goes-viral-how-to-spot-an-ai-image.

Hall, Stuart. "The Rediscovery of 'Ideology': Return of the Repressed in Media Studies." *Routledge EBooks*, July 5, 2005, 61–95. https://doi.org/10.4324/9780203978092-9.

Hamacher, Werner. "'Now': Walter Benjamin on Historical Time." In *The Moment: Time and Rupture in Modern Thought*, edited by Heidrun Friese, 161–96. Liverpool: Liverpool University Press, 2001.

Hayles, Katherine N. "Narrative and Database: Natural Symbionts." *PMLA* 22, no. 5 (2007): 1603–8. http://www.jstor.org/stable/25501808.

Hegenbart, Sarah, and Mara-Johanna Kölmel, eds. *Dada Data: Contemporary Art Practice in the Era of Post-Truth Politics*. Bloomsbury Publishing, 2023.

Hepworth, Katherine, and Christopher Church. "Racism in the Machine: Visualization Ethics in Digital Humanities Projects." *Digital Humanities Quarterly* 12, no. 4 (2018).

Here and Elsewhere. Gaumont Film Company, 1976.

hh1edits. "Hit by a Bus* - the Supercut." www.youtube.com, February 5, 2013. https://www.youtube.com/watch?v=tmYrWXhFf4c.

Hight, Craig. “The Field of Digital Documentary: A Challenge to Documentary Theorists.” *Studies in Documentary Film* 2, no. 1 (March 28, 2008): 3–7. https://doi.org/10.1386/sdf.2.1.3_2.

Hooks, Bell. *Black Looks : Race and Representation*. 1992. Reprint, New York: Routledge, 2015.

Joseph, Martha. “Basel Abbas and Ruanne Abou-Rahme: Echoes of Resistance | Magazine | MoMA.” The Museum of Modern Art, May 25, 2022. https://www.moma.org/magazine/articles/737.

Juhasz, Alexandra, and Alisa Lebow. “Beyond Story: An Online Community-Based Manifesto.” *World Records* 2, no. 3 (2018). https://worldrecordsjournal.org/beyond-story-an-online-community-based-manifesto/.

Katz, Brigit. “The Controversial Resurrection of James Dean.” Smithsonian Magazine, November 8, 2019. https://www.smithsonianmag.com/smart-news/controversial-resurrection-james-dean-180973513/.

Kim, Jihoon. *Documentary’s Expanded Fields : New Media and the Twenty-First-Century Documentary*. New York, Ny: Oxford University Press, 2022.

Krauss, Rosalind. “Sculpture in the Expanded Field.” *October* 8 (1979): 30–44. https://doi.org/10.2307/778224.

Lamelas, David. *A Study of the Relationship between Inner and Outer Space* . 1969. Video. London. Camden Art Centre.

Lange, Jeppe. *Abyss*. 2021. Film.

Lebow, Alisa. *Filming Revolution*. *Stanford Digital Project*. Stanford, California: Stanford University Press, 2018.

Levine, Caroline. *Forms : Whole, Rhythm, Hierarchy, Network*. Princeton ; Oxford: Princeton University Press, 2017.

Lim, Dennis. "'Signals: How Video Transformed the World' - Criticism - E-Flux." www.e-flux.com, March 24, 2022. https://www.e-flux.com/criticism/529250/signals-how-video-transformed-the-world.

Little, Colony. "In 'the White Album,' Arthur Jafa Invents a New Film Language to Take on the Clichés of Empathy." Artnet News, January 25, 2019. https://news.artnet.com/art-world/arthur-jafa-white-album-1448167.

Malavassi, Paola. "Arthur Jafa. Face It: The 'Affective Proximity' of Imagery." *Flash Art* 329, no. FEB–MAR 2020 (March 2, 2020). https://flash---art.com/article/arthur-jafa-face-it-the-affective-proximity-of-imagery/.

Manovich, Lev. "Remix Strategies in Social Media." In *The Routledge Companion to Remix Studies*, edited by Eduardo Navas, Owen Gallagher, and Xtine Burrough, 135–54. London: Routledge, 2015.

Manovich, Lev. *Software Takes Command*. New York: Bloomsbury, 2013.

Manovich, Lev. *The Language of New Media*. Cambridge: Mit Press, 2001.

Mbembe, Achille. *Necropolitics*. Durham: Duke University Press, 2019.

Min, Sey. "MoMA | Data Visualization Design and the Art of Depicting Reality." Moma.org. MoMA, 2015. https://www.moma.org/explore/inside_out/2015/12/10/data-visualization-design-and-the-art-of-depicting-reality/.

Minh-ha, Trinh T. *Reassemblage*. 1982. Film.

Morris, Tim. *Computer Vision and Image Processing*. Houndmills: Palgrave Macmillan, 2004.

Mozur, Paul. “Inside China’s Dystopian Dreams: A.I., Shame and Lots of Cameras.” *The New York Times*, July 8, 2018. https://www.nytimes.com/2018/07/08/business/china-surveillance-technology.html.

Nash, Mark. “Reality in the Age of Aesthetics | Frieze.” Frieze, April 1, 2008. https://www.frieze.com/article/reality-age-aesthetics.

Nash, Terre. *If You Love This Planet*. 1982.

Navalny. Warner Bros. Pictures, 2022.

Navas, Eduardo. *Remix Theory : The Aesthetics of Sampling.* Vienna: Springer-Verlag, 2012.

Nichols, Bill. *Representing Reality : Issues and Concepts in Documentary*. Bloomington, Ind.: Indiana Univ. Press, 1991.

Olson, Göran. *The Black Power Mixtape 1967-1975* . 2011.

