

INFRASTRUCTURAL CINEMA: SEEING ENERGY ON FILM IN THE LONG 1930S

by

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ABSTRACT

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Under the Supervision of Professor Jocelyn J. Szczepaniak-Gillece

American energy and infrastructure are at points of major reckoning. Electrical grids suffer major outages, while climate change threatens every known way of harnessing energy resources. But how did we get here? My dissertation, “Infrastructural Cinema: Seeing Energy on Film in the Long 1930s” analyzes the characterization of energy resources in American government and corporate films from the 1920s-1930s, or “infrastructural cinema.” Specifically, I interrogate how infrastructural cinema has affected our understanding of how to control and manage energy, and to what extent our reliance on such infrastructures limits present-day energy solutions. Infrastructural cinema is concerned with how energy and its networks are made cinematic: how does film both mediate our understanding of natural resources and act as an infrastructure itself? It is a concept born at the nexus of modernity, media, aesthetics, technology, ecology, and the nonhuman. I pursue infrastructural cinema as a media technology and a cultural technology—an ideological apparatus—often kept hidden from sight. This analysis reveals the intentionality of both energy and filmic systems that may otherwise be invisible or normalized, even to the point of being interpreted as neutral. Such a history of infrastructural cinema focuses on the constructedness of both cinema and infrastructure and questions the acceptance of certain infrastructures as central to human culture, primarily those that extract, transform, harness, or deliver natural resources to humans as energy. For example, the “pipelines alive with racing oil” deemed necessary in *More Power To You* (1939) crisscross native land and threaten ecologies.

My first chapter historicizes nonfiction film and focuses on the sociocultural context of the 1920s-1930s. Chapters 2, 3, and 4 analyze films about hydroelectric dams, oil and gas infrastructure, and electrical infrastructure respectively. Understanding this archive offers ways to address the infrastructural zeitgeist of the present and encourages new visions for life after energy extraction.

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For my family

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Every truly great accomplishment is at first impossible.

Introduction: Seeing Infrastructurally

Though the Latin prefix “infra” translates to “below” or beneath,” modern-day infrastructure permeates human life from all angles. Infrastructure, which can encompass energy, transportation, communication, urban planning, and economics, has become central to conversations about moving forward from the COVID-19 pandemic in the slightly shorter term, and to environmental sustainability in the longer term.¹ While infrastructural concerns exist on different scales, from the hyperlocal to the planetary, every geographic and political context shares a common interest in energy infrastructures and their futurity. The tumultuous present raises significant questions about the future: how will we continue to fuel vehicles, to power homes? Is it plausible to transition to zero-emission energy infrastructure? How quickly? Who will lose money? Who will gain jobs? What materials will be used? Where will they come from, and how will they affect the environment? The future of energy is uncertain in this moment of political and economic upheaval. But we can gain a deeper knowledge of energy’s genealogies through cinema history.

While a contemporary shift toward environmental concerns about infrastructural projects affects public opinion about them more than ever before, intense scrutiny of these projects is nothing new. As soon as major infrastructural projects began, people started to engage with them through different media forms in addition to visiting these sites in-person. David Nye describes such major projects and their strong affective draw as the American Technological Sublime,

¹ Akhil Gupta, “The Future in Ruins: Thoughts on the Temporality of Infrastructure,” *The Promise of Infrastructure*, Edited by Anand, Nikhil, Akhil Gupta, and Hannah Appel, (Durham: Duke University Press, 2018). 65. Gupta emphasizes that three dimensions of infrastructure, “a channel that enables communication, travel and the transportation of goods; a biopolitical project to maximize the health and welfare of the population at the same time as subjecting control and discipline; and its role as a symbol of a future being brought to fruition” connect specifically to energy infrastructures.

which he distinguishes as a particularly modern phenomenon demarcating the departure of sublime experiences from the realm of nature to that of man-made wonders.² These infrastructural marvels are also intimately connected with the natural world from their earliest histories. Nye gives the example of the Grand Canyon, which became a tourist attraction in part due its natural beauty and immensity, and in part because new transportation infrastructure was part of the experience of visiting. The infrastructure used to access the canyon taught visitors how to see it: as an unfathomable marvel, but also as a commodity, something they had the right to access because modern infrastructure had the power to take them there.

Cinema has always had the power to enhance comprehension of complex technologies, thus dispelling the incomprehensible nature of sublime technological objects. But it has also been able to selectively obscure to the point of omission the environmental realities of technologies that extract from and alter landscapes. Drawing on the philosophies of Edmund Burke and Immanuel Kant, Nye insists “the first reaction to the sublime object is often incomprehension,” whether that object is in nature, such as the Grand Canyon or Niagara Falls, or a technological structure, like the Hoover Dam.³ Unlike sublime objects in nature, which are inscrutable in part because they were not made by human hands, the technological sublime is imbued with human knowledge, expectations, and vision. Nye argues that technology is inseparable from cultural values, and thus, far from being neutral conduits for the heat, fuel, light, and overall energy required for modern living, the energy infrastructures humans build are ideological in addition to material. They are manifestations of our most ardent human ambitions.⁴ A historical

² David E. Nye, *American Technological Sublime*, (Cambridge, Mass: MIT Press, 1994), 9.

³ Nye, *American Technological Sublime*, 9.

⁴ *Ibid*, xx.

investigation into the ways in which cinema mediates technologies both sublime and mundane, from dams to dairy farms, illuminates contemporary perceptions of energy infrastructure.

I became interested in the historical role of cinema in infrastructural discourse after feeling disillusioned by the lack of sociopolitical impact that contemporary environmental documentary seems to have. My environmental concerns spurred an interest in engaging with media concerning environmental issues, from well-known climate action films like *An Inconvenient Truth* (dir. Davis Guggenheim, 2006), which sounded the alarm about the dangers of human-driven global warming to a wide, public, movie-going audience, to more niche films like *Into Eternity* (dir. Michael Madsen, 2010), which addresses a future audience about a facility in Onkalo, Finland designed to house nuclear waste for the next 10,000 years.⁵ While I felt personally compelled in distinct ways by each film I watched, I also felt disturbed by the messages geared toward “personalized action plans” implying that individuals watching could genuinely impact climate change while still living in an economic system dominated by industrial capitalism. Close to two decades have passed since Al Gore’s urgent message in *An Inconvenient Truth*, and climate reality becomes more urgent each year. At the heart of climate catastrophe, however, are the infrastructures that create the waste that is threatening life on earth. The use of fossil fuels, the damage to ecosystems, and the attempt to sequester industrial processes far enough away from middle and upper-class people in the United States so that they don’t pay attention to them has resulted in the high emissions we produce today and the

⁵ Other examples include *Manufactured Landscapes*, *Watermark*, and *Anthropocene: the Human Epoch* (dir. Edward Burtynsky, 2006, 2013, 2018 respectively), *2040* (dir. Damon Gameau 2019) and dozens of other films that address niche environmental subjects from carbon and methane released by industrial agriculture (*Cowspiracy*, dir. Kip Andersen 2014 for example) and other nature and wildlife preservation films over the years. Episodes of series like *Planet Earth* (BBC, 2006) are almost cliché in their formulaic inclusion of warnings about impending climate change affecting animal habitats.

environmental injustice afflicting low-income communities around the country and around the globe.

Helen Hughes cites a surge in environmental documentary at the beginning of the twenty-first century, arguing that documentary films are “part of the story of the response to the idea” of climate change.⁶ Hughes’ optimistic view of what she deems “Green Documentary” leans toward a celebration of the material, even if it is sometimes broken or in need of salvaging. This is in contrast to Michael Truscello’s indictment of industrial materiality. In addition to making human life easier from minute to minute and day to day, infrastructure in the twenty-first century can also be alienating, wasteful, and, as Truscello argues, brutal. He insists that the force of modern infrastructure is so intense that it is suicidal, necropolitical, and ecologically apocalyptic.⁷ He defines what he calls Infrastructural Brutalism as “the historical context in which industrial capitalism has met the limits of its expansion and domination, and yet continues to press for unprecedented commitments to build more oil pipelines, more large dams, more roads, more paved surfaces than any time in human history.”⁸ To delve into this concept, Truscello analyzes various examples of cinema, photographic media, and literature both past and present. I, too, see the brutalism infusing infrastructure built into and around daily life, and question the political, economic and historic factors driving industrial and infrastructural developments in the twenty-first century. To see the origins of our current problems, I seek to grasp how infrastructural imagination developed through cinema in the past. Was this brutality always apparent, even when making it apparent wasn’t the intention?

⁶ Helen Hughes, *Green Documentary: Environmental Documentary in the Twenty-First Century*, (Bristol: Intellect Books Ltd, 2014), 138.

⁷ Michael Truscello, *Infrastructural Brutalism: Art and the Necropolitics of Infrastructure*, (Cambridge, Massachusetts; The MIT Press, 2020), 4-5.

⁸ Truscello, *Infrastructural Brutalism: Art and the Necropolitics of Infrastructure*, 4.

My formulation of infrastructural cinema is twofold. First, I am concerned with how energy and its networks are made cinematic: how does film both mediate our understanding of natural resources and energy infrastructures and act as an infrastructure itself, a *dispositif* of connected political, ideological, and aesthetic strategies that shape perception? Rather than thinking of infrastructural cinema as a genre, I aim to situate it as a heuristic concept born at the nexus of modernity, media, aesthetics, technology, ecology, and the nonhuman. Second, I examine how cinema makes viewers see infrastructurally. I argue that cinema shapes viewer expectations of energy infrastructures offscreen in addition to building tacit knowledge about how they should work, in addition to their omnipresence. Seeing infrastructurally is a selective form of sight defined by the simultaneous shift between seeing and ignoring the infrastructural systems we rely on. Thus, I pursue infrastructural cinema as a media technology and a cultural technology—an ideological apparatus—simultaneously visible and hidden. Furthermore, while films focused on infrastructure exist to call attention to different systems, technologies, and industrial processes, their oft neglected status within the canon of film history renders them unseen historically. This, in addition to the intentional obfuscation of certain elements of infrastructures, namely the harmful and wasteful elements, creates a dichotomous existence for these films. My analysis reveals the intentionality of both energy and filmic systems that may otherwise be invisible or normalized, even to the point of being interpreted as neutral. Such a history of infrastructural cinema homes in on the constructedness of both cinema and infrastructure and questions the acceptance of certain infrastructures as central to human culture, primarily those that extract, transform, harness, or deliver natural resources to humans as energy.

I narrow my analysis to American cinema in the timeframe beginning in the late 1920s and ending in the early 1940s for a few reasons. The first is the political resonances between

these decades and the present day. The contrast between the economic growth of the 1920s with the subsequent crash and Great Depression of the 1930s feels familiar both in light of the 2008 recession and the economic downturn brought on by the COVID-19 pandemic. Economic change animates the politics of both eras. 1932's New Deal, the governmental response to the financial insecurity of the nation, is still one of the most robust government programs for public services ever to exist in the United States, and much of the policy was centered on labor and infrastructure. The New Deal resulted in tremendous resource allocation to public works projects that benefitted millions. The idea that the government intentionally funded social services and public projects that benefitted the average person is idealized as a model for many in the present who are in favor of a similar political shift, albeit focused on cleaner energy. Indeed, the oft-maligned Green New Deal (GND), a proposal aimed at improving social welfare through climate-friendly infrastructure, is rooted in Depression-era political moves and ideals. The key difference is that the New Deal of the 1930s built much of the infrastructure implicated in climate woes today. Naomi Klein writes of the similarities in "speed and scope" that the GND resonates with its namesake.⁹ She calls attention to the massive social overhauls required to achieve climate justice through political transformation, including progressive changes to immigration policies and laws targeting activists and workers, in addition to the more obvious element of green infrastructure.¹⁰ I am interested in New Deal cinema to know how this movement that in many ways succeeded was mediated on film, in addition to how infrastructures were discussed and aestheticized before, during, and after the tidal wave of New Deal programs.

⁹ Naomi Klein, *On Fire: the (burning) Case for a Green New Deal*. First Simon & Schuster hardcover edition, (New York: Simon & Schuster, 2019), 22.

¹⁰ Klein, *On Fire: the (burning) Case for a Green New Deal*, 50-51.

Knowing this offers a testing site for how cinema and media could play a role in the contemporary GND.

Filmmakers of non-theatrical, promotional, and sponsored films of the long 1930s were paying keen attention to the aesthetic and narrative dimensions of infrastructure and technology, most often striking a celebratory, excited tone about the possibilities of what was being built. While I do not equate the past with the present, the similarities between the political, economic, and infrastructural concerns of both the long 1930s and the present resonated with me. It is striking to feel the hopefulness of films about technological advancements of the era in contrast with the self-awareness of technological critiques in the present. When did the tone begin to shift? Were precursors visible in these early, celebratory films? As I researched, I became even more invested in learning about what more obscure films bring to bear on the relationship between infrastructure and cinema. I believe there is a significant relationship between the two forged in the aesthetic sensibilities of cinematic expression and the vacillation of infrastructures between their obvious and latent omnipresence in our surroundings. Thus, while my research began based on the environmental issues of the present, it transformed into an exploration of how infrastructure was made cinematic in earlier iterations, and in turn how cinema played an infrastructural role as a *dispositif* that taught about the promises of infrastructure that still infuse our faith in new technologies today despite the evidence that infrastructures are at a major point of reckoning in the United States.¹¹

Infrastructure is more than materials or component parts, or large connected networks—infrastructures also consist of aesthetics, form, and politics. Because of this they are also ever-

¹¹ Nikhil Anand, Akhil Gupta, and Hannah Appel. *The Promise of Infrastructure*. Edited by Nikhil Anand, Akhil Gupta, and Hannah Appel, (Durham: Duke University Press, 2018).

changing. Anand, Gupta, and Appel argue that because they are agents of modernity, infrastructures are ideal sites for increasing our recognition of intricate sociopolitical issues. Brian Larkin further articulates the importance of aesthetic considerations in relation to infrastructures, explaining that rather than fading into the background or becoming invisible, infrastructures make power dynamics and political structures visible.¹² Furthermore, Larkin insists that infrastructures instigate “*poieisis* ... the act of bringing something into being in the world by creating a way of doing and making.”¹³ These descriptions and definitions of what infrastructures are and what they can do relate closely to what cinema is and can do. Cinema too reveals political and social situations playing out both in the immediate moment but also over time. Cinema creates ways of doing and making; moving images and the experiences of viewing them influence life outside of the screen. Finally, like cinema, infrastructures are “simultaneously technical and aesthetic devices that are brought into being by relations between imagination, ideology, and technicity, that have a history, a present, and a future.”¹⁴ Infrastructure and cinema do not exist in one moment; they are both ongoing and variable. Thus, the ways in which infrastructural and cinema historiography and theories overlap supports my study of films whose primary aesthetic and narrative concern is infrastructure.

This dissertation has three overarching areas of interest that span and intersect among four chapters. The first is the disciplinary contribution I make regarding film history and the analysis and discussion of what are typically orphan films. While I engage with a few films that have been written on extensively, one of my goals is to add new dimensions and details to the

¹² Brian Larkin, “Promising Forms: The Political Aesthetics of Infrastructure” *The Promise of Infrastructure*, Anand, Gupta, & Appel, 174-202, 177.

¹³ Larkin, “Promising Forms: The Political Aesthetics of Infrastructure,” 177.

¹⁴ Anand, Gupta, & Appel, “Introduction,” *The Promise of Infrastructure*, 25.

landscape of film historical knowledge by delving into what infrastructural stories previously undiscussed films are telling. My second key area is the cinematic dimensions of infrastructure and climate in these films. Issues surrounding infrastructure and technology appear in a variety of non-fiction films, including educational films, promotional film/advertisement, industrial film, newsreels, and documentaries. Films that approach climate, on the other hand, don't appear until later in the twentieth century after the environmental movement started in the 1960s. I draw connections between infrastructural developments and the resources that new technologies were designed to extract and deliver to humans and consider what precursors of the environmental and climatic concerns of the present are detectable in films from previous decades. Was it clear that environmental woes were a part of these processes? How were they acknowledged, or were they evaded? If so, how intentionally? For example, many technologically-oriented films of the long 1930s consider waste from a resource rather than a pollution perspective—unused oil is a waste, rather than the carbon emissions produced by burning it. Without defending the views conveyed in the films I aim to gauge how much or how little the issue of environmental degradation is discussed during the time period. This connects to my final area of interest, the political, social, and economic textures of the era that shape the contexts in which the films I evaluate were made. This is relevant given the proximity of many of these films to scientific discourse, which seeks to be objective, but is often anything but. By drawing from an interest in each of these areas, I concentrate on a set of films ranging from the highly political to the seemingly mundane, each of which reveals a facet of cinema, environmental, and political historiography.

Chapter One, “Nature, Energy, Infrastructure: Intersections of Modernity in the long 1930s” draws connections among the sociopolitical events that impacted the films I study during the long 1930s, an era reaching from roughly the late 1920s into the early 1940s. This time

period also encompasses the rise of documentary film and other key changes in cinema history. This chapter also foregrounds the theories applied in subsequent chapters such as the *dispositif*. I argue that rather than simple by-products of industrial processes, cinema also helped to project what the future could or should be like infrastructurally and was thus central to infrastructural discourse. I also trace the revealing functions of both technology as described by Martin Heidegger and of cinema as theorized by Siegfried Kracauer, both of whom acknowledge in distinct ways the ways in which technology, both cinematic and infrastructural, attempts to order and enframe nature.¹⁵ By tracing the energy, infrastructural, and cinematic changes that occurred during the long 1930s, I call attention to the convergence of these distinct domains of development during the era and the ways in which they represent ideals of modernity that are often at odds with economic and material moves that would benefit the environment. Situating infrastructural cinema and seeing infrastructurally in relation to contemporary formulations of the Anthropocene is another key part of realizing the historicity of human-induced climate change and its cinematic traces.

In addition to tracing a history of the era synthesizing cinema and infrastructure, I outline the types of films I analyze in the rest of the project and my approach to accessing archival films online. Archives have infrastructures all their own, and the digital archives I rely on for my research are no exception. In addition to providing an overview of how and why a researcher might rely on different types of film archives and what results the use of different archives can produce in scholarship, I recount the use of digital archives for my project for both practical and necessary reasons, given much of my writing and research took place during the Covid-19 pandemic. A wealth of orphan films exist in online archives. While orphan films can include

¹⁵ Martin Heidegger, "The Question Concerning Technology," *The Question Concerning Technology and Other Essays*, trans. William Lovitt (Garland Publishing, Inc. New York & London, 1977).

fiction films, the vast majority of them are non-fiction, non-theatrical or both, including documentary and newsreels, government, corporate, or industry sponsored film, and educational or pedagogical film. The purposes and aesthetics of these films at times overlap, and at times differ drastically from each other. However, each category has a distinct history, for example, the stark increase in newsreels during World War I to spread war-related information differs drastically from the development of the visual instruction movement in the 1920s. Overall, chapter one argues for the necessity of engaging with a wide array of non-fiction films of different types to develop a broad understanding of how they teach viewers to see infrastructurally.

Chapter Two, “Harnessing Water & Preventing Waste: Film’s Mitigation to ‘Unproductive Expenditures’” evaluates water management films of the New Deal era. These films emphasize that dam building is the solution to both the risk to human life and livelihood caused by flooding, but also the idea that letting waterfalls and rivers flow without harnessing their innate kinetic power for energy is wasteful. This waste can be read as an unproductive expenditure based on the theory of Georges Bataille. Bataille theorizes elements of the economy that are seemingly unusable and questions their purpose, arguing that in an economy of excess, waste is inevitable. However, films like *Conservation of Natural Resources* (1937, Erpi Educational) and even a well-known Depression-era documentary like *The River* (1938, dir. Pare Lorentz) present an alternative view—the excesses of nature need not go to waste. Rather, they can be harnessed and used through modern infrastructural technology.

The other wastes of industrial development that inevitably come with infrastructural projects like dam-building, from environmental destruction to species depletion, are conveniently left out of the films. By considering primarily films about Tennessee Valley Authority (TVA)

projects in the first part of the chapter, I examine the unbridled optimism of dam-building films that were funded by the government during the New Deal. Given that both the films and the dams themselves were part of New Deal projects, it becomes clear that in addition to a building mission, the TVA had a pedagogical mission as well to show the public how successful their projects were, thus extending not only energy infrastructure on the ground but also generating excitement about the projects. In addition to *The River* and *The TVA at Work* (1936, TVA) both TVA-related films, this chapter discusses two newsreels, *Boulder Dam Opened* (1936) and *Boulder Dam Tested* (1941) by Pathé News. The newsreels conceptualize infrastructure as event rather than the labor and materiality that went into the creation of dams built in the era, further obfuscating the environmental problems they can cause despite being thought of as a cleaner energy source than fossil fuels. Finally, the chapter considers the legacy of dams and the ways in which these films omit the very real damage done to the cultural infrastructures of indigenous people.

In the third chapter, “Fossil Fuel Infrastructures-Visibility, Alchemy, and the Technological Imperative,” I explore how American films from the 1920s through the Depression Era aestheticize oil infrastructure as both a means of control and beneficial for the sake of sheer invention. Political theorist Langdon Winner explains that the technological imperative “suggests that the very construction of technological systems contains an inherent tendency to establish a complex set of linkages that continues beyond one’s original anticipation and that carries a powerful force of social obligation.”¹⁶ Once infrastructures are built, we are socially inclined to continue using them. Energy humanities scholar Imre Szeman’s “social ontology of oil” concept in contemporary documentary film also comes into clearer focus in

¹⁶ Langdon Winner, “Engines of Change” *Autonomous Technology: Technics-Out-of-Control as a Theme in Political Thought* (Cambridge, Mass.: MIT Press, 1977), 104.

relation to Winner's theory. Indeed, both argue that infrastructure begets ever more complex infrastructure, despite the potential for negative outcomes. While films from the Depression Era do not directly address most ills of fossil fuel extraction known today, they reveal how ideological and material infrastructures of oil were built in tandem and how they enabled the energy grid in which we are still deeply enmeshed.

The Story of Petroleum (1928) and *The Story of Gasoline* (~1928) are both nontheatrical films made by the U.S. Bureau of Mines. These films illustrate the oil boom of the era and the manual labor required for its extraction. It took work to lay pipelines and operate oil wells, in addition to the work done in laboratories where chemists synthesized ever more efficient versions of oil-based fuel. In contrast, *Master Hands* (1935), *More Power To You* (1939), and *Riding the Film* (1937), all directed by prolific promotional filmmaker Henry Jamison "Jam" Handy during the difficult years of the Depression, are more variable and commercial, emphasizing not only the extraction and refining of oil but also adjacent industries such as automobile manufacturing. From the 1920s to the height of the Depression-Era 1930s, the filmic aesthetics of oil shifted from highlighting its materiality, to the infrastructure developed to harness it, and finally to the practical benefits of an oil-driven culture for industries and consumers. Thus, in this chapter I argue that infrastructure itself encourages, or even forces, certain aesthetic choices to capture the ontologies of oil and its infrastructure on film.

Moving images have the power to reinforce our hopes for what energy infrastructure can help humans accomplish, how it works, and the optics of its successes and failures. In Chapter Four, "'New Tools for the Old Toil:' Electrical Aesthetics on Film in the Long 1930s," I dissect how energy is aestheticized on film at the points of use in domestic and rural settings and the tools that electrical power has made possible. Energy historian Julie Cohn urges that, "Despite

the invisibility of electric power, it is central to both the quotidian and the extraordinary in American life.”¹⁷ This point brings the dichotomy between visible and invisible infrastructures of energy and cinema full circle—electricity is the quintessential example of an invisible, powerful, and modern form of energy. While electricity seems immaterial, seeing infrastructurally allows viewers to fathom the material dimensions of electricity. Promotional films of the era about electricity make visible both the commonplace and exceptional changes to daily life wrought by electrification. For example, in the 1939 Westinghouse-sponsored film *Summer Storm*, a summer’s day is interrupted by a passing rainstorm. The film shows the stakes, low and high, of reliable electricity, and highlights how the electrical grid operated during the storm. *Summer Storm* champions the sturdiness of the material infrastructure involved in electrical power networks in addition to the human knowledge of grid workers. In contrast, renowned documentary *Power and the Land* praises the Rural Electrification Administration’s work to power farms while downplaying the material infrastructure needed to achieve this change. In this chapter, I analyze these and other lesser-known films about electricity from the New Deal Era to chart the development of how electricity affected domestic, urban, and rural spaces differently based on class, gender, and location. All of these films aestheticize electricity by dichotomizing the visible and invisible, the mechanical and magical, drawing attention to the ways in which cinema is central to our conception of this energy form.

Overall, this project explores three prominent forms of energy that gained cinematic traction during the long 1930s. To better recognize the staying power of modern energy regimes in the cultural imagination, I return to this earlier era, thus gleaning the ways in which cinema operates as a resource that is at turns material, political, and ideological. Indeed, cinema supports

¹⁷ Julie A. Cohn, “Conclusion,” *The Grid: Biography of an American Technology*, (Cambridge, MA: The MIT Press, 2017), 227.

a continuation of the stance that because energy is endless, that human use of energy is equally endless. Infrastructural cinema shows how energy “laws” give way to energy “dreams,” and that cinema fuels our societal somnolence surrounding the need to adhere to the limits of our infrastructures before it is too late.

Chapter One: Nature, Energy, Infrastructure: Intersections of Modernity in the long 1930s

To New Horizons, produced by the Jam Handy Organization in 1940 for the 1939-1940 World's Fair in New York showcases the ecstasies of high modernity by projecting twenty years into the future. While the first half of the film recounts westward expansion and technological development up through the early twentieth century, the cutting-edge vision of 1960 in the second half features scenes both eerily accurate and laughably, or darkly, off the mark. Familiar to a contemporary viewer are the superhighways connecting cities and rural areas with shocking ease, sprawling cities with massive airports, and the emphatic attention on an "ever-widening range of goods" available to consumers as a result of new technologies. But dreams unfamiliar or outdated also abound. The airport caters to dirigibles, city blocks are self-sufficient and thus people need not travel far to work, and nature remains untouched. After the historical interlude at its opening, the film reveals these futuristic vision as part of the "Highways and Horizons" exhibit at the World's Fair, a shift that is also indicated in the visual switch from black and white to technicolor. In filming the exhibit, the camera pans slowly across a landscape lush with trees as the narrator pontificates paradoxically, "sunshine, trees, hills and valleys, flowers, and flowing streams. These eternal things wrought by God are lovely and unchanging. Twenty years have passed. With new agriculture and industry, with new forms of education and recreation, a new world is constantly opening before us at an ever-accelerating rate of progress." As the camera pans at an extreme long shot over the diorama's Technicolor landscape, a series of cross-fades reveal a suburb and a dense city, and the contradictions of the film begin take shape.

Change is inherent to cinema. Moving images by their very nature capture things in motion, things as they change in position, location, or disposition. At the same time, film creates a visual time capsule wherein things stay the same. The "City of the Future" from the World's

Fair captured in *To New Horizons* is unchanging; we see it now as the film was seen over eighty years ago. And yet, the film endeavors to show viewers how much can change in a twenty-year period. Also inherent to cinema is artifice. While the aesthetic choices in the diorama sequences of the film mimic those used in films of actual landscapes, *To New Horizons* makes no effort to try convincing us that what we're seeing is real; we know that the country sides and cityscapes

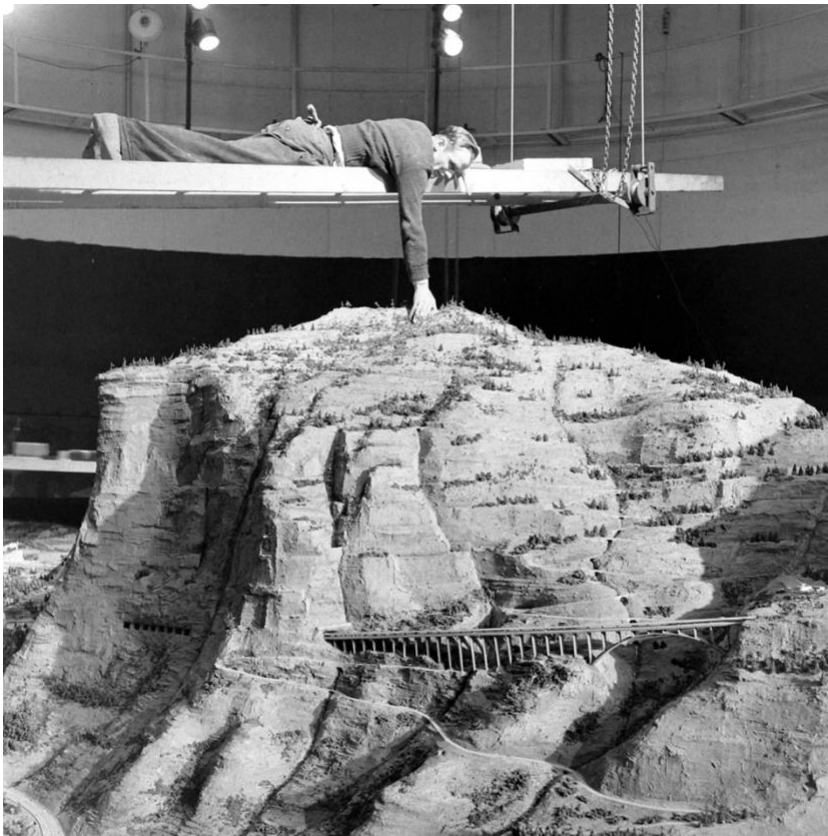


Figure 1 Model created for the 1939 New York World's Fair.

are mere models of imagined places. But thousands of hours of labor went into creating the models in exquisite detail to allow this futuristic vision to inspire viewer's belief in the possibility of a utopian fantasy in vivid Technicolor.¹⁸ That these dioramas are technically unmoving both on and offscreen, and moreover frozen in time by way of cinema, builds an even stronger effect when reflecting on

the statements made in the film about the unchanging character of the natural world.¹⁹ Indeed, a viewer today might wistfully or even bitterly regard Handy's quaint notion of eternal and untouched nature, as the harmony between the natural world and constant development is a

¹⁸ In 1940 Technicolor was still an expensive and complex process. It is impressive that Handy was using it for this film, however, given its context at the World's Fair, it is fitting that the production spared no expense.

¹⁹ Photograph in Figure 1 by Alfred Eisenstaedt from The LIFE Picture Collection/Shutterstock

material impossibility. Particularly poignant are images of craftsmen among the sprawling but miniature landscape of the diorama being built (Fig. 1).²⁰ These images exist only outside the film but paired with it, offer a potent metaphor for the willfulness of their vision; human bodies hulking god-like in the midst of their unfulfilled creation.

“Without any end or limit,” infrastructural and technological development promises to improve human life.²¹ Framed as the panacea for struggles of all kinds from labor to transportation to medicine and beyond, innovation paired with constant material and economic growth defines the idealism of the modern age. In its ubiquity, technology must not go unexamined. Heidegger instructs about the necessity to regard it critically: “Everywhere we remain unfree and chained to technology, whether we passionately affirm or deny it. But we are delivered over to it in the worst possible way when we regard it as something neutral; for this conception of it, to which today we particularly like to do homage, makes us utterly blind to the essence of technology.”²² The essence of technology is ideology in action—it cannot be neutral. It shapes how we live, how we see and how we build the future, and thus, when we pay close attention, “technology is a way of revealing.”²³ Thus, while promotional films such as *To New Horizons* take advantage of film’s utility to build anticipation for a promised future, it also reveals that the expectations of new horizons—of ever-increasing development—are either uneven or unrealized. Cities are planned around intricate roadways engineered with such precision they boggle the mind. And yet, neighborhoods are razed, and people displaced to

²⁰ Ben Cosgrove, “The World of Tomorrow’: Scenes from the 1939 New York World’s Fair,” LIFE Magazine, accessed 6/1/22, <https://www.life.com/history/1939-new-york-worlds-fair-photos/>

²¹ *To New Horizons*, Jam Handy Organization, 1940. Digitized film, Accessed 5/5/2022.

²² Martin Heidegger, “The Question Concerning Technology,” *The Question Concerning Technology and Other Essays*, trans. William Lovitt (Garland Publishing, Inc. New York & London, 1977), 4.

²³ Heidegger, “The Question Concerning Technology,” 12.

achieve such outcomes.²⁴ Meanwhile, the dream of guaranteed safety on these roadways by means of “automatic radio control” to keep a safe space between vehicles on freeways as described in the film is not only unrealized but would undoubtedly face political and technological hurdles if genuinely proposed.

While a single example can’t encompass the full range of unfulfilled desire and optimism conveyed in *To New Horizons*, the film, situated in a moment of transition politically and technologically, is a compelling point of departure for an extended engagement with energy and technology in sponsored, industrial, and educational films and documentaries of the long 1930s. The blind enthusiasm of a film that insists “a new world is constantly opening before us at an ever-accelerating rate of progress...a greater world, a better world which always will grow forward” informs the politics of my approach, a reminder of the hubris and hope, the fragility and destruction characteristic of the modern age.

This chapter will justify the historical investigation of nonfiction films about energy production, energy infrastructure, and natural resources, and their associated technologies. In focusing on energy infrastructure, I also attend to the discourse surrounding the differences between environmentalism and ecology in ecocinema. Environmentalist approaches to filmmaking are more straightforward and typically result in films that explicitly address known environmental issues, such as pollution, climate change, or animal and human extinction, with the intention of saving or preserving an element of the natural world. In contrast, Timothy Morton suggests that the mere “re-enchantment” or appreciation of nature upon which much environmental discourse has been based is not useful and proposes a new theory of ecology

²⁴ Robert A. Caro, *The Power Broker: Robert Moses and the Fall of New York*, First ed. (New York: Knopf, 1974); Teran Powell, “The Construction of Milwaukee’s Freeways: As Asset For Some, Detrimental For Others,” WUWM, National Public Radio, March 11, 2019, <https://www.wuwm.com/race-ethnicity/2019-03-11/the-construction-of-milwaukeees-freeways-an-asset-for-some-detrimental-for-others>.

dedicated to deconstructing nature itself.²⁵ Thus, while his theories align with the ecocinema scholars who insist we move beyond films whose subject seems an obvious fit with an environmental message, for Morton, turning over a new leaf in the field of ecocriticism isn't enough. From his perspective, it is necessary to leave concerns about nature behind to get a fuller grasp on the environmental situation at hand rather than dwelling on idealized nature.²⁶

Energy humanities and its sub-categories are even newer areas of concentration within the wider realm of ecocriticism, and these areas are still growing and transforming.²⁷ Thus, my approach draws from both the more established realm of ecocinema theory based on ecocriticism and, historically, environmentalism and conservation, in addition to energy humanities, that has a more direct aim to engage with energy and its infrastructures and their importance in shaping modernity.²⁸ The study of infrastructural cinema from the long 1930s is a study of how a human art form, cinema, reverberates with and is restructured by systems of newly established material infrastructure, from hydroelectric dams to electrical grids. Adrian Ivakhiv contends that moving images have social, economic, political, ethical, and technological relations, all of which shape audience's grasp of environmental reality.²⁹ His attention to perception and the world-making quality of cinema coheres with the concept of infrastructural cinema—both imply that cinema has the power to shape thought and influence what happens in material space offscreen. I contend that cinema has the power to make audiences see infrastructurally, and I turn my attention to non-fiction films that have not been prized for their artistic achievements but contain

²⁵ Timothy Morton, *Ecology without Nature: Rethinking Environmental Aesthetics*, (Cambridge: Harvard University Press, 2007), 13.

²⁶ Morton, *Ecology without Nature: Rethinking Environmental Aesthetics*, 13.

²⁷ Imre Szeman and Dominic Boyer, "On the Energy Humanities," *Energy Humanities: An Anthology*, eds. Imre Szeman and Dominic Boyer (Baltimore: Johns Hopkins University Press, 2017), 2.

²⁸ Szeman & Boyer, "On the Energy Humanities," 2.

²⁹ Adrian J. Ivakhiv, *Ecologies of the Moving Image: Cinema, Affect, Nature*, (Waterloo, Ontario: Wilfrid Laurier University Press, 2013), 32.

hidden depths in their aestheticization of infrastructure and resources. Thus, cinematic technology is both shaped by and shapes audience perceptions of the infrastructures on which it relies while also orienting audiences towards a modern sensibility predicated on principles of human primacy and control over environments.

Seeing infrastructurally taught audiences of the long 1930s to both tacitly accept but also internalize and value the often-hidden energy systems powering modern life. It is about the selective sight reflected by the cinematic apparatus. The purpose of an apparatus, or a *dispositif*, is to structure sight and understanding for a certain function. Deleuze writes, “Each apparatus has its regimen of light, the way it falls, softens, and spreads, distributing the visible and the invisible, generating or eliminating an object, which cannot exist without it.”³⁰ This way of seeing, this structured sight, was fostered by cinema and has impacted viewers ideologically into the twenty-first century. Beginning with an overview of the long 1930s —the mid-1920s through 1940— that covers the energy, infrastructural, and cinematic changes occurring during the period, I aim to illustrate the ways in which nonfiction films work historiographically to reinforce specific ways of seeing energy, infrastructural, political, and environmental ideologies by distributing their visible and invisible elements. In addition to attending to dominant political and economic theories, I concentrate on energy and infrastructure in relation to the environmental humanities to cultivate a tandem focus on infrastructural aesthetics and ecocinematic concerns about landscapes, climate, and the disruptions wrought by manmade technologies.

³⁰ Gilles Deleuze, “What is a Dispositif?” *Two Regimes of Madness*, (New York, New York: Semiotexte, 2006), 338-347.

Energy, technology, and sight have long been connected. Heidegger argues that the essence of technology stirs humans to use it in specific ways to the further benefit of the technology because of its ability to reveal. He writes,

The revealing that rules throughout modern technology has the character of a setting-upon, in the sense of a challenging-forth. That challenging happens in that the energy concealed in nature is unlocked, what is unlocked is transformed, what is transformed is stored up, and what is stored up is, in turn, distributed, and what is distributed is switched about ever anew. Unlocking, transforming, storing, distributing, and switching about are ways of revealing.³¹

Heidegger insists that when nature is ordered by technology, technology reveals elements of nature that would have otherwise been hidden. Technology reveals, and the essence of technology gathers resources together so that they become a “standing reserve” for human applications.³² Above, he describes technological processes, suggesting what is essentially a set of protocols that in turn set up more protocols for more technology, all perpetuating human dominion over nature. Yet this is not without consequences; it changes the very essence of landscapes, and of human life.

For Kracauer, one modern technology – the cinema – contains particularly important revealing functions.³³ Cinema also unlocks, transforms, and allows for new ways of seeing. It makes visible what would have otherwise been invisible, and it is instructive as well as extractive. Like the extractive infrastructures Heidegger describes, infrastructural cinema enframes and transforms nature. The ways in which cinema enframes are usually oriented

³¹ Heidegger, “The Question Concerning Technology,” 16.

³² *Ibid*, 17.

³³ Heidegger wrote “The Question Concerning Technology” in 1954; Kracauer’s meditation on cinema’s revealing functions was published as part of his *Theory of Film: The Redemption of Physical Reality* in 1960.

similarly to extraction—cinema gathers footage and orients audiences, and extractive infrastructures gather resources and shape them in the service of human society. For these reasons, infrastructural cinema and seeing infrastructurally are part of the “shadow history of cinema,” implicating cinema as part of the wider apparatus of liberalism that was well under way by the long 1920s.³⁴ The concept of revealing and the dialectic of visibility and invisibility solidifies the connection between filmic and energy infrastructures, showing that they both operate on material and ideological levels as *dispositifs* to gather and enframe resources. However, cinematic technologies do not always collude with extractive logics; they can also fight against them in both form and content and question the dominant ideologies driving extractive processes.

Cinema is an integral tool in making certain elements of energy systems visible (such as the desirable elements that align with capitalistic ideals of progress) and making certain other elements of these systems invisible (such as the destruction they cause to landscapes, to human livelihoods, and even the unseen elements of climate change). By historicizing cinema from an era that champions infrastructural progress, I aim to interpret our contemporary reluctance to acknowledge that there is a problem with energy as we know it and as we have built it. Infrastructural cinema props up an ideological fantasy rooted in capitalist modes of economics, material theory, and thought, a fantasy that leads to violent resource excess and environmental damage. Government, promotional, and documentary films are a part of a *dispositif* that works historiographically to support the idea that extractive energy infrastructure is part of the natural order. However, the same films that teach us to see infrastructurally can also teach us to see around and through infrastructures—to pull apart their enframing *dispositif* and to question the

³⁴ Lee Grieveson, “Empire of Liberty,” *Cinema and the Wealth of Nations: Media, Capital, and the Liberal World System*, (Oakland, California: University of California Press, 2018), 59.

worlds they build. Ultimately, these newsreels, documentaries, educational films, and government and corporate sponsored films promote ideals of efficiency and technological progress while offering an opportunity to question their necessity and ethics in the present. We can thereby unveil how cinema teaches us to understand energy, technology, and our own power to see infrastructurally.

The Long 1930s

The 1930s were a decade of tremendous political change in the United States. Sometimes referred to as the interwar period, I refer to my timeframe as the long 1930s.³⁵ This timeframe begins in the mid 1920s and includes the years of economic prosperity before the stock market crash of 1929, the Great Depression and subsequent political policies of the New Deal in the 1930s, and the move toward U.S. involvement in World War II in the very early 1940s. To see the relationship between energy and infrastructure requires knowledge of the social, economic, and aesthetic contexts in which these promotional, educational, and government films arose. By tracing a brief history of these three key sub-periods, I aim to better apprehend the cinematic environment surrounding them and foreground how infrastructure was built materially and cinematically in the long 1930s. Furthermore, while contextualizing the political and aesthetic moves of the films I will discuss, I connect them to the overarching zeitgeist of modernity.

The 1920s

The 1920s are historiographically characterized as a time of glamour, excess, and financial prosperity in the United States. In the decade following the close of the first World

³⁵ The interwar period usually includes the late 1910s

War, individual and corporate financial gains led to the desire for less government interference in daily life and economic affairs.³⁶ Notable events of the decade affecting people's daily lives include the passing of prohibition and the ratification of women's suffrage in 1920 and the subsequent social changes that occurred over the course of the decade.³⁷ Republican presidencies dominated in the 1920s from Warren G. Harding's election in 1920 to Calvin Coolidge's takeover in 1923 after Harding's death, and finally the election of Herbert Hoover in 1928.³⁸

The energy sector was undergoing substantial change driven by the dominant political trend of the decade to diminish government regulation in favor of giving private industry more decision-making power. This, however, does not mean that private industry did not work alongside state and federal government. On the contrary, the formation of the American Petroleum Institute (API) in 1919 and the subsequent regulation of the petroleum market by the federal government insulated the industry from fluctuations in the price of oil, thus allowing oil executives to leverage government regulation for their benefit, despite various members disagreeing with this move.³⁹ The Teapot Dome bribery scandal of 1923 also brought national attention to the some of the oil industry's more nefarious relationships with the U.S. Government. Other energy policy changes in the 1920s include the Federal Power Act (FPA), or the Federal Water Power act. The FPA went into effect in the 1920s with the goal of regulating the building of and energy sold by hydroelectric power plants.⁴⁰

³⁶ David E. Kyvig, *Daily Life in the United States, 1920-1939: Decades of Promise and Pain*, (Westport, Conn: Greenwood Press, 2002), 3.

³⁷ Kyvig, *Daily Life in the United States, 1920-1939*, 1-2.

³⁸ *Ibid*, x.

³⁹ N. Nordhauser, "Origins of Federal Oil Regulation in the 1920's," *The Business History Review*, 47 (1) (1973): 55-56. <https://doi.org/10.2307/3113603>.

⁴⁰ Matthew R. Christiansen and Joshua C Macey, "Long Live the Federal Power Act's Bright Line," *Harvard Law Review* 134, no. 4 (2021).

Much infrastructural development in the 1920s was connected to energy, in addition to transportation, agriculture, communication, and more. Transportation infrastructure changed drastically with the introduction of gas-powered automobiles. While railroad networks expanded to over 260,000 miles by 1920, their reach was limited.⁴¹ The railroad strike of 1922 exemplifies the growing pains of the railroad industry in the era. The Transportation Act of 1920 placed the railroad industry back in the private sector after a period of state control during World War I, and the conflict between the Railroad Labor Board, which continually cut wages for railroad workers after the Transportation Act's inception, led to the strike which lasted the summer months of 1922.⁴² Meanwhile, the increase in automobiles and the volatility and inefficiency of the railroad system for personal transportation led to a rapid increase in the construction of higher quality roads and highways. The Federal Highway Act of 1921 provided financial support to states for hard-surface road construction, a major advancement at a time when most roads were still dirt.⁴³ These transportation systems connected people in urban and rural areas and increased the movement of goods around the country.⁴⁴ Rural agricultural spaces were also drastically changed by new extractive infrastructure. Smaller, more affordable gas-powered tractors helped to increase labor efficiency on farms and the increase in automobiles and roads accessing farms increased farmer's ability to transport crops and perishable goods such as milk to urban areas in the 1920s.⁴⁵ Infrastructures of commerce were intimately connected to those of energy;

⁴¹ Kyvig, 38.

⁴² Philip Sheldon Foner, *History of the Labor Movement in the United States Volume 9: The T.U.E.L. to the End of the Gompers Era*, (New York: International Publishers, 1947), 174.

⁴³ Kyvig, 38.

⁴⁴ Lee Grieveson writes about the 1924 Ford-sponsored film *The Road to Happiness* in chapter 7, "The Pan-American Road to Happiness and Friendship" in his book *Cinema and the Wealth of Nations: Media, Capital, and the Liberal World System*, University of California Press, 2017.

⁴⁵ Kyvig, 35.

transportation innovations in the 1920s relied on those in the energy sector, and the increase in the efficiency of both increased the speed of their development.

Amid these changes, communication infrastructure was also developing and connecting people across wider spaces thanks to developments in the energy sector. While telephones were not yet ubiquitous in the 1920s, their domestic use was increasing. Radio was a much more popular household device, and close to 41 million radios were manufactured in the U.S. following the first public radio broadcast in 1920.⁴⁶ While radio was the de facto social technology of the home in the 1920s, cinema was the quintessential shared experience outside of the home. Cinema had already existed for over two decades by the 1920s, but the introduction of sound to film in addition to the strides made in the artistry of the medium make the '20s a crucial stage of development. Outside of Hollywood, documentary, newsreels, and promotional films were also being produced and shown widely in both mainstream movie houses and specialty theaters.

The Great Depression & The New Deal

While the 1920s shifted from post-World War I austerity to increased consumerism, wealth, and prosperity, the upswing did not last. The famous stock market crash of 1929 led to a period characterized by steep economic decline, job loss, and poverty for millions of Americans. In turn, the Federal Government responded with a series of policies known as the New Deal. Discussing the Great Depression and the New Deal together and their impacts on energy, infrastructure, and cinema creates a fuller picture of the tumultuous years between late 1929 and 1934.

⁴⁶ Kyvig, 59.

The emergence of new energy policies was a major change brought about by the Depression in the early 1930s. For example, the Federal Power Commission (FPC) was formed in 1930, ten years after the institution of the Federal Power Act. The FPC underwent a period of reform from around 1930-1935 as the Commission began to take on a more regulatory function in its relationship to energy, whereas the first decade of the Federal Power Act concerned hydropower licensing.⁴⁷ The FPC continued to issue licenses for the many dam projects that were ongoing and initiated in the early 1930s, but was also concerned with surveying power companies and authorities to better understand average rates, and thus protect consumers against price surges at the whim of power companies.⁴⁸ The national shift from protecting corporate interests and wealth to protecting consumers when it came to energy reflects the ways in which the Federal Government intervened to try to help businesses and consumers during the Depression. The domestic use of gas was another energy shift in the Great Depression. By 1930, almost half of American homes were equipped with gas appliances, though the majority were still concentrated in urban areas.⁴⁹ In addition, electricity was on the rise. While the use of gas for cooking and appliances increased from the start of the twentieth century and into the early 1930s, the use of gas for light was decreasing due to advances in electric light.⁵⁰ Private industry led the charge in electrification, and by 1930 eighty percent of machines in factories were powered by electricity.⁵¹ Rural electrification became widespread as the decade drew on, and the 1930s saw an overall increase in the implementation of electricity.

⁴⁷ Philip L. Cantelon, "The Regulatory Dilemma of the Federal Power Commission, 1920-1977," *Federal History Journal of the Society for History in the Federal Government* Issue 4, (2012). 62-63.

⁴⁸ Cantelon, "The Regulatory Dilemma of the Federal Power Commission, 1920-1977," 67.

⁴⁹ Kyvig, 46.

⁵⁰ Ibid.

⁵¹ Ibid., 45.

Energy during the Great Depression is intimately connected with its infrastructure; however, energy infrastructure wasn't the only public works system undergoing change during the early years of the Depression and the New Deal. Though the groundwork for infrastructural development was largely in place by the start of the '30s, the economic decline caused by the Depression sparked a series of government initiatives to create jobs and build infrastructure. This legislation is officially known as the New Deal, which was instated in 1932 by the Roosevelt administration immediately after his election. While initial legislation addressed the financial crisis, the effect of the New Deal on the nation's energy and other public infrastructures was profound.⁵² Federal programs were formed, such as the Public Works Administration (PWA), which funded the construction of crucial transportation infrastructure like highways and bridges in addition to other systems like sewerage, and the Tennessee Valley Authority (TVA), which created jobs in the region by taking over hydroelectric dams and other industrial manufacturing facilities.⁵³ At the same time the TVA created jobs, it increased the effectiveness of electrical infrastructure to the area. Thus, while the Great Depression caused upheaval in the daily lives and livelihoods of millions, it also inspired New Deal legislation that resulted in the federal funding for public works projects designed to increase quality of life.

American filmmaking practices in government and sponsored film proliferated during the Depression and New Deal era. Documentary and educational filmmaking was used to spread information about issues like floods, the dust bowl, and the lives of agricultural workers. Artists, including filmmakers, were employed by various government agencies to produce promotional films that chronicled and spread the word about the work being accomplished thanks to the New Deal. In turn, private production companies specializing in promotional films worked with

⁵² Kyvig, 196-199.

⁵³ Ibid, 201, 207.

corporations to advertise both their industries and associated products. Theaters were points of convergence for the wide range of film offerings in the early 1930s. An average night of cinemagoing during the Depression-era would include sponsored short films or advertisements, cartoons, and newsreels before the feature, the combination of which made up the fabric of cinema as mass media during the early 1930s. Moreover, many other promotional and educational films were shown non-theatrically in this era in public spaces including schools, churches, and town halls.

The Second New Deal & the Late 1930s

By the second half of the 1930s, the New Deal programs originally created to address the economic downturn had been in place for several years and more were under development. The Depression was not over, and a new wave of legislation known as the Second New Deal was initiated in 1935. Some well-known programs like Social Security and other labor-oriented initiatives originated during this second wave on New Deal legislation in addition to energy policies.

Perhaps the most well-known of the energy-related policies from the Second New Deal is the creation of the Rural Electrification Administration (REA) in 1935. The REA had a crucial role in bringing electricity to rural areas that were less economical to connect to existing power lines due to their isolation and small populations. Government funding made it possible for electric companies to connect farmers to electricity for the first time, revolutionizing daily life and labor in agricultural settings.⁵⁴ The Public Utility Act of 1935 further helped consumers by

⁵⁴ Kyvig, 202.

regulating the electricity industry by preventing electric companies from forming monopolies.⁵⁵ The Federal Power Act (FPA) also underwent changes in 1935, giving the FPC jurisdiction over not only hydroelectric power, but all electricity transmission regulation among states. The Natural Gas Act of 1939 similarly regulated interstate transmission to keep costs competitive among private companies but overall consistent for consumers.⁵⁶ Thus, in addition to access to various energy sources, by the end of the 1930s consumers also enjoyed better regulated energy utilities. The electrification of both urban and rural areas is perhaps the most notable development in energy from the late 1930s: the percentage of households nationwide equipped with electric power increased from around 35% in 1920 to nearly 80% in 1940.⁵⁷

By the late 1930s, the infrastructural projects of New Deal and second New Deal legislation were in full swing, and changes to both urban and rural spaces across the country were palpable. The Works Progress Administration (WPA) was formed during the second New Deal to employ those still jobless and impoverished during the Depression years. The WPA employed millions of workers to build massive projects impacting people for hundreds of miles like dams and power stations and also provided local jobs to build effective plumbing and parks in small communities.⁵⁸ The organization also employed filmmakers to record their efforts of and promote the organization.⁵⁹ The film *Hands* (1933) sums up the WPA's promotional message. Produced by the Commercial Department of Pathé News, the 4-minute film shows a series of idle hands, then a longer series of hands both at work and engaging in leisure activities, in addition to accepting money. The message is succinct: thanks to the WPA, those who were

⁵⁵ Kyvig, 202.

⁵⁶ "Natural Gas Act of 1938" *Major Legislative and Regulatory Actions*, U.S. Energy Information Administration. 2009. https://www.eia.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/ngmajorleg.html

⁵⁷ Kyvig, 56.

⁵⁸ *Ibid.*

⁵⁹ *Ibid.*

unemployed are now working and living normal lives. Crucially, in addition to federal job creation and the subsequent increase in public works and municipal projects, infrastructure in the late 1930s and into the 1940s connected people from various regions more closely than ever, linking rural and urban, regional and national, in unprecedented ways.