Paglen, Trevor, and Kate Crawford. *Training Humans*. 2019. Photography. Milan. Fondazione Prada Osservatorio.

Ramadan, Dina A. “Basel Abbas & Ruanne Abou-Rahme: May Amnesia Never Kiss Us on the Mouth.” The Brooklyn Rail, June 1, 2022. https://brooklynrail.org/2022/06/artseen/Basel-Abbas-Ruanne-Abou-Rahme-May-amnesia-never-kiss-us-on-the-mouth.

Rapp, Christof. “Aristotle’s Rhetoric.” *The Stanford Encyclopedia of Philosophy* Spring 2022 Edition (May 2, 2002). https://plato.stanford.edu/archives/spr2022/entries/aristotle-rhetoric/.

Reich, David. “Opinion | How to Talk about ‘Race’ and Genetics.” *The New York Times*, March 30, 2018, sec. Opinion. https://www.nytimes.com/2018/03/30/opinion/race-genetics.html.

Rheinberger, Hans-Jörg. *Toward a History of Epistemic Things : Synthesizing Proteins in the Test Tube*. Stanford, Calif.: Stanford University Press, 1997.

Rosenberg, Daniel. “Data before Fact.” In *Raw Data" Is an Oxymoron*, edited by Lisa Gitelman. Ca, Massachusetts : MIT Press, 2013.

Ruby, Jay. “The Image Mirrored: Reflexivity and the Documentary Film.” *Journal of the University Film Association* 29, no. 4 (1977): 3–11. https://www.jstor.org/stable/20687384.

Sack, Warren. “Network Aesthetics.” *Database Aesthetics*, May 5, 2018, 183–210. https://doi.org/10.5749/j.cttts7q7.13.

Sadowski, Jathan. “Potemkin AI.” Real Life, August 6, 2018. https://reallifemag.com/potemkin-ai/.

Santos, Miguel. “Launch of Google Cloud Vision Revolutionizes How Machines See.” Futurism, May 12, 2015. https://futurism.com/launch-google-cloud-vision-revolutionizes-machines-see.

Sekula, Allan. “The Body and the Archive.” *October* 39 (1986): 3–64.

Shaviro, Steven. *Post-Cinematic Affect*. O-Books, 2010.

Singer, Fanny. “Arthur Jafa’s ‘the White Album’ - Criticism - E-Flux.” www.e-flux.com, March 20, 2019. https://www.e-flux.com/criticism/259117/arthur-jafa-s-the-white-album.

Stark, Frances. *U.S. Greatest Hits Mix Tape Volume I*. 2019.

Steyerl, Hito. “ Documentary Uncertainty.” *A Prior Magazine*, 2007.

———. “A Sea of Data: Apophenia and Pattern (Mis-)Recognition - Journal #72 April 2016 - E-Flux.” E-flux.com, 2016. https://www.e-flux.com/journal/72/60480/a-sea-of-data-apophenia-and-pattern-mis-recognition/.

Stine, Kyle. “Other Ends of Cinema: Powers of Ten, Exponential Data, and the Archive of Scientific Images.” *JCMS: Journal of Cinema and Media Studies* 59, no. 2 (2020): 114–37. https://doi.org/10.1353/cj.2020.0005.

Struggles in Italy. Dziga Vertov Group, 1971.

Suleiman, Elia. “A Cinema of Nowhere.” *Journal of Palestine Studies* 29, no. 2 (January 1, 2000): 95–101. https://doi.org/10.2307/2676539.

Takahashi, Tess. “Data Visualization as Documentary Form: The Murmur of Digital Magnitude.” *Discourse* 39, no. 3 (2017): 376. https://doi.org/10.13110/discourse.39.3.0376.

Tawil, Yasmina. “Interview with Alisa Lebow of Filming Revolution: A Meta-Documentary about Filmmaking in Egypt.” Arab Film and Media Institute (AFMI), November 11, 2016. https://arabfilminstitute.org/interview-with-alisa-lebow-of-filming-revolution-a-meta-documentary-about-filmmaking-in-egypt/.

The Thin Blue Line. Miramax Films, 1988.

Tohline, Max. “A Supercut of Supercuts: Aesthetics, Histories, Databases.” *Open Screens* 4, no. 1 (2021). https://doi.org/10.16995/os.45.

Tufte, Edward R. *Beautiful Evidence*. Cheshire, Conn.: Graphics Press, Llc, 2006.

Van Dijck, José. “From Shoebox to Performative Agent: The Computer as Personal Memory Machine.” *New Media & Society* 7, no. 3 (June 2005): 311–32. https://doi.org/10.1177/1461444805050765.

Vertov, Dziga. *Man with a Movie Camera*. 1929. Film.

Williams, Linda. “Mirrors without Memories: Truth, History, and the New Documentary.” *Film Quarterly* 46, no. 3 (April 1993): 9–21. https://doi.org/10.1525/fq.1993.46.3.04a00030.

Woods, Derek. “Epistemic Things in Charles and Ray Eames’s Powers of Ten.” In *Scale in Literature and Culture*, edited by Michael Tavel Clarke and David Wittenberg, 61–92. London: Palgrave Macmillan, 2017.

Youngblood, Gene. *Expanded Cinema*. New York: E. P. Dutton, 1970.

Zerai, Assata, Joanna Perez, and Chenyi Wang. “A Proposal for Expanding Endarkened Transnational Feminist Praxis.” *Qualitative Inquiry* 23, no. 2 (August 20, 2016): 107–18. https://doi.org/10.1177/1077800416660577.

Zimmermann, Patricia Rodden. *Documentary across Platforms : Reverse Engineering Media, Place, and Politics*. Bloomington, Indiana: Indiana University Press, 2019.