Cinema outside of the studios became even more connected to New Deal initiatives in the late 1930s. The United States Film Service was formed in August 1938 after President Roosevelt expressed interest in creating a government-operated group of filmmakers and liaisons to not only make films but also increase the organized efforts of the Federal Government to archive them and standardize their quality and production processes.⁶⁰ Two of the most well-known New Deal films were made around this time: *The Plow That Broke the Plains* (1936) and *The River* (1938), both directed by Pare Lorentz. While the Film Service experienced a brief tenure overall—it ended in 1940—this final push of WPA funding for government filmmaking shows the importance of cinema during the New Deal era for promoting the activities of the government. That those opposing New Deal legislation and those in Hollywood were threatened by the filmmaking activities of the U.S. Film Service speaks to the rhetorical and artistic power of the films they were making.⁶¹

Cinema, both chronicling and shaping the experience of modernity, has long been intimately connected to the concept and characterization of modernity, in part due to the influence of Tom Gunning: “Cinema, both as practice and as a force that was understood in a variety of ways, played a central role in the culture of modernity. Given its striking appeal to popular sentiment, its mechanical force and play, its enlivening and contradictory tension

⁶⁰ The Living New Deal, “United States Film Service (1938)” accessed March 30, 2022, <https://livingnewdeal.org/glossary/united-states-film-service-1938/>

⁶¹ Ibid.

between picturing and moving, cinema metaphorized modern identity.”⁶² Gunning’s essay, while tracing the connections between cinema and modernity writ large, implies the energy, both culturally and literally, driving modernity. Indeed, the culture of shocks and flows he describes were driven by the shocks and flows of electricity, gas, and hydropower giving motion to modern cities, machines, and ultimately, cinemas, filmmaking, and film aesthetics. Encompassing the events of the Depression, the New Deal, and the breakout of World War II is a modern sensibility of constant change.

Modern Emergences: Infrastructure and Cinema

The first recorded usage of the term “infrastructure” is in 1875.⁶³ At the same time, the birth of cinema was underway— as early as 1878 Eadweard Muybridge used chronophotography to capture various images of animals in motion and display them in zoetropes, thus creating some of the earliest moving images. The late modern age, defined by an increase in urban populations, machines, and the categorization of information through technological means, gave rise to complex new systems structuring time and space, including cinema. In its original usage, infrastructure refers to physical matter; the materials used to build or create a structure that contribute to its overall design and outcome. While the term was just emerging in the latter half of the nineteenth century, infrastructure has become a common term, even to the point of being a buzz word in contemporary politics. In the modern age, economically driven endeavors like city planning and large government-funded militaries require complex infrastructural thinking, the sprawling results of which define life in the twenty-first century for many. Cinema, in tandem

⁶² Tom Gunning, “Modernity and Cinema: A Culture of Shocks and Flows,” *Cinema and Modernity*. Ed. Murray Pomerance, (New Brunswick, N.J: Rutgers University Press, 2006). 302.

⁶³ "Infrastructure, n." OED Online. June 2020. Oxford University Press. <https://www-oed-com.ezproxy.lib.uwm.edu/view/Entry/95624?redirectedFrom=infrastructure> (accessed August 10, 2020).

with the development of modern, physical infrastructures, possesses both technological and ideological infrastructures enmeshed with both formal and aesthetic elements of modernity.

These cinematic infrastructures encourage audiences to see infrastructurally.

To theorize infrastructure more fully and synthesize it with cinema history, I contextualize it through definitions from two different disciplines, Media Studies and Anthropology. Both disciplines, in distinct ways, theorize infrastructures through relationships with humans. Lisa Parks theorizes media infrastructure as including both the material makeup of systems used for the transmission and storage of information and their affective dimensions—the obvious and subtle influences they have on space and the “force-relations” between people and infrastructures.⁶⁴ By expanding media studies to move beyond a focus on content to infrastructure, scholars are urged to consider the material dimensions of infrastructures that harbor “covert or stubborn forms of power” that might otherwise go unnoticed.⁶⁵ Parks argues that media infrastructures encourage particular responses, behaviors, and politics, affective dimensions that have heretofore been largely overlooked in the field. In this way, much of her argument supports the idea that cinema can be part of a *dispositif* that encourages certain ways of seeing. Discerning these elements of media infrastructures, then, is key to scholarship that interrogates their role in shaping people and publics.⁶⁶ Anthropologists Nikhil Anand, Akhil Gupta, and Hannah Appel offer a similar definition of infrastructure relevant to the study of infrastructural cinema. They explain that from an anthropological view, infrastructure is more than material, but social and ideological as well.⁶⁷ Thinking of infrastructure through the nexus

⁶⁴ Lisa Parks, “Infrastructure,” *Keywords for Media Studies* Eds. Laurie Ouellette, Jonathan Gray, (New York, NY: New York University Press, 2017), 107.

⁶⁵ Parks, “Infrastructure,” 106.

⁶⁶ *Ibid*, 107.

⁶⁷ Anand, Gupta, & Appel, 27.

of these disciplines deepens its theoretical potential and enlivens its cultural and political relevancy. Thinking through the relational dimensions of infrastructure as a part of historiographic research reiterates the ways in which infrastructures are irrevocably tied to human ideologies and actions, including those powerful enough to make a planetary impact.

The term “Anthropocene” was coined in 2000 by atmospheric chemist Paul Crutzen and biologist Eugene Stoermer.⁶⁸ According to their definition, the Anthropocene is a conceptual geological era marked by the influence of human beings on the planet above all other biological or geological entities. The study of film as both a mechanical and material medium and as a creation that can also be felt as deeply human creates the backdrop to work through what defines infrastructural cinema and its connection to Anthropocene aesthetics. According to Marshall McLuhan, film combines the mechanical and the organic; infrastructure inevitably does the same as it aims to enable the smooth operation of complex systems in such a way that make them feel smooth, sustainable, and natural.⁶⁹ However, neglected and decaying infrastructure rarely goes unnoticed for long. One of the defining features of the Anthropocene is the obviousness of human material culture on the earth, including the infrastructures that human societies have built and either abandoned or embraced. Jennifer Fay argues that cinema of the Anthropocene makes us question how hospitable our environment truly is by showing audiences the façade of the natural world and the highly contingent status of human life in what are truly inhospitable environments on earth.⁷⁰ The concept of the Anthropocene also forces scholars to consider how

⁶⁸ T. J. Demos, “Welcome to the Anthropocene!,” *Against the Anthropocene: Visual Culture and Environment Today* (Berlin: Sternberg Press, 2017), 9.

⁶⁹ Marshall McLuhan and Gordon, W. Terrence. *Understanding Media: The Extensions of Man*. Critical ed. (Corte Madera, CA: Gingko Press, 2003), 314.

⁷⁰ Jennifer Fay, *Inhospitable World: Cinema in the Time of the Anthropocene*, (New York, NY: Oxford University Press, 2018), 16-18.

narratives of progress are juxtaposed with the marred and geoengineered landscapes now inhabited by the billions of Earth's residents.⁷¹

Fay's discussion of earth's inhospitality questions humanity's imposition on ecosystems and environments indifferent to our presence. Her argument is somewhat fatalistic about humanity's hubris and the traces we have left, and will continue to leave, on the environment through cinematic and other infrastructures.⁷² In contrast, from their anthropological positionality, Anand, Appel, and Gupta ask:

What kinds of infrastructure—epistemic, energetic, political—might we contemplate from the everyday ruins and rubble wrought by infrastructure today? How might we reimagine their forms and potentialities anew in times where the end of life itself has been rendered thinkable? ...a politics of infrastructure necessarily asks after its potential to transform the world we currently inhabit.⁷³

From their perspective, the question that must be asked of infrastructure is how to adapt to the changes it has wrought, and how to adapt it to cause less harm. It is impossible to go back to a time when earth was unaffected by human traces of both refuse and infrastructure as Fay and Anand, Appel, and Gupta agree. However, their disciplinary and theoretical approaches lead them to divergent conclusions. Their combination—Fay's idea that "The invitation of cinema in the time of the Anthropocene may then not be for us, after all" and Anand, Appel, and Gupta's imperative to make infrastructure serve humanity and not the other way around—raises questions about the place of human beings, both present and future, in and around infrastructures of the

⁷¹ Anna Lowenhaupt Tsing, Heather Anne Swanson, Elaine Gan, and Nils Bubandt. *Arts of Living on a Damaged Planet. Ghosts of the Anthropocene; Monsters of the Anthropocene*, (Minneapolis: University of Minnesota Press, 2017).

⁷² Fay, *Inhospitable World: Cinema in the Time of the Anthropocene*, 205.

⁷³ Anand, Akhil, & Appel, 30.

Anthropocene. Thus, the work to define infrastructural cinema exists alongside the necessity to develop a politicized film theory of the Anthropocene that both questions and centers the needs of earth's human population. By working to understand why some infrastructures are maintained and others neglected, why some grow in power and others fade, I question how seeing infrastructurally—that is, the way cinema teaches audiences to perceive infrastructure in certain ways—makes different elements of the climate emergency invisible enough that it is difficult to act on. Fossil fuel infrastructure is thriving despite clear evidence of the harm it causes, and regardless of the political motions taken around the world to move away from fossil fuels as quickly as possible.⁷⁴ Despite the best intentions of politicians, environmentalists, businesses, and scholars, the route toward an effective energy transition away from fossil fuels is obstructed by the pre-existing infrastructure—material, but also economic and ideological—that has been in place for at least a century, often longer. These infrastructures are still tacitly understood as necessary to modern life; seeing them otherwise requires effort. This effort, however, is worth giving. With effort, a politicized theory of the Anthropocene and energopolitics can emerge that imagines survival among the infrastructures some human societies have created.

Since the onset of the environmental movement in the 1960s, conversations about the extractive regimes of fossil fuels are often embedded in discourse on saving the environment, including wildlife, preserving human life, or both. Ecocritical methodologies in film studies have expanded these more traditional angles of environmental thought from the mainstream environmental movements of the late 1960s and early 1970s in important ways. Since the mid-1990s, ecocritical film studies have addressed issues of environmental sustainability and

⁷⁴ Sam Meredith, "What 'energy transition'? Global fossil fuel use is accelerating and set to get even worse" *CNBC*, April 14, 2021. <https://www.cnbc.com/2021/04/14/climate-global-fossil-fuel-use-accelerating-and-set-to-get-even-worse.html>.

conservation by exploring issues like how cinema mediates the preservation of earth's flora and fauna, its implications in wasteful and extractive systems, and critiques of the technological developments that have wrought environmental destruction.⁷⁵ Ecocritical methods applied to film encouraged the turn toward interpreting film as ecocinema; which is, in short, the idea that they that have an environmental message, undertone, or angle whether intended or not.⁷⁶

Ecocinema is the starting point for a study on films about energy infrastructure, but does not encompass them fully. In recent years, film scholarship has experienced even broader expansions of ecocinema theory, addressing niches such as energy— from fossil fuels to wind power— and their infrastructures more explicitly.

Ecocinema theory based in ecocriticism is still developing and should be engaged in varying contexts to expand its boundaries and applications. Films both nonfiction and historical are ideal for ecocritical analysis based in ecological thought in addition to recent mainstream film. Locating my work in the infrastructural realm rather than the environmental realm of cinema is an explicit move away from notions of nature as detached from human beings and toward the ecological thought of the interconnectedness, from humans to machines—including cinematic ones— to particles of dust. Theorizing infrastructure through film emphasizes the need to connect cinema history to an ecological politics that decenters the idea of nature as separate from human existence. This approach furthers ecocinema by focusing on infrastructural systems that span between nature and culture and thus perpetuate a theorization of ecocinema that goes beyond discussions of nature as an autonomous entity that can be and preserved as a world

⁷⁵ Sean Cubitt, Salma Monani, and Stephen Rust, Editors. "Introduction" *Ecocinema Theory and Practice*. New York: Routledge, 2013. 1-13.

⁷⁶ Cubitt, Monani, & Rust, "Introduction," 2.

apart.⁷⁷ The term nature is even more complex than the concept of infrastructure—thus infrastructure can even be thought of as a subset of nature, defined by Raymond Williams as “the material world itself; taken as including or not including human beings.”⁷⁸ Indeed, infrastructure falls easily within this definition, and while infrastructure is often designed to fade into the background of daily life and thus evade perception, historiography makes these invisible systems visible and raises questions about how infrastructural history has been written, heretofore normalizing the inevitability of harmful infrastructures.

Theorizing infrastructure differs from theorizing nature in important ways, however. Infrastructure creates a continuum between invisibility and visibility; it simultaneously supports structures that can be seen or felt while functioning largely below the surface, both literally and metaphorically, of what is seen or obvious. While parts of larger infrastructural systems are visible, I argue one of the key traits of infrastructure is that much of its form and operation is obfuscated, whether intentionally or not.⁷⁹ Cinema has similar characteristics. As Kracauer explains, films not only aestheticize what is obvious and recognizable from day-to-day life, visuals that are often key to narrative and nonfiction films alike, but also “discover...reveal things normally unseen.”⁸⁰ The technological structures of cinematic production tend to be hidden from audiences—the magical qualities of the film image spring forth from this effect.

There are numerous examples of the ways in which cinema can be subordinate to material

⁷⁷ Ecocriticism has tended to focus on literary nature writing. Ecocinema scholarship has borrowed from this tradition and spent much time on representations of nature onscreen.

⁷⁸ Raymond Williams, *Keywords a Vocabulary of Culture and Society*. Rev. ed. (New York: Oxford University Press, 1985).

⁷⁹ Examples include the introduction of sewerage systems in metropolitan areas like New York in the mid nineteenth century, rendering the problem of (human) waste much less visible thanks to technological developments underground, to mobile networks, particularly 5G, in the present, which of course is visible in the form of oft-derided cell towers, but largely operates invisibly through high-frequency millimeter waves.

⁸⁰ Kracauer, "The Establishment of Physical Existence," *Theory of Film: The Redemption of Physical Reality*, (Princeton University Press, 2007,) 46.

conditions. Early cinema was rife with fire risks because of the flammability of nitrate celluloid, and film stored in less-than-ideal conditions deteriorates rapidly. Some films expose the dual infrastructure of creativity and destruction of which cinema is a part, such as Bill Morrison's *Dawson City: Frozen Time*, which exposes the deterioration of the materiality of film while still using it to mobilize his perspective of the historiographic condition—that history is fragile, and without care and attention, can be lost. Morrison's films are the exception, however. Cinema, conceptually, was meant to be an all-encompassing experience for audiences, a layer of perception right next to reality that encouraged the mind to ignore that the things in the images onscreen are not really there at the time of viewing. The break in this continuity is a break in cinema's infrastructure, an interruption that takes the audience away from the cinematic experience. In this interruption, cinema becomes visible again as infrastructure, something that mediates what has been filmed for the audience, and a medium that shapes audience experience of what has been filmed.

Infrastructure also serves a regulatory function—thus, if it is visible at its outset because it is part of an innovative technology or being implemented on a large scale, the goal is for awareness of its presence or functioning to fade with time.⁸¹ This instinct is present in cinema through the early adaption of standard techniques like continuity editing. Because it is most often invisibly enmeshed in the regulation of systems, infrastructure usually becomes visible again if or when it isn't functioning correctly, or if it becomes damaged or broken. In this way, infrastructure is very much like a Heideggerian tool, only noticed when something goes awry or when it appears out of place.⁸² For example, users of electricity in their homes and places of

⁸¹ Michael Osman, *Modernism's Visible Hand Architecture and Regulation in America*. Buell Center Books in the History and Theory of American Architecture, (Minneapolis: University of Minnesota Press, 2018).

⁸² Philip Fisher, "The Aesthetics of Rare Experiences: Visual Experience", *Wonder, the Rainbow, and the Aesthetics of Rare Experiences* Cambridge, (Mass: Harvard University Press, 1998), 20.

work tend not to think of the location, weather conditions, and nonhuman factors affecting the power grid where their energy is made until the power goes out due to an interference.⁸³ At the same time, infrastructure is sometimes seen as a spectacle, most often when its failure results in massive damage, or when its construction or technology is new and impressive.⁸⁴ The concept of the technological sublime outlines this claim convincingly, arguing that manmade structures like skyscrapers or systems like the railroad are so overwhelming in their sheer scale and complexity that they inspire a similar awe in human beings as sublime experiences in landscapes such as waterfalls or high mountain peaks.⁸⁵ This sense of awe, or the sublime can be paired with a wonder, a visual aesthetic phenomenon according to Philip Fisher.⁸⁶ He argues that there is a stark affective distinction between wonder and the sublime, that of delight and fear, respectively.⁸⁷

How, then, does an invisible force like electricity become legible onscreen? Based on Fisher's claim that "wonder is a horizon-effect of the known, the unknown, and the unknowable...and is produced uniquely for each person," learning about how something awe-inspiring works, even something invisible or elusive, is part of aesthetic experience.⁸⁸ Thus, it is through its technological explanation that a phenomenon like electricity is aestheticized onscreen. While electricity as a resource is eventually integrated into daily life or normalized, learning how it is produced and how it works can still inspire wonder. In this way, electricity is perhaps the most closely connected to film aesthetically. Even though most people know how

⁸³ Etienne Benson, "Generating Infrastructural Invisibility: Insulation, Interconnection, and Avian Excrement in the Southern California Power Grid." *Environmental Humanities* 6 (2015): Environmental Humanities, Vol.6.

⁸⁴ The Deepwater Horizon oil spill in the Gulf of Mexico in 2010 is an example of infrastructural failure turned spectacle; the opening of the Hoover Dam in 1936 of the wonder new infrastructure can inspire.

⁸⁵ Nye, *American Technological Sublime*, 9.

⁸⁶ Fisher, "The Aesthetics of Rare Experiences: Visual Experience," 18.

⁸⁷ *Ibid*, 2.

⁸⁸ *Ibid*, 81.

film works—it doesn't inspire the same awe it did when it was first developed—in addition to the aesthetic experience of viewing, learning about its technical elements can still prompt wonder. Electricity is the subject of many films from the silent era, connecting the visibility of cinema to the visibility made possible by electric light.⁸⁹ Indeed, cinema is a part of the life cycle of technological awareness—it aids in the capture and promulgation of images representing wondrous technological achievements, only to be relegated to the archives themselves and forgotten alongside the infrastructure depicted therein. The recent flurry of film historical scholarship on neglected cinema and other media reflects an important revisiting of public conversations about infrastructure established over the past century that is now either in a state of disrepair or actively contributing to the climate crisis while operating in the background of contemporary life.⁹⁰ While the films may not evoke the same wonder of technological explanation as they may have when they were first created, recognizing the aestheticization of infrastructure and its connections to wonder and the sublime remain relevant; when cinema teaches audiences to see infrastructures as wondrous, they are less likely to be questioned.

Energy infrastructure is an arena of intense political debate in the present moment. While public discourse about energy is not new, the climate crisis and a theoretical shift into the Anthropocene have increased the attention to energy infrastructure and its political, economic, and environmental impact. Infrastructure is typically intended to regulate and encourage efficiency. However, infrastructures in support of fossil fuel use run the opposite risk—left

⁸⁹ Kristen Whissel, *Picturing American Modernity: Traffic, Technology, and the Silent Cinema*, (Durham: Duke University Press, 2008).

⁹⁰ Publications in the past 10-15 years on neglected cinema and invisible infrastructure include *Devices of Curiosity: Early Cinema and Popular Science* by Oliver Gaycken from 2015 and *The Undersea Network* by Nicole Starosielski from 2015. These authors are interested in the intersections of cinema and media with what is seen and unseen in the natural and man-made world, and the effect of making things visible that were previously unseen or unnoticed.

unregulated, this infrastructure maintains a status quo of energy usage that has irreparably damaged the planet. The energy humanities propose that “the key element left out of our understanding of the modern” has been energy.⁹¹ Energy is also a key element left out of our understanding of cinema history. Energy, modernity, and film aesthetics overlap in ways that develop new dimensions of all three categories. American nonfiction films from the New Deal era can contribute to both discussions within the energy humanities and the environmental humanities. They can impact broader discussions of energy politics because they document the ways in which the creation of energy infrastructure shaped attitudes toward both energy and infrastructure in the century that followed. These films simultaneously challenge and reinforce discourse about the efficiency of infrastructure and the infrastructural function of cinema through their content, style, and preservation in both physical and digital archives.

Digital Archiving & Infrastructure

While archival practices for film historical work aren't new, the creation and maintenance of digital archives is still new enough to necessitate an overview of the ways in which film archives both formal and informal, material and digital, are invaluable to film historians. Archives are also infrastructures in their own right and offer affordances and constraints by design. In the twenty-first century, public-facing video streaming platforms such as YouTube and Vimeo, in addition to more specialty websites like the non-profit Internet Archives, are common repositories for films. Films on these sites are usually those less restricted by copyright concerns, or of mild enough interest that their copyright status isn't causing the videos to be removed. There are more archival materials than ever available to potential

⁹¹ Szeman & Boyer, *Energy Humanities: An Anthology*, 2.

researchers, however this vast breadth does not always guarantee quality. This does not mean these media objects should be shirked as objects of study, but that increased efforts to frame the research based on available information and to be transparent about what is unknown is of increased importance. The digital landscape of archival films is vast, imperfect, and complex, but it is within this landscape that key archival infrastructures stand in support of film historical research.

Online video platforms are host to innumerable films uploaded by both individuals and private film archiving businesses, and the structure of these informal online archives reflects the at times meandering process of online film historical research. Rather than starting with a grouping of films in an archive, the researcher may start with a time period, theme, or set of films available online. Films referenced in essays or texts by other scholars can frequently be found somewhere online, though not always in a traditional archive. Furthermore, different copies of the same film exist in different online spaces. For example, the U.S. Bureau of Mines film *The Story of Petroleum* (1928) is part of the National Archives Video Collection on YouTube. Two other versions of the film have been uploaded by other users, both of which have clearer picture quality, but are shorter and missing certain frames (Fig. 2). Both professional and civilian archivists face challenges when it comes to knowing precise information about films this old. Reels could be missing, and it is likely that different edits of the same film were made, not to

mention the U.S.B.M. re-purposing footage they had already shot for future films.



Figure 2 citizen archivist's copy of *Story of Petroleum* (1928) (left) vs. National Archives copy

This example highlights the pitfalls of only using the formally archived version of a film while drawing attention to the need for careful attention to the differences between the official and unofficial versions of an archived film—the National Archives may have more accurate historical information, while a citizen archivist may have access to a better copy of a film for the study of aesthetic detail.⁹²

Little scholarship exists on the use of platforms like YouTube for film historical research specifically, but archivists have been raising questions about the use of digital repositories in their academic work since the early 2000s when these platforms were becoming more popular.⁹³ For example, Richard Cox acknowledges the role of the professional archivist in encouraging “citizen archivists” work of preservation, insisting that “Many records will be preserved by amateurs or they will not be preserved at all.”⁹⁴ This is particularly true of orphan films. While

⁹² For films in particular, a researcher would ideally have access to original film reels for indexical reasons in addition to a digital copy. Together, both versions paint a fuller picture of the film, but for a variety of reasons digital copies are easier to access.

⁹³ Rick Prelinger, “Personal Archives and a New Archival Calling: Readings, Reflections and Ruminations.” *The American Archivist*, Society of American Archivists, 2010. 691-695.

⁹⁴ Prelinger, “Personal Archives and a New Archival Calling: Readings, Reflections and Ruminations,” 691. In his review of Cox’s book, Prelinger cites Cox’s reference to this point by Robert C. Binkley in 1935, suggesting that this idea this applies today.

searching for films from the 1920s and 1930s on YouTube I noticed many channels created by amateur, or citizen archivists dedicated to their specific historical interests, reflecting the middle ground that archiving holds between individuals and institutions. Others are uploaded by a former employee who had access to a collection of corporate films. Still others include no explanation of the film or why it was uploaded, thus necessitating further research to corroborate accurate information about the film, and scouring the film itself and any title, year, and sponsor information that may be in opening or end credits.

The archival films that scholars have access to are the result of specific media infrastructures emerging during the past two to three decades. Indeed, easy access to digitized films and archives is possible thanks to the systems in place that allow for such broad access, a point numerous media scholars have made.⁹⁵ While usage differences exist between media infrastructures and energy infrastructures, their crucial roles within wider networks of modern technologies that have affected widespread cultural changes render their similarities important. For example, a shared trait of energy and media infrastructures is that of proliferation to the point of seemingly exponential increase in volume running through the network. As more infrastructure is designed and built, be it for information processing like digital networks in the 21st century or for harnessing energy through hydropower, resource extraction, or electrification in the 1920s and 30s, demand for what the infrastructure provides and for more robust and advanced versions of the infrastructure both increase. Furthermore, these increases in demand,

⁹⁵ Andrew Lison, et al. *Archives*, (Minneapolis: meson press; University of Minnesota Press, 2021), viiii.. Lison cites the work of media scholars Katherine Hayles (1999), Nicole Starosielski (2015), Tung-Hui Hu (2015), and Parks & Starosielski (2015).

functionality, and efficiency of infrastructures have led to significant increases in quality of life in numerous cases.⁹⁶

However, not all increases in infrastructure are positive. Increased extractive infrastructure, for example, exists alongside greener infrastructure like wind and solar power, but extraction is still occurring and negatively impacting both human and environmental health. Similarly, within information networks, misinformation exists alongside vetted knowledge subtly enough that it may go undetected by non-experts.⁹⁷ Film is not safe from the unstable contexts in which it exists in digital spaces either. While the formal and informal archives through which films are accessible are in part about revelation and access, drawbacks still exist from both media and energy infrastructure perspectives. Missing information, unknown context or editing, and historical status of films all contribute to their instability as information in the archive.⁹⁸ Furthermore, digital spaces are supported by material networks, and these material networks depend on the extractive processes that continue to wreak environmental havoc.⁹⁹ Thus, the very structure of the archive supporting access to films is unstable, and indeed, due to the sheer size of many archival collections, “information is archival capital, but too much information is a liability.”¹⁰⁰

⁹⁶ While some development is helpful, more helpful infrastructures are often also uneven. See David Harvey's . "The Flat World of Neoliberal Utopianism." *Cosmopolitanism and the Geographies of Freedom*, (New York: Columbia U.P., 2009).

⁹⁷ Katy Steinmetz, "How Your Brain Tricks You Into Believing Fake News," *Time Magazine Online*, August 9, 2018. <https://time.com/5362183/the-real-fake-news-crisis/>

⁹⁸ More popular films may have more archival information available about them compared to orphan films.

⁹⁹ See Sean Cubitt for an extensive explanation of the ways in which the seemingly infinitude of digital spaces is limited by environmental bandwidths. Cubitt, Sean. *Finite Media : Environmental Implications of Digital Technologies*, (Durham: Duke University Press, 2017); See Dustin Edwards for a rhetorical perspective on what he calls "digital damage" and the connection between media infrastructures and the Anthropocene. Dustin W. Edwards, "Digital Rhetoric on a Damaged Planet: Storying Digital Damage as Inventive Response to the Anthropocene." *Rhetoric review* 39, no. 1 (2020): 59–72.

¹⁰⁰ Rick Prelinger, "Do Physical Objects Have the Right to Exist?" *Open Space SFMOMA*, <https://openspace.sfmoma.org/2011/03/do-physical-objects-have-the-right-to-exist/>.

Archives are not straightforward repositories of information.¹⁰¹ Rather, each archive has a range of specific qualities, is uniquely structured, and requires awareness of its structure, background, and functionality for the researcher to responsibly use the information therein. A historiographic approach, based on understanding historic records and narratives situated in specific contexts and with precise purposes, reveals how archival films existed in their historical periods in addition to how they, as documents, teach histories. The films under scrutiny in this project celebrate infrastructural development that disrupts and damages while it improves quality of life. However, improvements in both media and energy infrastructures past and present are not linear. This infrastructural development follows a neoliberal impulse for growth at the expense of stability. Complex networks of energy and information are defined by their hidden volatility in addition to their visible usefulness. Historiography, however, still favors the latter narrative. Thus, in addition to knowing about the cultural contexts of the films I discuss, my approach also disrupts the dominant narratives about infrastructure bound to progress in the films while considering the information infrastructures of which the films are now a part.

Categorizing Non-Fiction Films

Looking at who was making nonfiction film in the 1930s, what the purpose of these films were, and how they have been categorized over the course of history is crucial to discerning the landscape of ideas and influences surrounding the films themselves. Plenty of genre distinctions among non-fiction films have been developed by both the creators and distributors of these films in addition to the scholars studying them who tend to demand more categorical precision.¹⁰²

¹⁰¹ Lison, et al. *Archives*, viiii.

¹⁰² Frank Kessler and Eef Masson, "Layers of Cheese: Generic Overlap in Early Non-Fiction Films on Production Processes," *Films That Work: Industrial Film and the Productivity of Media*. Ed. Hediger, Vinzenz, and Patrick. Vonderau. *Film Culture in Transition*, (Amsterdam: Amsterdam University Press, 2008), 77.

However, categorizing non-fiction films based on style, purpose/function, or production/exhibition still results in genre slippage, and most films fall into more than one.¹⁰³ Overall, it is my goal to be as thorough as possible in discussing the origins and sub-genres of the films. Their contexts both categorize them and reveal through what avenues they taught audiences to see infrastructurally.

From its origins, film has been constitutive—it orders both time and space into a visual form. This form is based on the physical parameters of the tools used in filmmaking: celluloid, frame, camera, and projector. Thus, cinema as a visual medium is already infrastructural, even when the content of the film is not about typical infrastructure such as road systems or electrical power distribution. The system of tools used in filmmaking determines its infrastructure, and nonfiction films are often marked by the atypical approaches used in their creation, distribution, and exhibition. The following genre overview is organized starting with the broadest categories and moving to the narrowest, from a grouping of films that is overall less explicitly infrastructural, to documentary, to newsreels, to government-sponsored, to corporate-sponsored, and finally to pedagogical film, the latter of which often considers infrastructural systems and technical processes for the purpose of educating the viewer.

Documentary & Newsreels

The recognized birth of documentary film in the United States happened in the second decade of the twentieth century.¹⁰⁴ Canadian Filmmaker Edward Curtis and American photographer and later Filmmaker Robert Flaherty crossed paths in New York in 1915, and this inspired Flaherty's interest in real-life subject matter as opposed to the fictional storytelling of

¹⁰³ Kessler & Masson, "Layers of Cheese: Generic Overlap in Early Non-Fiction Films on Production Processes," 77.

¹⁰⁴ Betsy A. McLane, *A New History of Documentary Film*. Second ed. (New York: Continuum, 2012).

popular cinema.¹⁰⁵ Flaherty's massively popular debut film, *Nanook of the North* (1922), sparked debates about what it means to represent reality onscreen, a key part of both public and scholarly discourse on documentary ever since.¹⁰⁶

Filmmakers by training and non-professionals alike were making films that could be categorized as documentary in the 1920s-30s. For example, in the early 1930s, the Worker's Film and Photo League (WFPL), a leftist group of filmmakers based in New York, made politically controversial documentary films such as *Winter* (1931), *Hunger* (1932) and *Pie in the Sky* (1934), the last of which was the group's only public release.¹⁰⁷ The group had formal ties to the communist party and the USSR, and its members included the likes of photographer Ralph Steiner and montage theorist and filmmaker Slavko Vorkapich.¹⁰⁸ The leftist intensity of the group led to their downfall in the tense political atmosphere of the Great Depression, but their work is a strong example of the stark contrast in purpose among documentary filmmakers in the 1930s. Many mainstream filmmakers were located on the West Coast making their living in Hollywood whereas the government operated largely out of Washington D.C. on the East Coast, creating significant distance between the world of filmmaking and the world of government. However, some U.S. government groups had the means to hire professional filmmakers, and some of the more well-known documentaries from the period were commissioned by the

¹⁰⁵ McLane, *A New History of Documentary Film*, 22.

¹⁰⁶ *Ibid*, 27. In the past decade, new attention has been paid both to documentary history and its resurgence as a popular genre. Betsy A. McLane's *A New History of Documentary Film* explains the broad history of the movement from its origins and its many iterations in North America and Europe. Documentary has also seen a resurgence in the era of internet streaming—both niche and wider-ranging material is available as a part of paid on-demand services, and on platforms with user-generated content like Vimeo and YouTube, resulting in an increase in public interest in the genre and a newfound concern for the veracity and the educational function of documentary.

¹⁰⁷ McLane, 93

¹⁰⁸ *Ibid*.

government, such as Pare Lorentz and Joris Ivens and their respective works *The Plow that Broke the Plains* (1936) and *The River* (1938), and *Power and the Land* (1940).

Great Britain also had a thriving documentary film movement, the institutionalization of which occurred almost simultaneously with that of documentary film in the United States, from 1929-1939 in Great Britain and 1930-1941 in the U.S..¹⁰⁹ The founder of the movement in Great Britain, John Grierson, had a strong leftist political vision for documentary film, and saw it as a way to both communicate with and educate the public about issues that affected them and that needed government intervention. Grierson also helped found the National Film Board of Canada (NFB), and some filmmakers who got their start in the documentary movement in Great Britain worked at the NFB for much of their career, like filmmaker and animator Normal McLaren.¹¹⁰ Though Grierson lived and worked in Great Britain for a majority of his deep involvement in the British Documentary movement, he is a crucial figure in the overall history of the genre, and according to McLane, “was responsible for the documentary film as it developed in English-speaking countries.”¹¹¹ Grierson re-imagined how filmmaking was funded and initiated the reliance on sponsorship from both governments and private corporations alike to get documentaries made.¹¹²

Overall, the 1930s were a decade in which documentary film as a genre grew significantly, from the start of the documentary film movement in Great Britain, to UK political filmmaking in the lead-up to World War II, to documentary filmmaking in the United States during the Great Depression and the New Deal. Several smaller categories of documentary exist

¹⁰⁹ McLane, 93.

¹¹⁰ Joni Hayward Marcum, “Visible Legacies of Invisible Resources: Gas Infrastructure, Women, and Environmental Control in 1930s British Documentary Movement Films.” *Film History: An International Journal* 33, no. 4 (2021): 81–108.

¹¹¹ McLane, 89

¹¹² *Ibid.*

within the broader category, one key example of which is the newsreel. While newsreels existed before the formal foundation of documentaries described above, they are connected to documentary ideals in both form and purpose—they recorded notable events for the purpose of informing the public about them. Newsreels arose from the information-rich media environment at the turn of the nineteenth century when film and journalistic mass media were both becoming popularized.¹¹³ Newsworthy events were recorded and shown before there was a real name for them.¹¹⁴ Newsreels in weekly form emerged in France about a decade later.¹¹⁵ The impulse to record political events to share with public audiences on film pre-dates documentary, though the origins of documentary and newsreel were both shaped substantially by the film-worthiness of one subject in particular: war.

War footage during World War I influenced documentary and newsreels dramatically. In France, for example, newsreels provided a new and powerful way for people to take in the realities of war, and “contributed to forming public opinion” about the war.¹¹⁶ Wartime newsreels were so popular in France that attendance at movie theaters during World War I increased by between ten and thirty percent.¹¹⁷ While news media wasn’t a novelty at the time, seeing what was going on elsewhere in the country and the world as the war unfolded was a powerful new use of film that had a major impact on the viewing public: “Cinema, and especially newsreels, were young, they had always been considered mere pastime, and all of a sudden they dealt with serious things and put the conflict under the eyes of civilians.”¹¹⁸ In Great

¹¹³ McLane, 8

¹¹⁴ Ibid, 11

¹¹⁵ Ibid.

¹¹⁶ Pierre Sorlin, “The French Newsreels of the First World War.” *Historical Journal of Film, Radio & Television* 24, no. 4 (October 2004): 515. doi:10.1080/0143968042000293847.

¹¹⁷ Sorlin, “The French Newsreels of the First World War,” 514.

¹¹⁸ Ibid.

Britain and the United States powerful newsreels and documentary-precursors were made and released to audiences. Film during World War I, in addition to swaying public opinion and support for troops, was also used for military training. From education to propaganda, wartime resulted in the widespread circulation of film media.

The first newsreel company to reach the United States was Pathé in 1911, and newsreel production increased over the next two decades before it reached a peak in the 1930s.¹¹⁹ In addition to disseminating wartime information, newsreel companies also made short films about many different subjects to spread information about them to the public. The subject matter of newsreels was wide-ranging, and this type of variety was one of the key characteristics of the seven-to-ten-minute reels.¹²⁰ Soon after their invention, newsreels were shown before films in theaters alongside other short subject films and cartoons.¹²¹ Many theaters even exhibited newsreels exclusively, such as the Trans-Lux.¹²² At these dedicated news theaters, a program of weekly news would play non-stop over the course of the day, allowing patrons to stop by and catch up on the news at any time. Though audiences did not always go to the cinema to see newsreels specifically, they were an integral part of the cinema-going experience during the period, and an easy way for people to learn both national and international news.

Though it is easy to criticize newsreels in the present because of their obvious lack of political objectivity, they are useful media for understanding how political issues and world events were represented to cinema audiences in the past—they offered a powerful collective viewing experience that illustrates cinema's power to structure society. While newsreels had the

¹¹⁹ Joseph Clark, *News Parade: The American Newsreel and the World as Spectacle*, (Minneapolis: University of Minnesota Press, 2020).

¹²⁰ Clark, *News Parade: The American Newsreel and the World as Spectacle*, 4.

¹²¹ *Ibid.*

¹²² *Ibid.*, 127.

potential to inform audiences about real-world events and show people new perspectives, they also had the power to change the spectator's relationship with information, much like documentary. In relation to the documentary genre and representations of reality, Joseph Clark claims that "the newsreel transformed the very notions of reality, representation, and their relation to one another."¹²³ Clark argues that newsreels are not merely a genre, but a "total system," an infrastructure of production and distribution unto themselves that has shaped American culture over the course of the twentieth century.¹²⁴ In the late 1920s and early 1930s, both the invention of sound film and an increase in major news events surrounding both technology and politics solidified the importance of newsreels in sharing information and enabling collective cultural experiences for the public.¹²⁵ Clark describes the importance of audience's judgement of newsreel images as follows: "By exploiting the tension between its ability to capture filmic evidence of the news and the ability to display that evidence to its audience, the newsreel emphasized the power and privileges of looking."¹²⁶ The acts of looking and seeing and the affective structures these actions reinforce are part of what make cinema infrastructural, and were important to newsreels because of their status as information sources that were designed to go beyond entertainment value.

Government-Sponsored Film

The United States government sponsored the production of many non-fiction films during the long 1930s. Like many non-fiction genres, government-sponsored films have traditionally received less scholarly attention. While edited collections such as *Learning with the Lights off*

¹²³ Clark, 2.

¹²⁴ Ibid, 3.

¹²⁵ Ibid, 4.

¹²⁶ Ibid, 5.

and *Useful Cinema* both address government film among their subject matter, recent work exclusively on government film is rare. Analyses and histories of government-sponsored film tend to be preoccupied with the bureaucratic function of these films, and how they speak to audiences from a position of authority while simultaneously attempting to position themselves alongside citizens rather than above them.¹²⁷ More recently, there have been a few more case-studies on government-sponsored film from a variety of time periods in *Useful Cinema* and *Learning with the Lights off*.¹²⁸ These edited collections from the last decade demonstrate the methodological turn toward new cinema history, which focuses on the social and cultural significance of cinema beyond its technical and artistic qualities, while delving deeper into the films from an angle that considers the paratextual environments and historical contexts in which the films were made. The study of non-fiction film at the intersection of new cinema history and the environmental and energy humanities further opens up potential avenues for film studies to make interventions in crucial political issues in our time. Government-sponsored film in the United States is complex, and by piecing together different scholarship on government-sponsored films from the 1930s, it is possible to grasp how these films operate as historiographic media, perpetuating positive technological and infrastructural messages through both narrative and aesthetic choices as part of a *dispositif*.

Government is already a form of infrastructure—it is designed to stabilize, to control, and to categorize both people and the operations of the state. The strategic use of film to spread information to the public as a part of governance demonstrates the importance of cinema in

¹²⁷ Jennifer and Kahana, Jonathan (Advisor), *Federal Films: Bureaucratic Activism and the U.S. Government Motion Picture Initiative, 1901-1941*, 2014, ProQuest Dissertations and Theses. com.ezproxy.lib.uwm.edu/docview/1615118824?accountid=15078.

¹²⁸ Charles R. Acland, and Haidee Wasson. *Useful Cinema*, (Durham NC: Duke University Press, 2011); Devin Orgeron, Marsha Orgeron, and Dan Streible, Eds., *Learning with the Lights off: Educational Film in the United States*, (Oxford; New York: Oxford University Press, 2012).

1920s and 1930s American culture as a place for people to come together and gain knowledge about how to be ideal members of society.¹²⁹ Lee Grieveson argues for the primacy of cinema in the context of the post-World War I era, in which government and corporate films stressed the importance of liberal democracy as the cornerstone of responsible government.¹³⁰ In the midst of the visual instruction movement in the late 1910s and early 1920s, cinema became a crucial tool for civic education, or the formation of citizens who can support the values of a particular political community.¹³¹ While contemporary readers may have mixed reactions to the concept of civic education given its purpose in shaping citizens who would support the state, this approach was common during the long 1930s.¹³²

Thus, civic education is connected to infrastructural cinema, and their purposes can at times overlap because internalizing one's role within the nation connects to knowing one's role in an increasingly infrastructural state environment. While it is easy to read films in the contexts of their civic educational purposes, applying new theoretical approaches from the environmental and energy humanities helps trace the ways in which political support for the state overlaps with political support for particular state-sanctioned energy regimes to this day. Inevitably, much government-sponsored film in the 1930s evolved from the post-World War I goal of stabilizing the United States political economy based on monopoly capitalism.¹³³ This political environment resulted in not only government-sponsored films about civic education, but also many industry-sponsored films with this aim as well.

¹²⁹ Lee Grieveson, "Visualizing Industrial Citizenship" *Learning with the Lights off: Educational Film in the United States* Ed. Orgeron, Orgeron, & Streible, (Oxford; New York: Oxford University Press, 2012), 109.

¹³⁰ Grieveson, "Visualizing Industrial Citizenship," 110.

¹³¹ *Ibid.*

¹³² The tension between political interest in laissez-faire and government-controlled economics in the New Deal period impacted whether government film was viewed as educational or propaganda.

¹³³ Grieveson, "Visualizing Industrial Citizenship," 108.

Industry-Sponsored Film

As organizers of film archives began making decisions about how to best store and make their collections available in the digital age, questions about digitizing the vast collections of previously unseen or ignored non-fiction film have seen new life in institutions both private and public. Though industry-sponsored films may originally have had internal audiences such as employees at a certain company, members of an educational institution, or some other private group, many industry-sponsored films were also aimed at the public. Audience is often a major question in the study of historical film— who watched these films, and what did those viewers learn from them or think about them? Though this type of audience analysis is the basis of some film historical research, it is difficult to do without an archive or dataset from a historical source. Trade magazines such as *Visual Education* and *Educational Screen* are useful for endeavoring to discover who the intended audiences were for many non-fiction films in training and education, many of which were corporate sponsored.¹³⁴ Though it is nearly impossible to gauge actual audience reactions to the films, these trade publications reveal the degree to which film companies and filmmakers found audiences in non-traditional exhibition spaces, like workplaces and schools, in addition to the few non-fiction films that drew audiences to movie theaters.¹³⁵ In addition to entertaining viewers, sponsored films were considered a superior way to educate audiences, be it in the workforce or the general public. Studying trade magazines and the trends and arguments made therein is a significant way to draw conclusions about how the groups

¹³⁴ Both of these publications are digitized and available on the Lantern Media History Digital Library.

¹³⁵ Stephen Groening, "'We can see ourselves as others see us' women workers and western union's training films in the 1920s," *Useful Cinema*, 36.

behind sponsored films were thinking about their audiences in the past in addition to analyzing the films themselves.

Scholarship on industry-sponsored films and their historical and political purposes within the context of film history benefits from a range of methodologies. For example, *Films That Work: Industrial Film and the Productivity of Media* highlights the many different ways in which industry-sponsored films can be engaged with historically.¹³⁶ Of particular interest to the development of the concept of infrastructural cinema and research in the energy humanities is the examination of films created by Shell Oil, an early example of which is an in-depth documentary about the business practices, colonial locations, and many technical processes that Shell perpetuated called *Bataafsche Petroleum Film* (1924, Netherlands).¹³⁷ Shell made and distributed films internationally from this point forward, connecting with the documentary movement filmmakers led by Grierson in the 1930s. In “Films from Beyond the Well: A Historical Overview of Shell Films,” Ruder Canjels argues that “Shell films may be read as exemplary interfaces that tie some of the key economic and political discourses of the 20th century into a visual rhetoric which systematically links company interests to larger political and societal goals.”¹³⁸ His broad history of Shell films and their international purview is an example of scholarly work that centers the overarching political life of a multinational company and its use of film for a variety of purposes, including marketing, building familiarity within communities, and educating audiences about oil processes and byproducts. This, in addition to influencing policymakers with the ability to shape both local and national decisions about fuel infrastructure,

¹³⁶ Hediger & Vonderau.

¹³⁷ Rudmer Canjels, “Films from Beyond the Well: A Historical Overview of Shell Films” *Films That Work: Industrial Film and the Productivity of Media*, 244.

¹³⁸ Canjels, “Films from Beyond the Well: A Historical Overview of Shell Films” 243.

makes Canjel's analysis of these films an example of how industrial films teach audiences to see infrastructurally.

To connect sponsored film to a historical application of the energy humanities, I examine an array of sponsored films by energy companies in the 1930s. Energy companies like Westinghouse and General Electric were producing films that had overlapping interests with the government-sponsored films at the time to convince the public that despite the Great Depression and the financial hardship people were experiencing, there were abundant sources of energy available by means of access to the right infrastructure. Films about these resources and their infrastructures were one of the first points of contact in orienting audiences toward these infrastructures, forming a reliance on the fuels still used today. Some examples from the 1930s include *A Visit to Value Town* (1935), *The New Frontiers: An Epic of Electrified America* (1936), and *Summer Storm* (1939), sponsored by Westinghouse. General Electric also had many sponsored films, and one GE commercial-oriented film, *Just Around the Corner* even included Hollywood starlet Bette Davis in 1933.¹³⁹ GE's films concentrated largely on their electronic appliances, the final manifestation of the infrastructural backdrop sprawling out of the home, unseen by the user of said appliance. Electricity, rather than a raw source of power, carries the power derived from the kinetic energy such as flowing water, or fuels that can be burned for energy like oil, gas, and coal. The almost invisible quality of electricity itself makes the appliances that rely on electricity even more important—they are the focal point of this deliverer of power into the home, keeping consumers isolated from the complex extractive processes necessary to produce it.

Educational Film

¹³⁹ *Just Around the Corner*, 1933; General Electric Corporation. YouTube.

The visual instruction movement took off in the United States after World War I with the creation of films for educational purposes.¹⁴⁰ While films always had the capacity to educate viewers, the visual education movement included groupings of educators and other professionals whose sole aim in filmmaking was to teach audiences through the educational capacity of moving images, rather than prioritizing a film's entertainment value.¹⁴¹ The editors of *Learning with the Lights Off* acknowledge the ubiquity of this experience for most people who were in school in the first three quarters of the twentieth century.¹⁴² Because of the belief in their ultimate purpose as tools to educate audiences, often in specific academic settings such as schools, writing and research on educational film has, for a large part of its history, fallen outside the purview of film scholarship.

I follow the lead of Orgeron, Orgeron and Streible in using the term “educational film” to encompass a broad range of films that educate, despite the longstanding historical discourse about what films “count” as educational based on who made them and for what purpose. For example, the popular educational film company ERPI (Electrical Research Products, Inc.) was only one of many companies specializing in educational film in the 1930s. However, educational films were made by many different people and groups, and their origins don't necessarily bar them from inclusion in the educational film grouping. Like the other types of nonfiction film I have reviewed, educational film is not meant to be a binding categorization, but a heuristic for the development of a theory on infrastructural cinema. Educational film, in fact, is a particular

¹⁴⁰ Grieveson, “Visualizing Industrial Citizenship,” 108.

¹⁴¹ Elizabeth Wiatr, “Between Word, Image, and the Machine: Visual Education and Films of Industrial Process.” *Historical Journal of Film, Radio & Television* 22 (3): 2002, 226. 333–51 doi:10.1080/01439680220148741.

¹⁴² Orgeron, Orgeron, & Streible, *Learning with the Lights off: Educational Film in the United States*, 3.

area of interest because of its emphasis on shaping audiences in explicit ways, with clear-cut goals for both informing viewers and shaping their thinking.

For practitioners in the visual education movement, education wasn't just about the distribution of information. Educational films were meant to be an efficient modality for transforming the masses into functional members of an advanced capitalist society.¹⁴³ Thus, like numerous other examples of efficient modern technologies, cinema played a role in the advancement of specific sociopolitical aims. Elizabeth Wiatr argues that practitioners in the visual education movement were drawn to the efficient transfer of ideologies possible through film because it held the viewer's attention:

Promoters of visual education saw [it] as a superior way to stimulate and enlighten students while making a far-flung technological world seem concrete and knowable. More memorable and appealing than print, film would communicate information efficiently enough to make the staunchest Taylorist beam. And film could build the nation: visual education would standardize and modernize perception to equip the masses, including immigrants and non-English speakers, for participation in the modern, visually-oriented world¹⁴⁴

Wiatr's analysis of the driving forces behind the visual education movement, and for industrial education specifically, draws attention to film's power to teach efficiently, ensuring that the pace of instruction matched the fast pace of modern life. Her reference to Taylorism illustrates the wider ideological landscape in which the visual education movement was situated; a landscape made up of the various necessities of industrialized society. These necessities included a workforce interpellated by the importance of speed and efficiency in their labor, and the

¹⁴³ Wiatr, "Between Word, Image, and the Machine: Visual Education and Films of Industrial Process," 334.

¹⁴⁴ Wiatr, 334.

acceptance of the technological imperative. Educational films' depiction of the seamless transfer of ideological stances underscores their inherent function as infrastructural cinema. These films perpetuate the belief that progress lies in increased industrialization, of which film is a crucial part, in addition to co-creating an audience primed to see infrastructurally. As Wiatr puts it when discussing an early Westinghouse film, *Panorama of Street Car Assembly Room*, "All the mechanical rationality of modern production assists the equally mechanical camera in a union of technologies."¹⁴⁵ This union between modern technologies and cinema forms the basis of infrastructural cinema by laying the groundwork for a spectatorship of energy flows and technology-driven capitalism.

In addition to the books and guides on documentary filmmaking written by major players in the wider documentary movement such as John Grierson, Edgar Antsey, and Paul Rotha, there are contemporaneous reports, books, and trade magazines concerned with educational film specifically. The 1932 report *Visual Instruction: its value and its needs*, for example, is "aimed at encouraging the production and use of educational films."¹⁴⁶ F. Dean McClusky, then president of the National Academy of Visual Instruction, described visual instruction in this report as emphasizing "the value of concrete imagery in the learning process" over the perceived emphasis on verbal imagery outside the visual instruction movement.¹⁴⁷ McClusky's report emphasizes the idea that the directness of visual imagery in contrast to verbal imagery was thought by filmmakers and proponents of visual education to be more unmediated than the symbolic realm of language. While the impact of motion pictures for visual education was seen as positive for its enthusiasts, there were also concerns about the impact of motion pictures on spectators, and

¹⁴⁵ Wiatr, 338.

¹⁴⁶ *Ibid.*, 333.

¹⁴⁷ Dean F. McCluskey, *Visual Instruction: its value and its needs*. Original report from 1932. *MPPDA Digital Archive* online.

children in particular. The Payne Fund studies, of which there were thirteen, were compiled into a volume released in 1933 called *Our Movie-Made Children*, which was meant to both convince readers of the powerful effect films could have on young people while also seeking to measure a phenomenon that was taken as a given: that film had the power to strongly impact spectators.¹⁴⁸ The studies were carried out between 1929 and 1933 before being released from 1933-1935.¹⁴⁹ While the Payne Fund studies were primarily concerned about “overstimulating adventure and crime films,” the studies were inspired by concern about the medium of film itself being overly stimulating and potentially dangerous.¹⁵⁰ Proponents of visual education saw the same traits of film raising so much concern in some as an advantage.

Amidst the controversy about the influence film could have on young minds, visual education was making its way into the mainstream. Because of its increase in popularity, a variety of guides on the creation of educational films were written by practitioners, beginning in the 1920s.¹⁵¹ As just one example, *The Educational Talking Picture* is both contemporaneous to the Payne Fund studies focused on educational film and follows similar tropes of other Visual Education textbooks identified by Wendell Johnson.¹⁵² Published in 1933, *The Educational Talking Picture* was written by Frederick L. Devereaux, who was the Vice-President of Erpi Picture Consultants at the time, an educational film company that later merged with

¹⁴⁸ Brenton J. Malin, “Mediating Emotion: Technology, Social Science, and Emotion in the Payne Fund Motion-Picture Studies.” *Technology and culture* 50, no. 2 (2009): 366–390; While *Our Movie Made Children* was written by Henry James Foreman, each study has an individual write-up, many by different researchers.

¹⁴⁹ Garth Jowett, I.C. Jarvie, and Kathryn Fuller-Seeley, *Children and the Movies: Media Influence and the Payne Fund Controversy*, (England: Cambridge University Press, 1996).

¹⁵⁰ Malin, “Mediating Emotion: Technology, Social Science, and Emotion in the Payne Fund Motion-Picture Studies,” 375.

¹⁵¹ Wendell G. Johnson, “‘A Happier Way of Learning’: The Visual Instruction Movement, 1918-1928”. ProQuest Dissertations Publishing, 2015. 215. For an extensive review of visual education textbooks, see Wendell.

¹⁵² Johnson argues that the earliest Visual Education textbooks were apologetic in tone about the use of film in the classroom but explains that by the end of the movement the textbooks were comprehensive in their content and emphasized “incorporating a wide variety of visual material into lesson plans.” 215

Encyclopedia Britannica by way of the University of Chicago in 1943.¹⁵³ The book is geared toward those interested in implementing visual education and covers a broad range of material like how to create an educational film, making material to go alongside it, how to use educational films in an array of educational settings, and how to set up and exhibit the films. The book acknowledges that visual education is becoming widespread and includes examples of which courses at the University of Chicago have implemented it into their curriculum; primarily science courses but implying a move toward future use across disciplines.¹⁵⁴ Deveraux understood visual education as a supplement to pre-existing learning processes and saw the purpose of film in the classroom as enriching and streamlining learning. He writes, “Talking pictures should not be used as an aid to instruction unless their use actually improves the efficiency of learning to a greater degree than is possible through any other means at comparable cost.”¹⁵⁵ Efficiency is paramount throughout the text and emerges as a key theme regarding film equipment as well as content. In a brief section called “The Problems of Space, Equipment, and Operation” Deveraux emphasizes that the cinematic apparatus is not yet but should be an integral part of the classroom. He even suggests that schools have film operators on staff for the efficient use of the equipment and to facilitate teaching: “If the 16-mm machine is used, an operator can be secured at a relatively small fee. This relieves the teacher, whose valuable time can be given to the more important part of the process of instruction.”¹⁵⁶ By breaking down the act of teaching into a cinematically-mediated form, the teacher allocates the delivery of certain information to film,

¹⁵³ Geoff Alexander, *Academic Films for the Classroom: a History*, (Jefferson, NC: McFarland & Co.,) 2010. p. 17; Aside from Erpi, other educational film companies included Coronet, Eastman Classroom Films, and McGraw Hill, to name a few, Alexander. 8

¹⁵⁴ Frederick Leonard Devereaux, *The Educational Talking Picture*, (Illinois: The University of Chicago press, 1935), v.

¹⁵⁵ Devereux, *The Educational Talking Picture*, 114.

¹⁵⁶ Devereux, 105.

making it an invisible teaching force. This allocation mimics infrastructural cinema writ large—the image teaches viewers how they should see infrastructurally and reflects faith in the efficiency of cinematic technology to do so.

Finally, the types of equipment, and thus the film stock used, are central to the efficiency of visual instruction. With the introduction of 16mm film stock in 1923, the option to make films for both personal and educational purposes became more feasible, and thus made it easier for film companies in this niche area to flourish.¹⁵⁷ While plenty of enthusiasm for visual education fueled the movement, the need for efficiency remained at the forefront of Deveraux's textbook on its application. Visual instruction was thought valuable for schools, businesses, and other organizations, not only for its relative low cost, but also for its effectiveness in “presenting sound and sight hitherto inaccessible.”¹⁵⁸ Thus, visual instruction, though different in purpose and content from fiction and documentary film, relied on the same cinematic qualities that Kracauer claims make film such a unique medium: they can grant access to processes difficult or otherwise impossible to see.

In addition to textbooks and educational films themselves, trade journals targeting the practitioners of visual education began publishing issues in the 1920s. The discourse among the different parties involved in educational films from camera, film, and exhibition material suppliers to educators themselves reveals the balance that educational films attempted to strike between efficiency and complexity and show their role in an educational system that emphasized assimilating with the technological flow of information of which film was a key part. Trade publications like *Visual Education* and *Educational Screen* provide a wealth of information

¹⁵⁷ Alan Kattelle, *Home Movies: a History of the American Industry, 1897-1979*. First edition. Nashua, N.H: Transition Publishing, 2000), 334.

¹⁵⁸ Devereux, 8.

about the subject matter of educational films, many of which are not readily available to view today. *Visual Education* ran from 1920-1924 with an issue each month. *Educational Screen* began in 1922 and ran through 1962, though the two publications merged in 1924 and kept the name *Educational Screen*. Early on, both journals were concerned with defining educational film and encouraging its use in addition to showing the breadth of possibilities it offered. A discussion of the qualities of educational film in the April 1920 issue of *Visual Education* reveals the juxtapositions in purpose for educational films: “I should like to call attention to what I consider the fundamental criterion of an educational film. A film to be educational must correlate with a curriculum; it must correlate with class room or lecture work.”¹⁵⁹ This description of the way in which film must fit into broader curriculum to be educational is debatable in relation to the rhetoric of ease and simplicity that visual instruction allows for. The messaging coming from the makers of cameras and projectors used in the visual education sector emphasizes this contrast. For example, the language in a Bausch & Lomb advertisement from a 1932 issue of *Educational Screen* insists, “Visual instruction is simplicity itself with the Bausch & Lomb Overhead Projector.” Thus, these publications show how practitioners were imbricated in both the search for the optimal way to teach but also in the desire to integrate the simplicity of modern technology into the classroom.

The publications of the visual education movement offer insight into the rise of popularity of this genre during the long 1930s and situate educational films as one of modernity’s technological trends. Based on these texts, the demand for efficient knowledge transmission, the need to educate the public on new technology and science, and a desire to support the economic and political ideologies that undergird modernization fueled the visual

¹⁵⁹ L. L. Thurstone, “What is an Educational Motion Picture?” *Visual Education* April 1920, 25.

education movement. These factors mirror the principles of infrastructural development that many of the films capture as their subject matter. The written materials of the visual instruction movement add to an understanding of infrastructural cinema by exploring the contents of the films and discussing, validating, and explaining their relevance to educators. Furthermore, they aid in revealing the thousands of educational films made that are no longer available while also showing how the films work historiographically. Indeed, the films show and tell their audiences about how technology functions through cinematic technology. Associated texts are yet another technological element. Pre-existing print media technologies bolstered the educational film movement and bolster the study of the films today. Overall, the visual education movement is a key example of the interconnectedness of industrial technologies, cinema, and the shaping of how modern development was understood through educational film.

Orphan Films

The reasons for making nonfiction films in the 1930s were as varied as the types of films being made. Professional documentary filmmakers worked to make films for both broad theatrical distribution and for more niche political purposes. The United States government had groups of filmmakers in bureaus throughout the country tracking public works projects and events and capturing them onscreen for both posterity and publicity reasons. Similarly, private companies got into filmmaking to promote their industries and reach the public through the new medium. Film also became a popular way to show filmgoing audiences both national and international news through the creation of newsreels, and educational film companies flourished as research on the pedagogical advantages of teaching with film was conducted and embraced by educators across a variety of disciplines.

Like these varied groups of nonfiction filmmakers, nonfiction films themselves vary greatly in kind. Some are mere sixty-second clips of breaking national events, a common subject of the newsreels. Others are full-length documentary films with enough action and drama to rival the entertainment value of Hollywood films. However, many nonfiction films were made on small budgets and with little thought to their longevity, and remain buried in archives, or are gone completely. Orphan films are another category to which many nonfiction films belong. Orphan films are described as “orphans” because they tend to be difficult to place in traditional archives or are lost or hard to find; they have no formal institutional or historical “home” so to speak. In the internet age, many collections of orphan films exist on streaming platforms, uploaded by anonymous users, and can disappear just as easily as they appear. Plenty of official archival institutions have also made use of public platforms like YouTube to make their collections more accessible to the public in addition to the rogue users with either personal collections or access to discarded archival material. For example, the Library of Congress (LOC) has an official YouTube channel on which they post both new and archival media, as they explain on their “about” section on their channel: “As the world's preeminent reservoir of knowledge, we are the steward of millions of recordings dating from the earliest Edison films to the present.”¹⁶⁰ The National Archives Video Collection is also on YouTube, however their collection is updated less frequently than the LOC’s online collection. Even online archives with institutional backing can vary in usefulness, depending on the amount of information provided alongside the media content, and the breadth and frequency of uploads. On the other hand, hundreds of individual users without formal archival institutional affiliations upload films found nowhere else online, with little more than a title and a brief description. For example, *Just*

¹⁶⁰ “About” page, Library of Congress YouTube Channel. YouTube.com. <https://www.youtube.com/c/loc/about>

Around the Corner, a Warner Brothers film made for General Electric in 1933, was uploaded by a user who goes by “rpf16mm” with the following brief description: “1933 promotional short for General Electric products starring Bette Davis, Dick Powell, Warren William, Ruth Donnelly, Joan Blondell, Preston Foster, Walter Miller and Frank O'Connor. This is an upgraded transfer from a 16mm print. The film was shown in theaters as well as local hardware and appliance stores around the country. Produced at Warner Bros. studios.”¹⁶¹ While most of the information in this description can be gleaned from simply viewing the film, such as the title, year, sponsor, who stars in the film, etc., it is still unclear who exactly uploaded this film, where they got the 16mm print from, and how accurate their description is. This degree of uncertainty is part of exploring the world of orphan films online and finding something like *Just Around the Corner* outside of a formal archive adds to the exhilaration of delving into this loose grouping of films. Though some fiction films are considered orphan films, and some, like *Just Around the Corner*, draw a blurry line between fiction and nonfiction, promotion and entertainment, most orphan films are nonfiction. Ultimately, while some films categorized as nonfiction have proven popular or remarkable enough to be well-known to film historians, such as some of the films I discuss in later chapters like *Power and the Land* (Dir. Joris Ivens 1940) and *Master Hands* (General Motors Corp. & Jam Handy Organization, inc., 1936) many more remain undiscussed.

Chapter 1 Conclusion

In the spirit of engaging with films neglected by the discipline’s history, the archival means by which I study nonfiction films are somewhat nontraditional. Rather than looking at a

¹⁶¹ Video description on YouTube upload of *Just Around the Corner* by rpf16mm. YouTube.com. https://www.youtube.com/watch?v=V7NEjP-_3gl&list=PLgo4Z4qs3G_eWWRdrmkUVK4EXseGUUQ6H&index=4&t=4s. Accessed 2/7/22

collection from a specific archive, I encounter the films I discuss in a variety of online spaces—a practice that mimics the varied film libraries and distribution channels for nonfiction films in the 1930s as well.¹⁶² This methodology fits both the historical structures of access to these films and a contemporary research approach molded to fit scholars in a digital age. From YouTube to my institution’s library to the Prelinger archives and beyond, the internet is an imperfect home for the imperfect films I study and their hidden histories. The advantages to my methodology are the ability to look at a broader array of films, and to start with a different set of questions about the films I work with that is not based in their archival location, but on their connected subject matter. By bringing together films from different times, original settings, archives, and with unique purposes, I can interrupt and reorient the histories they tell.

Cinema is part of energy infrastructure because while cinematic technology is not the central object of energy history, it is central to how energy and energy infrastructure is visually and historically understood. When the technology of cinema records footage and constructs images of infrastructural technology, it reveals these technologies while concealing itself; it enframes the visual resource and cinema stands reserve, ready for instructional use teaching audiences to see infrastructurally. Scholars in the energy humanities propose that “the key element left out of our understanding of the modern” has been energy.¹⁶³ A targeted study of nonfiction films about energy infrastructure contributes both to discussions within the energy humanities and to the environmental humanities as they interrogate the ways in which infrastructure is both revealed and hidden onscreen and the historiographic implications of what these films taught viewers to see.

¹⁶² Like the original access to the films I am studying, some of which were shown in theaters with widespread distribution and others of which were likely shown only in specific educational or work settings, my current access to the films varies from going through traditional repositories to finding films in obscure online homes.

¹⁶³ Szeman & Boyer, 2.

Chapter Two: Harnessing Water & Preventing Waste-Film's Mitigation to "Unproductive Expenditures"

The opening shot of the 1937 educational film *The Conservation of Natural Resources* features a waterfall surrounded by wilderness. Tall pine trees frame the foreground, and the waterfall is centered in an extreme long shot. The surrounding escarpment creates a stark contrast between the dry, rocky landscape and the water source, which does not appear to be in a lush, tropical environment but a rather arid one.¹⁶⁴ In the closer shots of the waterfall that follow, spectators can hear the thundering sound of the falls, and the visual closeness cuts out the landscape surrounding the waterfall in the opening scene in favor of focus on a feature that many waterfalls possess: the sheer power of their flow. It is unclear whether the waterfall in the closeup is the same as the one in the opening long shot; the angle of the shot has shifted to one side as opposed to capturing the image straight on like the long shot, and the establishing scenery from the previous frame is cropped out. The falling water in the closeup inevitably looks more powerful than the flow of the waterfall from a distance, but the dynamism of moving water combined with the film's editing makes it impossible to determine if it is the same waterfall.

Without context, nothing appears wrong with this scenic image. It mimics the sweeping imagery of contemporaneous travelogues, and the panoramic photography of the American West from the late 19th century.¹⁶⁵ However, after transitioning to the closeup of the falls, the film's voiceover announces, "The story of conservation is the story of waste and how it can be prevented." Suddenly the waterfall is wasteful; every moment it flows unfettered is a missed opportunity. While it may seem strange to think of a natural phenomenon as wasteful, the film

¹⁶⁴ The film does not indicate where the waterfall is located geographically, or of which river it is a part

¹⁶⁵ "Depicting the American West," National Park Service, <https://www.nps.gov/articles/wh-jackson-photography.htm>

promptly delves into the national need to capture the energy of the waterfall and put it to good use rather than letting it flow freely. The narrator's words immediately transform how the flowing water is perceived—not as a natural feature, but as a wasteful oversight. Over the course of the film, the impressive waterfall is visually replaced by a dam; equally impressive, although for different reasons. By trading the waterfall for the dam, albeit later on in the diegesis, film aesthetics are infrastructural, creating a way of seeing that fosters a visual regime of control. This regime of control makes visible both excess and wasted energy and renders the abstraction of a force like energy into visible form by focusing on an energy-producing motion like flowing water. When contrasted with its static counterpart, a dam, the film captures the chaos of the river and waterfall, aiding in its transformation into a consumable resource.

Even though motion always creates kinetic energy, it is only considered energy in the world of the film insofar as it can be harnessed and used by humans. Thus, the film creates a set of parameters in relation to human energy use outside of which energy turns into waste. However, *Conservation of Natural Resources* strategically uses images from various distinct locations to send a broader message about conservation that may not necessarily reflect material reality. Visual analysis using Google reverse-image search reveals that the waterfall in the opening shot of the film is the lower falls of the Yellowstone River, a 308-foot waterfall in the nation's oldest national park.¹⁶⁶ Ironically, the Yellowstone river has never been dammed, and remains one of the only undammed rivers in the U.S. Still, the film's aesthetic strategies imply that a dam might be in this river's future.¹⁶⁷ Landscape features like rivers exist within geopolitical contexts that make some of them more valuable in their natural state and others

¹⁶⁶ A feat possible thanks to extensive data resources in the era of digital archiving.

¹⁶⁷ "Yellowstone River: A Wildlife Paradise," American Rivers, <https://www.americanrivers.org/river/yellowstone-river/>.

more valuable when altered to create energy. The brief opening shot in *Conversation of Natural Resources*, while seemingly devoid of distinction due to the narrative and visual strategies of the brief scene, is enmeshed in the place-specificity of the Yellowstone River and its environs. The river has taken on new importance as recently as the summer of 2022, when its overflow flooded areas of Montana and Yellowstone National Park, reaching record-high water levels. The floods were brought on by a combination of warm weather melting snow in the high country and days of heavy rainfall, a harbinger of climate change.¹⁶⁸ As other films from the 1930s show, flooding is both dangerous and wasteful from an infrastructural perspective; floods are framed as disasters that could be mitigated by having the right structures in place. In the present, flooding in a national park known for its lack of dams raises questions about the infrastructural interventions of the future that may become necessary to stave off disasters, in addition to interrogating what conservation means in relation to the changing climate.

Rather than examining the individual ecological needs of a region, *Conservation of Natural Resources* gathers representative images of both natural and human-made landscapes, showing quintessential examples of each, and thus avoiding regional differences.¹⁶⁹ While these details may have gone unnoticed at the time, in a moment of increased environmental awareness, place specificity matters more than ever. In glossing over details and material constraints in unique geographic areas, the film creates an economy that corrects nature's wasteful errors with technology both filmic and infrastructural. However, the efficient economy within the film is a

¹⁶⁸ These patterns of extreme weather are one of the key pieces of evidence for human-induced climate change, according to the Environmental Defense Fund <https://www.edf.org/climate/climate-change-and-extreme-weather>.

¹⁶⁹ The dams in the film are also unnamed, though some of the dams are more recognizable based on their designs or the surrounding landscape features; Wilson Dam (Fig. 3, lower right) for example is recognizable. Reverse-image search identifies the first dam in *Conservation of Natural Resources* as the Owyhee Dam in Oregon (Fig 3, lower left).

fantasy. Applying George Bataille's theory of general economy to the film solidifies the impossibility of an efficient, waste-free world while simultaneously revealing the ways in which cinema works as a *dispositif*, an apparatus, that exerts control as an extension of material infrastructural desires such as dam-building, and as an ideological tool that fosters the normalization of technological intervention in the natural world. Furthermore, viewer alignment with the cinematic apparatus and the aesthetic understanding of material reality granted by the cinematic experience forges further connections between cinema and infrastructure writ large. Thus, in films focused on hydropower in the long 1930s, the necessity of environmental control by way of infrastructure and the belief in a subsequent closed system free of waste is naturalized via multiple levels of the cinematic apparatus.

The Apparatus or *Dispositif* & The Theory of General Economy

While the waterfall in *Conservation of Natural Resources* is one small example of wasted energy becoming useful energy, this example and the others in this chapter connect to Georges Bataille's theory of general economy and the accursed share of that economy: the seemingly unusable portion of an economic system (Fig. 3).¹⁷⁰ Furthermore, these films exemplify cinema working as an infrastructural apparatus in the process of conserving resources, building structures, and conditioning spectators as sociopolitical subjects. This conditioning teaches spectators to expect particular forms of progress based on the narrow economies focused on by the apparatus in these films.

¹⁷⁰ Georges Bataille, "The Meaning of General Economy," *The Accursed Share: An Essay on General Economy, Volume 1, Consumption*, (Zone Books, New York, 1988), 19-26.



Figure 3 Shots from *Conservation of Natural Resources* illustrating “wasted” energy becoming useful.

Both Michel Foucault and Jean-Louis Baudry discuss the idea of the apparatus, or *dispositif*, in distinct yet applicable ways. Foucault considers the idea of the *dispositif*, which he broadly defines as any control mechanism that maintains social power over a group or society, to be a network of different structures that create an infrastructural base for control.¹⁷¹ Based on Foucault’s usage of the term, a *dispositif* is inherently infrastructural—it can work to preserve dominant forms of control, typically over people, that thus have a bearing on the networks people build and use, which in turn reinforce the *dispositif*, and so on. Connected to the idea of

¹⁷¹ Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France, 1977-1978*. Ed. Michel Senellart; trans. Graham Burchell, (Basingstoke, England; Palgrave Macmillan, 2007), 17.

the *dispositif*, the controlling apparatus or series of apparatuses that form a matrix of control, is the concept of biopower. Biopower, or control tactics that relate to the human body, is a key concept for understanding the *dispositif*.¹⁷² Without power over the body, the apparatus would have little to exert material impact on. Furthermore, biopower and the *dispositif* connect to Bataille's theory of unproductive expenditures. Both are violent promoters of a capitalistic system that relies on an ideological invisibility cloak of neutrality. A *dispositif*, whether a political system, legal system, way of seeing, or social norm, is dictated through consistent behavior and discourse; no *dispositif* is inherent or natural, but rather culturally dictated through accepted structures of power. The same is true of biopower. And yet, they appear or feel natural to many due to their ubiquity and influence. In relation to cinema, rapt viewer attention and alignment with the cinematic apparatus is a form of biopower: the body acquiesces to the structuring form of the apparatus in a material way by viewing, and in an ideological way by then consciously aligning with the apparatus.

Baudry, focusing on film, emphasizes how the cinematic apparatus shapes spectator consciousness through its implicit immersion in ideological constructs. Baudry believes that cinematic technologies are inseparable from ideology, and that their construction as an apparatus reflects the biases and social structures held by their makers.¹⁷³ Thus, it is not only a film's content that influences the spectator, but the very cinematic mode through which they are exposed to information. Crucially, Baudry explains that spectators, identifying with the "eye" of the cinematic apparatus, occupy a position of significant power in relation to the image, which is

¹⁷² Michel Foucault, *Society Must Be Defended: Lectures at the Collège de France, 1975-76*, Ed. Mauro Bertani and Alessandro Fontana; General Editors, François Ewald and Alessandro Fontana; trans. David Macey 1st ed. (New York: Picador, 2003), 239-240.

¹⁷³ Jean-Louis Baudry, and Alan Williams, "Ideological Effects of the Basic Cinematographic Apparatus," *Film quarterly* 28, no. 2 (1974): 39-47, 41.

in essence turned into an “object” in relation to the viewing “subject.”¹⁷⁴ He explains that “the spectator identifies less with what is represented, the spectacle itself, than with what stages the spectacle,” i.e., the cinematic apparatus.¹⁷⁵ As a form of power, viewing or spectating then serves a similar infrastructural function as the apparatus: it connects seemingly unrelated fragments into a meaningful whole.¹⁷⁶ This power dynamic works on a psychological level to promote the individualism that drives capitalist ideology. Thus, it fuels the normalization of the modern economic and political ideologies central to infrastructural cinema in particular, those defined by technological supremacy, human domination of the natural world, and free market capitalism by shaping the self-perception and outward perception of viewers. By viewing as subjects, spectators aid in the creation of the infrastructures they see on screen while simultaneously building the power of the cinematic apparatus. This feedback loop perpetuates the elevated status of both spectators as subjects and of infrastructure and infrastructural cinema as a modern paradigm.

Economics are central to infrastructure, quantifying measures of efficiency, cost-effectiveness, and growth that infrastructure enables. From a theoretical perspective, infrastructures are used to describe capitalist economics by figures like Karl Marx and Friedrich Engels.¹⁷⁷ Following in this tradition, Bataille develops his theory of general economy. A general economy, he argues, differs from a limited economy because it is at first imperceptible due to its size, and general economies are economies of excess. Similarly, Baudry argues that the cinematic apparatus is also imperceptible, or is often imperceptible to the viewer in most cinematic forms. Foucault’s social apparatus theory also emphasizes the invisibility of the

¹⁷⁴ Baudry, “Ideological Effects of the Basic Cinematographic Apparatus,” 43

¹⁷⁵ *Ibid.* 45

¹⁷⁶ *Ibid.*

¹⁷⁷ Nikhil, Gupta, & Appel, 8-9.

dispositif because it is so ubiquitous or normal as to seem natural. In explaining his theory of general economy, Bataille stresses that it is necessary to understand the balance between human production and consumption on a larger, global scale because it is only at this scale that the excess and waste of the interconnected series of systems is revealed. The laws he lays out dictate that while energy on earth is infinite, the space available for growth creates its limits.¹⁷⁸ Bataille draws an important distinction between energy and growth by asking, “Supposing there is no longer any growth possible, what is to be done with the seething energy that remains?”¹⁷⁹ This excess energy and its pressure can result in either growth, if the limits of growth in a certain environment haven’t been reached, or a waste or loss of energy if they have.¹⁸⁰ Bataille cites technological and labor developments as two key factors that lead to surplus energy, asserting that given their capacity to create new systems, humans tend to use up more energy than is sustainable to the general economy.¹⁸¹ Thus, based on the theory of general economy, increased consumption is inevitable as systems grow through technological and labor development, which is well-illustrated by *Conservation of Natural Resources* and numerous other films I analyze.

In contrast to general economies, individual films can be considered examples of the limited or narrow economies Bataille critiques. Films focused on energy infrastructure and resources are narrow economies in the sense that they are unable to communicate their effects on a general economy. In fact, it is undesirable for them to do so. For example, in *Conservation of Natural Resources*, a limited economy of efficient New Deal programs, infrastructural projects, and energy production is contained in the narrative and aesthetic choices made by the filmmaker.

¹⁷⁸ Bataille, *The Accursed Share*, 27-29.

¹⁷⁹ *Ibid*, 31.

¹⁸⁰ *Ibid*.

¹⁸¹ *Ibid*, 37.

The wider-reaching, long-term effects of an action like damming a river are not explored, and within the world of the film are simply portrayed as efficient systems. Bataille contends that as a system grows or connects to more systems, inefficiency is inevitable, but this reality is ignored. Infrastructural cinema, then, not only exerts aesthetic control over the events occurring therein but also contains within it a narrow economy that is easy to control *because* of its limited nature. Taken together, all the films discussed create a more complex network of individual narrow economies that inch toward an understanding of the general economy. However, it is impossible for infrastructural cinema to capture the essence of the general economy because it cannot be all-encompassing in the way that Bataille insists the general economy is. Cinema is a tool of ideological and infrastructural control because no matter a film's content or aesthetic strategies, it can only contain a sliver of the general economy, and thus neglects to consider its consequences.¹⁸²

By applying Bataille's notions of excess and expenditure to energy films, I aim to expose the point at which predominantly capitalistic modes of thinking, reliant on a supposed efficiency and utility, reveal their often-ineffectual outcomes.¹⁸³ Furthermore, by contrasting films primarily informed by capitalist ideologies, despite the leftist bent of many New Deal policies during the time the films were made, I call attention to both the collusions and conflicting interests between state and private enterprise which encapsulate the energy industries of the era. While government policies were geared toward federal-level control over labor and economics, the drive of private industries and the ongoing partnerships between government and corporate

¹⁸² Bataille, *The Accursed Share*, 26.

¹⁸³ Ben Dorfman, "The Accursed Share: Bataille as Historical Thinker." *Critical horizons: Journal of Social & Critical Theory* 3, no. 1 (2002), 48. Bataille's theories of expenditure as I apply them began in his essay "The Notion of Expenditure," written between 1932 and 1935 and were expanded upon in *The Accursed Share* in 1949.

groups create the circumstances for co-existence of publicly beneficial and privately driven economic policy. Moreover, the intention of the films was not to reveal inefficiency or draw attention to these tensions and collusions. Rather, their purpose is largely to showcase, explain, and support the infrastructures they focus on, whether material, economic, political, or a combination of all three. By reading these films in the context of Bataille's theory of general economy, and particularly his notions of excess and expenditure, I trace among the films a pattern of infrastructures growing toward their limits in ways that have reverberated throughout the twentieth century and torment us in the present. Given the moment in which he was writing, Bataille's explanation of the general economy was not focused on climate change and energy industries expressly. However, by claiming that "the possibilities of life cannot be realized indefinitely," he addresses the looming presence of concerns about whether the economic and material systems human life depend on can continue to support it. Cinema participates in creating an infrastructural world in which it can.

Infrastructural film aesthetics perpetuate visions of efficient, narrow economies, yet close analysis of energy films reveals the ways in which these infrastructures fail on the level of general economy. For Siegfried Kracauer, the technical processes of cinema reveal physical reality broadly constructed. In a set of his notes from 1940, he writes, "Film brings the whole material world into play...it is interested in the refuse, in what is just there..."¹⁸⁴ In the films I analyze, physical reality connects to both social and political reality—the material is political and social. As it pertains to energy, hydropower, and conservation, waste is not just excess, but a political and social problem that infrastructure mitigates. Another sociopolitical problem arises, however, when energy film aesthetics are not true to material conditions, and thus fuel the

¹⁸⁴ Miriam Hansen, "Introduction," *Cinema and Experience Siegfried Kracauer, Walter Benjamin, and Theodor W. Adorno*, edited by Edward Dimendberg, Berkeley: University of California Press, 2012. vii

specious political practices that Kracauer feared about cinema, and ultimately the dual nature of modernity— that it is aesthetically and ideologically powerful enough to deceive the public regarding the material conditions facing society, and that it can dissolve individuality to the point of dangerous assimilation with, in his context, state violence and fascist politics.¹⁸⁵ In turn, cinema could also reveal the truth of material conditions and thus spark the necessary changes to avoid ruin.¹⁸⁶ Like Bataille, Kracauer’s interest in materiality was not directly connected to environmental concerns. However, his attentiveness to the way material reality exists in cinematic time and space works to call attention to environmental concerns as they relate to energy, extraction, and natural resources. James Leo Cahill connects these theorists to call attention to the ways in which cinema contains within it the power to both create and destroy material environments, a point that both Kracauer and Bataille attend to.¹⁸⁷ I apply Kracauer’s aesthetic theories to energy films of the long 1930s to articulate the material concerns largely ignored by the films content but present nonetheless; the materiality haunting cinema.¹⁸⁸ I aim to make visible the aesthetic regimes that ignore material constraints in favor of the intangible, boundless power of energy infrastructure. Overall, both Bataille’s theory of general economy and Kracauer’s theories of how film captures physical reality attend to scale and materiality, supporting an analysis of the ways in which infrastructural understanding is shaped by cinema.

The Great Depression of the 1930s was compounded by chaotic environmental changes across the country. While infrastructural interventions of all sorts were made, dams were some of

¹⁸⁵ Siegfried Kracauer, *The Mass Ornament: Weimer Essays; Translated, Edited, and with an Introduction by Thomas Y. Levin*, (Cambridge, Mass: Harvard University Press,) 1995.

¹⁸⁶ Kracauer, *The Mass Ornament: Weimer Essays*.

¹⁸⁷ James Leo Cahill, “What Remains, What Returns: Garbage, Ghosts, and Two Ends of Cinema,” *Ends of Cinema* Edited by Jocelyn Szczepaniak-Gillece and Richard A. Grusin, (Minneapolis: University of Minnesota Press, 2020), 99.

¹⁸⁸ Cahill, “What Remains, What Returns: Garbage, Ghosts, and Two Ends of Cinema,” 99.

the most visually archived and celebrated. Their construction was seen as both technological marvel—proof that human beings did have the capability to control nature—and job-creating relief project during a time of financial hardship. In this chapter, I will examine five government and educational films and documentaries in addition to newsreels and the environmentally focused New Deal policies that led to major dam-building projects in the United States. The culture of scarcity during the Great Depression was the backdrop for narrow economies of overabundance in nature, particularly when it came to waterpower, and meager access to basic needs in daily life for many citizens. The scarcity mindset of the 1930s also fueled the political regime of government-run and supported energy initiatives like the Tennessee Valley Authority and supported various films and filmmakers willing to work within the parameters of the New Deal policy agenda to systematically reveal energy capture and production through cinematic means, with a strong emphasis on the infrastructural projects undertaken to create energy.

Bataille’s notion of “unproductive expenditures” encapsulates the anxieties surrounding the desire to turn natural motion into usable energy.¹⁸⁹ According to Bataille, unproductive expenditures are inevitable expressions of excess energy that are by nature unusable—they can be joyful or destructive, but they are impossible to re-integrate back into the economy in a useful way. For Bataille, unproductive expenditures need not be negative, but within a capitalist economic structure, he believes they often are. In his theory he includes examples of unproductive expenditures that are not violent or destructive such as making art or experiencing sexual pleasure. Thus, the problem is not the expenditure, but the system it is in, which he suggests determines the expression of unproductive energy. He critiques unproductive expenditures within a capitalist framework because the excess financial resources within it are

¹⁸⁹ Bataille, 27.

mobilized for violence—he refers to war as a key example. However, from his perspective, the uneven accumulation of wealth by the upper class alone can also be classified as a form of violence and unproductive expenditure because in dispossessing people of resources, the ruling class essentially engages in a campaign of Necropolitics.¹⁹⁰ When water is reframed as a natural resource in a capitalistic system rather than just being part of a river, it has the potential to both help and harm based on Bataille’s perspective. We know that dams can lead to disasters when they fail or malfunction, but also that the way they re-route water has had negative effects on natural environments that are slower to accumulate. Despite this, they also support agricultural systems and make it possible to build cities in arid regions. Thus, flowing water and the control and creation of hydropower readily connects to Bataille’s notion of expenditure by questioning what unproductive expenditures of nature must be brought under control for the sake of wider infrastructural projects important during the New Deal. From the TVA perspective, the unproductive expenditure of hydropower was a serious waste that could be addressed through technological prestige.

The main concern surrounding hydropower in New Deal era films is the necessity for humans to develop adequate technologies to properly benefit from the abundant energy already present in the natural world, and thus to prevent that energy from being unproductive. A river flowing or a waterfall cascading that is not also capturing this motion and turning it into electricity is seen as a waste; the energy is there for the taking and allowing it to exist unfettered is a wasted opportunity. Similarly, not recording on film the creation of dams and the subsequent triumph of modern infrastructure over nature would be a wasted publicity opportunity. The intentional circulation and promotion of films focused on dams and waterpower ultimately

¹⁹⁰ Bataille, *The Accursed Share*; Achille Mbembe, *Necropolitics*, Translated by Steve Corcoran, (Durham, Duke University Press, 2019).

vouches for the policies supporting these projects by showing the flood devastation without them, the jobs they create, and the modern technology applied to their construction. The films, like the dams themselves, are part of an infrastructure designed to exert control through both infrastructure and aesthetics, establishing and perpetuating a visual regime of technological progress as a tool to both create needed energy and to create a balance between humans and nature. These films make both the infrastructural project of energy production cinematic, and in doing so mediate public knowledge about how water and energy are managed and interconnected. To make hydropower infrastructure cinematic is both to narrativize human relationships with the resource, and to exert aesthetic control over it, thus emphasizing human triumph over the natural world and its wasteful economy.

Unproductive Expenditures & Visual Regimes of Management

In 1942, *Educational Screen* described the government-operated Tennessee Valley Authority (TVA) as “harnessing the water and reclaiming the land” of the region. The legacy of the TVA is still alive and well today, and their current initiatives and relationships with energy and land in the region were first shaped by Depression-era ideals of progress. Founded in 1933 as part of the New Deal, the TVA remains a public corporation. Shortly after the start of the Great Depression, there was little trust in private companies.¹⁹¹ Thus, running public utilities through the TVA was a politically restorative gesture; a reclamation of equality and hope for the people, not just the reclamation of the land. Covering area in seven states including Tennessee, Alabama, Mississippi, Kentucky, Georgia, North Carolina and Virginia, the TVA was also designed to bring prosperity to one of the regions hit hardest by the economic downturn of the

¹⁹¹“TVA,” History.com, History.com Editors, Updated June 10, 2019, Original: Aug 3, 2017 <https://www.history.com/topics/great-depression/history-of-the-tva>.

great depression. The Tennessee Valley Authority act sought to increase the economic prosperity of the American South by stimulating farming and mitigating damage to the land from floods and the logging industry.¹⁹² The operation of the Wilson Dam was another major TVA initiative, as the dam was built for use during World War I to produce nitrate but remained unfinished until the TVA was formed and the dam put to work generating power and processing fertilizer beginning in 1933.¹⁹³ Though electricity was part of urban life beginning in the early twentieth century, in the 1930s most rural areas were still without it. Hydroelectric power from the dams in the Tennessee Valley changed rural life and agricultural practices significantly with the arrival of electricity on farms and homesteads. TVA efforts were all geared toward what *Educational Screen* described. By controlling the flow of water through rivers by damming and resuscitating land previously unusable after flooding, dams became one of the most crucial infrastructural projects of the 1930s.

TVA dam projects are ideal examples for analyzing why infrastructure is more complicated than its engineering. Attached to decisions about dam building were philosophical convictions about the political and economic situation of the nation, the cultural respect garnered by the science-backed work of engineers, and tacit but steadfast beliefs about the role of human beings in relation to nature. Because infrastructure impacts vectors of both tangible and intangible sociopolitical life, it, like cinema, can be considered an apparatus—a system made up not only of physical material like concrete and rebar, but subject to change based on human behavior, societal shifts, and environmental factors.¹⁹⁴ Most importantly, thinking of infrastructure in this way shows its complexity beyond being technologically impressive. Though

¹⁹²“TVA,” History.com.

¹⁹³ “A Dam for the People” Tennessee Valley Authority, tva.com.

¹⁹⁴Anand, Gupta, & Appel, 3.

it may seem difficult to comprehend how it is that a dam turns the motion of a river into electricity, then distributes it to homes, farms and factories many miles away, it is even more challenging to understand the matrix of policies, laws, choices, and consequences of a technological landmark such as a dam. David Nye's "technological sublime" offers the philosophical background explaining why massive engineering projects struck awe in people in the late nineteenth and early twentieth centuries, and why new engineering projects still do so now: "an object, natural or man-made, disrupts ordinary perception and astonishes the senses, forcing the observer to grapple mentally with its immensity and power."¹⁹⁵ Beyond the object lie elements of the object's infrastructure, the belief in which further fuels belief in the overarching benefits of projects like dams.

Fascination with an infrastructural project works similarly to fascination with cinema—it captures the heart and mind of the viewer, directing their attention. Marshalling audience support for new infrastructures and technologies takes advantage of the biopolitical power of cinema in the long 1930s. Biopolitics seek to politically sanction power of human life and labor. According to Grieveson, there is a fine line between the individual freedoms allowed by liberalism of the era and the ways in which the political economy of the liberal state used technology to measure, monitor, and shape populations for specific purposes.¹⁹⁶ New Deal policies designed to alleviate poverty and create jobs and other opportunities during the Depression were rooted in biopolitics because while biopower is concerned with the regulation of the body in space when it comes to daily life and social practices, it is also focused on harnessing harder-to-regulate mental power like consciousness and attention.¹⁹⁷ Building and capturing attention is much like building and

¹⁹⁵ Nye, *American Technological Sublime*, 15.

¹⁹⁶ Grieveson, "Empire of Liberty," 60-61.

¹⁹⁷ Michel Foucault, *The History of Sexuality. Volume 1*, trans. Robert Hurley, (Camberwell, Vic: Penguin. P. 2008,) 137.

capturing waterpower for a hydroelectric dam—they both create nodes of power that are then dispersed elsewhere, reinforcing the infrastructural system as a whole. Undirected thought is like uncaptured water because it is unproductive, but when it is captured, it creates part of the *dispositif* of infrastructural sight. The *dispositif* can also take material form as an energy regulation and creation apparatus, a dam.¹⁹⁸ By working toward managing a natural resource like water through infrastructure, political policies were also endeavoring to harness biopower. According to Adams, “The new biopower operates instead through dispersed networks—what in *Security, Territory, Population* Foucault names the *dispositif*.”¹⁹⁹ These dispersed networks include the psyche of the viewer. Thus, as part of the sociopolitical infrastructure of the dam, a documentary like *The River* that reached a wide audience and emphasized the benefits of dams to the population is part of the total *dispositif* of dam infrastructure. It harnesses audience attention and shapes their belief in the infrastructure.

Flowing water and the control of waterpower readily connects to wider infrastructural projects important during the New Deal era like expanding the electrical grid to get electricity to rural areas. As key media for communicating with people the infrastructural changes occurring under New Deal legislation, documentaries focusing on the abundant energy source of flowing water exist at the confluence of a few different factors. First, the long 1930s is a period marked by the severe dichotomy between excess and scarcity. The economic excess of the 1920s gave way to the financial scarcity of the 1930s during the Great Depression, causing a pivot in the values emphasized by the political administration from that of free markets to controlled markets. This logic also extends to natural resources. The Depression era was exacerbated in

¹⁹⁸ Foucault, *Security, Territory, Population*, 17.

¹⁹⁹ Rachel Adams, “Michel Foucault: Biopolitics and Biopower.” *Critical Legal Thinking*, 17 Mar. 2020, criticallegalthinking.com/2017/05/10/michel-foucault-biopolitics-biopower/.

Western states by damaged agricultural land in the West during the dust bowl and the simultaneous abundance of water to the point of river flooding at regular intervals in the southeast during the first three decades of the twentieth century. Finally, the discourse surrounding hydroelectric power serves as an intriguing counterexample to the energy rhetoric of oil and gas which has dominated academic discussions of energy history and energy media in the humanities.²⁰⁰

The energy humanities propose that “the key element left out of our understanding of the modern” has been energy.²⁰¹ Documentary films such as these then offer contributions to both discussions within the energy humanities and the environmental humanities as they document the ways in which hydroelectricity in the 1930s offered an alternative to oil and gas in certain geographic regions. Framing waterpower’s abundance as energy source also reflects the ideological stance of New Deal era politics centered on public ownership and the collective benefit of the resource. These documentary films simultaneously challenge and reinforce discourse about scarcity and excess in the New Deal era. The aesthetic and cultural focus on water in these films speaks to the desire to harness a visible and readily available resource. This is in contrast to the “invisible fuel apparatus” that defines the visual regime of fossil fuels, and even in the transformation of hydropower into electricity.²⁰² Electricity is “a carrier of energy, meaning that another source of power must be employed” to generate it.²⁰³ Water is the ideal

²⁰⁰ Christopher F. Jones, “Petromyopia: Oil and the Energy Humanities.” *Humanities*, vol. 5, no. 2, 2016, p. 36-46; Imre Szeman, “Crude Aesthetics: The Politics of Oil Documentaries.” *Journal of American Studies* 46, no. 2 (2012): 423–39. <https://doi.org/10.1017/S0021875812000151>; Robert Johnson, *Carbon Nation: Fossil Fuels in the Making of American Culture*, (Lawrence, Kansas: University Press of Kansas, 2014); LeMenager, Stephanie. *Living Oil: Petroleum Culture in the American Century*, (New York, NY: Oxford University Press, 2014), 5;

²⁰¹ Szeman & Boyer, 2.

²⁰² Ibid.

²⁰³ Christopher F. Jones, *Routes of Power: Energy and Modern America*, (Cambridge, Massachusetts; London, England: Harvard University Press, 2014), 162.

aesthetic subject for documentaries in the 1930s because it is an abundant, direct energy source with strong visual appeal, and was already at the center of the infrastructural projects of the TVA.²⁰⁴

The set of films I consider exemplify the ways in which energy discourse was framed by government documentary, educational film, and newsreels in the 1930s. These films also offer a chance to re-frame how natural resources were being approached during the Great Depression, which was through newly developed conservation efforts that created jobs.²⁰⁵ In these films, rather than needing to carefully ration resources due to scarcity, audiences are presented with the ethical problem of excess.²⁰⁶ In this scenario, rather than conserve the resource, the infrastructural task of both cinema and energy technologies like dams is to manage or harness the resource to prevent both damage to the land and wasted energy. Ultimately, New Deal era film focusing on natural resource management mediates the threat of the “unproductive expenditures” of natural phenomena such as the flow, and potential flood of a river that, while seen as wasteful within a capitalistic energy economy, would be seen as an example of normal or even good unproductive expenditure from Bataille’s perspective, because while it causes damage, it isn’t violence caused directly by human actions.²⁰⁷ These educational films can be described as infrastructural because they work as an extension of material infrastructure to develop ideas

²⁰⁴ Fossil fuel and electricity aesthetics will be analyzed in depth in chapters three and four.

²⁰⁵ Perry Henry Merrill, *Roosevelt’s Forest Army : a History of the Civilian Conservation Corps, 1933-1942*, (Montpelier, Vt: P.H. Merrill, 1981). Accessed on Archive.org. Conservation of land and resources was closely tied to New Deal work relief efforts. The founding of the Civilian Conservation Corps (CCC) in 1933 caused an increase in these efforts including erosion and flood mitigation, forest and land management, and wildlife and agricultural animal management. Employing workers to aid in these areas accomplished both conservation and employment goals for the Administration.

²⁰⁶ Bataille, 27.

²⁰⁷ While the floods aren’t caused by humans like wars are, for example, deforestation at the hands of humans exacerbated flooding, complicating the potential positive elements of an unproductive expenditure from Bataille’s angle.

about how emergent systems like dams control energy and thus attempt to control the ineffable natural forces that have the unproductive power to damage human environments.

An evaluation of films about New Deal public works projects informs contemporary concerns about financial inequity, degrading infrastructure, and natural resource use.²⁰⁸ In the 1930s, documentary, educational, and short newsreel film was used to inform the public about U.S. government programs designed to improve the lives of people affected by the Great Depression, and to promote the engineering projects being completed to rest of the world. Jeffrey Geiger argues that Pare Lorentz's *The River*, commissioned by the U.S. Farm Security Administration in 1937, "imagined national management solutions forged out of land, water and celluloid."²⁰⁹ I extend this provocation by discussing *The River*; *Conservation of Natural Resources* (1937), a film produced by Erpi Picture Consultants (later Encyclopedia Britannica Films); *The TVA at Work* (1936) produced by the Tennessee Valley Authority and the Department of the Interior; and two short newsreels, *Boulder Dam Opened* (1936) and *Boulder Dam Tested* (1941) by Pathé News. *The River* serves as a strong example of a well-known film about water management at the intersection of media and infrastructure. In addition, other films from the period help paint a more detailed picture of the different ways in which infrastructural cinema worked to frame water and its management onscreen in the 1930s.

The River (1937)

The River, directed by Pare Lorentz for the Farm Security Administration and the U.S. Department of Agriculture, is one of the most well-known government documentaries from the

²⁰⁸ In *Cinema and the Wealth of Nations*, Grieveson argues that cinema from 1913-1939 had a key role in establishing the neoliberal political environment of inequality that this exists today.

²⁰⁹ Jeffrey Geiger, *American Documentary Film: Projecting the Nation*, (Edinburgh: Edinburgh University Press, 2022), 112.

1930s. Lorentz began his career making government films with *The Plow that Broke the Plains*, a controversial film about the misuse of agricultural land leading to the dust bowl in the American West distributed by the US Resettlement Administration in 1936. The film sparked new interest in previously ignored government film.²¹⁰ For decades government films contained simple demonstrations or made land or public service announcements and were not seen as having entertainment or artistic merit. However, Lorentz' goal was for his work to compete with Hollywood, even if on a small scale, by getting widespread distribution.²¹¹ *The Plow that Broke the Plains* ultimately showed in approximately 3000 theaters, despite not being affiliated with a studio.²¹² Lorentz was about to leave government filmmaking behind after the financial issues he experienced while making *Plow* when, after pitching an idea for a film about the Mississippi river to officials at the Department of Agriculture, he was offered a \$50,000 budget for the project, which was endorsed by President Roosevelt himself.²¹³ This idea aligned closely with “numerous issues of concern to the New Deal: flood control, hydroelectric power, soil conservation, rural electrification”²¹⁴ and was given a significantly larger budget of \$50,000. *The River* ended up a major success and was offered distribution by Paramount.²¹⁵

Long praised for its artistry, *The River* tells a story about the rise and fall of American ingenuity in and around the Mississippi River delta. The film builds applies a primordial tone to the natural world through the opening shots of mountains, hills, rivers, and sky appearing unfettered by human life. The seeming timelessness of these scenes gives way to a setting in the

²¹⁰ Erik Barnouw, *Documentary: A History of the Non-fiction Film*. Revised ed. (Oxfordshire; New York: Oxford University Press, 1983), 118.

²¹¹ Barnouw, *Documentary: A History of the Non-fiction Film*, 117.

²¹² *Ibid*, 118.

²¹³ *Ibid*.

²¹⁴ *Ibid*.

²¹⁵ *Ibid*, 120.

mid-nineteenth century, which is depicted as a time of prosperity in the south as the river “became a highway” for steamboats to carry cotton and wheat away to be sold both in the U.S. and abroad.²¹⁶ Thus, the river becomes a tool for commerce on multiple fronts, from travel to irrigation to the fast transport of unwieldy commodities like lumber. The successful use of the river is the first era of the Mississippi in the film. But next, the river becomes a menace. In Part Two, once forests were cut down, erosion became a problem and led to massive flooding. The dramatic and devastating footage of these floods is accompanied by the narrator reading a list of years in which major floods occurred: “1903, 1907, 1913, 1916, 1922, 1937. We built a hundred cities and a thousand towns. But at what a cost?”²¹⁷ The reading is almost elegiac in tone, mourning the loss of life, land, and industry, and inevitably the loss of control over the landscape as well. Part Three begins by talking about the loss of natural resources like topsoil and the poor living conditions of farmers, but changes tone drastically for the last six minutes of the film. The film ends on a triumphant note, showing the reclamation of control now exercised over the river and the region as a whole through the creation of the TVA and its subsequent damming and hydroelectric projects.

The River has been the subject of film scholarship framing it in a variety of different ways. The film has alternatively been referred to as New Deal propaganda, bureaucratic activism, and eco-film.²¹⁸ These various cultural perspectives highlight the simultaneous importance and slipperiness of the film, in addition to the many discussions about the film from a

²¹⁶ *The River* Dir. Pare Lorentz, 1937. Dist. Paramount Pictures. Accessed online at Archive.org, <https://archive.org/details/RiverThe1937>.

²¹⁷ *The River*

²¹⁸ James Schneider and Vance Kepley (Advisor), *Documentary Film in the Public Sphere: Pare Lorentz's "The River" and Its Alternatives*, 1999, ProQuest Dissertations and Theses; Zwarich & Kahana (Advisor), *Federal Films: Bureaucratic Activism and the U.S. Government Motion Picture Initiative, 1901-1941*; Robin L. Murray and Joseph K. Heumann, *Ecology and Popular Film: Cinema on the Edge*. SUNY Series, Horizons of Cinema, (Albany: SUNY Press, 2009), 40.

technical perspective, which talk about the narrative structure, use of montage, and the inspiration drawn from poetic verse.²¹⁹ *The River* is one of the most memorable New Deal documentaries and overall easy to contextualize due to its widespread success and ready availability online today. Claims about *The River* as eco-cinema connect most closely to an analysis of *The River* as infrastructural cinema but are not exhaustive. According to Murray and Heumann, the film ultimately argues that “the best way to solve the problems humans have caused by their degradation of nature is to implement technological projects driven by human ingenuity and innovation.”²²⁰ Infrastructure itself becomes the solution to environmental problems like flooding, but as the authors point out, infrastructure is not only capable of failure, but is designed to benefit and protect some groups more than others, a point that the film fails to address. Thus, in addition to its importance as an eco-film, *The River* is a crucial example of infrastructural film that, like infrastructure itself, promises “modernity, development, progress, and freedom”, but fails to deliver this promise to everyone.²²¹

Delving into the promise of infrastructural development put forth in *The River* is important because both infrastructure and cinema are sites of influence and contention where certain voices, interests, and representations easily overshadow others. Cinema maintains American infrastructural ideologies by pandering to the status quo, including their aesthetic sensibilities. For example, *The River* only contains contemporaneous footage of white sharecroppers, despite the fact that there were many black sharecroppers and they were more likely to suffer greater harm due to flooding, including loss of livelihood and property.²²² Like the new hydroelectric infrastructure, *The River* is designed to quell the concerns of white

²¹⁹ Geiger, 112.

²²⁰ Murray & Heumann, *Ecology and Popular Film: Cinema on the Edge*. SUNY Series, Horizons of Cinema, 40.

²²¹ Anand, Gupta, & Appel, 3.

²²² Murray & Heumann, 51.

viewers, particularly those who might disagree with the representation of Black agricultural workers as playing a key role in their regional economies.²²³ Hydroelectric infrastructure then was directed toward helping alleviate the burdens on the white population, while making no public promises to the Black population. This is not to say that the Black population didn't benefit at all from some of the projects—dams made regular deadly flooding a much less pressing concern. However, a major part of the promise of infrastructure focuses on white audiences and their concerns.

The proposal and subsequent filming of dam-building and hydroelectricity projects were, in the 1930s, much more a political move than an environmental decision. Though preserving land was part of the reasoning behind dam building, the land being preserved was developed farmland, and little thought was given to the negative effects that damming would have on rivers. While Murray and Heumann argue that *The River* offered only a single, narrow solution to the problem of flooding that also neglected to take into account the environmental issues brought about by damming rivers, it must be acknowledged that this solution also happened to provide thousands of jobs to those left unemployed in the region during the Depression.²²⁴ Furthermore, the dam provided what seemed to be a leading source of electricity, which made dam-building even more attractive. The “Hydraulic Century, the Age of Dams” described by American environmentalist Marc Reisner resulted in the creation of 95% of all the world's large dams, which include any dam over fifteen meters in height.²²⁵ Geoengineering projects far outpaced any concerns about what their long-term outcomes might be. For example, the Wilson Dam in Muscle Shoals, Alabama was intended to power a munitions factory during World War I,

²²³ Geiger, 53.

²²⁴ *Ibid.* 39

²²⁵ Peter M. Lavigne. "Cultural Myths, Concrete Results, and Whoops Again." *Natural Resources Journal* 44 (2004), 671.

producing ammonium nitrate. After the war ended, the plant was abandoned, and “the unused ammonium nitrate...symbolized the sheer waste of the plants’ potential.”²²⁶ The political pressure to put what is otherwise wasted potential energy to use, whether in the form of flowing water or chemicals that could be used for both bombs and fertilizer was stronger than any concerns at the time about the effects these projects could have on the land.

The River is an example of infrastructural cinema in addition to being one of the more well-known and artistic government documentaries of the depression era. By showing the story of successful TVA intervention in the deadly and wasteful problem of flooding, *The River* reinforces the idea that cinema is central to resource management.²²⁷ Thus, the film put the practice of filmmaking at the center of public communication about resource management when it was released and became a part of resource management infrastructure by way of communicating infrastructural interventions of issues like flooding and the subsequent harnessing of water-power for electricity to the public. With its broad historical scope and Lorentz’s goal to make the film a theatrical hit, *The River* provides an excellent example of how government intervention aimed to prevent the unproductive expenditures that threatened the livelihood of American industry, and how a film and its narrative and aesthetic design can create a narrow economy that addresses a problem but fails to consider the effect that solution could have on wider infrastructural, environmental, and economic systems.

Conservation of Natural Resources (1937)

²²⁶ Matthew L. Downs, *Transforming the South: Federal Development in the Tennessee Valley, 1915-1960*. Making the Modern South, (Baton Rouge: Louisiana State University Press, 2014). 55.

²²⁷ Geiger, 112.

Environment-oriented films from the 1930s are not necessarily all uniform, however, nor are they all artistically produced like *The River*. Erpi Picture Consultants produced *Conservation of Natural Resources* in 1937, which highlights the moment of flux during which a focus on preserving land for its natural beauty and using natural resources for human development are juxtaposed. Roosevelt's commitment to nature conservationism infused the development of unemployment-focused New Deal programs. While these work programs were designed to create jobs for the unemployed, much of the labor done by the workers in these programs focused on technological development and energy extraction from natural resources by any means necessary, and this emphasis is visible in both private and government sponsored films about conservation and resources.

The first recorded usage of the term conservation explicitly tied to the environment is from 1875 and is defined as, "The preservation, protection, or restoration of the natural environment and of wildlife; the practice of seeking to prevent wasteful use of a resource in order to ensure its continuing availability."²²⁸ This definition emphasizes the idea of stewardship in relation to conservation, or the belief that it is human's responsibility to take care of the nature as a guardian. However, there is also a certain degree of exploitation implied in the second part of this definition. Using resources is a given, and only becomes a problem when it is wasteful to the extent that it might be used up too quickly or deemed unusable—the result of poor resource management. In *Conservation of Natural Resources*, management rather than conservation is actually the most valuable action between humans and nature. At the time, conservation did not have the same social and political implications it has now, which began to gain momentum during the environmental movement of the 1970s. This two-fold definition shows the

²²⁸ "conservation, n.". OED Online. December 2019. Oxford University Press. <https://www-oed-com.ezproxy.lib.uwm.edu/view/Entry/39564?redirectedFrom=conservation>.

juxtaposition of sensibilities surrounding conservation over the hundred years following its initial environmental usage—conservation in the late-nineteenth century focuses on preserving a resource to ensure availability for human use, whereas conservation in the latter half of the twentieth century drifted toward conservation of land and wildlife for the sake of the land and wildlife itself. The splitting up and designating of land for different specific uses, such as the formation of the national parks, is another key move that designated space for conservation as opposed to resource exploitation.²²⁹ This divvying up of land is tacitly acknowledged through the use of the waterfall footage from Yellowstone National Park in the opening scene juxtaposed with the commentary about conservation, at its heart, being about preventing waste. National Park space, in reality, would not be considered a waste. Rather, less picturesque rivers designated as energy sources would be seen as wasteful if left undammed. In fact, the sheer enjoyment of nature could be seen as an unproductive expenditure in Bataille’s view, a positive thing, in contrast to the need to harness the river and redirect it into productivity.²³⁰

In the context of the industrial resource gathering and managing projects of the 1930s, the latter half of the 1875 definition of conservation is paramount. Conservation is a form of management, and management is not necessarily about stopping a problem—such as chemical by-products entering waterways—but about making sure by-products are used, rather than wasted. I refer to this as re-routing. In *Conservation of Natural Resources*, one of the resources the narrator is concerned about being used up too quickly is oil. He explains, “The most effective means of saving oil is to make full use of its by-products. At the refinery, the oil is heated in stills and more than two hundred different products are obtained.” The re-routing approach of

²²⁹ Richard A. Grusin, *Culture, Technology, and the Creation of America's National Parks*. Cambridge Studies in American Literature and Culture, (Cambridge, UK ; New York: Cambridge University Press, 2004), 137.

²³⁰ Bataille, 33.

collecting chemical and other waste in a water treatment facility to be processed into fertilizer, ultimately to be used in agriculture, is another example of the re-routing of undesirable by-products and waste from the wrong location, where it can't be useful, to the right location, where it can be useful. In this case, usefulness is exclusively connected to human productivity and an increase in livelihood. In the film, spectators learn that waterways are being polluted by "poisonous waste" that is "poured in our rivers, killing the fish, and menacing the health of all of us." Yet we are also given a solution: "This can be prevented by sending such waste to sewage disposal plants, which change much of it into useful fertilizer. Thus, it is hoped that our rivers will once again run clear, and all will be inhabited by fish." Though the process of re-routing the poisonous waste is not included in the film, the final shot before the film's conclusion is of a fisherman wading into one of the now-clean streams, catching a fish. The implication of this image is that fish are only useful—and a stream is only worth cleaning—insofar as they can be consumed and used by people. Though chemical waste doesn't always flow directly into streams anymore today, chemical fertilizers used in agriculture, among innumerable other chemical by-products still enter the water system. By trying to make efficient use of secondary substances created during production processes, industries like the oil industry in this case still perpetuate the creation of waste, but on a longer, more circuitous route, out of sight of the rivers and streams enjoyed for recreation.

Conservation of Natural Resources emphasizes the imperative to manage resources rather than conserve them. The film is brief with a run time of only ten minutes, and the pace moves quickly. While the film addresses logging, fires, coal, oil, and erosion issues in addition to water power, the initial waterfall shot at the beginning being replaced by a dam later in the film establishes a visual motif mimicked in the address of other conservation issues. In this

educational film, dams are praised as both the solution to flood prevention, and the capture of energy that would otherwise be wasted, fossil fuels are lamented for being too scarce, and both forested and unforested landscapes present problems for unwitting farmers and industrialists seeking fertile farmland and lumber. In addition to tracing the conversation efforts of a variety of natural resources, the film also emphasizes re-routing by-products of production processes that would otherwise be wasted, or damaging to the environment, explaining for example that rather than draining into rivers, chemical by-products resulting from coal and oil extraction can be treated and turned into products like fertilizer. According to the film, capturing energy and producing consumer goods out of waste is crucial because some natural resources like oil are dwindling or limited in supply. The logic of the film implies that waterpower can supplement oil and gas to produce electricity, making it clear that it is one part of a large network of natural resources necessary to national stability. In this way, the energy strategies in the film are not unlike those of today, though energy production from different sources varies significantly by region, as it did in the past as well.²³¹

Conservation of Natural Resources also promotes the idea of human beings and nature working in service of one another; however, within this message the power dynamics between humans and the natural world are clearly balanced in favor of humans. Later in the film beaver dams are compared to man-made dams because they can both “control the flow of water and steams and prevent floods.” It should be addressed, however, that the beavers are first captured and taken to areas in which flooding is a problem. This relocation effort is striking because of its odd reliance on a creature’s natural behavior and the simultaneous control of the animal by

²³¹ Nadja Popovich, “How Does Your State Make Electricity?” *The New York Times*, December 24, 2018, updated 2020. <https://www.nytimes.com/interactive/2018/12/24/climate/how-electricity-generation-changed-in-your-state.html>

relying on them to exhibit their natural behavior in a different, location where they are “needed.” The film’s focus on water, timber, land, and oil as the key natural resources that need to be conserved offers a broad picture of what conservation priorities are, but within the film emerges a subset of resources that are exploited, or even actively destroyed, including the beavers, but also the underbrush in the forests which is cleared to “prevent fires from spreading” and the fish that will hopefully populate the rivers and streams once pollution is mitigated. At the end of the film, another shot of a different waterfall is accompanied by a narration quite different from the opening, “An intelligent program of conservation will restore the beauty of our land.” In truth flowing water can be waste or a feature of natural beauty depending on how it is managed, where it is located, and what its designated purposes are in relation to humans.²³² Waste is defined less by what it is, and more by where it is and what it is used for, or whether it can be used by humans at all.²³³ These designations are based on contemporaneous ideologies about human separation from and dominion over nature, in addition to how land is split up legally, how it is zoned for development, and how different naturally occurring substances are officially designated as natural resources.

Conservation of Natural Resources is an educational, rather than a technical or industrial, film. It is not surprising then that the film focuses on the positive changes happening in light of New Deal policies and programs, rather than showing the technical processes of exactly how pollution is re-routed to waste-water treatment facilities and turned into fertilizer, for example. Though they are not mentioned explicitly, it is clear that groups like the CCC are working in the film, re-planting trees in forests and building small dams in gullies to stop the erosion of

²³² Mary Douglas, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*. Routledge Classics, (London; New York: Routledge Classics, 1966).

²³³ Gay Hawkins, *The Ethics of Waste: How We Relate to Rubbish*, (Lanham, Md.: Rowman & Littlefield Publishers, 2006), 2.

farmland. Though this educational film is not sponsored by an industry or government bureau, it relies on their established visual strategies. Thus, while the film draws on pre-existing aesthetic choices, it still has the freedom to discuss a variety of resources from water to timber to farmland, the power of each respective industry is important in the film.²³⁴ Rather than foundering in the wake of the Depression, these industries are shown making headway toward a better, more efficient and productive future.

That Erpi films were designed for classroom use, often by advanced educators and researchers themselves, provides context for where a film like this was shown. Schools were likely the venue for a film like *Conservation of Natural Resources*. The title screen describes the film as “A Talking Picture For the Classroom” and shows that Erpi collaborated with George T. Renner, PhD at the Teacher’s college at Columbia University to make the film. Though it is not always possible to find information about the filmmakers or collaborators from older films such as *Conservation of Natural Resources*, George T. Renner, a geographer and professor at Columbia, wrote and published books and articles about geography, natural resources, and the power dynamics of control over natural resources in the context of the second World War.²³⁵ In a 1944 article, Renner provides a definition of natural resources: “At the outset, it is important that we be entirely certain as to what natural resources really are. Often when people use this term, they have in mind only a few materials in nature, such as minerals and, perhaps, timber and waterpower. Actually, the term is much broader than this; it includes everything present in the natural environment which can be used industrially or commercially by man.”²³⁶ It seems here

²³⁴ Richard Dyer MacCann, *The People's Films; a Political History of U.S. Government Motion Pictures*. Studies in Public Communication, (New York: Hastings House, 1973), 48.

²³⁵ Etzel G. Percy, “George Renner 1900–1955”, *Annals of the Association of American Geographers*, 48:3, 245-249, 1958. DOI: [10.1111/j.1467-8306.1958.tb01579.x](https://doi.org/10.1111/j.1467-8306.1958.tb01579.x).

²³⁶ George T. Renner, "Natural Resources in the Post-War World," *American Journal of Sociology* 49, no. 5 (1944).

that Renner is intentionally expanding on the simpler focus of films like *Conservation of Natural Resources*, which does focus largely on water, fossil fuels, and timber to include nearly everything found in nature that can be extracted and used. His article, “Natural Resources in the Post-War World” ultimately argues that there are two types of resources: fluid and fixed, and that geographical and ecological awareness are crucial political considerations when considering resource use. Renner explains that fluid resources can be transported, whereas fixed resources are more geographically based, and therefore rely on the “division of space.”²³⁷ This means that political ownership over land is paramount to the way natural resources are accessed. Renner provides the following example to illustrate his point: “A piece of Mediterranean climate in Finland would be worth more to the Finns than the iron ore of Lorraine.”²³⁸ In this instance, Finland relies on the fluid movement of resources from a region like the Mediterranean because it lacks these resources within its own geopolitical borders. However, the land and climate of the Mediterranean region can’t be replicated in Finland—it is fixed in its geological place and can’t be a part of Finland’s resources unless the ownership of the land changed. In the post-World War two context, Renner is invested in the possibility of land changing hands. He also implores the importance of preserving natural resources and irreplaceable land from destruction: “We live not on our technology but upon our resources.”²³⁹ Extractive technologies are only as good as the resource-rich land they are built on. This view is contrasted by some of the technophilic films made or sponsored by industries themselves.²⁴⁰

Bataille’s concept of narrow economies aligns more readily with the technophilic view that well-designed technologies and infrastructures are the key to resource management.

²³⁷ Renner, “Natural Resources in the Post-War World,” 430.

²³⁸ Renner, 436.

²³⁹ *Ibid*, 440.

²⁴⁰ Several of these films will be analyzed in Chapters 3 and 4.

However, the theory of general economy reveals what Renner argues—that technology is irrelevant without access to the right resources, or resources of quality. Within the context of an extractive regime, resources are the fuel of modern life. Resources are commodifiable, and they make technology work. Ironically, some technologies working the way they were designed to has proven in some cases to be detrimental. Indeed, when it comes to extractive technologies, “the threat is not a disruption of the status quo, but its continuation and persistence.”²⁴¹

The TVA at Work (1936)

In 1936 the Department of the Interior produced *The TVA at Work*, a film that Pare Lorentz clearly drew inspiration from when creating *The River* a few years later. The film features a few identical shots in the opening sequence, which quickly shows the cycle of a coming storm, rain, and flooding accompanied by the sound of an ominous minor scale. *The TVA at Work* has been paid little scholarly attention but was included in the listings of *Educational Film Catalog* (later known as *Educational Film Guide*) in various years from 1937 to 1939. The film was listed as *Wasted Waters* in 1939 with the following description: “This film was originally released in 1936 under the title ‘Tennessee valley authority at work.’ General picture of the TVA, development. Music by the Army band.”²⁴² Wasted water was not the only concern of the filmmakers, however; they were concerned about conserving the budgetary and labor expenditures involved in the film production process as well. The recycling of film content and

²⁴¹ Jennifer Fay, “Cinema and the Anthropocene: A Conversation with Jennifer Fay,” interview by Nicholas Baer, *Film Quarterly*, vol. 71, no. 4, 8 June 2018, <https://filmquarterly.org/2018/06/08/cinema-and-the-anthropocene>

²⁴² *Educational Film Catalogue*, H.W. Wilson Company, 1939. Accessed through Archive.org. 171. Though it is possible that it is the same film, the catalogue lists a run time of eighteen minutes, and the available version has a run time of only thirteen. Another film titled *Water Power* made by Erpi is listed in *Educational Film Catalogue* but has not been digitized for online viewing at the time of writing. What these catalogues reveal, despite the lack of most of the listed films availability on digital platforms today, is the surge in both a focus on educational films in the 1930s and 1940s, and how many of those films were concerned about issues surrounding water management.

even identical films released under different titles exemplifies the film industry's desire to avoid unproductive expenditures, too—why shoot new footage when pre-existing will do?

The TVA at Work is an example of a government-sponsored film with a much smaller budget than the films Lorentz made around the same time. The formation of U.S. Film Service in 1938 was responsible for the allocation of funds for bigger budget documentaries, but other government agencies continued making films of their own, often with a tighter focus by necessity. The U.S. Film Service didn't last long, however. Unlike John Grierson's thriving government film units in Great Britain, Lorentz' similarly modeled U.S. Film Service only lasted about five years before it was formally defunded by Congress.²⁴³ Controversy about how money was being used more for film distribution than production was one of the main talking points during the hearings, which spanned from 1938-1941.²⁴⁴ Allocation of funds for the U.S. Film service was based on funds appropriated to other agencies, such as the Department of the Interior in the case of *The River*.²⁴⁵ Another trigger for the controversy was the housing agency of the Film Service: The Office of Education took over the Film Service in 1938, ending the agency it had to float between government projects, making films for various agencies.²⁴⁶ This raised questions about the purpose of government films, and those made without a precise technical or educational focus were seen as too propagandistic by Congress. Thus, the political differences between documentary film and educational film were significant during this moment in the late 1930s. Educational film was seen as a harmless yet useful way to show instruction on a skill or activity, whereas documentary was a potentially dangerous genre where "general

²⁴³ MacCann, *The People's Films; a Political History of U.S. Government Motion Pictures*, 114.

²⁴⁴ MacCann, 104.

²⁴⁵ *Ibid*, 94.

²⁴⁶ *Ibid*, 104.

education...would inevitably become propaganda for a particular [government] program.”²⁴⁷

Thus, while big-budget documentary like *The River* and eventually Lorentz’ *The Fight for Life* (1940) were mired in controversy, smaller films have been less scrutinized overall.

The TVA at Work captures the simplicity of a shorter, focused government film that highlights a particular agency (the TVA) targeting a direct problem (wasted waterpower and flooding). The budgetary, stylistic, and content-related elements of this film make it a strong example of Bataille’s narrow economy. The first title card succinctly explains this: “Thus uncontrolled water takes its toll...Congress created the TVA to devise methods for the unified development of an entire watershed...that of the Tennessee River.” The interplay of images in the ninety seconds of the film addressed by the intertitle creates a conversation between the two—beginning with “thus” implies that the first word has been spoken by the visual evidence provided. The aesthetic differences between this and a bigger budget film like *The River* include the use of title cards, and radically different tone set by the upbeat music during the majority of the film. Unlike the educational film *Conservation of Natural Resources*, *The TVA at Work* focuses exclusively on the control of rivers by dams, occupying a narrower perspective on the discourse about natural resources. However, all three films feature similar visual strategies when it comes to filming water. Shots containing powerful flowing water are juxtaposed with the dams used to manage and make them productive. The close-ups of flowing water to the level of abstraction reiterates the sheer materiality of this natural force and emphasizes the need to control its movement through the landscape. To return to Kracauer, close-ups “reveal new and unsuspected formations of matter.”²⁴⁸ *The TVA at Work* aims to make flowing water a clear yet addressable threat, thus revealing the novel and unsuspected invisible of an otherwise expected

²⁴⁷ MacCann, 113

²⁴⁸ Kracauer, 48.

part of the landscape like a river or stream. The intensity of the close-up also re-iterates the threatening nature of uncontained hydropower by describing it as “runoff” and “excess rainfall.” These categorizations of water as a resource that can either be a threat or an asset depending on how it travels through a landscape naturalize the dominance of the technological solutions employed by the TVA.

The TVA at Work begins with a storm. Lightning strikes in the sky give way to shots of ever-increasing flood waters before images of news headlines that attempt to quantify the human and environmental cost and waste of the floods: “134 Dead, 200,000 are homeless in floods”; “150,000,000,000 Tons of water fall on the Valley’s 40,600 square miles every year”; “400,000,000 Tons of soil washed from Valley land every year.” The film sets up river flooding as a problem which can be solved by the TVA’s interventions but highlights other resources problems caused by flooding as well, such as soil erosion. Dams are the solution, as a title card explains, because they “store water during rainy months and release it during dry seasons.” The dams themselves are the focus of the first half of *The TVA at Work*, as the film not only advertises the building of dams, but shows where they are being built and why, and gives viewers a closer look at each of the dams. According to an intertitle in *The TVA at Work* that also includes a map, “Main river dams maintain a channel for navigation, provide flood storage, and capture energy that otherwise would be wasted.” Free-flowing water is not only a threat to life but is indeed thought of as wasted energy that could have otherwise been put to use. Dam technology is the locus of this reorientation toward flowing water in this film away from being seen as an unavoidable natural disaster and toward a raw source of energy production ready to be harnessed for human use, energy that would be squandered if not exploited.

Dam projects in progress and river locks, as well as farmland and rural electrification, are reviewed in the latter half of *The TVA at Work*. Pickwick Landing, Wilson, and Wheeler Dams are shown as both productive areas of commerce as well as technological marvels that attract tourists.²⁴⁹ The importance of navigation locks and river transportation in *The TVA at Work* overlaps with *The River*'s emphasis on waterways as the main routes of commerce in the region during the late-nineteenth and early twentieth centuries. Though the benefits of rural electrification tend to get less attention in films about waterpower, electricity production is conveyed as the most important way in which waterpower is harnessed into a useful resource. Both *The TVA at Work* and *The River* end with their focus on the production of electricity, with shots that strategically move from flowing water to dams to electrical generators, thus visually connecting water to the production of electricity by means of dam infrastructure. Finally, through flood control and using otherwise wasted material in the energy production process to create fertilizer at sites previously used during wartime like Muscle Shoals, soil—"the Nation's greatest resource"—is both protected and fortified by chemical fertilizer.

By retrofitting a weapons factory into a fertilizer plant, the completion of the TVA's Wilson Dam exemplifies an attempt to re-absorb excess. For Bataille, war is a socially acceptable form of deviance under capitalism; an act of destruction akin to those expected by actors on the fringes of society.²⁵⁰ War is ultimately seen as an arena of tolerated destruction for the mainstream.²⁵¹ As an infrastructural process undergone for the sake of fueling the war machine, Wilson Dam was meant to supply power to nitrate plants in Muscle Shoals, Alabama. The war ended before this plan could be put into motion, but as an attempt not to let their efforts

²⁴⁹ Nye, *American Technological Sublime*, 134-135.

²⁵⁰ Dorfman, "The Accursed Share: Bataille as Historical Thinker," 51.

²⁵¹ Dorfman, 51.

to build the dam go to waste, the power generated by the dam was still used for the plants, whose nitrate was used to both stockpile weapons during peacetime in addition to developing nitrate fertilizers—once an infrastructural project began, more development became inevitable.

In this way, Bataille’s theory calls attention to the inefficiency and excess of projects like the Wilson Dam completed in the name of utility. It is almost poetic that nitrate originally intended for explosives was re-routed through the system of production to become fertilizer, something that helps to grow crops to fuel life rather than destroy it. However, synthetic nitrogen fertilizer is also a known pollutant of groundwater and is thus highly dependent on careful and correct use to avoid causing more harm than good. The balance between creation and destruction is thus reversed in the context of Bataille’s theory. War is not only destructive but creative; growing crops is not only creative, but destructive.²⁵²

Boulder Dam Opened (1936) and Boulder Dam Tested (1941)

The Tennessee Valley Authority and the Farm Security Administration were behind many American films about dam projects in the 1930s. The TVA was and remains a government-owned public utility service and was thus the subject of similarly funded government film at the time. However, major dam-building projects drew the attention of private media companies as well. In addition to private educational film companies like Erpi creating films for the classroom, newsreel companies made short films about the projects to spread the news about them to the general public. In the 1920s and 1930s, newsreels were shown before

²⁵² Primarily due to the clearing of seemingly “empty” prairie land, thus upsetting ancient prairie ecosystems and their deep root systems, which made these grasslands susceptible to the type of erosion that defined the Dust Bowl. See “Trees Are Overrated” by Julia Rosen, *The Atlantic Monthly*, July 25, 2022. <https://www.theatlantic.com/science/archive/2022/07/climate-change-tree-planting-preserve-grass-lands/670583/>

films in theaters. Newsreels were a powerful media form that were used strategically to promote nationalism and fuel the fires of xenophobia and racism during wartime, but also to provide what was thought of as general entertainment and knowledge of current events.²⁵³

Though audiences did not usually go to the cinema to see newsreels specifically, they were an integral part of the cinema-going experience during the period, and an easy way for people to learn both national and international news. The current preservation and digitization of newsreels relies on the continuity and funding of production companies, and many newsreels have been lost over the course of the last century. Most often, scholarly studies of newsreels focus on a set of newsreels available either digitally or in an archive that engage with a definitive time period, event, or issue in history. Scholarship on some of the earliest newsreels like the French newsreels from the First World War call attention to both their archival incompleteness in the present day and their emotional power for audiences at the time.²⁵⁴ Other recent scholarship on newsreels argues for their importance for connecting international audiences with one another during wartime, such as the British newsreels during the interwar period and their intense focus on the United States.²⁵⁵ With the proliferation of digital video platforms in the twenty-first century, more newsreel collections are being digitized and made available to the public online, allowing for new connections to be drawn between disparate archives.²⁵⁶

²⁵³ Sumiko Higashi, "Melodrama, Realism, and Race: World War II Newsreels and Propaganda Film." *Cinema Journal* 37, no. 3 (1998): 38-61; K. R. M. Short, "Ponencia / Principal Address: American Newsreels in World War II: Entertainment, News and Pro-British Propaganda in 1941-42." *Filmhistoria Online*, no. 1 (1993): Filmhistoria Online, 1993, Issue 1-2.

²⁵⁴ Sorlin, "The French Newsreels of the First World War," 507-15.

²⁵⁵ Peter Bell, "'Uncle Sam Prepares': The Presentation of the United States in British Newsreels Before the Second World War." *Film & History: An Interdisciplinary Journal of Film and Television Studies* 30, no. 2 (2000): 50-59.

²⁵⁶ One such archival collection is Pathé News, which also contains newsreels featuring water management and dam projects from the 1930s.

The building of the Boulder Dam, later re-named the Hoover dam, was an engineering feat significant enough to draw the attention of Pathé News, a British newsreel company.²⁵⁷ Founded in the early twentieth century, Pathé News was dedicated to creating newsreels and travelogues of life in Great Britain, the British colonies and beyond. The goal of newsreels was to capture in short, interesting films important events, cultural sites and political happenings. Pathé News' newsreels are notable for their breadth of scope in terms of international subject matter, and the company quickly picked up on the popularity of travelogues for their insights into places most people would never have a chance to visit and cultures they hadn't been exposed to.²⁵⁸ Combining the news with entertainment gives Pathé's newsreels their appeal. Considering the overlap between tourism and industrial engineering in the twentieth century, it is not surprising to see that Pathé made many films about dams, including *Boulder Dam Opened* in 1936, and *Boulder Dam Tested* in 1941. Both films were likely shown in theatrical settings before a feature film. Their brevity attests to their original viewing circumstances and may also attest to their ease of accessibility today.²⁵⁹

Pathé' News covered stories about dam-building, dam disasters, and dam operation. From the 1930s alone the collection contains films about dam projects in Yorkshire and the Lake District in England; California, Colorado, and Washington in the United States; as well as South Africa, France and Italy. As a Newsreel company, however, Pathé' didn't always highlight the positive outcomes of projects, and their collection includes films about accidents as well, such as

²⁵⁷ *Around the World: The Story of British Pathé*. Films Media Group, Film Distributor, and TVF International Production Company. *Around the World: The Story of British Pathé*. Story of British Pathé. Place of Publication Not Identified]: TVF International (Firm), 2015. Digitized film accessed online.

²⁵⁸ *Around the World: The Story of British Pathé*.

²⁵⁹ British Pathé's collection includes more than 136,000 items from various news agencies. The breadth of focus in the collection reflects the interest in technological developments during the period, including dam building both in the UK and abroad.

Italian Dam Havoc (1935) and *Great Dam Bursts* (1933), both of which show the aftermath of dam accidents resulting in flooding in Piedmont, Italy and Denver, Colorado respectively.

Pathé's 1933 newsreel *Hoover Dam* focuses on the manpower and engineering used to build what would ultimately be known as the Hoover dam and echoes the decade's sentiments about flowing water as wasted energy. The voiceover in the short film explains: "Gigantic diversion tunnels to carry off the water give a slight idea of the vastness of the plan which will create a living for countless thousands by putting the swift-flowing Colorado to work." In addition to the vastness of the engineering, the film implies an economic and environmental vastness through the sheer scale of the workers in relation to the aforementioned diversion tunnels. The "countless thousands" of jobless people being put to work contain a similar untapped power as the Colorado River when discussed in the film. Both human being and river are put to work for the betterment of the nation and contain energy that would have otherwise been wasted -- energy easily turned into capital under the right infrastructural and political conditions.

By generic necessity, newsreels cut directly to the point both narratively and visually. *Boulder Dam Opened*, whose title in the archive is: "Harnessing Power Aka Boulder Dam Opened" condenses Franklin D. Roosevelt speaking about the dam in front of an audience, the turbines powering on, and water flowing from the diversion tunnels to dramatic effect all into a two-minute run time. The film even includes aerial footage, which "gives you some idea of the magnitude of the project" according to the voiceover (Fig. 4). The newsreel's drastic breadth of narrative content and shot variety in such a short span makes it particularly powerful. The dam is referred to as "The Eighth Wonder of the World" and in an aerial shot containing a passenger plane, shot from another nearby plane, the voiceover touts: "And just as the passenger plane symbolizes man's conquest of the air, so does Boulder Dam symbolize man's determination to

harness nature...America's monument to progress." The aerial filming of nearly a minute of the film testifies to this technological prowess while comparing the greatness of the dam to the greatness of achieving flight. The shots of the passenger plane are striking, and one wonders who was aboard the plane below, bearing witness to the first operation of the dam from high above.



Figure 4 Aerial shots from *Boulder Dam Opened* at difference distances

Aerial footage of the dam not only evokes a sense of awe, but also serves an infrastructural purpose: to demonstrate the human ability to overcome material reality and change the conditions of life in a certain setting (Boulder Canyon) that have a ripple effect far beyond that setting (the American West). In Kracauer's sense, this is a classic example of a revealing function focused on scale, and in this case, scale as it relates to affective power. According to Kracauer's logic, an object as big as the dam cannot be comprehended in its entirety through just one type of shot. Therefore, the transition between closer-range and extreme long shots accomplished through aerial footage reveals the dam in ways otherwise impossible to the average visitor to the site.²⁶⁰ The airplane, another modern machine like the cinematic apparatus, bends spatial and temporal experience. Thus, the optical power exuded by aerial footage of the dam joins two distinctly modern technologies in a marriage of power over space

²⁶⁰ Kracauer, 51.

and time, an infrastructural force shaping spectator perception of the dam. Each individual node of the modern apparatus in this scene—the dam, the airplane, and the cinema—are cumulative markers of power understood as human force, aided by technology, exerted against wasteful or chaotic natural forces. Furthermore, technology, including cinematic technology, alters time and space irrevocably, creating a sense of dominance over space even when unwarranted.²⁶¹ The significance of the reverberating *dispositif* through the dam, the airplane, and the cinematic apparatus is an accretion of power by way of technological marvel but also by way of the marvel's aesthetic overlap of distinct vectors of power.

Boulder Dam was, at the time, the tallest dam in the world at 726.4 feet tall and attracted international attention.²⁶² Even today the Hoover Dam is a tourist destination attracting close to a million visitors in peak years.²⁶³ The dam itself is a concrete arch-gravity dam. The design of the dam takes advantage of the high canyon walls in Black Canyon at the dam site, as the dam structure itself flexes under the pressure of the water and pushes against the solid canyon walls for stability and down into the bedrock due to its enormous weight of 6,600,000 tons.²⁶⁴ Hoover Dam was one of the first of its kind, with a complex construction plan that took five years to complete:

The dam was built from vertical columns of blocks that varied in size from about 60 square feet at the upstream face of the dam to about 25 feet square at the downstream face. An estimated 215 blocks make up the dam. Adjacent columns were locked together

²⁶¹ Paul Virilio, *Open Sky*, Translated by Julie Rose, (London, Verso, 1997).

²⁶² "Hoover Dam," Bureau of Reclamation, usbr.gov.

²⁶³ Henry Brean, "National Landmark Hoover Dam sees fewer tourists," *Las Vegas Review-Journal*, 8 June 2016. Online Access.

²⁶⁴ *The Hoover Dam*, Films Media Group, Film Distributor, and BBC. Seven Wonders of the Industrial World. Place of Publication Not Identified: BBC (Firm), 2017. Digitized film accessed online; "Hoover Dam," Bureau of Reclamation, usbr.gov. Online Access.

by a system of vertical keys on the radial joints and horizontal keys on the circumferential joints...After the concrete was cooled, a cement and water mixture called grout was forced into the spaces created between the columns by the contraction of the cooled concrete to form a monolithic (one-piece) structure.²⁶⁵



Figure 5 Boulder (Hoover) Dam under construction in February 1934.

The dam required thousands of workers to build, with an average of 3,500 and a maximum of 5,218 daily workers on the project at a time (Fig. 5).²⁶⁶ Though the work was dangerous, the opportunity was welcome for those in the region who were left jobless during the Great Depression. Indeed, “the construction of the dam was a powerful stimulus to the local economy [and] the building contract for Hoover Dam was the largest yet to have been signed by the U.S. government.”²⁶⁷ Filming and photographing the project in progress was an important part of the

²⁶⁵ Figure 5 from “Hoover Dam,” Bureau of Reclamation. Online.

²⁶⁶ “Hoover Dam,” Bureau of Reclamation. Online.

²⁶⁷ Nye, *American Technological Sublime*, 137.

infrastructural work the dam did in making it clear that the technological prowess of American engineering was undeniable.

The visual union of water and technology imagery in *Boulder Dam Opened* is potent. The upstream view of the dam itself, nestled between the canyon walls is immense in scale, and the monolithic structure comes alive when the diversion tunnels begin to spout water from either side of the canyon. The voiceover describes these streams of water as “manmade Niagaras” to underscore the immensity of what viewers are seeing onscreen. This “symphony of power” is accompanied by similarly triumphant music and mid-range shots of the diversion tunnels that give way to more abstracted shots of the streams of water meeting one another in the middle and dissipating into a massive cloud of mist (Fig. 6).



Figure 6 Boulder (Hoover) Dam diversion tunnels from different angles

Unlike the films that trace the history of floods and floodwater, the water imagery in *Boulder Dam Opens* is not only visually controlled by the film frame throughout the newsreel, but infrastructurally controlled by the dam structure itself. In the brief moment in which the streams from the diversion tunnels meet, it becomes difficult to make out any clarifying point of reference in the frame. From a still, the shot almost looks like a cloudy sky, reminiscent of those that showed where the water problems all began at the beginning of *The River* and *Tennessee*

Valley at Work. However, in *Boulder Dam Opens*, the brief abstraction quickly transitions to a view of the streams from a viewing platform, framing the stream in relation to onlookers before transitioning to the aerial scenes of the dam. Through the image—the infrastructure of cinema—forces that were seemingly abstract are made solid and powerful. The dream-like levity of cloud and mist, contained by cinematic and dam infrastructure, is put to efficient use.

Boulder Dam Tested (1941) reveals other elements of the dam aside from its sheer size and dramatic diversion streams. The much shorter film shows an upstream view of the dam, the expansive Lake Mead above, and the gates that allow water to flow from the reservoir through to the dam to create hydroelectricity. The various gates, tunnels, and spillways in the minute-long newsreel emphasize the ways in which the engineering of the dam works to manipulate water for power. The voiceover describes that the dam is “man’s triumph over the menace of flood, [and provides] controlled irrigation for two million parched desert acres.” Though flood footage does not appear in this nor other newsreels about Boulder/Hoover Dam construction, flood threat rhetoric is borrowed from discussions about regions in which this threat was more readily felt, such as the Tennessee Valley. Drought threatened the arid West, and the irrigation made possible by damming projects was the key infrastructural development after hydroelectricity created by the dam. Electricity goes unmentioned in *Boulder Dam Tested*, however. Though dams were advertised as a source of electricity, hydroelectric power has always been secondary to the use of fossil fuels for the creation of electrical power in the United States. Some regions use large amounts of hydroelectrical power, but despite their enormity, hydroelectric dams couldn’t provide nearly enough electricity to fuel the country in the 1930s, let alone today.

If dams were unable to completely solve the American energy problem, they were still appealing projects in part because of the ingenuity involved and the jobs created, but also

because of other potential uses. Depending on the region, the discourse surrounding the purpose of a dam project varied to fit local needs. Thus, in the Tennessee Valley, flood control was the primary reason for dam-building, and in the desert of the Southwest, irrigation was a more significant factor. This isn't to say that the conditions in these places and the uses of the dams matched these outcomes, but the films about them had a certain degree of regional specificity. Regardless of the various ways in which dam projects benefitted the people and lands of different watershed regions in the United States, the impetus for Depression-era films about dams was the desire to demonstrate technological control over water. Dams, the projects that could never provide all the power needed, and their cinematic representation served an essential American ideological function: the exertion of visual dominance over nature.

Water in Motion & Pedagogical Aesthetics

As a natural feature, water is inherently cinematic. On film, water is constantly in motion—only still photography can force liquid water to stand still. In his explanation of recording functions, Kracauer contrasts the stillness of photography with the capture of movement allowed by cinema as one of the key reasons why cinema promotes deeper understanding of its subject matter in the world than photography as an artform. He writes first that cinema helps viewers “acutely realize the significance of movement as an integral element of the external world as well as film.”²⁶⁸ In this way, he emphasizes the importance of cinema's recording and revealing functions not merely as aesthetic strategies, but ways of gaining insight into the world captured onscreen. In discussing revealing functions, Kracauer argues that “elemental catastrophes” are best represented through the cinematic medium.²⁶⁹ Given TVA

²⁶⁸ Kracauer, 44.

²⁶⁹ Kracauer, 57.

films' attentiveness to the force of water in clouds, rivers, and waterfalls where it isn't causing harm, but also in instances of extreme flooding and thus catastrophe, this point is well-illustrated by films concerned with harnessing water. However, cinema has a history of filmmakers focusing on water as subject matter, the breadth of which exemplifies the different ways in which it can be understood.

Water's animate qualities have made for intriguing viewing in films beginning with the short format of films from early cinema history. Short actuality films from cinema's history such as *Rough Sea at Dover* by Birt Acres and *Rocky Shore* by R.W. Paul, both from 1896, show the very early interest of filmmakers in capturing water in motion on film.²⁷⁰ Though the popularity of actuality films quickly gave way to narrative cinema and feature-length films, a variety of films from different genres included water motifs prior to the 1930s. Films such as *Atlantis* (1913 dir. August Blom) and *The Boat* (1921 dir. Buster Keaton) take advantage of the drama, comedy, and aesthetic interest of water. Documentary films also turned their attention toward water, in films such as *Niagara Falls* (1927 made by Eastman Kodak), *Rain* (1929 dir. Joris Ivens) and *H2O* (1929 dir. Ralph Steiner). *Niagara Falls* is typical of short travel films in the 1920s, which shows both the natural beauty of the site and the accessibility of the place to tourists, and to filmmakers. The painterly qualities of Ivens and Steiner's films are demonstrative of the simultaneous endless and transient qualities of water as a physical force.²⁷¹ Water is always moving and changing, it is both "evanescent" and fleeting, and as Kracauer puts it, "the motion picture camera seems to be partial to the least permanent components of our environment."²⁷² A rainstorm such as that captured in *Rain* is a keen example of water's evanescence, whereas a film

²⁷⁰ British Film Institute Online, <http://www.screenonline.org.uk>

²⁷¹ Kracauer, 52.

²⁷² Kracauer, 52.

like *Niagara Falls* which focuses on a more permanent fixture of the landscape simultaneously reveals the endlessness of falling water and emphasizes the fleeting moment of the camera's presence in that seemingly eternal landscape. The camera and the landscape both oscillate between a state of consistency and flux, and Kracauer's theory of recording and revealing functions seeks to explain the dynamics of the relationship between apparatus and subject. The camera must remain static to capture both a subject's permanence or transience. However, the camera can't record forever, and in this way, it is transient as well in its inability to maintain aesthetic contact with its subject matter. The nature of the apparatus both mimics and informs that of the subject. Just as one can learn about the motion of a waterfall through cinema, one can better understand the nature of the cinematic apparatus through a comparison to a waterfall—it is both constant and ever-changing at the same time.

In addition to their gestures of motion and elemental phenomena, the aesthetics of moving water on film can operate in such a way as to imply dangerous or wasteful motion and resulting disorder in New Deal-era films like *The River*. Water's changeability becomes threatening in the context of flooding, when a heavy rain can lead to loss of life, land, and property. However, water doesn't usually begin as a threat in most New Deal films. First the audience is introduced to a trickling stream, or a small waterfall—some films even abstract water to a vapor in the form of clouds. The beginning of *The River* meditates on imagery of the sky, emphasizing it as the ultimate uncontrollable space where water develops into a threat. While it becomes possible to control water once it falls to the ground as rain or flows in rivers, the film tacitly acknowledges that there is no way to control the weather itself, though through advances in climate science since, we know that human behavior on the ground certainly has an influence on the weather. Water is shown in both its gaseous and liquid states in *The River*, which

underlies its variability. Over the course of the film, water changes form and as it does so gains both mass and momentum, at times taking up the entire frame. Rather than contextualizing flowing water in a landscape, close-ups make water take over the film frame. Water also takes on a sublime quality during floods, as it represents an incalculable force best experienced through cinema, rather than in the threatening environment itself. The great power of this natural disaster is contrasted with the technological sublime of the era's solution—dams that both address the dangerous threat of flooding rivers and that turn the wasted energy of its flow into electricity by means of turbines.²⁷³

Though *The River* maintains an artistic approach throughout, in *Conservation of Natural Resources* and *The TVA at Work*, straightforward documentary aesthetics complement the abstraction of fast-moving rivers. Visuals meant to show the industrial processes at work operate in harmony with landscape shots of rivers and waterfalls, and the unsettling motion of rushing water is subsequently contained by the straightforward visuals of a map or even an intertitle, as many educational films that weren't silent still included them. The practical style borrowed from educational film scaffolds the information in *The TVA at Work* for example, by returning to the same graphic multiple times and expanding upon it each time. The map of the Tennessee Valley watershed becomes the visual focal point, an aesthetic strategy based on the need to educate the audience and help them retain information. The repetition and structure of the animated illustrations in *The TVA at Work* mimic the aesthetic qualities of the filmed shots of dams. Both are static and serve a regulatory function when compared to the unbridled water they constrain. Like the repetition of the map and infographic, the overall elements and structure of dams doesn't vary greatly; they all have the same features and seeing them over and over builds a

²⁷³ Nye, *American Technological Sublime*, 39.

sense of understanding of their structure (Fig. 7). Like the dams, the animations are also constructed over the course of the film.

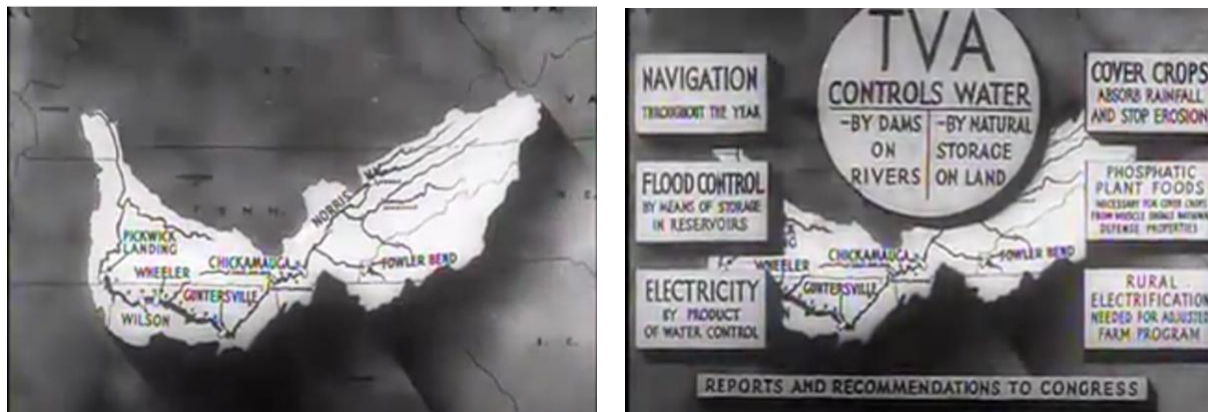


Figure 7 Maps in *TVA at Work*

The image on the left, the map of the watershed, orients viewers to where the projects outlined in the film are taking place. In the background, the outlines of various states show the viewer the location of the watershed within the United States, making the unfamiliar shape of the watershed area in the foreground understandable. Each subtopic in the film is added to the image as it is discussed, first by addressing what dams do to help control water, and then how land is strategically used in conjunction with dam-building to benefit from water control. By the end of *The TVA at Work*, this image has become an infographic as shown on the right, highlighting the key points the film has made. Through its progression over the course of the film, the illustration of the watershed area transforms from an abstract space to an informative, place-specific image. In contrast to the imagery of water, the map and infographic create a sense of visual control over the region addressed by the film; unlike the shape of a state, most viewers wouldn't recognize the shape of the watershed area, but those living near or in it may recognize it or the places it encompasses. By carefully listing how the TVA accomplishes what it does and visually connecting those actions to a map of the region, the animations establish both trust and knowledge for the audience; the TVA is doing right by the population it serves, and the points

made are brief and easy to understand. Though *The TVA at Work* and *The River* were both produced by government agencies, their aesthetic differences highlight both their varied purposes and potential audiences. It is less clear where a film like *The TVA at Work* would have been viewed or distributed, but it is likely that it was a nontheatrical film shown in schools or at various public meetings on smaller projectors.

One of the reasons *The River* has been the focus of film scholarship is due to its theatrical distribution, in addition to its cultural significance. Typically, theatrical cinema was considered more culturally important, though this has changed in recent years. But less well-known nontheatrical films such as *The TVA at Work* help to create a fuller picture of the filmic discourse surrounding water control in the Depression era. Films like these with different aesthetic choices, and thus audiences and distribution venues complement one another. In *The River* water close-ups disorient and unnerve viewers. Though natural phenomena such as a rainstorm and a resulting flood is not inherently negative, the narrative framing in *The River* gives nature the antagonistic role. Natural phenomena have “an unlimited number of psychological and mental correspondences,” thus the contextualizing narrative becomes key in shaping how the audience interprets nature onscreen.²⁷⁴ Water can be a playful element, or it can be a destructive force. The dramatic function of *The River* is achieved in part because of the aesthetic choices made by Lorentz to film water in a style both incremental and abstract, before focusing on technological feats. By filming water change, Lorentz also encourages the audience to engage with the various moods water can evoke. Rather than begin by talking about flood devastation, the narrative is built on water’s ability to change from benign to threatening. What begins as a small trickle increases to a steady flow, which further increases to a raging flood. The lesson of the film is

²⁷⁴ Kracauer, 68.

taught through this emotional narrative, and the implication that something seemingly innocuous can be dangerous when left unregulated.

Though *The River* is educational in the sense that it discusses the history of flooding in the region and the uses of the Mississippi River, *The River* overall avoids educational film aesthetics. Other films slated for educational use and nontheatrical venues tend to borrow aesthetically from theatrical films like *The River* in small doses, but develop their own aesthetic based on relaying information through straightforward visuals. For example, in *The TVA at Work*, easy-to-read infographics assure viewers that while at times threatening, floods are being managed both technologically and visually (Fig. 8). Of the thirteen-minute run time, about a minute and a half is dedicated to storms, water flow and flood imagery before shifting focus to TVA projects that address these threats. In such a short film the contrast between the visual disorder of running water and the repetitive structure of dams is stark.



Figure 8 Turbulent waters contrasted with an orderly dam in *TVA at Work*

In the Hoover Dam newsreels, the aesthetic experience of water is even more mediated by the dam technology itself. Though the Colorado River had naturally occurring flood patterns just like all rivers, the area surrounding the Black Canyon where the Hoover Dam was eventually built was much more sparsely populated in the 1920s and into the 1930s than the Tennessee

Valley. In the American Southwest, the likelihood of capturing dramatic footage of flooding was less likely, and the focus remained on the dam and the ways in which water was manipulated through its structure. Unique to the newsreels and to *Boulder Dam Tested* is the shot of Lake Mead. The extreme long shot of the man-made reservoir is perhaps the only shot of water in any film discussed in this chapter in which the water therein appears to be still. Though from up close the motion would be visible, the extreme long shot works to show both the beauty of the landscape, and a sense of the vastness of the reservoir at 247 square miles²⁷⁵. The brief shot of the lake is crowned by a bank of cumulus clouds that seem to threaten rain and is crisscrossed by what appear to be power lines (Fig. 9).



Figure 9 Lake Mead in *Boulder Dam Tested* (1940).

²⁷⁵ "Lake Mead," National Park Service, nps.gov. <https://www.nps.gov/lake/learn/nature/overview-of-lake-mead.htm>. Accessed 7/20/20

Each element in the image implies both environmental control and potential usefulness. Rather than a threat, rainclouds can unloose their storms and the water will be neatly collected and turned into energy by the reservoir and dam below. The lake itself holds water before it pours into the dam, regulating its ability to provide steady energy to the region. The intersection of the powerlines across the frame, though not contained by it, synecdochally stands in for the infrastructure in place that expands outward from the dam and provides electricity for communities in the region. The beauty of the Arizona desert and the stark contrasts between dry desert and the oasis-like reservoir are part of the appeal of the project with the creation of the Lake Mead recreational area. However, as the changing climate has impacted the water levels at Lake Mead and the fight for water rights in the American West has become even more fraught in the twenty-first century, this peaceful shot of the landscape around Hoover Dam in *Boulder Dam Tested* feels like an outdated postcard from a long-forgotten past.

The Legacy of Dams in the 21st Century: Social & Environmental Justice

Rivers, their banks, and watersheds have always been central to human cultures—after all, life requires the fresh water that rivers easily provide. In the present, it is difficult to imagine a river, big or small, without a dam built somewhere along its route. Dams have been built for thousands of years around the world, though most of the world’s dams both past and present are much smaller than the massive structures made legendary throughout the twentieth and twenty-first centuries.²⁷⁶ Indeed, dams have long been considered the superlative man-made structure by engineers, despite their social and environmental pitfalls.²⁷⁷ Alongside rivers, dams are part of infrastructural history, but their histories are fraught with the unequal outcomes that such

²⁷⁶ Christine Macy, “Dams Across America”. *Places*, placesjournal.org.

²⁷⁷ Macy, “Dams Across America”

projects produce. In addition to the environmental problems caused by large dam projects, millions of the world's poorest people have been displaced because of dam-building over the last century. Despite these problems, experts argue that the energy, jobs, and water resources created by large dams are worth the negatives, given that the demand for resources is only increasing.²⁷⁸ Thus, in the face of both a changing global climate and overall increase in population, massive water management projects remain central to infrastructure, and have therefore inevitably been the focus of numerous documentary and fiction films addressing their impacts.

Globally, geoengineering is still in full swing, with dam projects around the world being built at both record speed and reaching new heights, depths, and power outputs. Some of the biggest damming projects in the world are still under construction or have been operable only in the past ten years. Some of these projects have been highly controversial, some even resulting in documentary films critical of the projects such as the 2007 film *Up The Yangtze* (Dir. Yung Chang). Rather than focusing on the engineering marvels of the project, the film is about the close to 1.3 million people who have been negatively affected by the process of the dam being built.²⁷⁹ In response to the fast-paced films about water management with melodramatic narratives like those popular in the 1930s, this film moves at a "slow, almost elegiac" pace.²⁸⁰ Environmental filmmaker Jennifer Baichwal has made numerous documentary films that address water management, most directly in *Watermark* (2012), but also in *Anthropocene: The Human Epoch* (2018) which focuses on the extent of geoengineering in relation to the emerging concept of the Anthropocene among geologists and other academics.

²⁷⁸ Thayer Scudder, *The Future of Large Dams: Dealing with Social, Environmental, Institutional and Political Costs*, (London; Sterling, VA: Earthscan, 2005).

²⁷⁹ Alexa Weik Von Mossner, "Rising Waters: Submersion and Survival in Yung Chang's *Up the Yangtze*," *RCC Perspectives*, no. 2 (2012), 45. www.jstor.org/stable/26240360.

²⁸⁰ Von Mossner, "Rising Waters: Submersion and Survival in Yung Chang's *Up the Yangtze*," 45.

Though there were opponents of the hydroelectric geoengineering projects of the New Deal era as soon as they began, many of these opponents were members of groups who were largely ignored during the planning and execution of the projects.²⁸¹ Systemic racism and colonialism are reflected in the very infrastructure of water management in the United States. To be sure, films of the 1930s do not address these disparities. As infrastructural cinema, part of the goal of these films was to maintain the status quo, which included the ongoing displacement of Black and Indigenous people. Over the course of nearly the last hundred years, more dams have been built and there has been more displacement. There have also been efforts to remove dams and restore rivers and the habitats they provide. A significant part of these efforts is based on the continuous fight for land repatriation by native peoples.

On a smaller scale, thousands of dam projects on minor rivers around the United States have been reversed, and water protection over the needs of oil and gas companies has become a contentious political issue. Recent protests against the building and subsequent usage of the Dakota Access Pipeline (DAPL) have surged in strategic moments surrounding decision-making about the project, the main objection to which is the risk of contamination of fresh waterways like the Missouri River. Further, the issue of environmental racism has come to the fore in this controversy in a way that was kept hidden from mainstream media in the early twentieth century. The first proposed route of the DAPL, for example, originally put the pipeline closer to Bismarck, North Dakota, on the North side of the city. However, the route was moved South of

²⁸¹Dina Gilio-Whitaker, *As Long as Grass Grows: the Indigenous Fight for Environmental Justice, from Colonization to Standing Rock* (Boston, Massachusetts: Beacon Press, 2019). Gilio-Whitaker explains that in addition to settler colonialism, settler *industrialism* disrupted indigenous livelihoods. p. 75. Additionally, Republican politicians resisted public dam-building due to the federal funding required. See “The Tennessee Valley Authority: Electricity for All” and “The TVA and the Race Problem” both from the online *Social Welfare History Project*, Virginia Commonwealth University. <https://socialwelfare.library.vcu.edu/>

the city, much closer to the Standing Rock Sioux reservation.²⁸² Though the reasoning for the move alleges that the first proposed location did not pass environmental assessment by the U.S. Army Corps of Engineers, this further highlights the embedded environmental inequality in evaluating land for environmental assessment during infrastructural processes. “In most cases we don’t want these megaprojects coming in and destroying our land and water, but it happens anyway. The situation is even worse for our brothers and sisters in the global south where people are silenced, disappeared and killed to make money with no hope for justice” says Kandi Mossett-White, from the Mandan, Hidatsa and Arikara Nation in North Dakota. She is the native energy and climate coordinator at the Indigenous Environmental Network.²⁸³ Her points echo Rob Nixon’s argument in *Slow Violence and the Environmentalism of the Poor* which raises questions about how media can better address and represent slow environmental violence in a media culture that “venerate[s] the spectacular” and renders the people negatively affected by industrialization, included but not limited to dams, invisible.²⁸⁴

River reclamation is a slow process that remains contrary to long-held government and public support for geoengineering projects in the United States. As members of the general population slowly become more invested in addressing environmental issues, communities are working on small-scale environmental threats regionally, but little has been done on the national level to protect the environment and to address the explicit environmental racism built-in to water management infrastructure.²⁸⁵ Films about dams have shifted from aiding in the

²⁸² Catherine Thorbecke, “Why a Previously Proposed Route for the Dakota Access Pipeline Was Rejected,” ABC News, ABC News Network. 3, November 2016. Online.

²⁸³ Nina Lakhani, “Racism dictates who gets dumped on: how environmental injustice divides the world” *The Guardian*. Guardian UK. 21, October 2019. Online.

²⁸⁴ Rob Nixon, *Slow Violence and the Environmentalism of the Poor*, (Cambridge, Mass.: Harvard University Press, 2011), 3.

²⁸⁵ Robin Wall Kimmerer, *Braiding Sweetgrass*, 2013.

establishment of energy infrastructure by means of the social, political, and aesthetic mediation of flowing water. Now, the films about dams and water infrastructure likely to be seen by the public outside of niche contexts, such as dam site visitor centers, work against such infrastructure intervention and are more in favor of preserving people's homes while also protecting the environment. The uneven sociopolitical effects of dams controlling access to power and water for agricultural purposes are undeniable, as most of these projects benefit a relatively small group of people at the expense of many more who are displaced or disenfranchised.²⁸⁶ Though some of the reasons for dam-building in the 1930s made sense during the Great Depression, there has been enough backlash against dam-building in recent years to question the practice. The displacement of communities to make room for dam projects, particularly when these residents will likely benefit the least from these projects, has become more apparent. This practice of accumulation by dispossession becomes clear in recent films about water infrastructure, in addition to the ongoing inefficiencies of these infrastructures due to their age, deterioration, or their mismanagement.²⁸⁷

I conclude with a brief analysis of three films about the same dam from different time periods made by different people. These three films serve as excellent examples of the privileging of different voices, perspective, and ideologies and the need to make room for more diverse input regarding infrastructural development. The first is the Pathé newsreel *Coulee Dam Opened* from 1941. Similar to *Boulder Dam Opened*, the minute-long newsreel briefly describes the dam and its purpose to produce electricity, while showing footage of the massive structure. However, unlike *Boulder Dam Opened*, *Coulee Dam Opened* simultaneously acknowledges the

²⁸⁶ Anand, Gupta, & Appel, 10.

²⁸⁷ David Harvey, "The Flat World of Neoliberal Utopianism," *Space of Global Capitalism*, (Verso, 2006), 71-116. Print.

presence of American Indians and features them in the film, while also being explicitly racist toward them and attempting to allocate them to the past. Fifteen seconds into the short film the voiceover says: “The mighty barrier on the Columbia River will encompass a vast lake where redskins used to roam.” The film then has two shots of native people; one on the banks of the river facing the dam, and the other alongside the governor of Washington as he is about to flip the power switch for the first time (Fig. 10). The contradictions in this sequence are vast. By representing them onscreen, the film makes it clear that the native American population is still present in the area. By showing them facing the dam, it looks almost as if they are against the structure. But, by filming them alongside the governor flipping the switch, the film attempts to show their consent, or even approval of the project, when this was likely not the case.



Figure 10 Members of local tribes in *Coulee Dam Opened*

Despite the difference of over seventy years, the recent film made by the Bureau of Reclamation (BOR) about Coulee Dam, *Grand Coulee Dam: A Man-Made Marvel* still allocates Native American life to the past, a blatant falsehood. The film plays at the Coulee Dam visitor center— though it is doubtful that a majority of visitors sit down to watch the forty-minute film in full— and it is also available on the Bureau of Reclamation’s YouTube channel. During the film’s opening, the voiceover of this film makes a similar move to *Coulee Dam Opened*: “On a hot summer’s day in 1933, Sanpoil tribal chief Jim James held a stake, while Washington

governor Clarence Martin hammered it in.” Framing native peoples as complicit in the destruction of their lands is a trend that has not disappeared. The film unsurprisingly spends a majority of its time focusing on the innovative construction and engineering techniques involved in the building of the dam, and only briefly acknowledges the destruction of native fishing sites and relocation of tribes from their ancestral lands. The tone changes significantly during this short section of the film, lasting only about three minutes, though the native people’s losses are still described in the past tense, for example: “tribal members could no longer fish for this most valued commodity on which they depended.” By denying the opportunity for a present-day perspective from native people from the area, this contemporary film does a severe disservice to the historical and present-day difference in perspectives on river damming.

The BOR film uses a liberal amount of archival footage, framing it with commentary from historians and engineers in the present day. A newsreel featured in the film, *Uncle Sam... the Greatest Builder* from 1937 touts: “The program is sharing a fertile promised land...The program is sharing limitless power, from which may rise a new and faster industrial empire, bringing prosperity equally to all the people of the 48 states.” The idea of equal prosperity for people the country over is contradicted by the documentary itself, and though the film acknowledges the hardship faced by Native American populations in the area, it ultimately champions the spirit of industry and empire. In this way, the film perpetuates the myth of an infrastructural system that can serve all people equally. *Grand Coulee Dam: A Man-Made Marvel* also acknowledges the importance of newsreels during the 1930s and 1940s to spread the word about the dams to the public, and even includes clips from Pathé’s *Coulee Dam Opened*, though the clip used strategically cuts out the racist language from the original.

Finally, *Grand Coulee and the Forgotten Tribe* offers a different perspective on the effect of the dam on native people. The film, released on their YouTube channel and their website in 2016, was made by the Upper Columbia United Tribes (UCUT). UCUT is made up of and represents the interests of five tribes: the Coeur D’Alene Tribe, the Confederate Tribes of the Colville Reservation, the Kalispel Tribe of Indians, the Kootenai Tribe of Idaho and the Spokane Tribe of Indians.²⁸⁸ The documentary argues that dams are good for most, with the exception of the native people who have yet to be paid for their land. Unlike any films from the 1930s and 1940s and unlike most films from the present day, this film centers the voices of tribal members who are still fighting for congressional action in the form of a financial settlement. This film crucially contextualizes native people in the present, creating the necessary sense of urgency to address reparations for tribes who lost their land to the dam project who insist, “we’re not gonna go away, we’re not invisible, we’re still here; we’ll always be here.” Their website and YouTube channel contain articles and videos made by the organization about their initiatives, and their overarching goals are described by this statement on their website: “To ensure a healthy future for the traditional territorial lands of our ancestors through a proactive science-based approach to promoting Indian culture, fish, wildlife, and habitat, the UCUT provide one voice for our region.”²⁸⁹

Dam infrastructure is, and always has been, at the center of political and environmental controversy. The concept of harnessing energy from nature and putting it to use for humankind has environmental racism and colonialism built into its rhetorical, political, and visual regimes while simultaneously presenting the pinnacle of colonial technological achievement.

Infrastructural cinema has been complicit in the problem of perpetuating the importance of

²⁸⁸ UCUT Upper Columbia United Tribes, “About: Our Common Voice,” ucut.org, 2019.

²⁸⁹ UCUT Upper Columbia United Tribes, “Projects: United for the Benefit of All,” ucut.org

technological advancement at the expense of environmental concerns and equity for native people and will likely continue to be part of the problem without the concerted effort to listen to the narratives of the people who have been disenfranchised by infrastructure, rather than benefitting from it. Ultimately, dam infrastructure was designed for a variety of material purposes, but with a singular ideological purpose—to drive the proliferation of capitalistic society. In this regard, hydroelectric projects have been a major success. From an environmental standpoint, the outlook is significantly more complicated:

As for what is to be done about climate change, there's no real mystery. 'The issue is that accumulation-based societies don't like the answers we come up with because they are not quick technological fixes, they are not easy,' Simpson says. 'Real solutions require a rethinking of our global relationship to the land, water, and to each other. They require critical thinking about our economic and political systems. They require radical systemic change.'²⁹⁰

Energy infrastructure and resource management seem here to stay, for now. How can infrastructural systems mirror the radical systemic change necessary for environmental justice? And how can infrastructure be mobilized for these changes?

Chapter 2 Conclusion

The slow environmental damage wrought by dam building is representative of Bataille's critiques of economies that refuse to acknowledge their inefficiency. In the immediate present after a dam opens, there is an influx of energy to the region or community with infrastructure

²⁹⁰ Malcolm Harris, "Indigenous Knowledge Has Been Warning Us About Climate Change for Centuries; Nishnaabeg Scholar Leanne Betasamosake Simpson Explains Why "green Growth" Isn't Enough to save the Planet," *Miller-McCune.com*, 2019.

connected to it. The quality of life is likely to increase for people who have better access to the power a dam can provide, and with this increase, a demand for even more opportunities for improvement to infrastructure, power, and the chance for upward mobility. Growth is the desired outcome of reigning in an unproductive expenditure from a technological and capitalist economic perspective, however, Bataille argues that there is in fact no growth and that growth is an illusion. He writes, “I insist on the fact that there is generally no growth but only a luxurious squandering of energy in every form” (33). He explains that while an increase in the overall volume of something may seem like growth, it is just a shifting of energies. Moreover, he explains his view that, “growth is reduced to a compensation for the destructions that are brought about” (33). If what is perceived as growth within a narrow economy is a compensatory squandering of energy in the context of the general economy, this implies that the energy captured, transformed, and distributed by dam infrastructure is not what it seems; that is, there is still waste behind the illusion of efficiency. Bataille’s theory of unproductive expenditures reaches its peak in death, which he argues is the ultimate luxury. In my formulation, this can include the luxurious death of an infrastructure and the narrow economy supported by it.

According to Bataille, death is luxurious because it is the opposite of growth and efficiency. The consideration of death as part of an economy calls attention to the biopolitical dimensions of energy as an inherently useful force within an economy by associating death as a transgressive luxury. For Bataille, luxury isn’t about the material goods that one can gain access to by following economic rules, but rather the act of wasting energy, ensuring it escapes the grasp of economic usefulness, proving that there is so much excess that some must be wasted. However, given how many people depend on them and how much energy and economic value they create within the economic structures of which they are a part, can a dam have a luxurious

death? It indeed seems transgressive to embrace the end of a structure that was celebrated and that still has some degree of positive impact; however, the positive impact of many major American dams, particularly in the West, is dwindling. Dams like the Hoover Dam on the Arizona-Nevada border, celebrated in newsreels like *Boulder Dam Opened*, are at risk of becoming obsolete. The Glen Canyon Dam in Arizona is facing the same fate. The reservoirs in the arid landscapes created by these dams—Lake Mead and Lake Powell, respectively—oases of energy and prosperity, are drying up as the climate changes and the region endures what some meteorologists refer to as a megadrought. Without water running through them, the energy purpose of these dams evaporates with their reservoirs.

While these massive structures changed the physical and economic landscapes of these regions to match with the pace of modern development, the boon of such an increase can never last in Bataille's conception. In this way, the slow death of dam infrastructure can be understood in relation to gift-giving. Bataille configures gift-giving as both creative and destructive; it does both things at the same time by offering one thing while taking something else away and disguising it as an efficient shift of energy and resources. The harnessing and cordoning off of a resource like water that is then "given" as a resource or utility to a particular population in a particular area can be read as competitive gift-giving—it seems productive, but is in fact destructive because it opens a space for death in a narrow economy that would not have otherwise been there—the death of a landscape, the death of other small and unnoticed systems of life, and the death of cultures and lifeways for the people dispossessed of their land.²⁹¹ Thus, the nature of this infrastructural death, the end of the timespan during which a dam is a useful producer of energy, is perhaps less of a luxurious squandering and more of an indicator of the

²⁹¹ Greg Christopher Arculus, "The Luxury of Death in George Bataille's *The Accursed Share*," *The Explicator*, 76:3, 142-145, DOI: 10.1080/00144940.2018.1482453

ways in which the belief in the efficiency of a narrow economy is also destructive. Furthermore, it may be a harbinger of the current and imminent impact of climate change on infrastructure and its potential for success.

A dam is not inherently useful; it requires the lively kinetic force of water to create energy. Within the narrow economy that the films discuss in this chapter depict, the death of a dam is not luxurious, but rather it dwindles slowly over time to an end point. However, the excess availability of the films themselves can perhaps be seen as a foil to this quiet decline of the dam. The infrastructural cinema written about in this chapter has transformed from its life as a useful part of the economy, visually harnessing energy, to a luxurious squandering of energy itself. Neglected films may be viewed as the ultimate luxury item if luxury is defined by distance from efficiency and usefulness in the context of capitalism. Not only do these films not make money, but they are also often inefficiently organized and accessed, with numerous copies and locations on various platforms online and likely elsewhere in archives. Thus, while dam infrastructure may be too far gone to be oriented toward environmental justice, I believe it is possible to use new configurations of cinematic resources to build infrastructures of knowledge designed to question the status quo of energy infrastructures.

Chapter Three: Fossil Fuel Infrastructures-Visibility, Alchemy, and the Technological Imperative

Humanities scholarship focusing on oil has become so prominent in the past decade that Christopher Jones warned that we must work to avoid “Petromyopia” when researching and writing about the intertwined climate and energy crises.²⁹² Indeed, with the prominence of oil on the global political stage over the past several decades, from the Gulf War, to present-day concerns about arctic drilling and pipeline construction, to ongoing international conflicts, it follows that scholarship would reflect a vested interest in discussing the commodity and its extraction. Much film scholarship on fossil fuel extraction has focused on recent films and documentaries from roughly the past twenty years.²⁹³ However, fossil fuel use, promotion, and extraction were common subjects of both nontheatrical and theatrical film of the 1920s – 1940s and thus deserve attention from an ecocritical standpoint that attends to energy infrastructure, its ecological underpinnings, and its balance of science with magic.

Oil Wells of Baku: Close View (1896), one of the first films made that captures oil onscreen, shows how ripe this substance was for spectacle even in the earliest days of cinema.²⁹⁴ However, most films on the subject in the 1920s through the early 1940s were less concerned about oil as a spectacle and more interested in the development of oil infrastructure. Moreover, while the laying of pipelines or the workings of refineries may seem mundane in comparison to the giant hydroelectric dams highlighted in films about water, both types of films share a central focus on the need to control an abundance of a natural resource, and to transform something otherwise wasted or useless into something of value to modern people. Thus, as global capital

²⁹² Jones, “Petromyopia: Oil and the Energy Humanities,” 36-46.

²⁹³ Szeman, “Crude Aesthetics: The Politics of Oil Documentaries”

²⁹⁴ Murray & Heumann

continues to rely on fossil fuels in the twenty-first century, this chapter seeks to engage with the connections between fossil fuel infrastructure in the early twentieth century and today by evaluating films of the past. How did film aid in establishing fossil fuels as a dominant energy source? How do nonfiction films of the era generate knowledge about fossil fuels for audiences? How do they perpetuate magical thinking? And finally, how do films about fossil fuels, adjacent industries, and their infrastructure expand the definition of infrastructural cinema?

Oil onscreen can seem like a spectacle, or even sublime. Recent nonfiction films about oil tend to combine their focus on both natural elements like landscapes together with industrial and built environments like vast oil fields and distribution networks.²⁹⁵ This juxtaposition blurs the line between traditional notions of Immanuel Kant's sublime based on experiences of nature and landscapes, and the more recent iteration of David Nye's technological sublime, which argues that in modernity, technological feats inspire a sense of the sublime more so than natural features. Murray & Heumann propose that films about oil, beginning with *Oil Wells of Baku: Close View* (1896) solidify the capability of film technology to "heighten the impact of the spectacular, even as it documents environmental destruction" by showing the dynamic, material quality of both oil, and the extraction process required to obtain it.²⁹⁶ Their approach emphasizes the melding of natural environments and phenomena as Kantian sublime with the technological sublime.

In addition to discussions of nonfiction films, Murray & Heumann also describe two Hollywood films that relish in the spectacle of oil, *Tulsa* (1949) and *Hellfighters* (1968).

²⁹⁵ Szeman refers to *A Crude Awakening* (dir. Basil Gelpke and Ray McCormack 2006), *Crude: The Real Price of Oil* (dir. Joe Berlinger 2009), and *H2Oil* (dir. Shannon Walsh 2009). This visual strategy is also present in more recent films such as *Anthropocene: The Human Epoch* (dir. Nicholas de Pencier, Jennifer Baichwal, and Edward Burtynsky 2018), which focuses on geoengineering of the earth.

²⁹⁶ Murray & Heumann

Furthermore, they analyze the sublime effect of two documentary films about the devastation of oil fields caused in Kuwait by the Gulf War, *Fires of Kuwait* (1992) and *Lessons of Darkness* (1992). These films both focus on the violence and devastation wrought in the Kuwaiti oil fields during and after the Gulf War from 1990 to 1991, and the subsequent Kuwaiti oil fires set as a strategy by Iraq to destroy oil resources. While Murray & Heumann emphasize the sheer incomprehensibility of scale that the aesthetics of oil films impart to audiences, I argue that as an infrastructure, film technology can also order the chaos of the extraction process of oil by highlighting the technological developments of the industry in addition perpetuating a sense of the sublime. The leaps through time and genre made by Murray & Heumann expose the potential to develop a deeper analysis of historical nonfiction films about energy infrastructure, including oil and gas infrastructures, that focuses on how these films established control over oil infrastructure while emphasizing its seemingly magical qualities as well. By focusing attention on the positive outcomes of fossil fuel usage, the technological prowess required for fossil fuel extraction, and the vast infrastructural networks created to support a widespread reliance on oil, numerous nonfiction films of the 1920s and 1930s do just this.

There was no real environmental message in these films of the long 1930s, whereas today, the point of showing parts of oil infrastructural networks is the revelation of the environmental impact they have. The reasons for using a similar aesthetic strategy have changed, rather than the overall focus. In the present day, fossil fuel infrastructure has become more peripheral to the environmental concerns surrounding fossil fuel extraction and use in more recent nonfiction films, whereas in the 1920s, infrastructure was the focus of such films. In “Crude Aesthetics and the Politics of Oil Documentaries,” Imre Szeman describes the way infrastructural montage stands in for the oil industry in current documentary films:

With few exceptions, its presence is signaled only by the frequent images inserted into (what have become) a form of generic montage about the oil sands: enormous, glowing refineries, made up of systems of pipes, exchangers, and condensers of almost unimaginable complexity; slow aerial pans of the vast extraction sites, framed against the edges of boreal forest now fast vanishing in their wake; and the slow-motion movement of grasshoppers (oil pumping units) conjoined with...sped-up images of consumer modernity – driving, building, shopping.²⁹⁷

Szeman's description is worth quoting at length because it emphasizes the infrastructural components of the oil industry, the parts of which stand in for the industry as a whole. This is significant because the trend of showing these infrastructural connections is not new, yet these images convey a radically different message in the twenty-first century than they did in the 1920s and 30s. While infrastructural imagery is now representative of the negative impacts of the oil industry, historical oil films that engage this aesthetic strategy tend to do so to show the triumph of technological complexity. In addition, they emphasize the alchemical features of fossil fuels such as the chemical processes required to refine, distill, and otherwise transmute crude oil into a wide range of consumable substances. Current documentary films sample historical films to contrast the optimism about oil in the past with the catastrophe of environmental destruction and societal dependence it has caused in the present. The historical films, their contexts, and the reasons for their optimism are not explored in-depth when they are sampled for contemporary documentaries, however, making this a beneficial area for deeper study.

²⁹⁷ Szeman, "Crude Aesthetics: The Politics of Oil Documentaries"

Szeman's approach seeks to "map the social ontology of oil—the how, why, and wherefore of oil in our social, cultural, and political life."²⁹⁸ Following his lead, a historicization of nonfiction oil films from the 1920s through the 1930s, when fossil fuel infrastructure was becoming a mainstay of modern life, serves similar ends. For example, was energy infrastructure always depicted as sprawling, yet secret, as it tends to be in nonfiction film now? Or is its occultation a function of its fall from favor? Indeed, the focus on the "quotidian infrastructures" that depend on fossil fuels, and that humans depend on, reveal another facet of the social ontology of oil over the course of their use in the twentieth century: their connection to the technological imperative, or the drive to develop more technology for the sake of development, rather than to serve a specific purpose or need.²⁹⁹ The technological imperative treats development as an end in itself, and indeed, the reliance on oil in so many facets of modern life reflects this imperative. Political theorist Langdon Winner explains that the notion of the technological imperative "suggests that the very construction of technological systems contains an inherent tendency to establish a complex set of linkages that continues beyond one's original anticipation and that carries a powerful force of social obligation."³⁰⁰ By framing extractive processes as a technological imperative, the social ontology—the how, why, and wherefore—of oil and its ubiquity, comes into clearer focus. Indeed, based on Winner's theory, infrastructure begets ever more complex infrastructure, despite the potential for negative outcomes.

By the 1920s, an array of different agencies of the United States government were making films to communicate their roles in promoting technological development that would benefit both the wider economy and individual quality of life. The U.S. Bureau of Mines

²⁹⁸ Szeman, "Crude Aesthetics: The Politics of Oil Documentaries"

²⁹⁹ *Ibid.*

³⁰⁰ Winner, "Engines of Change," 104.

(USBM) specialized in film production and distribution in support of the industries it partnered with. The USBM operated as part of the Department of the Interior, and was established in 1910 to address concerns surrounding the extraction of mineral resources, including coal and oil.³⁰¹ Extractive industries were dangerous, and films made by the USBM emphasize both the “efficiency and standardization” of extractive technologies to assure the increasing safety of fuel manufacturing processes and to reassure viewers of corporate altruism.³⁰² In 1919 the USBM created a plan that admitted a need for strategic public relations to better communicate the realities of the oil industry to “legitimate operators, engineers, and oil companies.”³⁰³ The USBM received \$25,000 in funding from the American Petroleum Institute (API) to produce *The Story of Petroleum* in 1928.³⁰⁴ The film addressed the closely overlapping policy objectives of the agency and the publicity needs of the oil industry, which emphasized a business-friendly economy for oil companies and a safe, high-tech work environment for workers in the industry. Standard Oil of Indiana funded the USBM-produced *The Story of Gasoline* around the same time.³⁰⁵ According to Lee Grieveson, most of the films produced and distributed by the USBM through their twenty-three distributing centers were funded by private industries and aimed for exhibition at non-theatrical venues like “technical societies and schools, commercial, industrial, educational, social, and religious organizations.”³⁰⁶ Grieveson further articulates that the

³⁰¹ Grieveson, “Empire of Liberty,” 58.

³⁰² Gregory Waller, “The American Petroleum Institute: Sponsored Motion Pictures in the Service of Public Relations” *Petrocinema: Sponsored Film and the Oil Industry*, eds. Marina Dahlquist and Patrick Vonderau. (New York, Bloomsbury Press, 2021), 138; Grieveson, “Empire of Liberty,” 58.

³⁰³ Waller, “The American Petroleum Institute: Sponsored Motion Pictures in the Service of Public Relations,” 139.

³⁰⁴ In his recent chapter “The American Petroleum Institute: Sponsored Motion Pictures in the Service of Public Relations” in *Petrocinema: Sponsored Film and the Oil Industry*, Gregory Waller cites the USBM *The Story of Petroleum* as being made in 1928, in addition to a film of the same title being released in 1919. It is likely that *The Story of Gasoline* was made close to this year as well, though the specific date is unlisted. The film refers to an increased demand for oil over the course of 1927.

³⁰⁵ Waller, 140.

³⁰⁶ Grieveson, “Empire of Liberty,” 58.

partnership between government agencies and private industry “[formed] a visual machine of sorts.”³⁰⁷ Thus, USBM films were part of an apparatus designed to align citizens with government and corporate interests.

Finally, oil and oil infrastructure onscreen during the long 1930s appeals to metaphors of magic and alchemy—magic for its connection to visual trickery and instantaneity, and alchemy for its suggestion of transformation, revelation, and prestige. These metaphors reflect more about the belief systems surrounding oil than a mere turn of phrase might suggest. Cinema’s historical relationship with visual illusions comes to bear in the way that oil films relay the work of extraction. While the films I analyze don’t blatantly engage in the same trick photography techniques as a filmmaker like Méliès, the rhetorical move behind what they show the viewer and what they hide has a similar effect, that is, to inspire awe while also clearly going through the steps in a technical process. Both the technical function of cinematic projection—still frames in rapid succession creating the illusion of motion—and film editing control how images appear onscreen, and as Colin Williamson elaborates, “At its most basic technical and phenomenological levels, the cinema, like a magic trick, is as much about visibility as it is about obscurity.”³⁰⁸ Williamson argues that while technologies like cinema and photography familiarize viewers with the images they capture, by way of their technical processes, they also “have the uncanny potential to de-familiarize both what and how we see.”³⁰⁹ He situates this feature of cinema in relation to scientific discourse specifically, calling attention to the juxtaposition of truth-seeking and illusion-weaving that scientific and technical films engage in.

³⁰⁷ Ibid.

³⁰⁸ Colin Williamson, *Hidden in Plain Sight: An Archaeology of Magic and the Cinema*, (New Brunswick: Rutgers University Press, 2015), 46.

³⁰⁹ Williamson, *Hidden in Plain Sight: An Archaeology of Magic and the Cinema*, 49

Thus, their dual purpose to both reveal and obscure is a version of a magical—and cinematic—sleight of hand that corresponds with Kracauer’s revealing functions.

The narrative equilibrium between scientific processes and magical ones is key to conveying oil and gas infrastructures onscreen in this era. The films discussed strike a balance between revealing the highly technical mechanical processes involved in extraction and emphasizing the miraculous existence of oil and its seemingly infinite potential. While scientific discourse is in part defined by its adherence to observable, repeatable, and disprovable phenomena per the scientific method, Jason Josephson-Storm insists that rather than an era of disenchantment from magic, the modern era is rife with magical thinking.³¹⁰ While oil infrastructures are inherently scientific, they represent magical thinking by obfuscating or minimizing the labor intensive or wasteful elements of extraction. This line of magical thinking is an illusion, however—technology can only do so much to make extraction efficient, and it still prevents audiences from seeing what is truly happening, that is, the release of carbon emissions. Thus, while promotional films for the oil and gas industry frame the discovery of oil as a happy accident and human ingenuity to use the substance as a stroke of alchemical genius, hindsight shows that the “modern magic” of oil is very dark indeed.³¹¹

Leading Up to Oil

Burning organic material, including wood and peat, as a source of energy has been central to human civilizations for thousands of years.³¹² Before the dependence on fossil fuels and inanimate energy sources, the most relied upon energy sources were biomass fuels and

³¹⁰Jason A. Josephson-Storm, *The Myth of Disenchantment: Magic, Modernity, and the Birth of the Human Sciences* (Chicago: The University of Chicago Press, 2017).

³¹¹“More Power To You,” Directed by Jam Handy, 1939. 9 minutes, 3 seconds. YouTube.

³¹²Vaclav Smil, *Energy and Civilization: a History*, (Cambridge, Massachusetts: The MIT Press, 2017), 225.

animate power: “Nearly all traditional societies could produce heat and light only by burning biomass fuels. Woody phytomass, the charcoal derived from it, crop residues, and dried dung provided all the energy needed for household heating, cooking, and lighting and for small-scale artisanal manufactures.”³¹³ In addition, animate power is energy created through the direct application of force from a human being or animal, such as a domesticated farm animal pulling a plow, or a human worker using a mechanical device.³¹⁴

Coal, still widely used today, significantly predates oil, with its earliest use in Han dynasty China 206 BCE – 220 CE.³¹⁵ However, coal was not used widely until the modern era, beginning in the 16th century.³¹⁶ Finally, fossil fuels and inanimate energy sources—energy generated through the movement of machines—rose to prominence in the late nineteenth century, though humans have been aware of hydrocarbons—oil— for thousands of years because of “seepages, bitumen pools, and ‘burning pillars’” visible in landscapes.³¹⁷ Fossil fuels proved to be the most efficient way to power the machines of the industrial revolution, and caused a swift change in the daily lives of most occupants of Western cities during that time.³¹⁸ Energy historian Vaclav Smil refers to the earlier historian Lewis Mumford’s description of Western modernity built on fossil fuels to emphasize these changes: “Power, speed, motion, standardization, mass production, quantification, regimentation, precision, uniformity, astronomical regularity, control, above all, control—these became the passwords of modern society in the new Western style.”³¹⁹ The fossil fuel infrastructures built beginning in the late

³¹³ Smil, *Energy and Civilization: a History*, 163.

³¹⁴ *Ibid*, 132.

³¹⁵ Smil, 228.

³¹⁶ *Ibid*, 230.

³¹⁷ *Ibid*, 245.

³¹⁸ *Ibid*, 267.

³¹⁹ *Ibid*.

nineteenth and into the early twentieth centuries reflect the desire to fulfil these standards, as does the expanse of these infrastructures today.

Smil argues that the transition to fossil fuels includes two distinct improvements from prior reliance on biomass fuels and animate power. First was the invention of machines and connected infrastructures to convert, refine, and chemically alter raw fuels such as oil.³²⁰ The second improvement is electricity, whether generated by secondary means (burning fuels to create the heat needed to rotate generators) or primary means (such as a generator rotated by the flowing water through a dam). Electricity, according to Smil, “is the most convenient, versatile, and at the point of its use, the cleanest form of modern energy.”³²¹ Fossil fuels are inextricably linked to electricity production to this day despite the wide range of other possible ways to generate electricity. The connection between fossil fuel extraction and electricity is obscured because, Smil notes, it is the cleanest form of energy at its point of use. The point of energy use was, in pre-industrial societies, the same as the point of energy production; for example, a wood-burning fire used to heat a home is *in* the home, as is the waste left behind. However, advanced infrastructure has made the removal of the point of energy production from the point of use not only possible but necessary to use these fuel sources to generate electricity. If coal or oil had to be burned at the point of use to create electricity, people would have doubtless demanded a turn to cleaner and more renewable means of electricity generation long ago.

The spatial relationship between the point of production and point of use is well illustrated across nonfiction films about oil from the 1920s and ‘30s. They enforce their own strange geography by more often visually basing spatial information on the locations of oil wells, pipelines, and refineries rather than in relation to landmarks or place names that viewers might

³²⁰ Smil, 226.

³²¹ *Ibid.*, 228.

be familiar with. For example, a web of lines representing pipeline networks appears superimposed on a map of the United States in *The Story of Petroleum* before the map of the state lines behind it and fades slightly after, causing an afterimage that lingers (Fig.11). This afterimage reveals an infrastructural



Figure 11 Network of pipelines superimposed on map in *Story of Petroleum*

system that, while technically out in the open, overwhelmingly exists on the outskirts of cities, on native lands, or in places occupied by poorer residents in rural areas. In this image, the various points of production are visually connected by lines to form a network that is revealed onscreen and yet widely concealed from most energy users in day-to-day life.

Over the course of the twentieth century, the divide between land shaped by oil and gas infrastructure, the points of production, and the towns, cities and suburbs using the most electricity, or the points of use, has become starker. It is as if some places appear completely unaffected by the byproducts of the industry, while other less advantaged communities are ravaged by it. The relegation of dangerous industrial processes to poorer and minority communities is intentional and reveals an ideological delineation between two different kinds of locales, defined originally by geographer Yi-Fu Tuan and further described by human geographer Tim Cresswell: space and place. The locales in which extraction is an established practice are mere “spaces” in the sense that they are considered by oil developers as “an open arena of action and movement,” defined by its abstraction from typical human experience, in

contrast to places, which are “about [people] stopping and resting and becoming involved.”³²²

The very processes of extraction shown, the vapors, machinery, and pollution make it clear that the space of extraction is not a place that human beings want to occupy. Films may have a hand in leading audiences to believe otherwise, however, by showing the development of boom towns on the periphery of oil fields, with wives and children outside small homes. Yet, in the 1920s, these spaces are not depicted as at-risk of environmental destruction, or as exploiting a location indefensible by its inhabitants, but rather as the natural next move in technological progress, arguing that the infrastructures built there extract the fuel needed to sustain the ever-quickening pace of modern life.

Smil explains that energy imperatives have driven technological development but cautions against assuming that the demand for energy must drive the development of technology in a specific way, resulting in a technological imperative. Smil argues that even when considering energy as a key factor in the shaping of human history, it should not necessarily be read as the most important factor, nor as part of the natural order:

The only rewarding and revealing way to assess energy’s importance in human history is to neither succumb to the simplistic, deterministic explanations buttressed by recitals of countless energy imperatives nor to belittle it by reducing it to a marginal role...Energy conversion is always necessary to get anything accomplished, but none of the extrasomatic conversions initiated and controlled by people is predestined, and only a few of them arise simply from chaos or accident. This dichotomy is as important for interpreting the past as it is for understanding future possibilities: they too are not

³²² Yi-fu Tuan, *Space and Place: the Perspective of Experience*. Minneapolis: University of Minnesota Press, 1977; Cresswell, Tim. *Place: an Introduction*. Second edition. Chichester, West Sussex; Malden, MA: Wiley Blackwell, 2015. 37.

predestined, but their scope is definitely restricted, and energy flows impose the most fundamental limits.³²³

Here, Smil insists that historians need to fight against the notion that the ways in which humans have generated energy outside of their own physical abilities are predetermined but warns against dismissing its importance entirely when considering future energy possibilities. In the present, future energy possibilities are still based on the existing contexts, strategies, and infrastructures that support energy production now, most of which are dependent on fossil fuels. Smil's line of reasoning offers an opposing stance to the idea of a technological imperative, and thus to the belief that the development of technology is out of control and inevitable.³²⁴ Rather, Smil argues that inevitability is not the prudent way to think about the future of energy.

Technological imperatives have been theorized as a negative force because of their potential to both foster support for development for the sake of development without considering its ramifications, and for appearing as neutral conduits for what is in fact sustaining the speed and efficiency of destruction. The technological imperative and the energy imperative readily merge in the context of energy infrastructure. Energy imperatives and technological imperatives shape one another, and an energy imperative can in turn spur the demand for technologies, thus perpetuating a technological imperative, and so on. To re-emphasize, energy imperatives need not be met with a specific type of development, or development at all, according to Smil. Rather than expanding, it is possible for populations and energy demands to stabilize.³²⁵ This has not historically been the case, however, and growing populations have tended to result in growing demands for energy, technology, and infrastructural development.

³²³ Smil, 418.

³²⁴ Winner, 105.

³²⁵ Smil, 419.

Fossil fuel infrastructure's technological imperative, the need to continually expand and develop, can be seen in a selection of films from the long 1930s about oil and gas infrastructure. In *The Story of Petroleum* and *The Story of Gasoline*, ever more complex technologies of extraction are shown as a benefit in and of themselves and are conveyed as the only solution to growing demands for fuel and energy. In these films, the need for more oil engineering, more oil infrastructure, is seen as a positive thing. However, outside the film frame in day-to-day life, these engineering feats spurred by the demand for oil tend to be hidden from energy consumers. The hiddenness of the generating source for electricity is perhaps why oil and gas, which are always difficult and dirty to extract, have been demonized much more than electricity in the present moment of climate crisis as a major contributor of carbon emissions in the atmosphere. This is in contrast to the early twentieth century when the main concern was keeping pollution away from the point of use, and less was known about the widespread effect of burning fossil fuels even far away from the point of use. Thus, while films from the long 1930s do not directly address most ills of fossil fuel extraction known today, the films reveal how the ideological infrastructure in support of fossil fuels was built alongside the material infrastructure in which the energy grid is still deeply enmeshed.

Film itself as a technology was used for the unbridled support of extractive industries, its representation of which has a powerful effect on the viewer that supports the ultimate goals of both cinematic and extractive infrastructures— to seamlessly show certain elements of an industrial process and to intentionally hide others. Infrastructural cinema focused on oil and gas encourages an aesthetic regime of simultaneous visibility and erasure that is central to understanding how these films sought to order the spaces of extraction as well as oil infrastructure. The films discussed in this chapter gloss over the negative impacts the oil industry

had on the surrounding land and omit entirely the climactic impacts of the industry that were acknowledged by a variety of state agencies and private companies even at the time the films were being made.³²⁶ When viewing these films, however, it is possible to watch for cracks in the technological facade that shapes the aesthetics of oil.

Oil and Gas Extraction & Use in the United States in the 1920s – 1930s

The 1920s through the early 1940s, until the start of World War II, is a period distinct from the first oil booms in the nineteenth century, which began in Pennsylvania and spread slowly through Appalachia and toward the west. Thus, it makes sense to connect the upswing in the pace and expenditure of modern life to the expansion of the oil industry in the early twentieth century rather than the century prior and view its characteristics independently. The technologies being developed became increasingly powerful as the fuel sources they ran on became more robust and easier to come by with less human energy required. From both an energy and cultural standpoint, the sudden ubiquitous presence of oil as a source for fuel caused an increase in the potential for quality and abundance of life. Oil not only signaled a shift in energy use and technological development, but also a shift in mindset in American culture, as the ability to rely on oil “would ultimately lift Americans out of a parsimonious world of limited organic resources—a world with fairly non-negotiable upper limits on material and population growth—and hurl them into a seemingly infinite new material world.”³²⁷

While the oil boom drove rapid technological and scientific development into the 1920s and its economic high point, the Great Depression brought even this industry of abundance into a

³²⁶ Spencer R. Weart, *The Discovery of Global Warming*. Cambridge, Massachusetts: Harvard University Press, 2008.

³²⁷ Johnson, *Carbon Nation: Fossil Fuels in the Making of American Culture*.

lull.³²⁸ Despite the drop in demand for oil and gas during the Depression, the era still marks a key transition in fuel consumption in the United States, as the dominance of solid fuels like coal and wood were on equal footing with oil and gas.³²⁹ This was a time period of transition for both fuel use and energy delivery on small and large scales. Fuels that were relied upon for household use, such as wood and coal, were slower to give way to electrification. Electrification began in urban centers on the East Coast and spread westward through smaller cities before finally reaching rural regions and farms. Still, it was not an even process. Depending on where oil was being extracted, some smaller towns were faster to get access to electricity than others because electricity could be powered by gas-burning generators in a central location in town. One such example, Muncie, Ohio, is explored by David Nye. Nye argues that by the Great Depression, electrification of even far-flung rural areas was becoming the norm, as Franklin D. Roosevelt insisted that “Electricity is no longer a luxury, it is a definite necessity.”³³⁰ Bringing electricity to the home is infrastructurally tied to the extraction of fossil fuels, though hydroelectricity was another supplier of energy to homes depending on the region.

Generally, industry transitioned to fossil fuel use more swiftly than private residences. Even in the mid-1910s, factories were often powered by electrical generators running on gas, a more efficient fuel to operate the massive machines used in manufacturing.³³¹ This reliance on newer, more powerful and efficient fuel also resulted in factories that were less reliant on human

³²⁸ "Trials and Triumph: The 1930s and 1940s Were Tumultuous Years in the American Oil Industry, as the Sountry Coped First With the Great Depression and then World War II." *Oil and Gas Investor*, July 2004, S40+. *Gale General OneFile* (accessed November 7, 2020).

<https://link.gale.com/apps/doc/A119740221/ITOF?u=milwaukee&sid=ITOF&xid=d03b794f>.

³²⁹ Joseph M. Dukert, and Edison Electric Institute. *A Short Energy History of the United States: (and Some Thoughts About the Future)*. Washington, D.C.: Edison Electric Institute, 1980. 51.

³³⁰ David E. Nye, "Rural Lines," *Electrifying America: Social Meanings of a New Technology, 1880-1940*. Cambridge, Mass.: MIT Press, 1990. 287- 338. 304.

³³¹ Nye, "The Factory: From the Pastoral Mill to the Industrial Sublime," *American Technological Sublime*, 135.

labor to stoke coal and wood fires. In the oil field, human labor is necessary to operate the machinery used for extraction despite overall shifts toward automatic machines in industry as a whole. As the fuel moves further from the extraction site, however, the nature of human labor in relation to oil changes as well. Workers monitor equipment and conduct research and quality control checks, and the labor is less physically rigorous but more technically rigorous. In and alongside the development of industrial infrastructure at the end of the nineteenth century, scientific fields like chemistry became more relevant, and other fields like geography enjoyed more scientific clout.³³² By the 1920s and 1930s, these disciplines intellectually supported the fossil fuel industry, lending not only a sense of legitimacy of meeting new energy demands through fossil fuel extraction, but to the technological imperative. This drove the industry to continue developing ever-better systems that could extract more oil at higher rates and take otherwise difficult-to-use raw materials like bitumen, or other chemical by-products, and integrate them into usage.

In *The Story of Petroleum* and *The Story of Gasoline*, an ontology of fossil fuel infrastructures is developed through an infrastructural aesthetic that juxtaposes difficult human labor with seemingly magical technological processes. The labor of extraction is represented by the manual work it took to lay pipelines and operate oil wells, in addition to the work done in laboratories where chemists worked on synthesizing ever more efficient versions of petroleum-based fuels, and other stops along the ways between the points of extraction and consumption. In contrast, *Master Hands* (1935), *More Power To You* (1939), and *Riding the Film* (1937), all directed by prolific promotional filmmaker Henry Jamison “Jam” Handy during the difficult years of the Depression, were more variable and commercial, focusing on not only the extraction

³³² Paul Lucier, *Scientists and Swindlers. Scientists and Swindlers*. Baltimore: Johns Hopkins University Press, 2008.

and refining of oil but also adjacent industries such as car manufacture. The human labor depicted in these films reflects the changing professions surrounding technology in the early twentieth century as well as the shifting relationship of the worker with their labor.

As a technology that has the power to order images, space, and time, and thus impose a specific understanding of both technical and natural processes, film has the power to enforce the idea that humans are dominant over the environment given their ability to engineer fossil fuels. Workers, who for a majority of United States history were farmers contending with the natural ebbs and flows of the seasons, became the monitors of an industrial system operating on a level seemingly apart from the natural world. Yet the economy of nature as theorized in the late nineteenth and early twentieth century proposes otherwise. Indeed, the western ideal of civilization borne out of the Victorian era, according to Donald Worster, “always depended vitally on the vigorous conquest of nature by science and technology,” which was not seen as a fight against nature per se, but as part of the natural order itself during the “ascendancy of man.”³³³ Ultimately, the visual regimes of these films about fossil fuel extraction in the 1920s and 1930s emphasize the infrastructure that extracts, transforms, and distributes while naturalizing the ways in which these infrastructures alter land and perpetuate more technological development

1920s: The Story of Petroleum and The Story of Gasoline

In the 1920s, the U.S. Bureau of Mines produced two silent films focused on fossil fuel extraction: *The Story of Petroleum* and *The Story of Gasoline*. The Bureau of Mines (USBM)

³³³ Donald Worster, “The Ascent of Man”, *Nature's Economy: a History of Ecological Ideas*. Second edition. Cambridge [England]; New York: Cambridge University Press, 1994. 170-187.

was active from 1910 – 1996 and was housed within the Department of the Interior.³³⁴ Like many other bureaus within the U.S. government at the time, the USBM used another turn-of-the-century technology —film— to chronicle the technological progress being made in the natural resource sector. Both of these films made by the USBM, with run times of 25 minutes and 43 minutes respectively, perpetuate the technological imperative of fossil fuels. They do so by structuring the audience’s understanding of the extraction process as both desirable for consumers and ideal for the advancement of scientific knowledge, and as a more appealing and advanced way of fueling transportation and manufacturing. In each film, the origins of the petroleum industry are explained in terms of the need to keep pace with the demands of a growing economy and a growing population through varying engineering techniques. In both cases, however, it is clear through the images, more so than the explanatory intertitles, that oil and gas infrastructures have a significant impact on the environment at both the drilling site and beyond. Film works to simultaneously showcase new infrastructure while tacitly revealing the changes the infrastructure brings to the landscape.

The primacy of fossil fuel infrastructure over the natural landscape is central to both films. In addition, their narrative structures offer a normative framework, increasing their authority. This framework is built first on the idea that fossil fuel extraction is the necessary next step required to meet growing energy demands during the period of significant economic growth in 1920s America; second, that the development of fossil fuel infrastructure is inherently good not only because of the fuel gained, but because development for development’s sake was seen as positive, and because of the fringe benefits of other petroleum-based products such as opportunities for scientific advancement. Finally, the films seek to imply that fossil fuel

³³⁴ “U.S. Department of the Interior Information”, doi.gov, U.S. Department of the Interior, <https://www.doi.gov/library/us-department-interior-information>

infrastructure works in harmony with nature, rather than against it. Taken together, these elements shape the social ontology of oil during the 1920s.

The films echo one another in both style and tone as they seek to convey complex technical processes to viewers. However, the later film goes beyond the bounds of the first in explaining more of the chemical processes involved in making sure that the petroleum extracted from the ground can be used in a variety of forms. To achieve their didactic goal of establishing an authoritative framework, both films engage in specific aesthetic strategies that expand Siegfried Kracauer's concept of the "revealing functions" of film.³³⁵ Kracauer argues that revealing functions such as showing small, large, or transient objects impacts viewer perception, implying that the aesthetics of cinematic experience give meaning to real-world things, and in this case infrastructures, that people might not otherwise attach ideologies or emotions to. These aesthetic strategies include playing on the visual dichotomies of what is seen and what is unseen surrounding fossil fuel extraction, thus implying the alchemical possibilities of both film and fossil fuels. The films also develop a strategy of visual synecdoche, which I describe as the repetition of smaller parts of an infrastructural system standing in for a whole. In the case of fossil fuel infrastructure this is out of necessity; the entire system cannot be filmed at once. Other aesthetic strategies used by the films to support their claims including close-ups, long shots, panning, and animation. Together, these strategies create a new aesthetic pattern dictated by the scale of the subject matter. Thus, infrastructure itself encourages, or even forces certain aesthetic choices to capture the ontology of infrastructure on film.

Transmutation & Revelation: The Alchemy of Film meets the Alchemy of Oil

³³⁵ Kracauer, 46.

The Story of Petroleum and *The Story of Gasoline* both privilege the individual pieces of technology that make up the whole of oil and gas infrastructure. The revealing functions of film, such as the contrasts between close-ups and wide shots of large objects, and visual elements that “habit and prejudice prevent us from noticing” show viewers more than might typically meet the eye or more than the educational intertitles might imply in the context of these films.³³⁶ Oil and gas infrastructures are created to transmute crude oil into the vast array of useful fuels and materials it seems destined to become, and these films engage in multiple revealing functions to perpetuate a specific ideological approach to oil that treats it as a highly transmutable substance.

For example, in addition to live-action footage, both films utilize infographics to break down the way that a barrel of oil can become a variety of new products such as gasoline, fuel & gas oil, asphalt, road oil, wax, coke, lubricating oil, and kerosene (Fig. 12).



Figure 12 Fuel breakdowns; *Story of Petroleum* & *Story of Gasoline*

The development of infrastructures to turn crude oil into many different things is indeed alchemical in nature—it reflects the desire to turn something of no value before extraction into something of intense worth once extracted and processed. In addition, I connect the speculative belief that these processes will lead to an ultimate good to the metaphor of alchemy, in which

³³⁶ Kracauer, 46-54.

medieval philosophers believed that alchemy could not only transform plain metals into gold, but that such transformations could result in immortality.³³⁷ The drive to extract fossil fuels mimics a similar belief in the potential of infinite life embedded in capitalist economics; a belief that ultimately ignores the very material constraints surrounding extractive processes which are in turn challenged by the need for exponential growth.³³⁸ The apparent abundance of oil hidden just beneath the ground perpetuated a narrative that hinged on the possibility of becoming rich with little up-front investment by getting involved in the oil industry. Although this narrative was less influential after the initial oil booms in the Eastern United States gave way to a widespread industry, the link between a mythos of wealth and fossil fuels as an ever-abundant resource have had a strong influence on the way the industry has developed.³³⁹

Thus, in *The Story of Petroleum* and *The Story of Gasoline*, extractive processes are at once laid bare in a way that is technically clear while maintaining a magical quality reflective of the strong belief in the benefits of extractive logics, further fostered by the financial growth of the industry in the early twentieth century. The alchemical properties of fossil fuels, then, are inseparable from the alchemy of capitalism's exponential growth, as both oil and wealth *seem* to appear out of nowhere:

“As we enter into a period of modern chemistry, ‘alchemy’ persists, rather stubbornly, outside of narrative, as a marker for something like ‘magical transformation.’ In the

³³⁷ "alchemy, n. and adj.". OED Online. September 2020. Oxford University Press. <https://www-oed-com.ezproxy.lib.uwm.edu/view/Entry/4691?rskey=wtRQQ0&result=1&isAdvanced=false> (accessed November 06, 2020). While the *Story* films do not consistently refer to magic or alchemy as an overarching metaphor, I draw attention to it to illustrate how the belief in fossil fuels as magical impacts both how they were discussed in the films but also their ideological stickiness, i.e., why they seem so attractive.

³³⁸ Richard Heinberg, "Optimum Power" *Power: Limits and Prospects for Human Survival*. Gabriola Island, BC, Canada: New Society Publishers, 2021. (257-301) p. 260; Heinberg "Power in the Holocene" *Power*, (97-157) p. 145

³³⁹ Brian Black, "The Sacrificial Landscape of Petrolia". *Petrolia: the landscape of America's first oil boom*. Baltimore: Johns Hopkins University Press, 2003. 60- 81. 65.

context of modern, corporate science, it continues to serve this function. But there is a risk that the invocation of ‘alchemy’ will burst out beyond the boundary of something like a marvelous trade secret, to undermine this serious work.”³⁴⁰

There is a narrow yet important distinction being made discursively between the seemingly “magical processes” of fuel and wealth creation, and the scientific and economic advances being made based on careful observation and analysis.

The dynamic between the unseen, the magical, and the seen, the scientific and technological, plays out onscreen in both *The Story of Petroleum* and *The Story of Gasoline*, despite their demarcations as educational documentary films. While the films are not intentionally utilizing editing or narrative strategies that perpetuate magical thinking, the materiality and possibilities of oil itself, its infrastructure, and its representation imbue the substance with a preternatural quality that mingles with the utilitarian purposes of the *Story* films. Crucially, the films balance the aesthetics of plain technological processes with seemingly magical transformations of raw resources through their focus on the role of oil and gas infrastructures. In the logic of these films, it is clear that without quickly advancing scientific and engineering expertise, oil would not be the panacea to the demands of modernity that it claimed to be. The discovery of oil drove advances in these areas, and vice versa, and films from the era readily show this tandem forward motion. The two films reveal that extraction is inevitably a process of loss and recovery mediated through technological means, and that the complexity of these processes is part of their purpose. Indeed, based on their goal to convince viewers that fossil fuel extraction is necessary, positive, and harmless, the films maintain that development is

³⁴⁰ Karen Pinkus, *Fuel: a Speculative Dictionary*. Minneapolis: University of Minnesota Press, 2016.

good for development's sake, thus imbricating these oil films in the oil industry's technological imperatives.

Humans, Machines, and Visual Synecdoche

The Story of Petroleum and *The Story of Gasoline* engage in a standard array of style elements typical of both educational film and documentary from the era, enticing viewers by offering historical information about oil and appealing to viewer's intelligence and desire for knowledge. As one of the first few intertitles of *The Story of Gasoline* says: "Of the millions using gasoline probably fewer than ten per cent have a speaking acquaintance with its real nature and practical power possibilities." Film, according to this line of thinking, is a medium capable of acquainting viewers with the ontology of gasoline because of its roots in magic. These USBM oil films from the 1920s convey a radically different social ontology of oil than recent oil films, however. Oil in the 1920s was still viewed as fodder for excitement—something unexpected and abundantly available. While the aesthetics of oil documentaries in the twenty-first century help viewers understand the problem of oil, the aesthetics of oil documentaries in the early twentieth century help viewers understand the possibilities of oil.³⁴¹ To a viewer now, there are obvious problems occurring during extraction that are evident in these films, but this wasn't their intent when they were created, and the aesthetic choices made in the films reflect an overall unproblematic view of the resource. The biggest problem in the films, it seems, is figuring out how to turn oil into more useful things. Rather than the problem of environmental damage and social strife, viewers are faced with the possibilities of an infinite energy supply and social mobility thanks to oil.³⁴² Twentieth century life, and twentieth-century progress, would not have

³⁴¹ Szeman "Crude Aesthetics: The Politics of Oil Documentaries," 423.

³⁴² Ibid.

been possible without easy access to fossil fuels.³⁴³ Thus, the emphasis on infrastructure and the containment and ease of use of the resource in both *Story* films is reflected faithfully by their fusion of educational and documentary styles which sought to order information in a convincing and clear way.

Frequent intertitles frame historical and contextual information in the films, such as the opening intertitle of *The Story of Petroleum* attributing the founding of the American petroleum industry to Colonel Edwin L. Drake in 1859. They also offer explanations of technical terminology and unfamiliar images, such as providing a definition for what is being shown in a subsequent scene. For example, before a panning shot of an oil field, an intertitle reads: “The gas escaping from the producing oil well is rich in gasoline. This is called ‘casinghead’ gas. The vapor in the picture is escaping gas.” (Fig. 13)

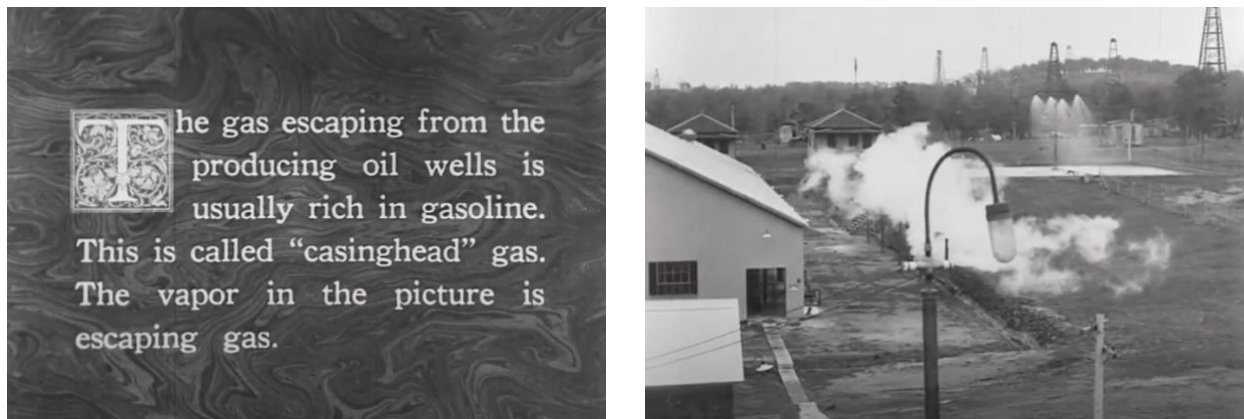


Figure 13 Intertitle & shot of escaping gas from *Story of Petroleum*

Both films balance describing infrastructure with intertitles and showing from footage what the infrastructure of the oil field looks like and explaining how it works. The example of escaping gas from *The Story of Petroleum* demonstrates how the film sets up the dynamic between the resources being extracted and the technologies used to capture them and make them efficient.

³⁴³ LeMenager, 5.

Casinghead gas, also known as natural gas, is a coveted resource in and of itself. While it “escapes” to some extent due to the design and pressure of the wells, casinghead gas is also captured and used. This process is shown in-depth in *The Story of Gasoline*, which explains in an intertitle that “additional gasoline known as Casing-head or Natural Gasoline, is recovered in the oil fields by collecting and compressing the gas from oil wells. This condenses the gasoline contained in the gas.” Indeed, the capture of natural gas from active oil wells is the technological predecessor to extractive technologies more novel today, such as hydraulic fracturing, or fracking—the now highly controversial technology that extracts natural gas from shale formations deep underground.³⁴⁴ The logic surrounding natural gas has reversed since the 1920s—current technologies actively seek to extract this resource independent of other fossil fuels, whereas natural gas was once a by-product of the more dominant process of oil well drilling. Now, the high value of the fuel makes it financially worthwhile for oil companies to pursue this approach, despite a record of devastating environmental and health consequences.³⁴⁵

The ongoing development of ever-more technology and processing of fossil fuels is reflected by the expansive infrastructure the industry was developing in the 1920s. The rapid laying of pipeline in a scene from *The Story of Petroleum* exemplifies the accelerated pace with which new technologies were developed to ensure efficiency of oil processing and distribution; the lines must always be kept moving more oil from the fields (Fig. 14). The intertitle explains: “The discovery of the new oil fields makes rapid line laying a necessity, as temporary field tanks will not save the oil in a prolific producing field. Here is an eight-inch pipe line being laid at the

³⁴⁴ Smil, 277.

³⁴⁵ Eliza Griswold, *Amity and Prosperity: One Family and the Fracturing of America*. First edition. New York: Farrar, Straus and Giroux, 2018.



Figure 14 Workers laying pipe in *S.o.P.* (1923)

rate of one mile a day.” Watching the group of roughly twenty men working to assemble the pipeline in the subsequent scene feels even more urgent as the older frame rate affects the speed of their motion—they look as if they are moving at super-human speeds. The film encourages this interpretation, as the next intertitle explains, “The operation is almost continuous. The foreman raps on the pipe, giving the men ‘time,’ so they work in unison like a nicely balanced machine.” The mechanized movements of the human body in this scene reflect an element of their infrastructural aesthetic.³⁴⁶ Human beings, film, and pipelines are each seen as technologies that contribute to the perpetual and increasing forward motion of modernity.

The two USBM *Story* films about oil and gas utilize the human form within the frame to convey the vast scale of the technologies that make up this infrastructure. While this way of framing humans differs from their positioning as mechanisms within the machine of infrastructure, it readily shrinks humans down and away from being the stars of the show. Rather, it is the infrastructure itself that is emphasized. It is both mundane and marvelous, mammoth and minuscule, depending on the way in which it is framed. The human form serves as a reference point to orient a viewer to understanding the size of various component parts of this network of extraction, storage, refining, and distribution. For example, in *Petroleum* the height of a storage tank is discernable based on the men both on the ground and at the top of the ladder.

³⁴⁶ Anson Rabinbach, “The Political Economy of Labor Power,” *The Human Motor: Energy, Fatigue, and the Origins of Modernity* / Anson Rabinbach. New York: BasicBooks, 1990. (69-83) p. 74.

The width of the tank, however, exceeds the frame in a testament to its size and holding capacity, and a prior establishing shot of the area shows dozens of them without human forms as points of reference. The figures offered in the film are hard to comprehend in quantity, as the intertitle before this shot reads: “Most of these tanks have a capacity of 55,000 barrels, or 2,310,000 gallons.” How does one imagine so many gallons? It isn’t easily done, and thus, the oil tank becomes a visual referent of both abundance and incomprehensibility. Earlier in *Petroleum*, another establishing shot of an oil derrick has a man beneath it on the ground, giving the viewer a sense of its size against the otherwise barren landscape behind it. These two examples of some larger elements of oil infrastructure in turn hint at the enormity of the infrastructural system as a whole—each tank, each derrick is a mere speck in the vast network of oil extraction (Fig 15).

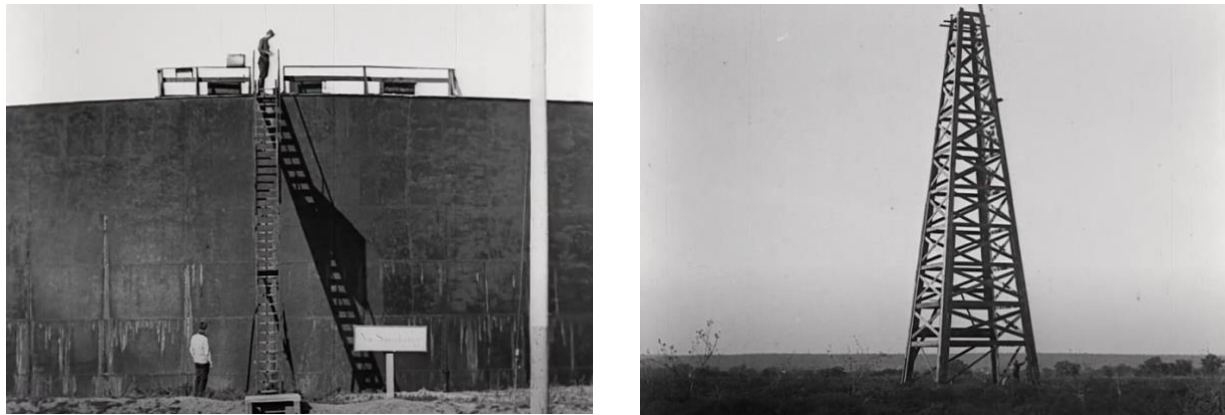


Figure 15 Workers create sense of scale in *Story of Petroleum*

To create a composite understanding of oil infrastructure, close-ups are used for scale in relation to the human body as well. This pattern of editing between long shots and close shots connects larger and smaller pieces together even though the small pieces are difficult to see in the big picture and vice versa. Kracauer describes the practice of shifting between long and close shots as a strategy to try to understand “hypothesized qualities of complex entities and the

observed qualities of their elements.”³⁴⁷ In other words, the way a film is made can encourage inquiry about complex entities, such as oil and gas infrastructure, and ultimately allows viewers to make observations about them, despite their complexity, because of the filmic image. He also compares this editing strategy to scientific inquiry, an association that bears a connection to infrastructural oil and gas films for their particular role in bolstering scientific practices surrounding these industries.³⁴⁸ Filmmaking, then, can simultaneously be seen as a scientific technology that helps viewers devise an understanding of industrial processes, but also a magical medium that raises questions about these processes.

In addition to establishing the sprawling enormity of oil and gas infrastructure by positioning human bodies in relation to large structures that are in turn only small parts of the total infrastructure, the 1920s *Story* films also frame how the much smaller parts of the infrastructure, parts similar in scale to the human beings involved in maintaining and operating them, fit into the larger whole. The smaller parts of oil infrastructure, impossible to film in its entirety, create a visual synecdoche. I base this concept on the figure of speech in which a part stands in for the whole. A visual synecdoche, then, is a simple enough aesthetic strategy, but is particularly relevant in the context of infrastructural cinema because it adds another dimension to Kracauer’s revealing functions. Infrastructure by its very nature requires a reliance upon visual synecdoche, not only focusing on things unseen as Kracauer describes, but things that are so large that they can only be comprehended when broken into smaller component parts. Thus, to have a deeper understanding of a network, a series of images of the different parts of an infrastructural system is required. In a visual synecdoche, rather than the image expanding outward to capture a system in full, images are shown in an order that allows them to be layered

³⁴⁷ Kracauer, 52.

³⁴⁸ *Ibid.*

upon one another in the mind, creating a sense of intimacy and understanding of a complex system through an accretion rather than an expansion of the frame outwards to reveal the whole.

As a revealing function of film, visual synecdoche can be achieved through the use of close-ups. In relation to Kracauer's explanation of the big in his revealing functions, an understanding of scale is affected by the constant switch between the big and the small from shot to shot, a feature unique to film. The close-ups are relative to the overall long and extreme long shots. In other words, close-ups in this film are more similar in composition to medium shots but serve the same purpose of contrasting bigger and smaller pieces of infrastructure through editing, and shots of both bigger scale objects and smaller scale parts in the *Story* films create visual synecdoche. In *Petroleum*, a cropped shot of two men standing at the base of a drilling operation shows the massive scale of the component parts of machinery needed to extract oil for a well. The man on the left gazes upward, perhaps to the top of the derrick out of the frame; the gear-chain behind him is nearly as wide as his neck. The gears and rotors themselves that control the bit being driven through rock strata are up to the man's torso in height, giant versions of the familiar mechanical elements that operate other machines in daily life. Another man leans nonchalantly against part of the structure surrounding the gears; the connecting pieces of piping and rope fade into the middle distance of the shot (Fig. 16). Later in the film, a worker is filling large oil cans in a warehouse. The oil cans are a significant marker of how a layperson might understand how oil is contained— this is how they might come into contact with it on the consumer end of the process (Fig 16). From drilling and extraction to filling an oil can with motor oil, significant time, distance, and labor has occurred by humans and machines, both of which make up parts of the infrastructure of oil and gas extraction in *Petroleum*.



Figure 16 Medium shots of workers in *Story of Petroleum*

In *Gasoline*, the film allows access to another setting in which the human body establishes a sense of scale: the laboratory. The lab is established as a separate yet connected place to the infrastructure of oil and gas technologies; it is where the “rigid specifications” described by the film are tested and accounted for by experts. In this setting, an extreme close-up is used to show what the quality control chemist is looking at in the scene. Extreme close-ups are much less common than medium shots in both films, and only occur in the lab setting. This approach to the filming of industrial processes differs from the nonfiction yet more lyrical city symphony films contemporaneous with educational documentary such as these yet maintains a similar focus on the wonders of modernization and the relationships between human beings and their built environments.³⁴⁹ In one scene, the chemist, who has his back toward the camera, is dressed in professional attire while vigorously at work. His expression is not visible, and his positioning in the frame indicates that what he is doing and looking at is more important than his facial expressions (Fig. 17).

³⁴⁹ City symphonies tended to focus on both the marvels of modern life, such as skyscrapers and crowds, and the industrial components of cities such as factories and workers, rather than smaller-scale technical or scientific processes. *Manhatta* (1921) is an early 1920s example.

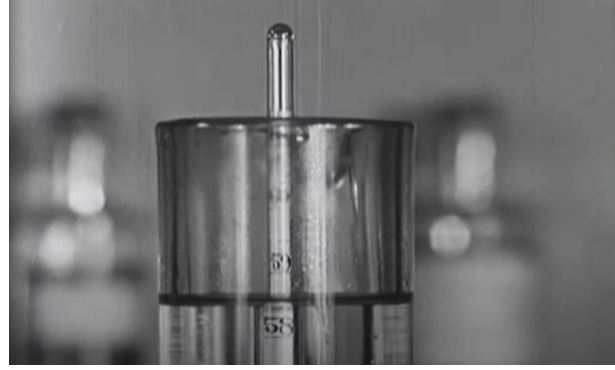


Figure 17 A chemist and the close-up of what he sees in *Story of Gasoline*

The subsequent close-up in *Gasoline* is used not as in narrative films to establish a sense of intimacy and affinity with another human being, but rather to verify the precision of a scientific process.³⁵⁰ The chemist peers at the test tube of distilled gasoline, within which a thermometer takes the temperature of the liquid. Intertitles at the beginning and end of this short scene also verify the work of the chemist, reiterating his role as part of the bigger infrastructure at work.

In both *Story* films, the technological elements of infrastructure are the main emphasis. The machines of infrastructure themselves are featured prominently in both films, and in shots that focus on machines, human beings are barely present, if present at all. The machines represent the absent presence of the human labor that went into their construction, however, and human figures that do appear among the machines of the oil industry in both films have a ghost-like presence. Similar to the effect of frame rate discrepancies on the scenes of workers laying pipeline, the humans moving among the heavy machinery in both films seem to have superhuman speed. In *Petroleum*, one such scene features the interior of a casinghead plant. Three brief shots of machinery inside the plant, lasting about seven seconds each, feature identical rows of machinery. Straight lines and right angles crisscross the frame, the composition of each emphasizing the precision of the machines at work through their orderly composition. In

³⁵⁰ Lorraine Daston and Peter Galison, "Mechanical Objectivity," *Objectivity* (New York: Zone Books, 2007), 126.

the midst of such visual order, it is almost uncanny to see a human figure flit in and out of the last of these shots in less than a second (Fig. 18). Another shadowy figure, truly ghost-like, appears moments after the first, and is easy to miss, as the figures move in different directions out of the frame. Is it perhaps the same man, who turned left when hidden by a piece of machinery? Or did another man enter the shot unseen? The film quality is such that it is impossible to tell, even with the playback speed slowed down four times.

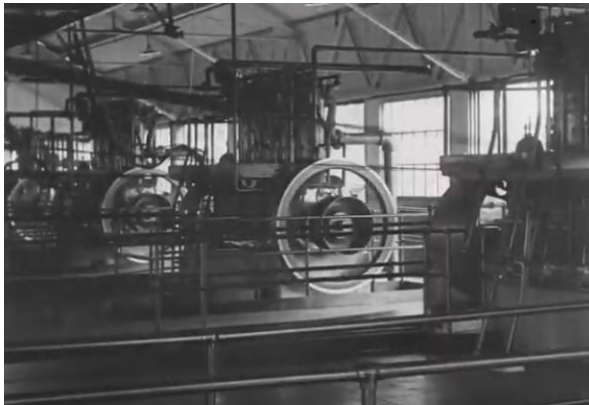


Figure 18 Inside the casinghead plant in *Story of Petroleum*.

The ghostly presence of the human figures in these films are momentary reminders of an earlier industrial past in which industry relied more on the human expenditure of energy than the machinic. These bodies haunt the *Story* films wherein human beings are more often situated among scientific instruments in laboratories—the safer spaces for those in the industry who have ascended the ranks to become alchemists of this new endeavor. In the present, the ghostliness of human figures in oil and gas films are also harbingers of a dark future. Is it possible for human beings to coexist with fossil fuel infrastructures in the long term? Fossil fuel industries insist on their ongoing necessity, yet climate scientists urge political and business leaders to move away from reliance on these fuels. It is possible that fossil fuel infrastructure will remain a feature of the Anthropocene even if human beings don't survive this epoch ourselves.

The structural decisions afforded to film, with scenes joining larger narratives and laying out stories and histories, made for an ideal medium to connect each piece of the infrastructural puzzle of oil together, though they took a different approach than films about other energy technologies in the 1920s and 1930s. Rather than emphasizing the technological and natural sublime of dam technologies described in Chapter Two, oil and gas films tend to focus on the details and component parts, using visual synecdoche and therefore perpetuating the alchemy of infrastructure through the impossibility of grasping its entirety at once, and the paradox of both visualizing oil infrastructures while acknowledging that some elements of it, like gas, can be invisible. Aesthetically, oil is not inherently interesting to look at in black and white, and its infrastructure is also different in scale and form from something like a hydroelectric dam. According to Nye, dams reflected “a clean and silent industrialism” alongside the “established icons of the natural sublime,” the waterfalls and rivers whose motion generate power.³⁵¹ In contrast, films of the era focusing on oil and gas infrastructure overwhelmingly spend their time breaking the infrastructural whole down into smaller pieces of the process, with a few notable exceptions. Each section in the films is designed to reflect the synecdochic logic of oil infrastructure and emphasize its technical complexity. Unlike the grandiose flyovers of dams meant to highlight both the natural and the technological sublime at once, oil films operate on an overall smaller yet spread out scale, emphasizing shots of austere and orderly machinery connected in a million ways to more unseen infrastructure, while human figures flicker quickly in and out of the frame.

Infrastructure as Landscape: Panning Shots and Technological Mastery

³⁵¹ Nye, *American Technological Sublime*, 135.

According to Kracauer, “The motion picture camera has a way of disintegrating familiar objects and bringing to the fore—often just in moving about— previously invisible interrelationships between parts of them.”³⁵² The major difference between this claim and the occurrences in the *Story* films is that the objects in the films are somewhat unfamiliar to the viewer to begin with. These films visually build oil and gas infrastructure through their framing and explanation of new technologies, and through drawing interrelationships between their constituent parts. The goal of such films is not necessarily for everyday people to understand the intricacies of oil and gas infrastructure permanently, but rather to expose audiences to the complicated process in order to convince them it is complicated, and thus establish it as something important yet challenging to understand for a layperson. This complexity strategy is a rhetorical device that reflects the growing power of oil and gas industries in the 1920s, and their simultaneous initiative to show their technological prowess with their need to maintain power and authority over their enterprise without being questioned. The *Story* films, by visualizing relationships among different parts of this infrastructure, reveal interconnections while still leaving their complexity intact. Indeed, the purpose of a breakdown of a process can be to show its simplicity, but in this case, the goal is both to show the complexity of the process and to help viewers form enough of a genuine understanding of the process that they internalize its value.

Both *The Story of Petroleum* and *The Story of Gasoline* use a few slow panning shots with relatively long takes compared to the rest of the editing in the films. These shots are a critical element of the films, despite being used sparingly, because unlike the generic industrial montage of more recent documentary critical of fossil fuel infrastructure, they convey a sense of the power of cinematic imagery as well as reinforcing the positivity and the sublime of industrial

³⁵² Kracauer, 46-54.

development. First, the panning shots work to show viewers perspectives otherwise impossible to access— part of the power inherent in cinematic technologies is to create this type of window that can transport viewers to new, unknown spaces, as this “illusion of direct experience can engage with an exciting yet self-contained sense of immediacy.”³⁵³ This immediacy, combined with an overall lack of place specificity in the panning shots, results in an overarching sense of excitement about industrial possibilities, particularly possibilities that are not directly affecting a majority of viewers in the spaces of their everyday lives. This is not to say that all viewers were unaffected by the location of this infrastructure, however. Indeed, it is still the case today that though much oil and gas infrastructure is located in isolated or neglected locations intentionally, a majority of consumers are sheltered from the direct ill-effects of living or working in close proximity.

Petroleum has a panning shot of a refinery lasting 45 seconds. Based on the intertitles, this refinery is in East Chicago. *Gasoline* has a similar panning shot of a refinery in an unnamed location lasting 50 seconds. These shots, in the midst of shorter takes that move between bigger and smaller pieces of the infrastructure, serve as visual predecessors to the types of aerial shots described by Szeman in more recent documentaries critical of the oil industry. The differences in these older panning shots, in addition to when they were made, are the technologies available for filming, and the emphasis in the more recent films on the way in which oil and gas infrastructure has overtaken the landscape, whereas in the older films, the focus is on the intricacy of the infrastructure itself rather than the landscape around it. Infrastructural oil and gas films differ substantially from those about dams and hydroelectricity in this way. It is impossible to ignore the natural feature, the river, when it comes to hydroelectricity. The river is visible, and a

³⁵³ Geiger, 42.

longstanding feature of the landscape. However, because oil was almost always hidden before extraction, the infrastructure itself is the most visible element of this fuel. Thus, the refinery panning shots highlight the industrial landscape in a similar way to dam films, but with a different focus.

The panning shots are also examples of how infrastructural cinema overlaps with the technological sublime in ways that a majority of the footage in these films evade. These dynamic shots are fascinating to look at as they slowly move from left to right, capturing at least a 180-degree panorama of both the East Chicago refinery in *Petroleum* and the unnamed refinery in *Gasoline*. In the latter film, the illustrated map that shows the transportation of oil from its source to its point of consumption also lacks place-specificity, favoring the spectacle of the infrastructure itself over an emphasis on the place in which it is located. The map lacks any indication of where the refinery being discussed is located in a state, or even regionally, in addition to not illustrating how far apart the different parts of the network displayed are from one another. In turn, the refinery panning shot itself is all-encompassing (Fig 19). From a single standpoint, the camera rotates to reveal storage tanks, interconnected pipelines, chimneys, and train tracks as far as the eye can see.

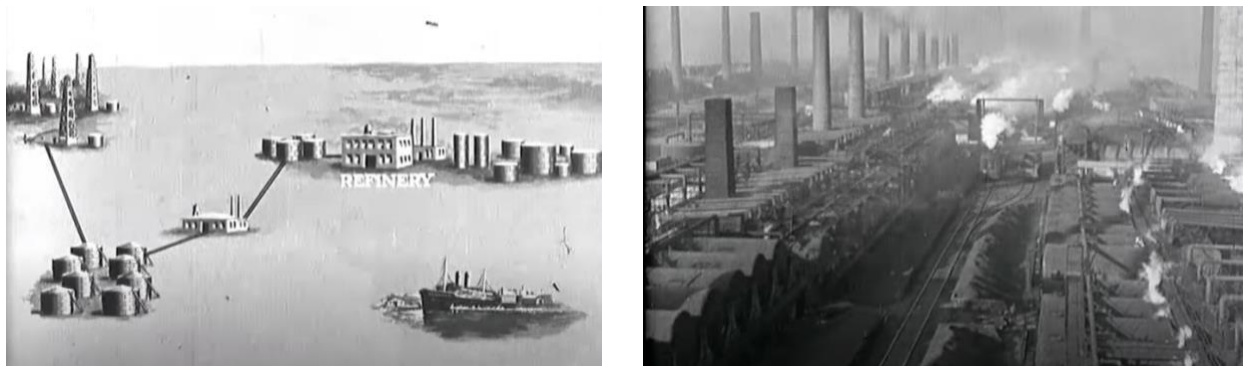


Figure 19 Ambiguous map & a vast, unnamed refinery from *Story of Gasoline*.

Though still relevant to them, the concept of the technological sublime is complicated by the genre of educational documentary film. If the sublime evokes a sense of indeterminacy in a viewer, a sense of awe at the impossibility of understanding something fully, then it is not surprising that the two USBM *Story* films do not contain abundant examples of this type of image. The purpose of the films is to provide viewers with a practical enough understanding of how these technologies work, not to completely obfuscate them. In the *Story* films, the oil industry proudly shows viewers a complex technical process by way of infrastructural cinema, offering moments in which a viewer may experience a sense of awe at the technological achievement of this infrastructure but also walk away with knowledge of the technological processes therein. Thus, the infrastructural aesthetics in the *Story* films are a hybrid of both the desire to showcase a complicated process in detail, and the desire to impress viewers with a sense of the sublime.

The panning shots also evoke the virtual mobilities of documentary film.³⁵⁴ The shots parallel travel films of the early twentieth century and the tourist gaze associated with it. That gaze is similar to the viewer's gaze falling upon this scene of technological networks; a similar "imaginative 'taking possession' of sites" that internalizes the importance of this infrastructure while simultaneously experiencing the sublime qualities of its imagery.³⁵⁵ Though unlike travel films in most other ways, these shots in the *Story* films reflect elements of the cinema of travel and mobility, which "began to perfect modes of illusory mastery over motion picture technology as well as over the world itself."³⁵⁶ Mobility and travel are required elements of an infrastructural network like that of the oil industry, and the use of film technologies to tell the story of these

³⁵⁴ Geiger, 42.

³⁵⁵ Geiger, 41.

³⁵⁶ *Ibid.*, 44.

infrastructures likewise reflects the increasing mastery of cinema as a way of establishing understandings of reality. The concept of mastery of both film technologies and of the world itself is central to the aesthetics of infrastructural cinema such as the two *Story* films.

If cinema can “render visible what is commonly drowned in inner agitation,” this implies a technological mastery of the cinematic image, the infrastructure therein, and the viewer’s own emotions.³⁵⁷ In this way, the two key panning shots in the *Story* films attempt to orient viewers toward something awe-inspiring amidst the elements of technical practicality. Infrastructural cinema works to both inspire through appeals to the technological sublime and inform through adhering to documentary and educational film protocol; it “aims at transforming the agitated witness into a conscious observer.”³⁵⁸ This observer, like the film and oil technologies themselves, is a part of infrastructural cinema. It is the conscious observer who is kept at the correct distance, and oriented with the right combination of aesthetic functions, who internalizes the infrastructural necessity and supremacy of both the image and the material networks shown onscreen.

The final minutes of both *Story* films follow the extraction and refining process of fossil fuels to their logical conclusion—their consumption by people. In a series of shots at the end of *Petroleum*, trains with tank cars labeled with “Sinclair Oils” move toward the camera on their tracks; tanker trucks pull out of a filling station outside a refinery to take the fuel in bulk to “warehouses, garages, and machine shops;” and finally, the fuel arrives at the service stations where personal motor vehicles can fill up on gas. The final scenes of the machines that use these fuels serves as a shift in focus, a signal at what the future of these extractive industries will bring as the century throttles forward. In *Gasoline*, there is a more explicit focus on the refining

³⁵⁷ Kracauer, 58.

³⁵⁸ *Ibid.*

process, rather than on fuel usage by automobiles. However, this process is only useful in relation to the consumption of the fuel. The technological imperative operates in tandem with the need for increased speed, efficiency, and power.³⁵⁹ The distillation processes and chemical treatments featured in *Gasoline* point to this need for fuel efficiency for consumers. The technical complexity shown in the film is the case in point for the necessity of efficiency. The film implies that the challenging process of refining fuels that requires advanced engineering is only worth it if a profit can be made on the end product. Thus, efficiency is central to the technological imperative, particularly when it comes to fossil fuel commodities, and the need for both efficiency and power became even more prominent after the start of the Great Depression.

Overall, these two USBM *Story* films from the 1920s reflect the excitement of the fossil fuel industry's technological innovations, and films of the 1930s focusing on oil and its related industries have a similar obsession with technological processes with an even more consumer-focused message. This shift reflects the continuation of the frameworks pertaining to oil and gas films from the 1920s while also building upon them: in short, the films from the 1920s insist upon the necessity of fossil fuel extraction, the inherent good of this industry for a variety of reasons, and the harmony of the industry with natural environments. The films analyzed from the 1930s are responding to a radically different economic context, however, and shift their emphasis toward the centrality of human beings in the industry, and they do so while still engaging in visual and, beginning with sound film, spoken rhetoric of magic and alchemy. Ultimately, the 1930s films reveal a shift toward appeals to the commercial interests of oil companies and other related industries such as the automobile industry, moving on from a more focused study of extractive infrastructure in and of itself.

³⁵⁹ Richard Heinberg, "Power in the Anthropocene" *Power: Limits and Prospects for Human Survival*, (Gabriola Island, BC, Canada: New Society Publishers, 2021), 171.

The 1930s: Commercialism Meets Economic Decline: Oil & Gas During the Great Depression

By the 1930s, the U.S. Bureau of Mines had moved on from their focus on making films about the oil and gas industry and films about the industry were primarily being made by other stakeholders. Overall, these films vary more in their subgenres and include a more explicitly pedagogical style in addition to frequent promotional messaging. Crucially, the oil industry remained a privately-owned sector of the U.S. economy, and in the Depression era, which may be why fewer government-sponsored films were created that focused exclusively on oil. The films made by government groups in the 1930s focused on their own programs, as discussed in depth in Chapter 2 in relation to the TVA in particular and revisited in Chapter 4 when looking at the process of rural electrification. The 1930s saw a drop in demand for oil due to the Great Depression, but a robust infrastructure of extractive technology remained ready for use. The promotional films from the 1930s I discuss show a strong contrast to the more myopic view of the infrastructure supporting the oil and gas industry in the USBM films in the 1920s. Rather, the educational and promotional films of Jam Handy focused on in this section were made to promote an array of industries and ideologies through their focus on metaphors. These metaphors are used to make the subject matter more familiar to the viewer and can be read as an attempt to convince viewers of both the human role in and the human need for petroleum-based products. Three films produced by the Jam Handy Organization are strong examples: *Master Hands* (1936), *More Power to You* (1939), and *Riding the Film* (1937).

The Jam Handy Organization has recently been researched by Rick Prelinger, founder of the Prelinger Archives, and a major scholar in the field of nonfiction film. In his research, Prelinger describes the life and colossal filmic output of Henry Jamison “Jam” Handy, focusing

on his significance in the educational and commercial nonfiction film industry.³⁶⁰ According to Prelinger, Handy “influenced the development of audiovisual education and corporate speech more than anyone else working in moving images,” and argues that Handy’s influence is likely much further reaching than we currently know, based on an overall lack of engagement with the large corpus of Handy-produced films.³⁶¹ As a creator of nonfiction film, Handy straddled the divide between educational and promotional film. Unlike film companies that had connections to educational institutions and relationships with educators, Handy paved his own way as a visual educator and formed relationships that were more central to corporations than to classrooms.³⁶² Handy was invested in making information as understandable to the layperson as possible, and was one of the early proponents of the visual education movement that began in the early 1900s.³⁶³ Though Prelinger urges scholars to avoid analyzing Handy’s films in isolation, he admits that delving into the breadth of Handy’s films is a daunting task.³⁶⁴ While the value of evaluating Handy’s films and their influence across a broader range of films cannot be denied, a few specific films made by Handy from the 1930s benefit from an analysis of the social ontologies of oil in films of the era and their role as infrastructural cinema.

Prelinger insists that the films in Handy’s *Direct Mass Selling* series are marked by an “extreme concentration on visualizing the unseeable.”³⁶⁵ This approach in films for Chevrolet, for example, a brand intimately linked to a reliance on oil, leads to an acceptance of fossil fuel

³⁶⁰ Rick Prelinger, “Eccentricity, Education, and the Evolution of Corporate Speech: Jam Handy and his Organization” Eds. Hediger, Vinzenz, and Vonderau, Patrick. *Films That Work: Industrial Film and the Productivity of Media*. 1st ed. (Amsterdam: Amsterdam University Press, 2009,) 211-220; Rick Prelinger, “Smoothing the Contours of Didacticism: Jam Handy and his Organization” Eds. Orgeron, Devin, Orgeron, Marsha, and Streible, Dan. *Learning with the Lights Off*, (Oxford University Press, New York u.a: Oxford Univ. Pr, 2012), 338-355.

³⁶¹ Prelinger, “Smoothing the Contours of Didacticism: Jam Handy and his Organization,” 339.

³⁶² Prelinger, “Smoothing the Contours of Didacticism: Jam Handy and his Organization,” 340.

³⁶³ *Ibid*, 344-45.

³⁶⁴ *Ibid*. 351; Prelinger, “Eccentricity, Education, and the Evolution of Corporate Speech: Jam Handy and his Organization,” 216.

³⁶⁵ *Ibid*, 215.

ubiquity in American life. The social ontology of oil in Handy's films is an ontology of mediation—it permeates relationships among people and things, connecting them to each other in complex ways. Fossil fuels are constantly used to support human life and commerce but go largely unseen; instead, we see the networks and goods reliant upon them. Indeed, parallel to the extraction process is the production process of consumer products that rely on oil. In relation to the products designed to use petroleum-based fuels for their operation, fossil fuels and their infrastructures ultimately remain unseen. Oil plays a supporting role in consumer life in these three Handy films. The unseen infrastructure of oil drives advanced forms of manufacture, making high-speed and efficient production of goods like automobiles possible in the first place. This production process is the subject of one of Handy's most well-known films, *Master Hands*, which has been added to the National Film Registry by the Library of Congress.³⁶⁶ Though *Master Hands* has not been widely analyzed, Max Fraser and Andrew Tohline both make arguments about the importance of the film in relation to labor and its representation in the 1920s. Alternatively, Brian Oakes approaches Handy's films from a promotional angle.³⁶⁷ The connections between *Master Hands* and the wider infrastructures of the oil industry of which automobile manufacture is a part are as yet undiscussed.

Master Hands

Master Hands, with a run time of just over thirty minutes, traces the stages of manufacturing parts for and eventual assembly of the 1936 Chevrolet. It contains only a few

³⁶⁶ Max Fraser, "Hands Off the Machine: Worker's Hands and Revolutionary Symbolism in the Visual Culture of 1930's America." *American Art* 27, no. 2 (2013). 95.

³⁶⁷ Andrew Tohline, "'Around the Corner': How Jam Handy's Films Reflected and Shaped the 1930s and Beyond." Electronic Thesis or Dissertation. Ohio University, 2009. <https://etd.ohiolink.edu/>; Brian Oakes, "Building Films for Business: Jamison Handy and the Industrial Animation of the Jam Handy Organization." *Film History: An International Journal* 22, no. 1 (2010): 95–107. <https://doi.org/10.2979/FIL.2010.22.1.95>.

lines of narration early in the film as part of the opening sequence, which also features three intertitles explaining why a film like this is relevant to general audiences: millions of people are on the road, and millions of workers are employed by the automobile industry, and yet a majority of people don't have access to the industrial processes behind their manufacture. The second intertitle reads: "The twenty-five million drivers and their families who depend on these workers for personal transportation have little opportunity to see at work the skilled craftsmen whose master hands command the great machinery of production." The film maintains a constant tension between the power of the machinery and the expertise of the worker. The dynamic score emphasizes this tension. Dark and dramatic themes play during the scenes of forging parts from molten metal, the dangerous materiality of these substances juxtaposed with the humans exerting control over them and literally bending them to their will. An upbeat and lighthearted tone characterizes the music during the scenes in which workers are together on assembly lines and fabricating smaller parts that require precise and practiced movements. This oscillation in musical tone takes the place of a spoken narrative about what is occurring onscreen. After the third minute, there are no more intertitles and no more narration for the duration of the thirty-minute film. Rather, the viewer is taken through the industrial processes of automobile manufacturing by way of direct exposure to the image. The film is considered an "industrial symphony" and is thus in league with other films that focus more on the aesthetics of industrial processes, rather than providing a detailed explanation of them.³⁶⁸ And yet, while the film is not immediately read as educational, after its initial exhibition in theaters before feature films or in venues specifically for more commercial films, it was "repurposed as a 'vocational subject,'

³⁶⁸ Prelinger, "Eccentricity, Education, and the Evolution of Corporate Speech: Jam Handy and his Organization," 217.

meant to be shown in trade schools and industrial education programs,” and thus likely enjoyed a broad viewership.³⁶⁹

Master Hands juxtaposes the expertise of human labor with the importance of machines for the manufacturing process, and embodies the intersecting political issues that were at the heart of American labor in the 1930s. Providing visual access to the factory and the workers inside is itself a political choice: as Max Fraser explains, “by the mid 1930s...the factory floor had become a particularly modern terrain, and also a particularly contested one,” but not necessarily a progressive one.³⁷⁰ The contention in the representation of the factory arises from its “multiple meanings... of progress and stagnation, wealth and poverty, [and] the liberating potential of technology and the confining strictures of work” in the middle of the Great Depression. In 1936, at a moment when unemployment was down when compared to the start of the decade, workers were dealing with a new wave of dehumanizing working conditions and the de-skilling of their work.³⁷¹ Fraser’s analysis focuses on how workers and labor are represented in visual culture of the 1930s, particularly in their direct surroundings in the factory as is the case in *Master Hands*. Though the factory in *Master Hands* is a GM manufacturing facility for Chevrolet located in Flint, Michigan, the factory and the mobility of its product represents part of oil infrastructure’s takeover of an earlier era that did not depend fully on fossil fuels beyond the factory walls.

In the context of the machine age, a period driven by extractive industries, human workers are yet another facet of oil infrastructure. The film’s “fetishistic obsession with the

³⁶⁹ Prelinger “Eccentricity”, 212; Prelinger, “Smoothing the Contours of Didacticism: Jam Handy and his Organization,” 350-51.

³⁷⁰ Fraser, “Hands Off the Machine: Worker's Hands and Revolutionary Symbolism in the Visual Culture of 1930's America,” 97.

³⁷¹ *Ibid*, 96-97.

disembodied hand” supports the idea that while humans appear more integral to technological processes in a film like *Master Hands*, that their labor is in service of a much larger infrastructure unseen in the film itself.³⁷² Ultimately, Fraser contends that any attempt to redeem the humanity of workers in *Master Hands* is disingenuous, and calls attention to Charlie Chaplin’s satirical *Modern Times* which was released the same year as a parallel that “gives a good sense of the extent to which the work of Taylor, Ford, and their disciples and imitators had come to influence the aesthetic culture of the era.”³⁷³ *Master Hands*, with its Taylorist sympathies, contains both an aesthetic and ideological bait and switch: workers are represented, but they are also demeaned; they have a certain degree of mastery over their tasks, but their tasks are de-skilled in relation to the larger mechanization of production. As Fraser argues, “Hands could signal both the strength and weakness of workers’ bodies,” and these dynamics are impossible to separate from the forces of capitalism driving mechanization and industrialization in the 1930s.³⁷⁴ Fraser points out that in relation to radical art addressing the labor movements of the 1930s, Handy’s films are squarely aligned with the forces of bourgeois capitalism in their reduction of laborers to parts of a machine: the hired hands of a modern age.³⁷⁵ In this way, *Master Hands* is deeply enmeshed in the disenfranchisement of human laborers and their welfare brought about by the domination of corporate interests, yet solidifies the role of the worker in infrastructural cinema.

Thus, the seemingly magical technological processes of infrastructural cinema may depend not only on technological networks, but on the hidden or even dehumanized work of

³⁷² Fraser, “Hands Off the Machine: Worker’s Hands and Revolutionary Symbolism in the Visual Culture of 1930’s America,” 104.

³⁷³ Ibid.

³⁷⁴ Fraser, 110.

³⁷⁵ Ibid, 102.

human laborers. Though the alchemical processes of oil are far from the factory floor in *Master Hands*, a similar magic unfolds in the aesthetics of industrial manufacturing: “From foundry to finished product, we watch the automobile take shape before our eyes—an alchemical transformation of metal, glass, and rubber wrought by the unnamed ‘skilled craftsmen’ whom the opening titles heroically identify as engaged in the ‘great drama’ of production.”³⁷⁶ Fraser calls attention to the magic of assembly, a term that seems to naturally fit with the process viewers of the film are party to. In *Master Hands*, the alchemy is of the image as well as the material processed rendered on film. In addition to the transformation of metal, glass and rubber, film transforms a process typically hidden behind factory walls into a commanding aesthetic experience.

The dance-like movement between workers and machines on the factory floor as the shape of an automobile finally takes form assembles the vehicle aesthetically, frame by frame, as the workers assemble the cars before the camera. A scene lasting a little over a minute reflects the parallel processes of aesthetic and machinic assembly. Near the end of the film, the scene begins with a long shot of workers from an overhead angle. This positioning of the camera orients the viewer toward where the workers are in relation to the machinery, and the vastness of the machinery in the factory itself.

³⁷⁶ Ibid, 96.



Figure 20 Establishing shot & eye-level shot in *Master Hands*

This establishing shot transitions to shots of what appear to be components of the car's frame moving through a network of machinery, machinic hands mingling with human ones for maximum efficiency (Fig. 20). The placement of the camera among the machines in the factory gives viewers a symmetrical, eye-level view. Is there a human body behind the camera at this point, similarly engaged in a dance between man and machine? Or was the camera placed on a tripod at just the right distance to capture the assembly line propelling the car frame into the foreground? The placement and displacement of bodies and machines, both factory and filmic, create an aesthetic that emphasizes the triumph of technology and its ability to so seamlessly craft both automobile and image in an alchemical exchange of human and nonhuman motion.

Handy's approach to educational and promotional film shows a stark contrast to the USBM films of the 1920s, and complicates the visual insistence of the *Story* films, which imply that human beings either monitor machines or conduct scientific studies rather than act as central to their operation. Additionally, the *Story* films suggest that humans can be akin to machines themselves, such as the workers laying pipe. Alternatively, Handy's emphasis on human workers and the importance of their human-ness is made clear in *Master Hands*. The film's focus on a highly visible status symbol used and enjoyed by humans in daily life as an end-product—the

automobile—rather than the substance used to power this machine, insists on the primacy of humans in the dynamic between man and machine. *Master Hands* strikes a visual dynamic in which human hands are constantly required among the machinery being operated. Several close-ups of worker's faces appear in the film, shots that tend to pan down to the worker's hands after a few moments fixed on their visage (Fig 21).



Figure 21 A worker's face then hands in *Master Hands*

The workers gaze intently at the tools and parts they are working on, and the viewer is given what feels like direct access to the highly skilled individuals that make industrial manufacturing possible. However, Fraser argues that “the sheer repetition, no less than the relative inattention the camera pays to the workers’ faces or anything, really, of their bodies above the arm, transforms the factory floor into little more than an endless series of hands at work.”³⁷⁷ This perspective is skeptical about the inclusion of humans in the film, and insists that the thematic focus on hands is more dehumanizing than humanizing. However, while the political goal of the film was not to humanize or empower the worker, it is meaningful that the camera lingers on worker’s faces even momentarily, in contrast to the USBM films from the 1920s. Because the product being made in *Master Hands* is directly connected to the consumer, it makes sense to

³⁷⁷ Fraser, 99.

show more human workers in the film, whereas the fossil fuel extraction process is shown as being more—though not fully— automated and requiring less human labor after the initial work of drilling and laying pipe has taken place. The proximity of product to consumer seems to inspire the choice by Handy to praise workers in the film, even if this praise was not well-aligned with labor politics at the time. The promotional goal of the film is to encourage viewers to identify both with the people making the product and their skill, and with the product itself: “Chevrolets were made by working men, *Master Hands* seemed to be saying, and working men could afford to drive Chevrolets.”³⁷⁸ Identifying with car ownership is a tangible idea compared to the sprawling complexity of extractive infrastructures, films about which are less focused on relatability so much as practicality, and the promotion less of a product than a process. The USBM films don’t imply that the workers seen in the films are relatable. In the case of both *Master Hands* and the *Story* films, however, human labor is necessary, though emphasized differently to serve the creator’s unique aims.

The contrast between the visibility of the car with the invisibility of the gasoline within demonstrates yet another contrast and highlights the tension surrounding different industrial processes and their representation. According to Prelinger, corporate speech was at odds with government speech in nonfiction films, and their approaches and messaging vary.³⁷⁹ Despite the lack of direct messaging, however, *Master Hands* has explicit promotional aims. The Jam Handy Organization was founded as an educational film and media company, and understanding its role as a company with the need and desire to generate revenue is crucial.³⁸⁰ At the time, commercial

³⁷⁸ Fraser, 101.

³⁷⁹ Prelinger, “Eccentricity, Education, and the Evolution of Corporate Speech: Jam Handy and his Organization,” 215.

³⁸⁰ Oakes, “Building Films for Business: Jamison Handy and the Industrial Animation of the Jam Handy Organization,” 98.

interests were kept largely separate from educational and public media. Advertising was not yet prolific, and it was not common to have corporate-sponsored content in schools or on television. Handy knew this and approached the creation of *Master Hands* accordingly. Despite being steeped in corporate messaging, the film was intentionally made with multiple uses in mind, as it was one of Handy's films "produced without explicit sales pitches so that they could be shown in classrooms, and beginning in the late 1930s, on television."³⁸¹ To promote the ideals of work, efficiency, and consumerism, *Master Hands* had to say plenty without saying much at all. The focus on music and visuals in the film evades the strictures placed on promotional content in the era for the purposes of education, and creates an aesthetic experience defined by motion, moving parts, and the simultaneous hyper-visibility of certain elements of industrial infrastructure and the concealment of others.

More Power To You

With a stark contrast in overall style and purpose to *Master Hands*, *More Power To You* is an educational film and promotional film in equal measure. *More Power To You* enthusiastically explains the process of drilling, transporting, and refining oil into gasoline at a fast pace and with voiceover narration, illustrating technical processes while simultaneously expounding upon the greatness of the fossil fuel industry and its accomplishments. Like the USBM oil films from the 1920s, *More Power To You* is intent on showing the viewer how oil is extracted from the ground and the variety of infrastructural and chemical processes involved in its manufacture into usable consumer products like gasoline. Unlike the two films from a decade prior, however, this film thrives on the novelty of sound technology and thus the inclusion of

³⁸¹ Prelinger, "Smoothing the Contours of Didacticism: Jam Handy and his Organization," 343.

narration, which serves as a defining new element when compared to both *Story* films. Though *More Power To You* features shots with Sun Oil branding, the film does not contain any titles or credits that include a specific sponsor, nor is a sponsor listed in its entry on archive.org. It is possible that this film is meant to be more educational than promotional of a specific company, but extractive industries as a whole are promoted in the film in full force. The film correlates oil with power, emphasizing the ways in which the perpetual motion of extractive industries allows for the constant and ever-increasing motion of American life, motion that is contingent—in the film’s messaging—on the power provided by fossil fuels. As a medium, film captures this argument perfectly in its ability to keep pace. The pacing of *More Power To You* feels breakneck in comparison to the *Story* films, and notably less poetic than the balletic factory scenes in *Master Hands*, while engaging in forceful spoken commentary about the merits of fossil fuels.

Though *More Power To You* is a practical film in many ways, showing the familiar visuals of extraction and illustrative animations similar to the USBM films, the hyperbolic narration aligns it with the excitement and possibilities of extractive processes from the previous decade. *More Power To You* is eager to prove that the novelty of extraction has not worn off, nor has its filmic possibilities. Indeed, one of the opening narrations in *More Power To You* declares, “for millions of years this source of power slept peacefully in the dark recesses of the earth, until modern magic loosed the liquid energy from its subterranean prison.” Furthermore, by anthropomorphizing oil and implying its dormant state as imprisonment, *More Power To You* sets the tone for the excitement and possibilities of unleashing this great power and imbues it with the agency of a sentient being. In the film, oil can do things because it has been collecting power over time. The release of oil from the ground, then, results in a great burst of power all at once. This simultaneously makes for an attractive narrative about the practical applications of

this resource while also providing an engaging narrative about its origins reminiscent of the Promethean legend of stealing fire from the gods. Oil is given a primordial and ancient power in the opening of the film that adds to its narrative appeal. Once unleashed, the agency and energy of oil only increases. The mechanical motions of extraction are described in relation to those of the human body: the “ever-swaying rocker arm” pumps oil from wells and is further described as the “unceasing heartbeat of the oil fields.” Pipelines are “alive with racing oil.” During these descriptions, the film places visual emphasis on perpetual motion and lines that crisscross the screen (Fig. 22).

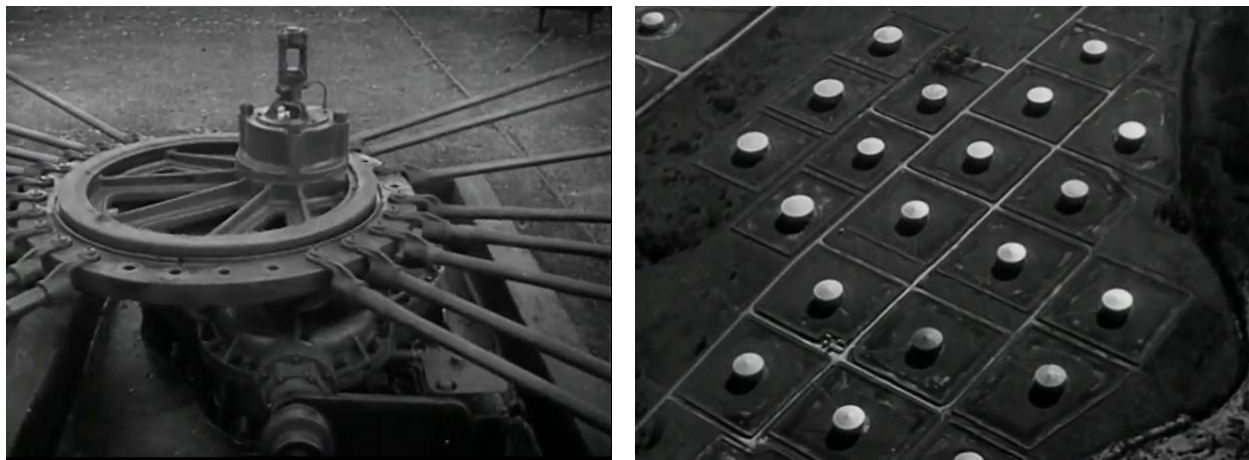


Figure 22 Infrastructure forms patterns in More Power To You

The significance of these lines—whether cables connected to the rotating pump responsible for pumping oil from sixteen wells at once or the pipelines laid for hundreds of miles across landscapes—lies in the impossibility of comprehending them all at once. Lines become a visual metaphor for infinity; the pumping stations and oil tankers are mere stops along the way. In this way, the strategy of visual synecdoche from the USBM films still applies, despite other aesthetic differences. The lines also continue the metaphor for the human body. If the pump is the beating heart of the oilfield, the oil itself is the lifeblood of the ever-expanding network of pipes

spreading across the landscape, there to bring power to people in their daily endeavors. By associating oil with humanness, the film creates a strong case for its ongoing importance.

It would certainly be a magical thing if extractive industries did not cause extensive environmental damage, and the film engages in this type of wishful thinking as well through its comparisons of extractive infrastructure to natural landscape features. The film compares oil infrastructure to forests twice, the first exclaiming that “the petroleum forest grows” as hundreds of oil derricks occupy what is implied to be previously unused land. The second time, the towering chimneys of the refineries are referred to as “those masses of strangely wrought steel; forests of stacks.” This creates a juxtaposition between the novelty of the infrastructure and its intricate network of pipes, boilers, towers, and tanks, and an allusion to a forest, something natural and ancient. During both moments in which the narrator refers to derricks and smokestacks as forests, an aerial shot of each is shown onscreen. Similar to the human body comparison, aligning derricks and refinery towers with forests emphasizes their proximity to nature, implying that progress is and should be viewed as natural, while also remarking upon the complexity of these systems and particularly their networked quality. The irony of comparing oil infrastructure to forests, the greatest carbon offsetting systems on earth, is striking in a present moment in which scientists and entrepreneurs are still attempting to develop new technologies to offset carbon emissions, rather than preserving or re-planting forests that have been cut down in the name of industry.³⁸²

³⁸² For example, in January 2021 billionaire Elon Musk revealed an offer of \$100 for the best carbon capture technology. Sarcasm abounded in environmental circles online that the best carbon capture technology already exists in the form of forests ([NBC News Article on Musk’s announcement](#)).



Figure 23 "forest of derricks" and "minarets of science" in *More Power To You*

The industrial forests described in the film are made visible through the use of aerial photography. Removing the camera from the ground allows for the sense of scale needed for the visuals in the film to match the level of intensity conveyed in the narration. The extreme long shots afforded by aerial photography give the viewer a sense of the vastness of oil infrastructure networks and are also awe-inspiring in their display of technological development (Fig. 23). In this way, the aerial shots of the forests of derricks and refinery towers establish a sense of the technological sublime, particularly in relation to factories and industry: “The immense machines seem to function almost without human intervention. Man has tamed nature, extracting power from ‘useless’ raw materials. The ‘conquered and resigned leviathans’ do his bidding.”³⁸³ This recap by David Nye of a 1912 description of a power station in New York in which networks of machines operate at the service of the human demand for energy is fitting in relation to the cinematic depiction of oil networks in *More Power To You*. Though the film emphasizes human ingenuity in its latter half, the aerial shots imbue the network with agency yet subservience to the human need driving their creation, all while calling attention to their sheer size.

³⁸³ Nye, *American Technological Sublime*, 134. This descriptive approach reveals a stark contrast to the human-centric visuals in *Master Hands*, and thus also calls attention to the variability of Handy’s promotional work.

These shots also create a sense of detachment from what is happening on the ground at these sites, if only for a moment, while still exerting control over them. Images captured by plane are constituted by the novelty of aviation and its ability to “annihilate the experience of space and time.”³⁸⁴ This is relevant to images of oil infrastructure in particular because the affective liberation from place specificity aids in encouraging the viewer not to worry about the potential effects these infrastructures may have on the environment, but rather to view them as expected parts of the landscape that can work in tandem with natural processes. According to Jason Weems, the combination of flight with photography “fix[es] images of the land in time while simultaneously liberating them from space.”³⁸⁵ This spatial liberation opens up a greater potential for environmental complacency. A forest of derricks is not equal to a forest of trees, but aerial imagery treats them as such. The power granted by aerial imagery is violent in the worst instances, and hegemonic in its reduction of place specificity to mere image in the best instances:

This all-seeing vertical view, which following philosopher Michel Foucault could be described as ‘panoptic,’ proved to be one of the most fascinating, utilitarian, and ideologically loaded components of aerial gazing, and it was often co-opted by those who sought to exercise authority. Vertical views enabled people to perceive and represent the land as an abstract object, and in the process, to exert their will upon it.³⁸⁶

Handy’s *More Power To You* is engaged in multiple levels of promoting power. Indeed, the filmic abstraction of the landscape enforces the power oil infrastructure has over those

³⁸⁴ Jason Weems, “Managerial Mosaics: New Deal Aerial Photography and the Marshaling of Rural America,” *Barnstorming the Prairies*. *Barnstorming the Prairies*, (Minneapolis: University of Minnesota Press, 2015), 54. <https://doi.org/10.5749/j.ctt19b9jds>.

³⁸⁵ Weems, “Managerial Mosaics: New Deal Aerial Photography and the Marshaling of Rural America,” 54.

³⁸⁶ Weems, xiv.

landscapes, and the deftness with which they expand their operations to cover huge tracts of land, foresting the countryside with the unmistakable markers of industrial development.

The latter half of the film is dedicated to the happenings at the refineries and in the labs there where chemists work to discover new ways to use petroleum and its byproducts. In addition to promoting the potential power that oil provides the average citizen, the film enthusiastically spotlights the symbiotic relationship between the oil industry and scientific innovation, and the power of science. It is fitting that in the mid twentieth century, the towers of the refinery are described as “minarets of science.” The metaphorical comparison between the scientific establishment and religion is potent and ascribes a god-like power to the scientists developing these new technologies. The overlap of the mystical or magical elements of chemistry and the seemingly miraculous elements are both suggested in this segment of the film. While magic implies sleight of hand, something that has a process we simply aren’t always privy to, miracles have an even stronger implication of unbelievability. In the case of oil chemistry, how unbelievably useful the substance is. It is a miracle, as the film implies, that the resource gives human beings so much power. Film viewers, then, are hailed as the religious faithful to this new and powerful institution and the substance it produces. In another nod to the mythical power of oil, the narrator explains that “scientists wrest from the crude petroleum its true power.” Once again, scientists become the alchemists of the oil industry; they are the key to unlocking its true potential by transmuting useless by-products into consumables. The scientists’ work space is granted a whimsical and exciting description, while the film’s visuals pan over long bubbling glass test tubes and rest on the attentive gaze of chemists, enraptured by the possibilities of their work: “The laboratory with its strange gleaming of new and unpredictable things. Here are created modern miracles with the chemistry of oil.” The focus on the lab and the role of scientists

places the onus on them to regulate the current use of petroleum extracted, but also to make sure that the industry is constantly improving. Power itself is not enough; it is expected to follow a trajectory of constant acceleration.

More Power To You meditates on the power granted to citizens by way of this tremendous industry, connecting their need to the latent power seemingly locked away in the ground, waiting to be extracted for human use. Through this logic, the land is there to provide human consumers with the power they need to live their lives in a modern era. Thus, *More Power To You* seeks to align itself with an approach that is friendly to the landscape, showing that oil infrastructure is a natural development in human reliance on the land, and that the industry blends in with nature in a way that is not disruptive but productive. The film equally praises the scientists behind the scenes in the oil industry who continually work to make it more efficient, and to extract new uses from the leftover materials created during the refining process. The cycle of being faced with a problem, subsequent technological innovation, and further problem-solving is crucial to the social ontology of oil in *More Power To You*. Not only does oil power machines, but it also powers scientific innovation, and thus creates a wider cultural benefit than the fuel and its uses alone. Extractive industries are thus synonymous with constant progress.

Riding the Film

With its playful opening featuring winter recreation such as sledding, tobogganing, and ice-skating, *Riding the Film* orients viewers to the importance of oil-based lubricants for automobiles by focusing on the experiences of everyday life. This film also strongly supports Prelinger's point that many of Handy's films in his *Direct Mass Selling* series emphasized the need to show viewers processes that are typically impossible to see with the naked eye to help

them understand and appreciate the technologies being developed for mass use, such as motor vehicles. This film is unique from *Master Hands* and *More Power To You* in a few ways, including the playfulness of its narrative that focuses on familiar experiences, and for its reliance on even more specialized film technology to show what otherwise could not be seen, including microphotography to show an extreme close-up, and the use of a stroboscope to show a crank shaft inside a working engine in slow-motion. *Riding the Film* is the only of the three films that actively discusses the role of the camera, and thus of film technology, in mediating the viewer's understanding of the depicted technological processes. *Riding The Film* was sponsored by Chevrolet, and the film's emphasis on the automobile engine and its complexities is the center point of its narrative arc. By focusing on a few specific mechanical examples, *Riding The Film* locates the need for extractive infrastructure in the familiar realm of the automobile while simultaneously revealing its magical inner workings.

Riding the Film depends on specific technical strategies both to teach viewers about the importance of the subject matter, lubricating oils, and to show practical examples of how they work in real life. The first film technology used to reveal what would otherwise be impossible to see is microphotography. After ninety seconds of winter sports footage, an opening narration explains, "Strange as it may seem, ice skaters do not skate on ice. Even the smoothest ice isn't slippery enough for that." The film begins its educational tone immediately by forcing viewers to question their assumptions about what they see—which certainly appears to be figure skaters skating on ice. The narrator quickly clarifies: "Ice must be lubricated before anything will slide on it. The skates really glide over a thin film of water under the skate. Here's what really happens." The phrase, "Here's what really happens," acts as an adage for the film as a whole. Its purpose is to show viewers invisible processes that, while often ignored or forgotten about, are

crucial to familiar processes. Microphotography is used in *Riding the Film* to capture a simple experiment that demonstrates why oil in particular is such an advantageous lubricant because of its high viscosity. The narrator also explains in brief how water, though valuable as a lubricant, has significant shortcomings.

The experiment consists of a plane of metal at around a 15-degree angle with a smooth block of metal placed on top of it. The block fails to slide down the plane, despite the smooth finish of both block and plane. A microscopic close-up shows that the two metal objects are in direct contact with one another, and therefore the block will not slide down the plane (Fig. 24).

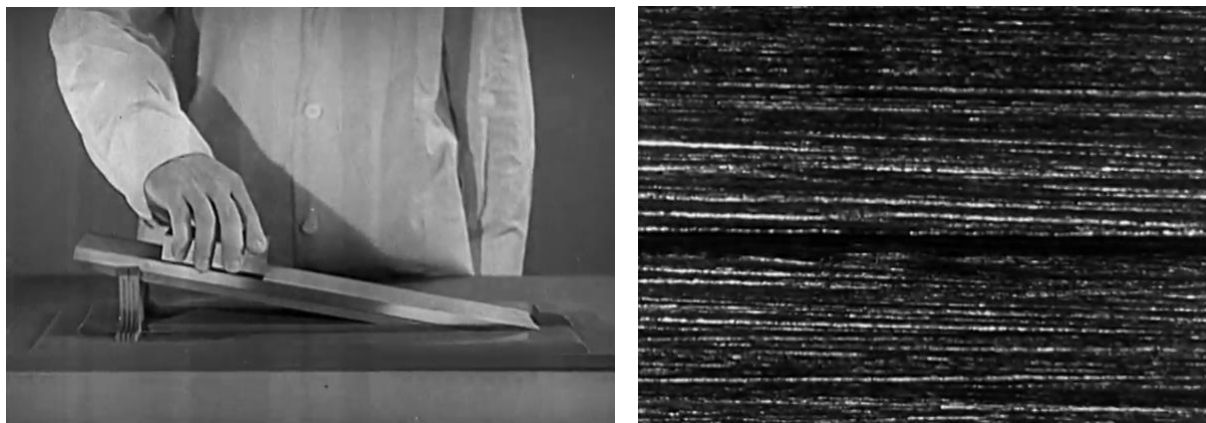


Figure 24 the experiment in *Riding the Film* without oil

Then, oil is added to the plane, and the block is shown easily sliding down. Again, a shot of the plane and block is juxtaposed with a shot of the metals up close using microphotography, only this time, with the oil between them creating a film of lubrication (Fig. 25). From the very early stages of cinema, microphotography was used by filmmakers to capture microscopic life to create science films.³⁸⁷ By using similar technologies, *Riding the Film* establishes a scientific tone that relies on the authority of microscopic images such as these to prove the veracity of their

³⁸⁷ Oliver Gaycken, *Devices of Curiosity: Early Cinema and Popular Science*, Oxford University Press, 2015.

claims.³⁸⁸ The microscopic view does indeed illustrate the point: the metal moves freely over the film of oil in the shot, and the movement is shown for about twelve seconds.

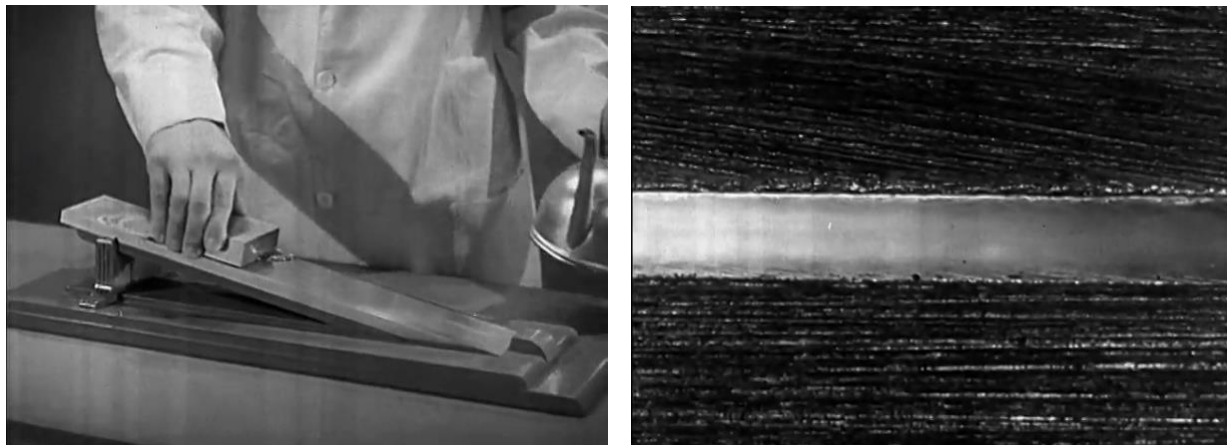


Figure 25 The experiment in *Riding the Film* with oil added

The stroboscope is the next film technology used in *Riding the Film* to show a process that would be otherwise impossible to see with the naked eye. The stroboscope makes it possible to see a process that happens extremely quickly to be viewed in slow motion through the use of a strobe light that connects to a camera to capture this phenomenon on film. A car engine and its intricate operation are the focus of the latter half of the film, and a series of shots of an engine, animations, and the stroboscope are used to demonstrate how the oil moves through and lubricates the engine. The film makes it clear that because of the complexity of the engine, multiple methods must be used to distribute oil, ensuring it will run. The stroboscope is used to show the lubrication of connecting rods, which operate the cam shaft. A dipper on the bottom of the connecting rod dips into a pool of oil, distributing it around the engine (Fig. 26).

³⁸⁸ A history of the early use of microphotography in science films can be found in Oliver Gaycken's *Devices of Curiosity: Early Cinema and Popular Science* from 2016 published by Oxford University Press. Gaycken notes that "microphotography" is not necessarily the most accurate term for films containing microscopic footage. He explains like microphotography more accurately describes still images and opts for "microcinematography" based on the more common usage in the present (205 n6). However, the narrator in *Riding the Film* refers to these shots as microphotography, so I use this terminology here.



Figure 26 Stroboscope operation & footage in Riding The Film

The explanation of this process in the film is fairly technical, and the use of both animation and stroboscope film technology offers multiple ways to convey what is going on in the engine. More interesting than the stroboscope footage, however, is perhaps the shot of two men operating the stroboscope, in which the camera is visible beside the engine, and the flashing light of the stroboscope can be seen creating the images shown a moment afterwards. This moment is atypical in its visual focus on film technology; the camera attached to the stroboscope is in the frame, and it being filmed by yet another camera. The subsequent stroboscope footage of the engine interior shows quivering strings of oil and the aggressive rotation of the connecting rod but doesn't illustrate the process nearly as clearly as the animations of the process shown before and after this footage. The use of film technologies to show a process happening at high speeds, and offering a real glimpse inside the engine, however, solidifies the connection between film technologies and the technological imperative. The use of more technologies layered upon one another, it seems, are seen as better than fewer technologies. In the case of *Riding the Film*, this is true of both film technology and oil technology.

Chapter 3 Conclusion

Like *Master Hands* and *More Power To You*, *Riding The Film* has a preoccupation with the quintessentially modern need for perpetual motion supported by invisible aid. *Riding The Film* makes it clear that without the unseen help of lubricating oils, the machines relied upon by millions would fail to operate. Read synecdochally, the engine is a stand-in for and a representative part of extractive infrastructure as a whole. *Riding the Film* shows that an engine operates smoothly thanks to invisible lubrication. A film like *More Power To You*, in addition to the USBM films of the 1920s, demonstrates that extractive infrastructure operates smoothly thanks to the vast and complex networks of pumps, pipes, tanks, refineries and the perpetual growth of modern transportation networks. Oil and its infrastructures move in order to keep life moving at a fast pace, and in the 1930s, the car engine was the modern technology par excellence. In a modern car culture that, according to Stephanie LeMenager, connects the very act of driving with “being alive,” the literal and figurative power of the engine is palpable.³⁸⁹ Indeed, in the 1930s, cinema was at the crux of the competing need to acknowledge and make known the technological prowess of extractive industries, and to allow their operation to continue—unfettered, unseen—in the background of American life. Based on the film’s logic, the beauty of “riding the film” of oil that allows a car to run is that the film of oil is meant to be forgotten.³⁹⁰ Extractive infrastructure was also meant to be built and subsequently fade into the background. Yet it has been the disruptions in these extractive processes, the spills, contamination, and waste, that has brought it into such intense focus in the twenty-first century and made it impossible to ignore.

³⁸⁹ LeMenager, 80.

³⁹⁰ Perhaps much like these instructional films themselves, which as orphan films, are also forgotten.

Chapter Four: “New Tools for the Old Toil:” Electrical Aesthetics on Film in the New Deal Era

In the 1939 Westinghouse-sponsored film *Summer Storm*, a sleepy summer’s day is interrupted by a passing rainstorm. Dramas big and small unfold around a city: a farmer doing chores; a woman baking a pie; workers downtown riding elevators up to their offices. Elsewhere, more serious situations transpire. A child lies sick in bed, a doctor at his side. Another healthcare worker tends to a refrigerated room of penicillin, and yet another child is shown in the hospital inside an iron lung, struggling to survive. The film shows the stakes, low and high, of reliable electricity, and subsequently highlights the ways in which the electrical grid is maintained and kept online during the passing weather event. In addition to illustrating how electricity helps the average person, the film venerates workers in various industries. As a whole, the film and its narration place special emphasis on the human demand for electrical power, explaining during a scene inside the hospital, “But this is humanity. The bellows of the iron lung, thirty minutes without power, and death would step in to claim a life.”

On Valentine’s day 2021, a stormfront riding a volatile polar vortex from the North stretched far enough South in the United States to affect much of the state of Texas. Since the state is usually bereft of such cold weather, and particularly precipitation such as freezing rain and snow, infrastructure came to a standstill. Traffic conditions caused hundred car pileups and resulted in fatalities, and crucially, the independent power grid supplying much of the state with electricity, ERCOT, began to founder. Planned rolling blackouts were contrasted by unplanned outages as the un-winterized natural gas lines, in addition to wind turbines, were driven to a halt by the cold. In a moment almost a year after the COVID-19 pandemic began to cause a widespread public health emergency in the United States, the failure of an electrical grid in

Texas highlights some of the ways in which such infrastructural instabilities compound one another. As a vaccination campaign endured a slow roll-out, extreme winter weather only slowed it down further; healthcare workers rushed to vaccinate as many people as possible in areas of Texas before the storm hit to avoid doses going bad.³⁹¹ Further outages forced those with vaccination appointments to reschedule. During the blackouts, various national news outlets picked up a story from the *Texas Tribune* of a woman whose partner relies on an oxygen machine to survive—the charge of which began to drain as their area in Richardson, Texas lost power.³⁹² Much like the fictional scene in *Summer Storm*, public health, in addition to industry and other daily work, relies on a trustworthy electrical grid. Nevertheless, nearly eighty years later, grids are still subject to massive failures, and the risks during winter outages in which people struggle to stay warm in their homes are as risky or even riskier than outages in summer.

In *Summer Storm*, the narrative focuses on the demand for energy surging when the brief rainstorm causes people go indoors and turn on their lights. The film also explains in light detail the way electricity for the grid is first generated, then transmitted, and finally distributed through a series of smaller substations and lines. Julie Cohn, an energy historian and author of *The Grid: Biography of an American Technology* weighed in on the Texas power debacle while it was happening, firstly by explaining why it is crucial to avoid oversimplifying the massive network that is the power grid. She remarks, “The grid is shorthand for a collection of technologies owned and operated by thousands of entities — from government agencies to homeowners with

³⁹¹ Sarah Pezenik and Ivan Pereira, “Texas Officials scramble to administer 5,000 COVID vaccines after power loss” ABC News, ABC News Network. February 15, 2021, <https://abcnews.go.com/US/texas-officials-scramble-administer-8000-covid-vaccines-power/story?id=75911159>

³⁹² Shannon Najmabadi and Marissa Martinez, “ ‘We’re in it alone’: Power outages leave millions of Texans desperate for heat and safety,” *The Texas Tribune*, February 16, 2021, <https://www.texastribune.org/2021/02/16/texans-weather-power-outage/>

rooftop solar panels.”³⁹³ Indeed, Cohn’s book traces the history of the power grid in the United States not only to explain the technical details surrounding its development, but also to comment on the ways in which the affordances and constraints of existing infrastructure will influence the future of energy.³⁹⁴ These opportunities and limitations can be addressed, but it will take the cooperation of many actors working together, representing a wide range of participants from government entities to private companies, engineers, and consumers. In the comparison between *Summer Storm*, exemplifying a brief period of surging demand for power, and the 2021 ERCOT failure, it becomes clear that like the calculations made by energy engineers to predict demand, cinema too is an instrument of measure and control.³⁹⁵ Unlike the neat accountability afforded by infrastructural cinema like *Summer Storm*, real life power grid infrastructure is at the mercy of numerous contingent factors, from extreme weather to animal interference, and many more.³⁹⁶

Additionally, like the calculations made to determine how much energy on average is needed on a given day and a given time during the year—which were likely more accurate before the increase in extreme weather patterns brought about by climate change—a film like *Summer Storm* is no longer representative of the challenges faced by the grid in the twenty-first century. But was it ever? Cohn urges that “despite the invisibility of electric power, it is central to both the quotidian and the extraordinary in American Life.”³⁹⁷ Films about electricity, from explanations of the grid to appliances to electrification projects bring the invisibility of electric power into view through various aesthetic techniques. While the point of this visibility may be to

³⁹³ Julie A. Cohn, “Texas seceded from the nation’s power grid. Now it’s paying the price,” *The Washington Post*, February 17, 2021, <https://www.washingtonpost.com/outlook/2021/02/17/texas-power-winter-storm/>

³⁹⁴ Cohn, *The Grid: Biograph of an American Technology*, 9.

³⁹⁵ *Ibid.*, 86.

³⁹⁶ Benson, “Generating Infrastructural Invisibility: Insulation, Interconnection, and Avian Excrement in the Southern California Power Grid.”

³⁹⁷ Cohn, *The Grid*, 227.

foster understanding, infrastructural cinema does not serve exclusively educational ends. Films in this canon can in fact serve as yet another mirror reflecting the ideological constraints of the infrastructure at a given point in time. In her preface, Cohn makes it clear that “the grid”—though she explains that even this is a misnomer, as there are four connecting grids in the United States— “was not at all the logical outcome of a natural process of building networks.”³⁹⁸ Her insistence echoes Vaclav Smil’s point that the way energy systems and energy use has developed is not natural or predetermined, but rather the outcome of incalculable decisions made by different groups and individuals over time, influenced by both cultural and other material forces. Contrasting the arguments made by these historians matters in relation to infrastructural cinema because this cinema makes an opposing conclusion. In films about these infrastructures, the message veers toward predetermination and natural progression, avoiding complexity in favor of an all-encompassing narrative. Indeed, the hundreds, even thousands of films left out of this study may together represent a more complex picture of infrastructure, but it is unlikely that audiences would have been exposed to a full catalog of films on a subject such as dam building or hydroelectricity, gas lines, or electrical grids, just as I am not. Infrastructural films, like their synecdochic visual patterns and reliance on Anthropocene visuality, were meant to serve as a part standing in for a whole.³⁹⁹ This aesthetic approach creates enough distance between viewer and represented object to encourage a sense of understanding as well as tacit acceptance of the information therein, in addition to reinforcing the idea that humans have mastered the environment through our infrastructures.

Images, both still and moving, have the power to reinforce our hopes for material infrastructure. Image-based media sponsored by an industry or perpetuated by a government in

³⁹⁸ Cohn, *The Grid*, ix.

³⁹⁹ Demos, “Geoengineering the Anthropocene,” 29.

support of an industry, can have a powerful effect on public trust or support of the industry. Alternatively, media imagery can work against the mainstream beliefs that systems seek to reinforce about their operation, such as the need for fossil fuels, or the superiority of fossil fuels over other energy sources. The films surrounding both hydroelectric projects and damming as well as oil in the previous two chapters are strong examples of the former, and films about electrical companies and their infrastructures serve a similar function. The key difference is that electricity is the product of an infrastructural system rather than an energy source itself. The grid, as Cohn explains, is capable of energy production from a variety of different energy or fuel sources. Indeed, *Summer Storm* acknowledges that the grid could be powered by a hydroelectric dam, or by fossil fuels such as coal or oil burning to produce steam. The voiceover in *Summer Storm* explains,

But as you see, [the generator] is useless without something to keep the rotor turning. Waterfalls can provide this turning force as we all know. The force that spins the rotors of the giant generators. But the electricity that most of us use is provided by another and more abundant source of nature's power. So here, coal, or oil is used to provide steam, with plenty of force to keep these generators turning (Fig 27).



Figure 27 Waterfall & smokestacks in scenes from *Summer Storm* (1939)

Similarly, the ERCOT grid in Texas relies on a variety of fuel sources, including natural gas and wind power, two of the sources that were affected by the extreme cold of the Valentine's Day storm. The grid is a site of complications, then, in terms of energy messaging from corporate and government bodies. Rather than the clear-cut message that oil is efficient, or that waterpower is an abundant resource to be harnessed, electricity leaves enough ambiguity for questioning how the grid can be both more reliable and more sustainable in the future. Unlike a full move away from a resource like fossil fuels, the grid isn't going anywhere. Rather, the ways in which nonhuman resources connect to and power the grid is currently in flux and offers a point of entry for questioning what the moving images of energy's past—from their cultural influence and the political motives—bring to bear in the present.

This chapter analyzes the ways in which infrastructural cinema builds an aesthetics of electricity through a reliance on both the human and nonhuman actors connected to the grid, in addition to networks and spaces through which electrical power flows. In the following three sections, the first related to people and their labor, the second concerned with appliances and technologies, and the third connecting the prior two through place specificity and location, I aim to simultaneously draw distinctions and highlight the interconnectedness of how electricity is aestheticized through infrastructural cinema. The visibility of electricity and its production is contingent on where it is being used, by whom and by what technologies. The dichotomy between visible and invisible, mechanical and magical manifests more strongly among films about electricity than those about either waterpower or fossil fuels when subject to close analysis. It is for this reason that electricity, in its ubiquity, veils the broader concept of energy and its inexplicability so effectively. Not only is electricity ubiquitous in modern life to this day, more so than any time in the past, but the history of cinema is irrevocably connected to the

history of electricity. Thus, electrical and filmic infrastructures have been connected for over a hundred years, and yet the unique qualities of films focused on electricity as their subject matter have yet to be discussed in relation to their role in shaping energy, and particularly electrical infrastructure.

In *Electrifying America*, which focuses on the uptake of electrical power in the United States from 1880-1940, David Nye explains that focusing on how the general public experienced electrification “shifts attention away from inventors and captains of industry to ordinary people: consumers, workers, reformers, housewives, and farmers. The central subject becomes not genius, not profits, not machines, not scientific discovery, but the human experience of making electricity part of city, factory, home, and farm.”⁴⁰⁰ Nye’s concern with telling a history of electricity based on its social experience is reflected in numerous films of the era, from the commercial ventures of Westinghouse and General Electric to the famous government-sponsored *Power and the Land*. Though electricity relies on vast and complex infrastructures, people prevail in such films, revealing the key to understanding how electrical infrastructure’s connection to energy supplies is largely passed over in such films in favor of a different focus. For example, in 1935 Chevrolet sponsored a Jam Handy film called “Behind the Bright Lights”. This seven-minute film is a curious artifact as a bridge between fossil fuel interests and electrical energy infrastructure in the era for a few reasons. First, the film’s sponsor is invested in and intimately connected to fossil fuel extraction, as outlined in Chapter Three. Second, the film focuses on a massive electrical Chevrolet sign off a highway in a large city, shown in contrast to the small workers hoisted up by ropes working daily to change burned out bulbs. Electricity and fossil fuel interests join force in the materiality of the sign, given its commercial message, its

⁴⁰⁰ Nye, *Electrifying America: Social Meanings of a New Technology*, xi.

reliance on electrical power, and its need for human maintenance on a near constant basis. The film is primarily concerned with the *men* behind the bright lights—the workers and engineers making sure the sign operates as intended. I see the film’s title as an invitation to dig deeper into what films focused on electricity in the Depression era tell us about energy infrastructures then and now. In other words, what else lies behind the bright lights of both electricity, and the screen, that such films can reveal?

Electrification, Infrastructure, Cinema, & the Modern Age in the United States

By the time the Great Depression began in the United States, electricity was no longer a new invention. But this doesn’t mean that the adoption of electricity has a straightforward history. According to film scholar Lucy Fischer, “most historians date the inception of the electric age with the 1831 discovery of the law of electromagnetic induction by the English scientist Michael Faraday.”⁴⁰¹ However, the invention of the incandescent lightbulb in the late nineteenth century by Thomas Edison marks the starting point for the coming ubiquity of electricity over the next century in the United States. As Smil explains, once non-commercial lighting became a conceivable next step in electrical development thanks to the lightbulb, a contrast to outdoor-only arc lighting, Edison and those working with him “translated these ideas into practical realities in an astonishingly short period.”⁴⁰² The outcome of this rapid development is very much still visible in the present, even down to the technologies in use. Smil elaborates, “After more than 120 years the dominant constituents of our pervasive electrical systems—steam turbogenerators, transformers, and high-voltage alternating current (AC)

⁴⁰¹ Lucy Fischer, “‘The Shock of the New’ Electrification, Illumination, Urbanization, and the Cinema,” Ed. Murray Pomerance. *Cinema and Modernity* (New Brunswick, N.J.: Rutgers University Press, 2006), 20.

⁴⁰² Smil, 261-62.

transmission—have grown in efficiencies, capacities, and reliabilities, but their fundamental design and properties remain the same, and their originators would easily recognize the latest variation of the themes they created.”⁴⁰³ Electrical power as we know it has existed a mere century, and yet in this short time it has been the touchstone of modernity widely conceived. Electrification has aided in increased speed and efficiency of both daily tasks and larger, more complex systems quintessential to the modern age. As cultural theorist Raymond Williams writes, modernity implies the development of institutions and industries that have been seen as “unquestionably favorable or desirable” while insisting that the positive implications of modernity be scrutinized.⁴⁰⁴ Indeed, despite the overall positive changes wrought by electric power, the systems we rely on for energy and the sources of fuel or energy they rely on to function deserve such scrutiny for their role in economic, political, and environmental issues in the present day.

Electricity was not invented, but rather put to use through technological development. Thus, systems to produce and use power are the true arena of electrical invention. Electricity is a physical phenomenon based on the earth’s magnetic fields, electrical charges, and motion on the atomic level. It is present in various forms free of human intervention such as in certain animal species, lightning, static electricity, and more. According to Smil, the development of electricity is unique in energy history because as a secondary energy source, it can rely on any kind of fuel for production. He explains that electricity is “an entirely new kind of commercial energy. Any solid, liquid, or gaseous fuel could be burned, its released heat used to convert water into steam, and the steam used to rotate turbogenerators and produce electricity.”⁴⁰⁵ Additionally,

⁴⁰³ Smil, 262.

⁴⁰⁴ Williams, “Modern,” *Keywords: A Vocabulary of Culture and Society*, 209.

⁴⁰⁵ Smil, 226.

hydropower, geothermal power, nuclear fission, wind turbines, and photovoltaic cells or solar power have all been used over the past century to generate electricity in varying degrees.⁴⁰⁶

Electricity, electrical energy and electrical power all have distinct meanings. Electricity is the phenomena described above; electrical energy and electrical power are definitions both reliant on systems of measurement based on the International System of Units (SI). Electrical energy is the measure of how much charge is necessary to cause movement in a circuit and is measured in Joules. Electrical power, on the other hand, is measured by rate of energy consumption in Watts, or for higher units of power, kilowatt-hours (KWh).⁴⁰⁷ Electrical power is the most commonly applied meaning when “electricity” as a technological part of everyday life is referred to.

Electrical power infrastructure was first modeled based on gasworks, and the first central electricity generating station to become operable in the United States opened in New York in 1882.⁴⁰⁸ Designing networks for infrastructure based on pre-existing structures made sense; gasworks, for example, were modeled on existing water supply lines.⁴⁰⁹ However, it wasn't long before the centralized model of the electric power station was eliminated in favor of a more distributed approach. Rather than a central generating plant in the city using the power, power stations were removed from the cities they served and instead located close to where the power supply being used to generate the electricity—such as water power or coal—could be easily accessed.⁴¹⁰ The locations of both energy extraction and production were not centrally located by

⁴⁰⁶ Smil, 228.

⁴⁰⁷ Leland Teschler, “The Difference Between Ac Electrical Power and Ac Electrical Energy,” *Machine Design*, machinedesign.com, 2014.

⁴⁰⁸ Wolfgang Schivelbusch, *Disenchanted Night: The Industrialization of Light in the Nineteenth Century* (Berkeley: University of California Press, 1988), 65.

⁴⁰⁹ Schivelbusch, *Disenchanted Night: The Industrialization of Light in the Nineteenth Century*, 64.

⁴¹⁰ Schivelbusch, 66.

the Depression era, and the need for far-reaching infrastructure became of notable importance for the rural electrification effort. For electrical power, it is important to distinguish between transmission and distribution, as they rely on different infrastructures that connect to one another to form electrical grids. Transmission lines handle high voltages that travel long distances from where the power is being generated, such as at a hydroelectric power plant or a coal-burning power plant.⁴¹¹ Connected to substations, which transform the voltage from high to low, are distribution lines, which are the power lines that connect to smaller regional providers and ultimately to consumers. The switch from higher to lower voltage, called alternating current (AC), allows for more flexibility in the distribution of electricity based on demand. Cohn explains the initial introduction of AC as follows:

“The Westinghouse Corporation introduced an integrated AC electrical system capable of powering lights as well as multiple types of motors at a distance. George Westinghouse had previously pioneered a series of devices that shared several key characteristics: (1) transmission over a distance, (2) crucial linking mechanisms, and (3) mechanisms providing feedback to allow regulation of the system.”⁴¹²

Thus, from its inception, the particular challenge posed by the inability to store electrical power and therefore the need to generate it in real time based on demand influenced grid design. While grid infrastructure now may seem unchanged and unchanging, the early developers of this technology had flexibility in mind, and flexible use remains central to the power grids used today.

Electric power is thought of as one of the key markers of modernity. Access to electricity, felt and experienced as instantaneous for users, is connected to a history of ever-increasing speed

⁴¹¹ Cohn, *The Grid: Biograph of an American Technology*, 20.

⁴¹² *Ibid.*

and efficiency in privileged spaces. It has also been connected to cinema for their similar roles as historical markers of the modern age. Like electricity, cinema can seem immaterial as well as instantaneous. Though both are very much reliant on material and technological infrastructures, at their point of use or their point of consumption they are intangible.⁴¹³ Kristen Whissel makes a case for the technological and ideological connections between the emergence of more widespread electrical power and cinema at roughly the same moment, around the turn of the century. She argues that cinema is “a specific instance of modernity” that aligned and meshed with other developing technologies at the time.⁴¹⁴ By writing on early cinema and the machinations— both literal and metaphorical—of the medium, she is concerned about the meanings and understandings of electricity and its elimination of time and space in conjunction with cinema. Similarly, Lucy Fischer draws connections between cinema, electrical power, and the technological sublime, as well as the nerve-fraying “shocks” of the modern age characterized by actual electrical power and the surrounding discourse.⁴¹⁵ The dynamic between a certain level of psychological unraveling or precarity— the result of the speed with which technological and social change was occurring— and control and excitement at the helm of new technologies creates tension among the different ways in which novel industrial developments were represented and understood onscreen.

As Fischer describes, by the 1920s, people “regularly shifted from seeing electricity in terms of technical change to a metaphorical level where it meant novelty, excitement, [and] modernity.”⁴¹⁶ However, the technical features of electronic devices were still very much part of

⁴¹³ Nadia Bozak, *The Cinematic Footprint Lights, Camera, Natural Resources*, New Brunswick, N.J.: Rutgers University Press, 2012.

⁴¹⁴ Whissel, 12.

⁴¹⁵ Fischer, 20.

⁴¹⁶ *Ibid*, 26.

film, both fiction and nonfiction, in the 1920s and into the 1930s in addition to being used as a metaphor for modernity. Fischer's analysis of the 1922 Buster Keaton film *The Electric House* conveys the simultaneous fascination and trepidation surrounding electrification of the home. Keaton's character is mistakenly taken for an electrical engineer at a college graduation ceremony, and asked to fully electrify a wealthy home, an endeavor that goes haywire in keeping with the film's comedic genre. In addition to novelty electrical devices like an electric pool table and bookshelf retrieval mechanism, Keaton's film has an escalator as its centerpiece. While escalators existed at the time, they were only in public spaces. That escalators were first publicly used as part of amusement park rides implies their silliness in the film.⁴¹⁷ Furthermore, this novelty device was not practical in the private space, as it was designed to increase the flow of foot traffic in crowded spaces like subway stations, and thus not fulfilling its design purpose in a private residence.⁴¹⁸ A promotional film by General Electric (GE) from 1915, *The Home Electrical* was perhaps in part the inspiration for the Keaton film. The eleven-and-a-half-minute film differs drastically from the zany, unpredictable electrical home conveyed by Keaton toward the high level of control offered by a fully electrical home environment as envisioned by GE. A brief comparison between these films highlights the ways in which electricity as a material good and a tool for efficiency was seen in a more earnest promotional film.

While the GE film may seem absurd in turns when viewing now, it takes itself very seriously. The film features an array of electrically powered devices, including an electric car simply referred to as an "electric" in the film. In the opening scene, this vehicle transports two men, Mr. Wise and Mr. Newhouse, from a shop window featuring electronics to the home of Mr.

⁴¹⁷ Megan Carpenter, "How the Escalator Forever Changed Our Sense of Space," *Smithsonian Magazine*. June 27th, 2019. Smithsonianmag.com

⁴¹⁸ Carpenter

& Mrs. Wise, the owners of the newly electrified house. In addition to the quirkiest electric items like an electric cup for shaving and an electric cigar lighter, the Wise household also features an electric vacuum cleaner that is built into the house, and a fully electric kitchen, which an intertitle claims is the pride of their home. In the kitchen the gadgets become more recognizable to devices used today, such as an electric water kettle and stove. The latter half of the film emphasizes the labor-saving qualities of electrical appliances, particularly for Mrs. Wise. She joins her husband and their guest for lunch, and as the food is kept warm in electric chafing dishes she checks on her child in addition to writing a letter to her mother. These are conveyed as the personal tasks she might not have time for if she had to do more work around her home in the absence of electricity. Though clearly a wealthy household, the film implies that the time and labor-saving qualities of electricity benefit even servants. Mr. Newhouse is impressed by the technology in the home. An intertitle from his perspective notes, "I have enjoyed seeing your equipment and appreciate your hospitality and assure you that we shall have a complete equipment of G-E heating devices. I certainly owe these wonderful conveniences and labor savers to my wife." The promotional short film shows, to an extreme degree, the extent of electrical appliances in the period available to the wealthy, and the work saved by using them.

Keaton's *The Electric House* also gestures, albeit jokingly, toward the domestic labor-saving qualities of electricity in the dinner scene in which a conveyor belt both serves plates and moves them in and out of a dishwasher in addition to drying them, as the intertitle explains, that this is "something for the housewife." (Fig. 28)⁴¹⁹

⁴¹⁹ *The Electric House*, 1922 Dir. Buster Keaton, Dist. First National Pictures.



Figure 28 Conveyor belts for dishes in *The Electric House*

Later in the film, the conveyor belt and dishwasher both undergo a complete malfunction when the real thwarted electrical engineer arrives to wreak havoc on Keaton's already dangerous electronic devices. In one scene, Keaton rides the conveyor belt before the dishwasher ejects dishes at him, breaking them on the floor around him. These malfunctions and their material manifestations in the form of physical comedy represents the shocks and fears that come with new electrical technologies, but also make light of them for audiences. In contrast, in the closing scene of *The Home Electrical*, Mr. & Mrs. Wise enter their parlor as Mrs. Wise gestures to the fireplace. Mr. Wise shakes his head, and gestures toward an electrical space heater that also emits light, creating a glow similar to that of a fireplace. Rather than starting and tending to a fire in the hearth, the Wises can sit down together immediately (Fig. 29). This scene shows GE's desired message for new consumers of electronic goods—a sense of peace, calm, and importantly, minimal to zero labor for those living in electrified environments.



Figure 29 Mr. & Mrs. Wise in *The Home Electrical*, (GE 1915)

Additionally, the significance of ending the film at this new, electric hearth implies that this focal point of domestic life and space is not being replaced, but merely improved upon by electronic devices. After all, Mrs. Wise's white dress would doubtless get covered in soot if she were to tend to a fire, but the dynamic between Mr. and Mrs. Wise is portrayed as easygoing and warm, as they enjoy the timeless ritual of gathering before the hearth.

As even an early electricity promotional film like *The Home Electrical* implies, the widespread use of electricity had a major impact on labor in the United States. Electrification wrought significant shifts for domestic labor done by housewives and servants, though labor outside of domestic work was impacted significantly as well. While Nye explains the workplace also became safer both in the short term, with less dangerous equipment, and in the long term posing few health risks from burning fuel, workers were wary of the downsides to electricity in the workplace as well.⁴²⁰ With electric light and power, tasks dictated by the time of day and the natural light needed to work, or the need for a direct fuel supply in the immediate vicinity of work, time and space warped to accommodate a 24-hour stream of potential working hours.⁴²¹

⁴²⁰ Nye, *Electrifying America: Social Meanings of a New Technology*, 192.

⁴²¹ *Ibid*, 193.

While workers themselves were concerned by the potential disruption to their long-practiced personal routines, business owners felt that electricity was uniformly positive as an amendment to the workplace, saving both time and money by increasing efficiency.⁴²² Nye reflects on a curious pattern in the adoption of electricity in factories and other places of work indicative of the wider political and economic patterns of capitalist modernity that reads like a warning of things to come: “This expansion of the day might have offered labor choices about when and how long to work, but simultaneous changes in factory organization moved in the opposite direction, toward more rigid control.”⁴²³ Nye’s observation raises questions about the social imperatives of infrastructure that could theoretically provide more choice, but that ultimately render the workforce more vulnerable to exploitation. Of course, a development like electricity benefits people in many ways, but this benefit may very well be disproportionate, and weigh heavily in favor of industrialists leading the charge toward full-fledged neoliberalism a century later. Non-fiction, documentary, and promotional films in the 1930s, a time deeply focused on labor issues, reflect the tension between the positive developments wrought by electricity and the political dangers of the efficiency brought with it.

Electrical power was in use well before the long 1930s but did not begin to gain widespread use until this point.⁴²⁴ The shift from relying on fossil fuels and other natural fuel sources for energy to electricity for energy was not only a tremendous infrastructural shift but was experienced by people on an intimate level. According to David E. Kyvig, “Even before examining specific functions of electricity, one ought to consider the fundamentally different look, sound, and feel of the electric and electrified environment.”⁴²⁵ As a visual technology, and

⁴²² Nye, 193.

⁴²³ Ibid.

⁴²⁴ Kyvig, 43.

⁴²⁵ Ibid, 44.

eventually with the addition of sound, film has the ability to capture and convey the nuances of the electrified environment to audiences. Additionally, not everyone gained access to electrical power at the same time. While travel between rural and urban spaces became easier with the addition of the car into the mainstream in the 1920s, the technological contrasts between these spaces was starker than ever. Cities were quickly electrified, while the countryside lagged behind.⁴²⁶ However, even the steep economic decline of the Great Depression did not stop the development of electrical infrastructures, and over the course of the 1930s power production increased with dips occurring only in 1931, 1932, and 1938.⁴²⁷ In the 1920s, the tandem use of clocks with the increase in electricity in homes and businesses allowed people to schedule time without considering when the sun rises and sets, though this luxury was not as easily afforded to those in the working class.⁴²⁸

On film, infrastructure is often mediated and made visible and knowable as part of the process genre. Process genres are defined by their structural and aesthetic aim to demystify how a task is completed, whether it be the assembly of a machine in an industrial era educational film or the steps of a heist in a Hollywood blockbuster.⁴²⁹ In *The Process Genre: Cinema and the Aesthetic of Labor*, Salomé Aguilera Skvirsky argues that film has a singular ability to convey processes ranging from the material to the affective, from the industrial to the domestic, by showing the steps in the process in sequential order. Furthermore, she explains that the process genre “often elicits references to wonder and absorption; instances are frequently magical, spellbinding, mesmerizing, and so on.”⁴³⁰ Similarly, films about electrical power have dual

⁴²⁶ Kyvig, 43.

⁴²⁷ Cohn, *The Grid: Biography of an American Technology*, 101.

⁴²⁸ Kyvig, 44.

⁴²⁹ Salomé Aguilera Skvirsky, “Introduction,” *The Process Genre: Cinema and the Aesthetic of Labor*, (Durham: Duke University Press, 2020), 3.

⁴³⁰ Skvirsky, *The Process Genre: Cinema and the Aesthetic of Labor*, 3.

purposes— to depict how the power is produced, distributed, and used by consumers, and to emphasize the invisible, magical quality of electricity when compared to older power sources. Thus, cinema can emphasize or de-emphasize the infrastructure necessary for electricity use, and in doing so, reflects the magic aesthetic of the process genre. Skvirsky also builds an argument for the importance of *images* depicting process, connecting them to how viewers conceptualize labor. As she notes, the genre has seen a surge in recent years even as labor in neoliberal societies shifts from material to affective work. Films about electrification processes of the long 1930s do it all, showing the material, affective, and symbolic processes discussed by Skvirsky, calling attention to a transitional moment in labor, energy, and cinema history.

Electrifying Domestic Space

Domestic labor and the ease afforded by electrical appliances are central to promotional films made by electrical companies in the long 1930s. While the labor of domestic spaces was already somewhat invisible due to much of this work being done by women, electricity makes labor seem almost to disappear completely. And yet, by filming these space and appliances, these forms of labor are both acknowledged, and thus made visible, and connected to electrification discourse, deflecting their visibility in favor of automation and efficiency. In films like *A Visit to Valuetown* (Westinghouse, 1935), and *Just Around the Corner* (General Electric & Warner Brothers, 1933) electrical power simultaneously frees some women from domestic tasks while solidifying the role of domestic women as managers of that space. The inclusion of electric appliances like ovens, washing machines, and vacuum cleaners did not mean that women ceased labor, only that they labored differently. This message comes through despite the emphasis the films place on the labor-eliminating possibilities of electrified domestic appliances. Furthermore, these two films show the range in style and approach for promotional filmmaking by electric

companies in the 1930s, and the desire for the films to be both entertaining and convincing as advertisements.

On the other hand, fabrication and process, perhaps less entertaining, are also featured in electric appliance films. *The Fabricated GE Kitchen* (GE 1930) is a process film showing how a kitchen designed around the future inclusion of appliances is built. First, this film is notable among the other two for its focus on the construction of this space in a film studio. While the other films may have been filmed in studios, they don't draw attention to their artifice the way *The Fabricated GE Kitchen* does. *GE Kitchen* also implies that the acts of designing and installing the kitchen and appliances are undertaken by men, a contrast to the final users of the kitchens and appliances, almost always women. The prior films focus primarily on women as the owners and users of domestic spaces and electric appliances, whereas *GE Kitchen* seems to argue that without men working as designers and engineers, women wouldn't be able to benefit from electricity in the same way. Finally, *The Fabricated GE Kitchen* also emphasizes the infrastructural thinking of domestic design in the era: the kitchen is built to accommodate brand-name appliances. Buildings needed to be updated infrastructurally to accommodate new electric technologies, and rather than a loss, this was conveyed as a perk of progress. Brand loyalty was also conveyed as crucial and seemed to pay off not only economically but socially, as seen in *Just Around the Corner* in which a young professional's boss is continually impressed by his choice to furnish his home with GE appliances. While each of these three films has a radically different approach and tone, each contributes to understanding electric infrastructure's role in domestic spaces in the form of electrical consumer durables.

Just Around the Corner: Electrical current as social currency

Just Around the Corner is a promotional film produced by Warner Brothers for General Electric in 1933. The film also features emerging star at the time Bette Davis, who had just signed a contract with Warner Brothers.⁴³¹ The film relies on a plot-driven structure to build tension: two men are up for a promotion at work, and both are trying to impress their boss. The first, Mr. Graham, had just had the boss and his wife, Mr. and Mrs. Sears, for dinner the previous night. At the office the next day, the other man, Jerry, converses with Mr. Sears about his aspirations for a trout pond behind his home, and Mr. Sears is intrigued enough to suggest a weekend trip to visit. The film clearly suggests that the home lives of each of the two men will help Sears decide who should be up for the promotion and implies that the electrical technology present in the home is a large part of what impresses Sears. He is wowed by the way in which Jerry and his young wife Ginger run their home economically and efficiently with electric power and appliances, and much of the promotional film's action occurs at their home. This location, and thus the emphasis on domestic space, is key to addressing the likely demographic the film was aiming for, that is, the women who would be relying on the appliances in their homes most of the time. As Julie Wosk explains, after around 1918 "American appliance manufacturers and utility companies stepped up their efforts to promote the use of electricity by housewives," and a film like *Just Around the Corner* represents the efforts of General Electric to appeal to this group.⁴³²

Women's bodies were configured around electricity discourse from its origin in both domestic spaces but also in mainstream film, literature, and advertising in the early twentieth century. Wosk argues that in addition to women using electric appliances in their homes, women

⁴³¹ Davis' co-stars include other popular actors at the time such as Dick Powell, Warren William, Joan Blondell, Preston Foster, and Ruth Donnelly.

⁴³² Julie Wosk, "The Electric Eve," *Women and the Machine* (Baltimore: Johns Hopkins University Press, 2001), 83.

were associated with electricity in the form of “the Electric Eve,” a woman archetype who is in turn both a potential femme fatale, a domestic angel, or even a machine herself depending on the circumstances.⁴³³ Connecting femininity with electricity across a broader range of locations and media, Wosk describes various fictional and real-life Electric Eve representations including women wearing electric jewelry in an issue of American industry journal *Electrical World* in 1883, a fictional female android named Halady from Auguste Villiers de l’Isle-Adam’s novel *L’Ève future* (Tomorrow’s Eve), published in France in 1885, and fictional protagonist Marie’s electric double in Fritz Lange’s *Metropolis* (1926).⁴³⁴ Wosk contends that “women had been portrayed as goddesses of electricity, exotic androids, and seductive advertising lures, but during the early decades of the twentieth century manufacturers also asked women to envision themselves differently: as consumers of new electrical products of industry.”⁴³⁵ This switch from archetype to consumer marks a significant shift in the tone surrounding discourse connecting women with electricity. The impact of electric appliances on women’s home lives is conveyed as empowering for women, while still dwelling in the rhetorical realm that questions women’s full control over these technologies. Wosk elaborates that poetry and visual art of the 1920s for example imply the fusion of women and machine in a way that can be read as both dehumanizing and invigorating, with women’s bodies at the center of this dichotomy.

Just Around the Corner takes a decidedly normative approach to the subject of women’s electrical lives, appealing to labor eliminating qualities of appliances. Additionally, Davis’ character Ginger serves as a contrast to the seductress characters she was playing in films at the time, such as her role in *Bad Sister* (1931) as Marianne, which aligns more closely with

⁴³³ Wosk, *Women and the Machine*, 74.

⁴³⁴ Wosk, 82.

⁴³⁵ *Ibid*, 83.

previously conceived ideas of the electric eve. While *Just Around the Corner* has a less succinct connection to films like *The Home Electrical* and its spinoff *The Electric House*, the film maintains a similar approach in its plot to the GE film. In *Just Around the Corner*, the home is the space central to a family's success, and this success is made possible by electricity and GE electrical appliances. While the narrative in *Just Around the Corner* hinges on a higher-stakes scenario—the potential promotion at work for Jerry—both films also follow a pattern in which a man is invited into the fully electrical home of a couple, later leaving with a strong positive impression of the way the household is run. Women's labor and its portrayal as effortless, enjoyable, and even magical thanks to electricity is central to GE's strategy even more so in *Just Around the Corner* than in the earlier *The Home Electrical*.

In both films the woman is in charge of the home and has ample time to spend attending to her spouse and her child. In this way, family harmony and health are also connected to the availability of electricity and electricity serves a particular role in the construction of home economy. As Phyllis Palmer explains in her book, *Domesticity and Dirt: Housewives and Domestic Servants in the United States, 1920-1945*, despite the appearance of labor-aiding appliances on the market, the interwar period in the United States was laden with conservative views of women's labor—it was expected for middle-class women to accept housework as their life's work and give up any prospects of paid work away from home.⁴³⁶ The film reflects these domestic ideals and pushes them even further in their Depression-era context, which exacerbated the need to make money spent seem worthwhile. Though Ginger and Jerry could seemingly afford to hire a paid domestic servant, they emphasize the economic benefits of Ginger doing it

⁴³⁶ Phyllis Palmer, "Domestic Work Between the Wars." In *Domesticity and Dirt: Housewives and Domestic Servants in the United States, 1920-1945*, 1-16. Philadelphia: Temple University Press, 1989. Accessed April 23, 2021. doi:10.2307/j.ctv941wpk.6.

herself. In *Just Around the Corner*, Mrs. Sears and Ginger have several exchanges about how Ginger manages to run her household without a maid and also take care of a baby. Ginger seems unphased by the work she does to maintain their home, and she embodies the ideal woman Palmer describes as a “good woman” who achieves her moral superiority through her role as a housewife.⁴³⁷ When Mrs. Sears exclaims, “You know, I’ve really been mystified with a frail little person like you operating a house of this size without help,” Ginger replies, “Well I have lots of help,” as she plugs in an electric coffee percolator. The film opts for a demonstrative aesthetic in which Ginger uses her appliances in lieu of extensive dialogue of her explaining what she means by having “lots of help.” She also demonstrates her household thrift by relying on an appliance, paid for once—rather than continually paying another woman for her domestic service. This strategy sets the short film apart from a straightforward advertisement in that it highlights the confidence Ginger exudes, her ideal lifestyle, and youthful slim figure (what Mrs. Sears perhaps meant by “frail”) rather than in-depth focus on products in every scene. However, the film still manages to cover trends in home economics and consumer durables that exemplified the “ideal” lifestyle for women of the era, that is, to live as a Middle-class housewife (MCH) with all the requisite technological novelties and moral trappings.⁴³⁸ The narrative built around the lifestyle allowed by electrical infrastructure and appliances in the home sends a strong message that this power source is for the up and coming, that home life would be burdensome without it, and that MCHs contribute equally, albeit differently, to their family’s success and well-being.⁴³⁹ The role of the MCH in promotional electricity films also creates an intentional contrast to the more

⁴³⁷ Palmer, *Domesticity and Dirt: Housewives and Domestic Servants in the United States*, 17.

⁴³⁸ Palmer, 18.

⁴³⁹ Palmer, 20.

fantastical and morally bereft possibilities for electrified femininity of the area as described by Wosk.

Food preparation and cooking are integral to the labor done by women in their homes in the 1930s, and because the products on display in the film are mainly kitchen appliances, food preparation and cooking are central in *Just Around the Corner*. However, the act of cooking remains absent from the film. As a process, cooking is conveyed synecdochally in the film as the appliances are visible in only some shots and scenes, and a few scenes stand in for the entire process of cooking rather than showing Ginger's steps to achieve her artfully prepared dinner.⁴⁴⁰ In this way, Ginger's labor is at the heart of the film while also remaining largely unseen. The Sears' weekend visit to the young couple's home revolves around mealtimes, but the meals are about ease and leisure rather than the effort Ginger put in to preparing them. For example, after enjoying their evening meal, the foursome is shown entering the parlor while Mr. Sears comments on the food, even comparing Ginger's cooking to the quality of a restaurant. Mrs. Sears says to Jerry, "You know you're a very lucky young man to have such a good cook nowadays," to which Ginger replies, "Anybody can be a good cook with a kitchen like mine. The reason that roast is so good, Mr. Sears, is that electric cooking conserves the goodness of the meat, cooks it in its own juices." As Jerry and Ginger are working to impress the older couple, not only ease of use, but quality outcome is important—the food must be impressive as well as simple to prepare. Ginger truly does it all in the film, entertaining her husband's boss and his wife with her company while also providing home-cooked meals. Her ability to socialize is predicated on her freedom from constant food preparation and storage. Rather than a worker, she has risen to the ranks of manager, as she explains in another exchange during the same after-

⁴⁴⁰ Skvirsky, 16-18.

dinner scene. Mrs. Sears says to her husband, “Martin, I want you to look at these hands,” as she grabs and then holds up Ginger’s hands in front of him. “Can you believe they do the entire work of a house?” she exclaims. Ginger quickly follows, “They don’t do the work, they direct the work,” to which Mr. Sears replies, “quite different from the old days.” In this quick exchange, Ginger takes credit not for her labor, but for her deft managerial skill—directing the work is of course a skill in itself, perhaps conveyed as a higher-level skill than hands-on meal preparation. In the narrative arc of the film, it is implied that Ginger’s managerial skills translate to Jerry—she is the manager of their household, while he is soon to become manager at the office. It is implied that what happens at home among other family members translates to the workplace; Mr. Sears sees Jerry’s intelligent, organized wife, and ultimately offers Jerry the promotion at the end.

Health is also a subtle yet significant layer of electricity discourse in the film, particularly surrounding food safety and children’s wellbeing. Over the course of the thirteen-minute run time, Ginger and Jerry’s child only makes a brief appearance, but this moment is significant in appealing to the broader benefits of electricity in the home beyond mere labor-saving. Indeed, the film implies that electricity has life-saving power as well. A few times in the film Ginger says that she is going to go check on the baby, and Mrs. Sears accompanies her. Yet, the processes involved in taking care of a child is absent from the film. The toddler-aged girl finally appears briefly near the end of the film. After their supper, Ginger and Mrs. Sears ascend the stairs while their respective husbands talk in the drawing room. Mr. Sears is in disbelief that Jerry and Ginger are able to afford all the modern conveniences in their home on their income, and remarks that in spite of that, they seem to have “mastered the art of living.” Jerry replies that they’re in fact saving money, and that without needing a maid their household budget stays quite

secure. Moments later, the women descend with the baby in tow, and Jerry adds, “Here’s the little person responsible for it all,” in reference to their child. Jerry continues: “You know, two years ago we nearly lost the baby and since then the doctor’s been very strict about her diet; that’s how we happened to get our electric refrigerator.” While this entire exchange only lasts about twenty seconds, the implications for food safety and the legacy of historical debates surrounding cold storage techniques at the turn of the century are profound.

Between around 1875 and 1915, before electric refrigeration was widely available at the start of the 1930s, families relied on iceboxes to store food that needed to be kept cold, a practice that remained somewhat controversial in light of the Progressive era, which ushered in a sanitation revolution.⁴⁴¹ At the turn of the century, certain highly perishable foods like “butter, milk, cream, eggs, poultry, and fish” were considered safe only when eaten fresh, though storing these foods in iceboxes soon became common practice.⁴⁴² Household use of iceboxes was still popular into the late 1920s and early 1930s, though as *Just Around the Corner* implies in the scene surrounding the child’s health, these storage strategies were imperfect. Without consistent temperature regulation, food safety was not guaranteed, and “home economists spread the message that improper food storage posed dangers to health.”⁴⁴³ The refrigerator, then, is simultaneously a vehicle for household thrift, a status symbol, and crucially, a signifier of the housewife’s commitment to her family’s health and safety. Shelley Nickles writes that by the 1930s:

⁴⁴¹ Jonathan Rees, “The Pleasures and Perils of Cold Storage,” *Refrigeration Nation: A History of Ice, Appliances, and Enterprise in America*, (Baltimore: Johns Hopkins University Press, 2013), 100. Accessed April 24, 2021. ProQuest Ebook Central; Rees, *Refrigeration Nation*, 119.

⁴⁴² *Ibid*, 99.

⁴⁴³ Shelley Nickles. ““Preserving Women”: Refrigerator Design as Social Process in the 1930s.” *Technology and Culture* 43, no. 4 (2002): 693–727, 705. <https://doi.org/10.1353/tech.2002.0175>. 705.

The refrigerator's primary function, preserving food, was now linked visually to the responsibilities of the average housewife to provide a clean, safe environment for her family...By buying a white refrigerator and keeping it in the kitchen, the housewife expressed the awareness of modern sanitary and food preservation standards; her ability to keep the refrigerator white and devoid of dirt represented the extent to which she met these standards.⁴⁴⁴

In *Just Around the Corner*, Ginger's home is portrayed as clean and safe; she confidently serves safely stored and prepared food to her guests as well as her young child with the confidence that the electrical appliances she relies on will eliminate the fear of food-based health hazards, and her GE refrigerator aligns with aesthetic standards of cleanliness, despite the threats of foodborne illnesses being invisible to the naked eye. Indeed, the symbolic power of the refrigerator as both a tool and a moral signifier was strong enough to buy the owner moral superiority as well as social status because its representation of increased cleanliness and thus family health and safety.

As Nickles suggests, films that advertise an appliance eventually focus on their aesthetic qualities in addition to the practical details of their operation. Attentiveness to the appearance of the appliances signals their role as cultural signifiers connected to morality. In promotional films, the clean appearance of the appliances imbue their owners with class mobility and moral superiority in addition to connecting them to the electrical infrastructure representative of modern ideals like connectivity, efficiency, and power. In this way, appliances are perhaps the ultimate synecdochic object—they are modular and can be detached from the grid that supplies them with energy, and they are essentially useless mass-produced objects without a power supply. Unlike unharnessed water or untapped oil, then, the usefulness of an appliance feels

⁴⁴⁴ Nickles, "'Preserving Women': Refrigerator Design as Social Process in the 1930s," 705.

somewhat limited. Despite these limitations, and the longer-term issues in the present day of overconsumption of new consumer durables and the discarding of old ones, appliances like refrigerators, dishwashers, ovens, washing machines, and smaller ones like the coffee maker are proudly displayed in *Just Around the Corner*—they are, after all, what’s being sold.

In the film, the main emphasis is on the appliances used for food preparation. Despite the brevity of Ginger and Mrs. Sears’ interaction over supper, in the kitchen Ginger takes time to explain the timed oven, food, its storage, and its cleanup to represent the main three appliances in the film. The scenes of the appliances emphasize their efficiency, cleanliness, and ease of use for the owner as a labor-saving mechanism in addition to their branding and design. In the film, both the dishwasher and the oven are shown in use—the goal being to show a potential consumer how the products work (Fig 30). In an earlier scene, Ginger is shown in a medium long shot in her kitchen opening the refrigerator to reveal the organized and well-supplied interior. Mrs. Sears promptly arrives in the kitchen, distraught that Ginger let her sleep in instead of asking her for help with breakfast. Ginger insists that she needed no help to prepare the meal, and that she loves living out away from the city—a nod to the ongoing rural electrification at the time. After breakfast, Ginger shows Mrs. Sears the dishwasher.



Figure 30 Ginger showing off appliances in *Just Around the Corner*

Ginger quickly lists the benefits of the appliance, and how well it functions—for example, not needing to rinse dishes beforehand, and how the heat the machine gives off from using hot water during the washing process then dries the dishes with their own heat afterwards. Ginger also does some quick math to explain how much time she saves by using the dishwasher. After she loads the dishes, several overheard shots show the design of the appliance and the dishes within in. The cut between the start and end of the wash cycle in the film truncates the time a wash cycle would actually take, which emphasizes the speed of the activity with the help of an electric appliance. In this scene, both women agree that washing dishes is a laborious activity and express their gratitude at the option to avoid it. Mrs. Sears explains, “You know, when we were first able to afford a service, my greatest happiness was that I had no more dishes to wash. You know I almost want to keep house for myself this new way. I think it should be fun.” The film insists that the appliance, though embedded in the home of a younger woman in the film, can be used by anyone, and here signifies that appliances should be part of a both upper and middle-class households. Rather than a loss of status for the inability to afford domestic servants, the film implies that ownership of an electric appliance is merely a different form of help around the house for modern women. The refrigerator returns in the last scene of the film to somewhat comedic and familiar effect as the Sears’ raid the fridge for leftovers at night. The scene, while short, illustrates the light-up interior of the fridge, allowing the user to easily see the contents inside in addition to the convenience it provides by allowing someone to eat something late in the evening well after a planned mealtime because the food is kept at a safe temperature for storage. This scene illustrates that the refrigerator is intimately connected to time—a magical device indeed that prolongs the lifespan of certain foods and extends the window of time during which someone in the household can enjoy a meal or a snack. The refrigerator as a time-altering

device aligns with Kyvig's claim that electricity changed the concept of time and the workday but extends the application beyond electric light to other electric appliances as well.⁴⁴⁵

The oven, like the refrigerator, appears in use in the film before it is discussed in detail. In the breakfast scene, Ginger plugs in the coffee percolator and quickly places a dish in the oven. The merits of the electric range on the stovetop are discussed in the dishwasher scene when Ginger explains that pots and pans can also go in the dishwasher because “the controlled heat of the automatic range never burns, the food in the pan is as clean as a dish.” However, the oven is front and center in the pre-supper scene after the foursome arrives home from an outing in the afternoon and Ginger wows the guests by saying that dinner will be little work to prepare. A concerned Mrs. Sears exclaims, “Won't it be a lot of work? It's late afternoon, you know,” to which Ginger replies, “The work is done now. More magic. Want to see how I do it?”

Appliances in the film have the magical ability to operate seemingly without human intervention. Ginger's explanations straddle the line between revealing the secrets of these magical appliances so that viewers of the film—potential buyers—understand to some degree how they work, while also maintaining the illusion they create of a work-free home life for the family—the woman—who owns them. In the kitchen, Ginger and Mrs. Sears stand in a closely cropped medium shot with the oven in the center. Ginger expounds upon the features of the oven, such as the sliding shelves that allow the user to place many dishes in the oven at once, and the timer that the user can set for a time to begin cooking, turning the oven on, and when it will turn off, in addition to what temperature it will run at. Ginger specifically mentions as well that “the times and temperatures are the same as it would be with any other fuel” implying that the electric oven can easily compete with a gas-powered version, without mentioning gas directly. Again, the

⁴⁴⁵ Kyvig, 44-45.

automated features of the oven allow the user to alter time to fit her needs; a clear example of how electricity in the home changed how people organized their daily lives. And yet, after they enter the kitchen and Ginger explains to Mrs. Sears how she managed to cook dinner sight unseen, she reveals that she prepared everything in advance the night before and stored it in the refrigerator. Labor has not been eliminated entirely, but the film emphasizes the labor-saving mechanisms of electrical appliances like refrigerators for overnight storage and timed ovens for cooking while out and about, rather than the food preparation that Ginger undoubtedly had to do the previous night. Time spent on work has perhaps merely shifted, but the film aims to conceal where it has shifted to.

Just Around the Corner clearly reflects material concerns of the early 1930s in the United States—a clean, efficient middle-class home, economical appliances, and safe food for the family. However, the film also does affective work. Skvirsky claims that earlier process genre media was perhaps more focused on materiality because of the material conditions of labor in their contexts. *Just Around the Corner* does both. As part of the process genre, the film conveys what Skvirsky describes as symbolic processes, which are characterized by one process hiding another process. The bait and switch of a material process—cooking, cleaning up, and maintaining the household—for an affective one—impressing the Sears’—is the symbolic process of the film. The process of impressing the boss and Jerry earning a promotion is narratively more important than the process of cooking and maintaining the household, even though the latter is the actual subject of the promotional film. Affectively, the viewer is supposed to be most concerned with what will happen to Jerry at work. The first four minutes of the thirteen-minute film take place in the office where the men work, and thus there is some level of investment in whether Jerry gets promoted. In the final fridge-raid scene described above, Mr.

Sears alleviates viewer curiosity when he says, “Well this has been a great fishing trip. I caught a new office manager!” But over the course of the film, Ginger is the one who has done the managerial work to impress Mr. Sears; her husband comes off as somewhat nervous at the office, yet in the well-controlled home environment, conducted by his wife, he is at ease and able to do the affective work required to win over his boss. Thus, *any film* can be a symbolic process of the material infrastructure it represents. While film too is material, its affective dimensions, meant to inspire confidence and safety for those who trust in electrical infrastructure, are immaterial and intangible.

The Fabricated GE Kitchen & A Visit to Valuetown: Prefabricated Spaces and Consumer Durables

Though radically different in approach from *Just Around the Corner*, two more promotional films, *The Fabricated GE Kitchen* and *A Visit to Valuetown*, each illustrate different elements of the process genre. They also highlight how labor and space are constructed and either emphasized or de-emphasized to communicate the need for electrical infrastructure. A brief analysis of these films also serves as a conclusion to my discussion of *Just Around the Corner*, extending my argument that film and domestic electrical infrastructure shape one another. Furthermore, *The Fabricated GE Kitchen* clearly falls into the process genre, whereas *A Visit to Valuetown* has a different, more whimsical approach focused on the visible features of a prized consumer durable of the era, the refrigerator, and maintaining the invisibility of the spaces in which it would be used, the kitchen, and the electrical infrastructure needed for its operation. While the former film is much less entertaining to watch, intertitles express that part of the film’s goal is to imbue the GE kitchen with a sense of possibility, even fantasy, while remaining trustworthy and utilitarian. For example, the first intertitle reads, “The General Electric Company

has developed a kitchen, the key-note of which is standardization. However, this in no way limits its amazing flexibility and uniformity of design.” The concepts of flexibility and uniformity read as somewhat contradictory, and yet they accurately convey that the kitchen is to be a space of reliability due to the infrastructure it is connected to and its prefabricated components, and a space of innovation and flexibility for the end user. The latter film seeks to entertain viewers with a surreal approach, visually comparing the refrigerators to houses and their contents—various vegetables and meats—to people. The absence of a carefully fabricated space in *A Visit to Valuetown* shifts the emphasis to the appliance itself, allowing the processes involved in cooking, maintaining, and managing a household fall away.

Thus, a comparison between the two films from two different companies, *The Fabricated GE Kitchen* (General Electric, 1930) and *A Visit to Valuetown* (Westinghouse, 1935) illustrates two opposite extreme aesthetic approaches taken by electrical appliance company films. The first focuses on the importance of the built domestic space, which can be read as both a microcosm for electrical infrastructure writ large and as a self-reflexive onscreen look at both filmic and infrastructural processes. The second relies on fantasy and the magic imbued in the electrified object itself—the refrigerator. In the silent GE film, a small team of workers assembles a kitchen from essentially the ground up, beginning in a space with a black background that appears to be a film studio. Being in the liminal space of the studio creates a sense of fabricating not only the kitchen out of pre-made materials, but visually building the infrastructure needed for an electrified domestic life through film itself. The Westinghouse film, on the other hand, takes advantage of film’s allowance for creative and uncanny images, and embraces a zany narrative about various foods shopping for their “home”—different refrigerators—in a fantastical neighborhood, Valuetown. The latter film combines a studio backdrop in addition to both stop-

motion and drawn animation and sound to build a setting based on fantasy rather than practicality. The two films reflect different consumer facets of electricity discourse at the time that are notably different from the domestic labor-heavy narrative approach in *Just Around the Corner*, instead opting to omit domestic labor from their promotional content entirely in favor of very specific types of built environments detached from an actual dwelling. This sense of detachment is a plus for the messaging in the film. Aesthetically, it becomes easier to imagine a kitchen setting like GE's or a refrigerator like Westinghouse's anywhere—in a suburban home, a rural home, or a home in the city. At a time when electricity was still absent in many rural areas, these films created a forward momentum in their messaging that electricity and electrical appliances could be available to anyone, anywhere, despite whether that was actually the case.

The Fabricated GE Kitchen is a process film that likely falls into the training film category. The film does not have the creative intrigue of a promotional film for a consumer audience, nor does it blatantly advertise a product. Rather, the film seems to be aimed at GE employees in charge of the kitchen installation depicted in the film. The labor shown in the film, which primarily includes fabrication, is coded male. However, the labor that will primarily be undertaken in the finished space will be largely coded female. In this way, the film is an unusual example of the male-gendered labor behind the fabrication of a space dedicated to domestic work. In contrast to a film like *Just Around the Corner* that highlights female labor, *The Fabricated GE Kitchen* reveals that before a woman can take the lead in household management, she must acquire the correctly designed and fabricated space. These spaces, their designs, component parts, and fabrication, still lie in the hands of men.

The setting of *The Fabricated GE Kitchen* itself feels unfabricated. Behind two-by-fours and around the edges of the frame lies what appears to be dark empty space—the space of the

film studio. Yet undoubtedly plenty of work went into the design and construction of the studio in which this film is being made. The scenery in the film is that of a pre-existing workspace, as the studio is in use for the recording of the kitchen fabrication process and will inevitably be available for other film-fabrication projects in the future. The visibility of the studio space early in the film is further de-emphasized as the film progresses and the kitchen space is fabricated, taking over the frame. Before the viewer's eyes, the scaffolding for the prefabricated components and the film studio backdrop become a fully functional kitchen. The initial glimpse of the space used for filming this and other films calls attention to the constructedness of both film itself and the spaces of labor that the film records and normalizes. The film opens on a scene of two men looking at a blueprint, and two-by-four beams stripe the frame vertically from the top down to the floor. The shell of the kitchen has already been built, and during the film the pre-made components of the GE Unit Kitchen are installed. While some of the process looks familiar to the contemporary viewer familiar with furniture stores like Ikea that require assembly by the consumer, the film also shows that some knowledge of carpentry is required for installation. Like *Master Hands* by Jam Handy from Chapter 3, the mechanization of work, in this case pre-fabrication of component parts, has not made hands-on labor disappear, but has merely changed its process.

As the film progresses, the two men bring in and stack a series of flat boxes containing the prefabricated components of the kitchen. They methodically assemble the metal frames and add side panels and work surfaces to the space, with intertitles explaining each step as they go. The intertitles emphasize the need to place the dishwasher and lighting correctly and carefully for electrical hookup, showing the builders arranging the required part accordingly (Fig. 31). Easily recognizable electrical burners are

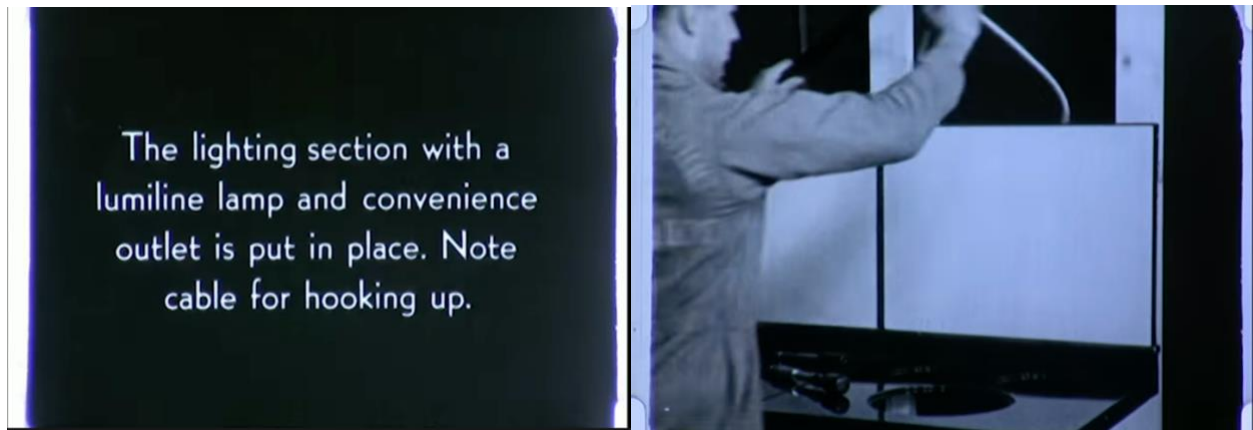


Figure 31 Intertitle & installation shot in *The Fabricated GE Kitchen*

installed on the stove, a distinct visual marker of the electrified cooking process that will take place in the space. Perhaps the newest kitchen innovation in the film is the garbage disposer installed under the sink. Built-in electrical disposers were developed in the 1930s. Two conflicting stories about their origin exist—one attributing their origin to architect John W. Hammes beginning in 1927, and one attributing their creation to General Electric in 1935⁴⁴⁶. The GE model is shown in their film, though Suellen Hoy explains that garbage disposers were not widespread in American homes until after World War II.⁴⁴⁷ The inclusion of such a new technology in the film suggests its more aspirational undertones. In the film, what's fabricated is the ideal kitchen, not necessarily the kitchen attainable for most people at the time. Spacious cabinets and drawers surround the gleaming appliances in the fabricated kitchen, their emptiness hinting at the prosperity required to ensure they are filled with food for a family, the reality of which was not always realized during the Depression era. The film ends shortly after the refrigerator is put into the place, indicating the final touch of a safe, efficient, and electrified kitchen.

⁴⁴⁶ Denise DiFulco, "Grist for the Daily Grind" *The Washington Post* August 23rd, 2007.

⁴⁴⁷ Suellen Hoy, "The Garbage Disposer, the Public Health, and the Good Life," *Technology and culture* 26, no. 4 (1985): 758–784.

While *The Fabricated GE Kitchen* shows the process of building an aspirational, fully electrified kitchen, *A Visit to Valuetown* delves deeper into the realm of fantasy. Through its staging of a neighborhood of refrigerators waiting for various food items to settle in and find homes, this film is representative of an over-the-top promotional approach that appeals to absurdity and humor. Perhaps a bit more engaging due to the inclusion of color and sound, the film appeals to a wider audience—children and adults alike. This appeal to a wider audience implies that this promotional film could have been shown in theaters before feature films. The playful cartoon elements of *A Visit to Valuetown* balance out practical sloganeering, including banners fluttering in front of the refrigerators saying, “A New Standard of Value in Economy,” “A New Standard of Value in Efficiency,” “A New Standard of Value in Convenience,” and “A New Standard of Value in Beauty.” Adults watching are drawn in by the features of the appliances while young viewers are entertained by animated and stop-motion sausage links, eggs, and wedges of cheese marching down the sidewalks of Valuetown. The detailed description of the first refrigerator, “The Westinghouse Golden Jubilee Model ED30” exemplifies an interlude targeted at the end user of the appliance -- an adult, and primarily a homemaker -- that still applies playful stop-motion filming techniques. A woman’s hand demonstrates the newly redesigned door latch, but the rest of the interior features of the refrigerator move around unfettered by the visual intrusion of human hands. The lack of human interference among inanimate objects takes precedence from earlier stop-motion films like *The Automatic Moving Company* (1910, Romeo Bosetti & Émile Cohl) while contrasting with a film like Jam Handy’s *Master Hands* in which the human element is paramount. In *Valuetown* the emphasis remains on the device itself by visually displaying its novelty and precision of design while a voiceover explains the features aloud. Shelves and ice trays seem to magically appear

inside the refrigerator, and the 5-year warranty is also emphasized before the film cuts to a humanoid hotdog climbing a staircase into the appliance. In *A Visit to Valuetown*, food is attracted to the appliance, rendering shopping for it unnecessary. While food gravitating to the appliance of its own volition is a mere conceit of the film's plot, necessitating anthropomorphism, this messaging speaks to the goals of efficiency and thrift the promotion conveys.

While both *A Visit to Valuetown* and *The Fabricated GE Kitchen* contain varying degrees of narrative elements, they both depart from the plot-driven style of *Just Around the Corner*. While *A Visit to Valuetown* has a playful frame narrative—food finding its “home” in a refrigerator—it still lacks the level of detail in *Just Around the Corner* with its purpose-driven narrative, multiple main characters, and emphasis on the lives of those using the electrical appliances rather than the appliances themselves. Taken together, the three films reveal the range of approaches available to engage audiences with promotional content focused on the convenience of electricity in the home and thus the need for electrical appliances. The key commonality among the three films is a focus on the ease of access to said appliances and subsequent ease of use. The ease of assembling or using a prefabricated kitchen with appliances designed to fit directly in place and connect to the electrical infrastructure to power them is contrasted by two more films of the Depression era, *Power and the Land* (1940 dir. Joris Ivens) and *GE Effects on Farm Life* (1930s), that focus on the benefits and, more subtly, the challenges of rural electrification and electrifying spaces not originally designed for electricity or electrical appliances. While both of the films focus on the improvements wrought by electricity on farms, even contemporaneous critics argued that “the technological fix of buying electrical appliances

seemed too pat and too easily affordable” to be realistic.⁴⁴⁸ Indeed, the promotion of widespread electrical infrastructure perpetuated the design of new interior structures as seen in *The Fabricated GE Kitchen*, the fantasy of refrigeration being possible anywhere as seen in *A Visit to Valuetown*, and the idea that labor-saving and health-promoting appliances were attainable for any family as seen in *Just Around the Corner* without engaging with the realities of how long these changes took, how much they cost, and if they truly cut back on labor. As electrical infrastructure became more widespread, reaching rural areas and farms in particular, the benefits of electricity on farming became an important film subject. While *Power and the Land* is well-known, *GE Effects on Farm Life* is unknown, and thus provides a beneficial comparison to the celebrated Ivens documentary.

Rural Electrification: Power and the Land & GE Effects on Farm Life

While there were some films about electricity and electrical appliances made before the 1930s, more well-funded and ultimately celebrated films focused on electrification were brought to the fore of American cultural consciousness with the formation of the Rural Electrification Administration (REA) in 1935. Before this New Deal-era government organization, films about electricity were typically made by private corporations such as GE and Westinghouse with the goal of product promotion in mind. However, the shift toward public works projects during the Great Depression at the behest of New Deal administration made private utilities such as electricity a public concern, and thus the social need for filming the government-funded rural electrification efforts arose. Audiences for government-sponsored films were politicized, and “the ultimate effect of such state-sponsored films was to cultivate a responsible citizen’s reaction

⁴⁴⁸ *New York Post* and *Commonwealth* as qtd. By Ronald R. Kline “Ideology and the New Deal ‘fact film’ *Power and the Land*. *Public Understanding of Science* January 1 1997, Vol 6 Issue 1: 19-30. 26.

to social malaise and economic crisis through civic engagement as a political actor. Documentary thus inscribed its audience within the public sphere.”⁴⁴⁹ While promotional films also had the public in mind, the purpose of the film in the case of government-sponsored content is different. While both corporate and government-sponsored films about electrical infrastructure and appliances promote electricity—it’s hard to imagine a con to electricity as an ideal power source—promotional films remained tacit in their politics where government films were more direct.

Electric power was a crucial political tool in the development of a public recovery plan during the New Deal era and the Great Depression.⁴⁵⁰ While there was some conflict among farmers about the benefits of electrifying due to both the cost and mistrust of the processes required to gain access to electricity, electrification was seen as a net positive in most every way in both promotional and government film. In *Power and the Land* (1940), government-sponsored electricity made possible by the Rural Electrification Administration (REA) is praised as the answer for farmers who have been left in the dark as private utility companies refused to expand to rural areas because of the cost. The film romanticizes manual labor without electricity and maintains a dignified tone rather than making farms without electricity look sorrowful. *Power and the Land* strikes a careful tonal balance in its representation of labor and does not imply that electricity eliminates labor. Rather, the film identifies ways for labor to both remain meaningful through community and to become more joyful thanks to electricity. Thanks to its rural setting, *Power and the Land* balances a focus on modernization and the politics of modernizing, and the traditional values believed to be important to the primary audience of rural farmers. This differs

⁴⁴⁹ Paula Rabinowitz, “1930s Documentary and Visual Culture.” *The Wiley-Blackwell History of American Film*, (Chichester, West Sussex; Wiley-Blackwell, 2012),10.

⁴⁵⁰ Cohn, *The Grid: Biography of an American Technology*, 75.

drastically from the hyper-modern approach in most corporate-sponsored films at the time. Another film, *GE Effects on Farm Life*, offers a political contrast to Ivens's film while following a nearly identical plot.⁴⁵¹ This corporate-sponsored film focuses on a farm family gaining electrical power as well, but General Electric is given credit for this gain. The films also differ in their styles. Finally, two shorter and lesser-known films were made from unused footage originally shot by Ivens for *Power and the Land*. The two films, *Bip Goes to Town* (1941) and *Worst of Farm Disasters* (1941), focus on different angles to communicate the benefits of electrification on farms. *Bip Goes to Town* emphasizes the positive outcomes of electrification for future generations, as it focuses on the youngest Parkinson child, Bip, and his fascination with electricity at the creamery in town. *Worst of Farm Disasters* centers on the tragedy of a barn fire, which Ivens ultimately decided to leave out of *Power and the Land* to avoid the negativity of the content.⁴⁵² Even so, barn fires were a common occurrence due to kerosene lamps, and the footage of the fire is striking. The film has an ominous tone whereas the others have an upbeat, optimistic one. Thus, this final film serves as both an outlier and a reminder of the dangerous outcomes possible if electrification is not achieved.

Power and the Land was directed by Dutch filmmaker Joris Ivens and released in 1940 by RKO. Focusing on a single family, the Parkinsons of Ohio, *Power and the Land* is both a celebration of the role that farming plays in a modernizing America and a government-sponsored propaganda film praising the Rural Electrification Administration (REA). The film's run time of thirty-eight minutes is split into two distinct parts—the depictions of difficult manual labor before the farm has electricity, and the thrill of automated work through the help of electricity

⁴⁵¹ The release date of this film is unlisted in the credits and where it is available online, though it appears contemporaneous with *Power and the Land*.

⁴⁵² Ronald R. Kline, "Ideology and the New Deal 'fact film' *Power and the Land*. *Public Understanding of Science* Vol 6 Issue 1:(1997), 19-30. 23.

and electrical appliances. The Parkinson family is represented as noble, hard-working, wise, and moral—they don't do things the “easy way” like people living in the city because they have no choice. However, the film is careful not to cut them down morally after they get electricity. Rather, the narrative makes it clear that those who are the most hardworking, the farmers providing food for the rest of the country, deserve respite from the requirements of keeping a farm running, and thus deserve electricity to make this job not only easier but safer and more efficient. Furthermore, the power cooperative model shown in the film, a model in which farmers themselves take out an REA loan to pay for the installation of electrical infrastructure, ultimately becoming the owners of their own power system, emphasizes the upright attitudes of farmers as independent thinkers and hard workers who are willing to take the matter of electricity access into their own hands. In this way, *Power and the Land* emphasizes the many positive elements of rural electrification and the government agencies supporting it.

Like other well-known New Deal-era films such as *The Plow That Broke the Plains* (1936) and *The River* (1938), both directed by Pare Lorentz, *Power and the Land* was directed by a filmmaker whose previous work built the foundation for his approach to the REA-sponsored film, and who continued to make many more documentaries after its release. Before coming to the United States, Ivens already had a reputation for his artistry, from his early film *Regen* (Rain, 1929) to the Soviet-influenced *Industrial Symphony* (1931), which was sponsored by the Dutch Philips Electric Company.⁴⁵³ Numerous film scholars and historians have discussed *Power and the Land* and compared it to other government-sponsored documentaries in addition to its sociopolitical aims. Historian Robert R. Kline argues that the film is representative of three primary overlapping ideologies shared among three groups involved in the creation of the film:

⁴⁵³ Barnouw, 133-34.

Power and the Land embodied a complex ideology of technological progress that was shared by documentary film-makers, the REA, and social commentators: the social aspect of technological determinism (that technology is the primary source of social change); the progressive ideology of electricity (that electricity is a force for social progress); and the modernizing role of government (that government should help electrify the farm in order to reduce cultural differences between the city and country).⁴⁵⁴

Like gas industry films and water-power focused films of the era, *Power and the Land* had a progressive view of infrastructural development, and filming this development was crucial to recording and promoting the progress being made. While Kline explains that the film went through much revision over the course of its creation, the ultimate message relied on the idea that “happiness was still defined in terms of modernity” when it came to farm life.⁴⁵⁵ Indeed, as a secondary power source, electricity is prized as the defining factor of modernity, and in *Power and the Land* is completely aesthetically detached from the energy resources needed to generate it such as gas, coal, and water power. This aesthetic detachment helps define another key feature of modernity and infrastructural aesthetics—the ever-deepening visual divide between the source of energy and the point of consumption. The magical quality of electricity, its cleanliness, timesaving, and instantaneity are also central tenets of modern infrastructure as imagined onscreen during the New Deal era. As Kline insists, ideologies surrounding these technologies and how they operate build on each other to imply that whether a problem is caused by other technologies or their absence, a technological solution is still called for if the goal is to catapult rural people toward modernity.⁴⁵⁶

⁴⁵⁴ Kline, “Ideology and the New Deal ‘fact film’,” 19.

⁴⁵⁵ Kline, 25.

⁴⁵⁶ *Ibid*, 26.

Power and the Land has been widely discussed in film history, but not closely analyzed in the context of the environmental and energy humanities. New Deal films focusing on electrical light and appliances differ from films about fossil fuels of the same era in their aesthetic approach and in their audience. Films about electricity with a more celebratory tone such as *Power and the Land*, and even promotional films with corporate sponsors like *Just Around the Corner* either de-emphasize or completely omit the generating source of the electricity used, which could have been hydroelectricity, but was more likely coal or gas. Additionally, films like *Power and the Land*, and similar government-sponsored films like *The River* both had wide theatrical releases and were made with that goal in mind. Despite the aesthetic disconnect from fossil fuels in these films, electrical infrastructure has historically been a fossil fuel infrastructure. Electricity itself does not emit carbon into the atmosphere or leach chemicals into groundwater, but most power plants burn fossil fuels to generate electricity, as has been the case from the advent of this power source. *Summer Storm* is exceptional in its display of how interconnected the electrical infrastructure is, and even it conveys a rosy outlook. *Power and the Land* includes a single take of identifiable oil infrastructure from a distance. The shot lasts about twenty seconds, resting first on a long shot of the distillation and cooling towers for ten seconds before panning up and left toward a cloud of billowing steam wafting behind the transmission towers and their lines connected to the power station. Based on the appearance of the power station and the steam being produced, it is likely powered by burning oil or coal to heat steam-powered generators. While the film doesn't delve into these connections—it wouldn't necessarily make sense to, given its focus—this short sequence does similar work to *A Summer Storm* to draw connections to the source of the electricity in the film.

Another lesser-known film about rural electrification parallels the themes of *Power and the Land* while also departing from its style and approach in significant ways. First, the film is likely sponsored by private industry rather than by the government. The film is viewable online but remains orphaned in the sense that the exact year, the definitive sponsor, and its history remain speculative. Based on my knowledge, I estimate the year to be between 1940 and 1942.⁴⁵⁷ Tentatively titled *GE Effects on Farm Life* where it is streaming on YouTube, the promotional film has a run time of 24 minutes. The film is not only relevant as a point of comparison for *Power and the Land* in terms of content, but also in its meta-approach to viewership—*GE Effects* operates through a frame narrative in which members of a rural community are viewing a GE film in a public meeting house. The film opens to scenes of tractors, farmers at work, and improvements in roads that help farmers get their wares to consumers. At 1:35 minutes into the film, a shot from the back of a small room and the backs of audience members heads shows the same film up on a wall coming from a projector. The viewer of *GE Effects on Farm Life* is brought into the group of rural audience members as part of the film through this frame narrative, and the film cuts back to the continuation of this screening for farmers and their families before switching completely to the main narrative of the Howard family (Fig. 32). Another parallel between *Power and the Land* and *GE Effects on Farm Life* is their focus on the plight of a specific family: the Parkinsons and the Howards, respectively. In the latter film, it is clearer that the people being filmed are actors, and the film is scripted to mimic the way a family might discuss getting electricity on their farm and the potential reasons for doing so. Unlike *Just Around the Corner*, health and safety concerns are less prominent, but the narrative still focuses on the birth of a child and thus the increased need for electricity to ease the burden of labor,

⁴⁵⁷ The appliances in the film and its narrative responsiveness to *Power and the Land* inform this estimate.

particularly for the young mother, in the home and on the farm. Indeed, with the increase of electrification starting in the mid-1930s, the infant mortality rate decreased significantly, a fact hinted at in *GE Effects*.⁴⁵⁸ While it is unclear whether *GE Effects on Farm Life* was made prior to or after *Power and the Land*, these two films have clear similarities that suggest that those working on each were aware of the other film's existence.



Figure 32 farm & frame narrative in *GE Effects on Farm Life*

The political angle of each film is perhaps the most important difference and speaks to the distinctions in style between *Power and the Land* and *GE Effects on Farm Life* as well. Both films contain a key scene in which community members are gathered to discuss the benefits and potential drawbacks of electrification, and to ask the sponsor—the REA and GE representatives respectively—questions about who pays for the service, how quickly they will have access to electricity after deciding to move forward with the process, and who owns the utility after its paid for. This scene in Ivens' film, funded by the government-run REA, consists of voiceover narration like the rest of the film. The narration explains, after listing off a series of questions including how the electrical lines are funded, “The REA loans money at low interest rates for

⁴⁵⁸ Joshua Lewis, “Infant Health, Women’s Fertility, and Rural Electrification in the United States, 1930–1960.” *The Journal of economic history* 78, no. 1 (2018): 118–154.

line construction, and where necessary, generating plants, to the cooperative set up by the farmers in the community. There are no private investors, no profit-making.” The REA mission and government-supported stance are central to this scene, and the voiceover narration creates a sense of continuity during this scene despite the potential for conflicting views from farmers in the meeting being filmed. In the GE film, the potential for conflict is handled through fictional scripting to begin with, rather than filming actual community members. In *GE Effects on Farm Life*, the first question from an audience member after the nested GE film ends in the public meeting room is who pays for the electrical line. The GE representative present, Mr. Moore, responds: “We build the line and pay for it. All that’s necessary is for enough of you folks to take the service. Power companies everywhere have been building rural lines for years at no cost to the farmer where enough farmers were ready for it.” In these parallel scenes, the political stakes of each film are distinct, despite having nearly identical structure and the same end goal. In *GE Effects on Farm Life*, this scene almost feels like a direct response to *Power and the Land*, as it shows GE trying to explain that they do service rural areas, despite the REA’s arguments to the contrary. The REA was formed because it was believed electric companies weren’t willing to service these areas because it wasn’t profitable. The dialogue in the film addresses this directly, showing that GE is up to the task and making the same efforts at the REA.

While there were adjustments made to the day-to-day lives of the Parkinson family while filming *Power and the Land*, Ivens still endeavored to make the film in such a way that shows how the lives of real people, and preferably a real family, benefit from electrification on their farm and in their household. In contrast, *GE Effects on Farm Life* feels quite scripted, and is most likely using actors to play the roles of the Howard family. While the film fails to cast big-name actors like *Just Around the Corner*, the use of professional actors sets a more promotional tone

than the documentary appeal of filming actual farmers in *Power and the Land*. Iven's focus on a real family and glorifying their working-class status reflects his interest in both uplifting views on workers and his leftist political background. The anti-corporate, pro-public service messaging in *Power and the Land* is bolstered by the film's more poetic approach. *GE Effects* is less conceptual and more straightforward in its plot. Kline argues that *Power and the Land* is like Pare Lorentz's *The Plow that Broke the Plains* and *The River* and compares it to Iven's Spanish Civil War Film *The Spanish Earth* (1937). Kline groups *Power and the Land* with other government-funded documentaries of the era recognized for their artistry, and one of the tenets of these politically charged films is their reliance on filming everyday people rather than actors.⁴⁵⁹ While *Power and the Land* and other successful films under Pare Lorentz's leadership at the short-lived U.S. Film Service were competing with Hollywood in the late 1930s, electrical companies such as GE also seemed to see a documentary like *Power and the Land* as a political threat.⁴⁶⁰

Both films emphasize the labor-saving qualities of electrifying farms. Some scenes of farm labor after electrification are parallel in the same way as the meeting scenes with the REA and GE representatives. For example, both films focus on dairy farmers, which seems too similar in content to be a coincidence. While *GE Effects on Farm Life* does not have a specific production or release date listed where it is available online, nor as part of its credits, the film seems to intentionally mimic some structural and elements of *Power and the Land*. As a product, milk connects the rural to the urban environment in both *Power and the Land* and *GE Effects on Farm Life*. The focus on dairy farmers in the films is practical—they as a group could benefit substantially from electrification to ensure the safety of their product—but

⁴⁵⁹ Kline, 26.

⁴⁶⁰ Barnouw, 117.

it is also both symbolic and infrastructural. The symbolism of milk is connected to health and strength. In *Power and the Land*, the narration during the first scene in the dairy barn says, “Milk ringing in the pail white and clean. Fresh milk for the town and city; milk that makes bones and muscles for the children of the nation.” In this narration, milk is not only a literal calorie and nutrient-giving food, but it is also equated with the economic growth of the nation. The “bones and muscles” of the nation’s children were of literal concern at the time, particularly in the latter years of the Depression during which malnutrition was a concern and infant mortality rates were still high in rural areas. However, these lines can also be read metaphorically. The infrastructural connections required for the safe and economically viable transport of a commodity like milk, the “ribbons of concrete” moving products from place to place more quickly referred to in the opening scenes of *GE Effects*, are fortified by successful agricultural commerce. In this way, these very infrastructural elements, roads, and eventually power lines, are also the “bones and muscles” powered by dairy in an economic sense.

As a subdivision of the United States Department of Agriculture (USDA), the REA had a vested interest in promoting the USDA’s agenda, including efficient use of the nation’s rural workforce on farms. While electrification certainly made farm life easier and perhaps resulted in economic benefits to individual dairy farmers thanks to speed of processing, less manual labor, and less loss of product due to spoilage, the wider economy also benefitted. Thus, electrification was not only about helping farmers, but about protecting and streamlining the production of a commodity. The films focus on the farmers and their willpower and desires as workers, making the messaging both worker and family-focused, while the economic need for commodification surrounds the events of both films and serves as a visual reminder that electricity drives an increase in quality of life not only for individual workers, but also for those benefitting the most

from a thriving economy. During this second wave of the New Deal, socialist-oriented policies were still being supported by the government, but their financial support was waning in favor of more neoliberal policies.⁴⁶¹ Both films highlight the balance between these conflicting economic models and the importance of commodities like milk to both socialist and capitalist-driven messaging.

Both films also downplay the amount of time it takes to electrify a rural area. In *GE Effects on Farm Life*, the GE representative at the meeting explains that it could take as little as a few weeks. In *Power and the Land*, it is unclear how long the process will take. Klein explains that it could take the REA years to get electricity to farms.⁴⁶² In comparison, GE's process sounds promising for its speed, but it is unclear if this promise was delivered. Either way, both films jump in time, allowing audiences to see what farm life with electricity is like. Skipping over the laborious process of the planning for, building, and installing electrical lines fits with the end-goal of both films: advertising the labor-saving effects of electricity on farms for the entire family. While *Power and the Land* focuses on electricity's effect on both domestic and outdoor labor, *GE Effects* focuses more closely on the benefits of electricity for domestic labor, and therefore women. GE follows a familiar pattern in this sense, staying closer to the consumer they see as having the power to sway a household toward electricity: the women, who will not only benefit from electricity in their homes but also need an array of GE appliances as well. The REA even partnered with corporations such as GE and Westinghouse to increase access to the necessary hardware, supplies, and ultimately appliances necessary once electrification was achieved. As Nye explains, "cooperation with the private sector developed further, so that cooperatives worked with local commercial dealers such as the General Electric Supply company

⁴⁶¹ Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940*, 317.

⁴⁶² Kline, 25.

in Muncie which sold and installed equipment even ahead of the day when the lights first came on.”⁴⁶³ The goal of such collaborations was to increase the number of farmers using electric power, and to increase the electrical load to make electrification profitable. In other words, it was seen as mutually beneficial that farmers not only have access to electricity, but to use as much of it as possible. Without numerous electrical appliances and lights in multiple households, the electrical load would remain low. The collaboration between the REA and private companies is reflected in arrangements such as these. Yet the contrast between films like *Power and the Land* and *GE Effects on Farm Life* suggests that the REA was still at odds with private electric companies and that each viewed the other as competition. Indeed, early in the formation of the REA, private electric companies “fought tooth and nail against the REA’s efforts – both on the ground and in the public square.”⁴⁶⁴ Despite their opposing stances, rural electrification likely would not have been possible without the eventual union of public and private groups working together to support the effort.

The REA relied on visual representations of electricity usage and benefits to convince farmers that it was worth it to enroll in the REA loan program to form a cooperative, and filmmaking was not their sole strategy. Lester Beall designed striking posters to advertise electricity, and the REA also had its own monthly publication, *Rural Electrification News*. Michael Golec explains that like the two films, the posters don’t focus on the technical process of electrification, but rather visualize the idealized end result.⁴⁶⁵ He explains that rather than providing facts, the posters visualized a future with electricity that was in reality yet to be fully

⁴⁶³ Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940*, 318.

⁴⁶⁴ Noah Karr Kaitin, “How it Worked when it Worked: Electrifying Rural America” Cornell University College of Industrial and Labor Relations Senior Honors Thesis, May 2013. 6.

⁴⁶⁵ Michael J. Golec, “Poster Power: Rural Electrification, Visualization, and Legibility in the United States,” *History and technology* 29, no. 4 (2013): 399–410; Michael J. Golec, “Graphic Visualization and Visuality in Lester Beall’s Rural Electrification Posters, 1937.” *Journal of design history* 26, no. 4 (2013): 401–415.

realized.⁴⁶⁶ The visual simplicity of the posters was originally believed to be an appeal to illiterate audience, however Golec explains that the actual audience for the posters was administrators and government officials.⁴⁶⁷ Thus, before selling the idea of electrification to rural audiences, the REA sought to beguile other government offices with a vision of minimal yet highly effective electrical infrastructure. Additionally, the streamlined designs clearly communicate complex data across varied bureaucratic groups.⁴⁶⁸ Golec signals the REA's desire for clear communication about rural electrification while suggesting that their portrayal of electrification was idealistic. The designs for the posters were based on pictorial methods thought to "state facts in such a way that exact meaning cannot be mistaken."⁴⁶⁹ Overall, both the films and posters seek to communicate complex sets of data through simplified aesthetic strategies. These visualizations also serve as referents for infrastructural networks, thus playing a key role in defining an element of infrastructural aesthetics as the visual simplification of processes too dense or illegible to show in their entirety

The REA also had its own publication, *Rural Electrification News*, which was printed monthly from at least 1935-1941, and explained in more technical detail the benefits of electrification.⁴⁷⁰ Each issue featured several different news stories and announcements under the "General" designation, and issues also included a section called "The Technical Side" and another called "March of Rural Electrification." The General section offers a broad array of anecdotes about electrification and its benefits, many of which correspond to what the

⁴⁶⁶ Golec, "Poster Power: Rural Electrification, Visualization, and Legibility in the United States," 401.

⁴⁶⁷ Goleic, 401.

⁴⁶⁸ Ibid.

⁴⁶⁹ Ibid.

⁴⁷⁰ Google Books by way of Stanford University library's U.S. Government Deposit has a 754-page collection of *Rural Electrification News* beginning with the July 1939 issue and ending in August 1941. Kaitin cites issues of the publication ranging back to 1935, which appear to be unavailable online.

electrification films emphasize. For example, in the July 1939 issue, one of the General features is titled “How Electricity Saves Money for Dairymen.” The article features a 2-page spread with photographs illustrating each of the technologies mentioned (Fig. 33). Improvements like electric water pumps and refrigeration for the milk are explained in more depth than a film like *Power and the Land* offers, demonstrating the REA’s broad approach to media about their initiatives.

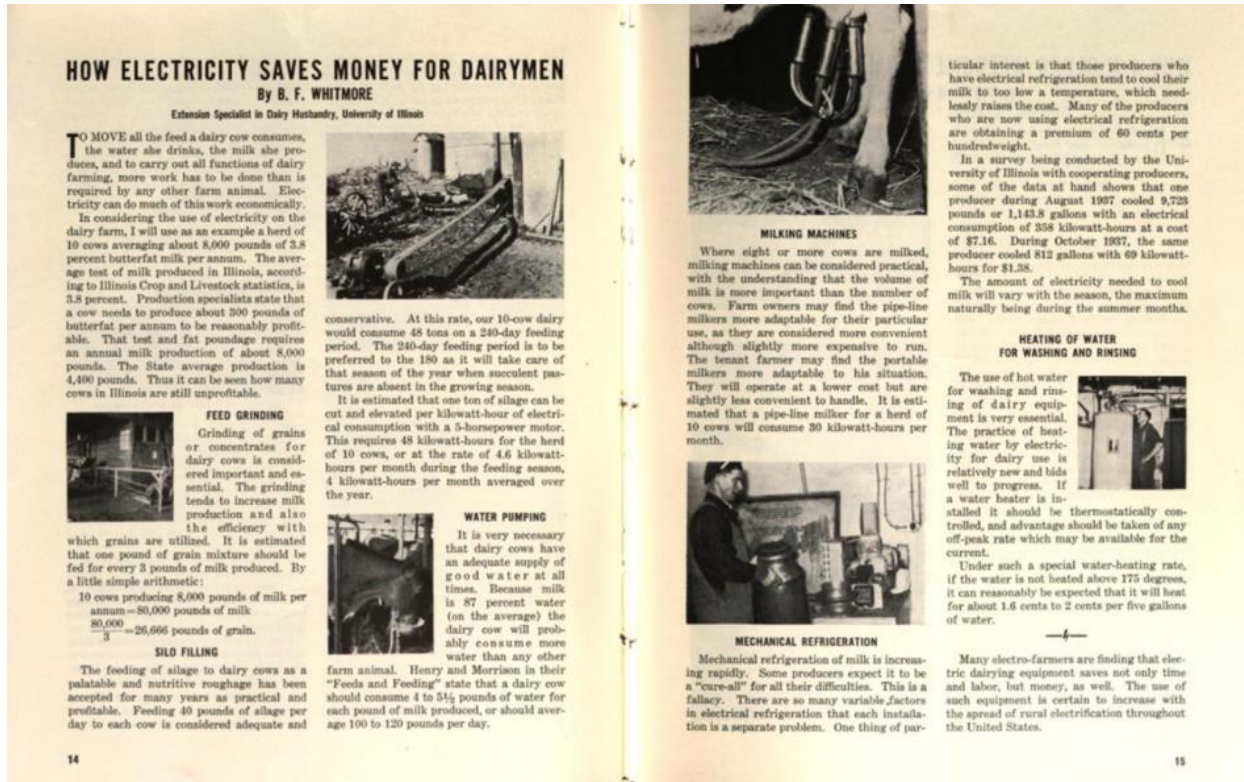


Figure 33 Two-page spread from *Rural Electrification News*

The Technical Side section of the publication focuses on new developments in electrification research, such as planning wiring (September 1939 issue). The Technical Side only featured in issues from July 1939 to March 1940 before the publication replaced it with the new sections “Electricity at Work,” “Running the Rural System” and “Members Should Know.” The March of Rural Electrification endured, focusing on the expansion of electrical infrastructure nationally and internationally, and includes a section called “Among the States” that provides insight into projects happening on the local level around the country. This section also includes innovative

ways in which REA co-op members are benefitting from electricity. In the October 1939 issue, the infamous “Washing Machine Wringer Used for Shelling of Peas” story appears. This same hyperbolic story is mentioned by the voiceover narration in *Power and the Land*, adding a layer of absurd humor to the usefulness of new electric appliances: “they say a lady in Missouri even taught her wringer how to shell peas. I won’t ask for an affidavit on that, but she says it’s true.” Ivens and those involved in the making of the film clearly drew from other materials the REA had already collected and distributed, re-working the material into a different context to change the tone and highlight the wide range of benefits to come from electrification. *Rural Electrification Newsletter* offers insight beyond the representative Parkinson or Howard families from *Power and the Land* and *GE Effects on Farm Life* while also showing the ways in which these films attempted to be both representative and include anecdotes from real people in communication with the REA.

Two other REA films, *Bip Goes to Town* and *Worst of Farm Disasters*, both released in 1941, focus on different benefits of electrical infrastructure and have an overall different tone than both *Power and the Land* and *GE Effects on Farm Life*. The films are particularly beneficial for comparison because they were both made from unused footage originally shot by Ivens for *Power and the Land*. In this way, the films are like missing pieces of a puzzle in the overall vision Ivens had when filming for the REA. These two films were edited by Lora Hays under Iven’s supervision and were re-released along with *Power and the Land* in a PBS special called *Rural Electrification in Ohio: Historic REA Films, 1940-1941—Electrification Comes to the Farm* in 2010. A brief introduction to the re-release explains that while *Power and the Land* received a wide distribution, the other two shorter films had a limited release and were largely forgotten until the creation of a film about the making of *Power and the*

Land called Power for the Parkinsons and another film about the Parkinson family called *The Parkinsons*.⁴⁷¹ Both films, re-released in 2008 and 2010 respectively, are narrated by Walter Cronkite and were released on a local Illinois PBS station and are now freely available online. *Bip Goes to Town* expands on the theme of human labor working in tandem with electrical power by focusing on the Parkinson's youngest child, Bip, and his trip to town. While there, he visits an electrified creamery, and contemplates his future career options as perhaps "an aviator, or a soldier" while the narration suggests that farming, if it is supported by electricity, is an equal aspiration. Labor concerns are framed from the perspective of Bip, and the voiceover narration explains, "24 hours is not enough on a farm without electricity," implying that these farms require round the clock work, obviously unappealing to both children and adults alike. Ultimately *Bip Goes to Town* is a hopeful film in which Bip becomes excited by the prospect of farming with electricity. This messaging is in line with the REA's goal to uplift rural communities and encourage them to continue farming rather than abandon their farms for cities.

Bip Goes to Town begins on the Parkinson family farm, but the most crucial scenes of the film take place in town at the electrified creamery where the family's milk is processed for sale. Once at the creamery, the shots showcase the electric machinery used to process the milk, showing both Bip and viewers how "the machines do the hard work" involved in keeping milk safe for consumption, and thus make it profitable. Having just visited an electrified farm on the way to town, Bip has already seen the first part of the milk production process aided by electricity. The narrative of the film suggests that Bip and Frank leave the unelectrified

⁴⁷¹ *Rural Electrification in Ohio: Historic REA Films, 1940-1941—Electrification Comes to the Farm*. Films On Demand. 2010. Accessed September 17, 2021. <https://fod.infobase.com/PortalPlaylists.aspx?wID=240117&xtid=53082>.

Parkinson farm with milk, stop by another electrified farm to pick up more, and then head to the creamery in town. Bip opens the door to the creamery from the outside before a cut reveals him entering the door from the inside of the creamery. Bip is centered in this long shot and surrounded by a series of pipes that create lines across the frame, suggesting that Bip has entered an infrastructural, modern space (Fig 34).

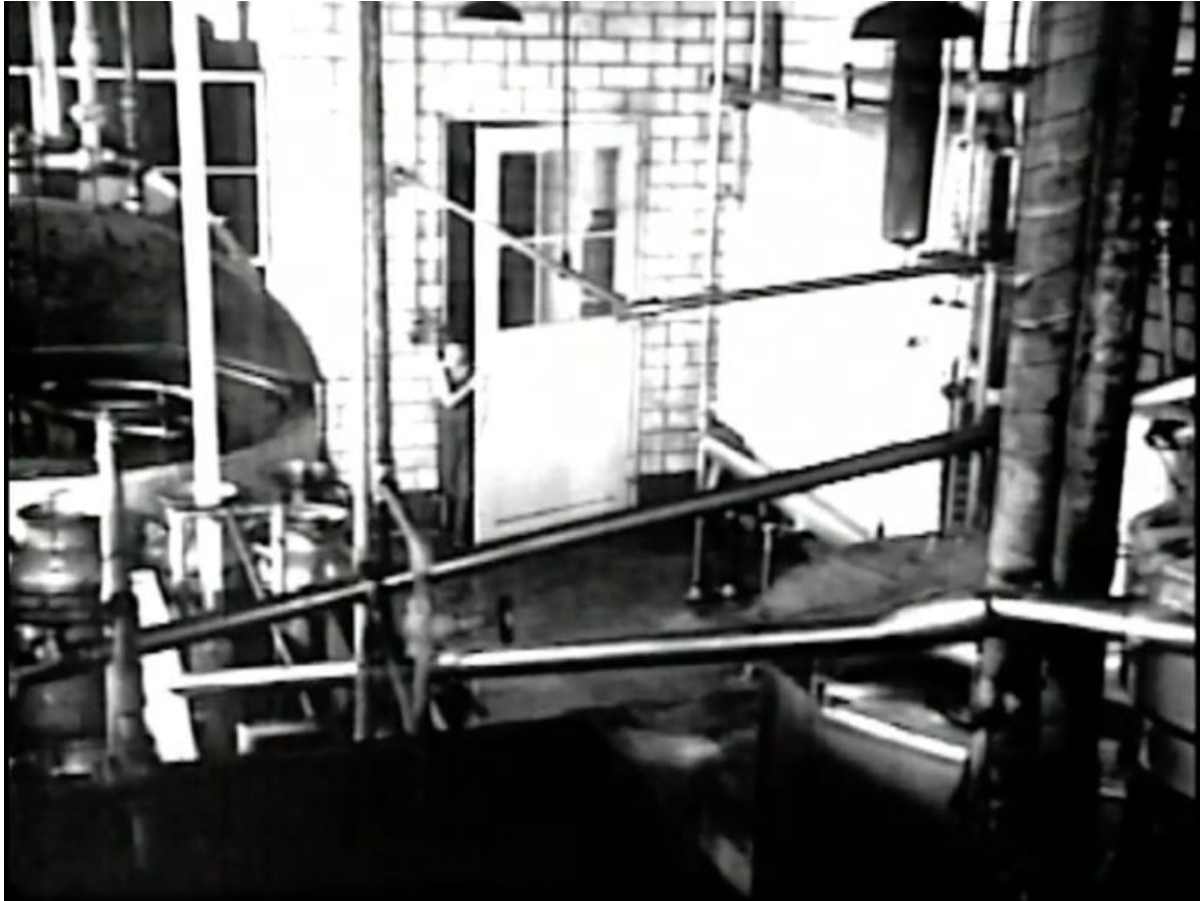


Figure 34 Bip enters the creamery in Bip Goes to Town

The narration shifts between an adult, explanatory narrator and a child-like voiceover offering Bip's observations. Upon entering the room, Bip's narrator says, "It sure is cold in here," to which the explanatory narrator responds, "Milk must stay fresh and pure." Coldness indoors during summertime can only be achieved through electrification, and the film explains that the purity and safety of milk depends on this electrical temperature adjustment. Bip is mesmerized

by the movement of the milk containers through the creamery as they are opened and emptied, and the milk is weighed and cooled for storage. In a childlike gesture, Bip reaches toward the cooled cream and samples it before a worker playfully scolds him. He scampers away, past more milk cans moving on conveyor belts, out the door. This moment, though simple and seemingly insignificant, encompasses the importance of safety in the milk being processed at the creamery. Bip can taste the milk without fear that it could be unsafe for consumption. Outside of the creamery's electrified walls, his safety in sampling the milk is not guaranteed. In both *Bip Goes to Town* and *Power and the Land*, Bip is representative of children writ large and their need for safe food. Bip's experience in the creamery displays the electric technologies available while calling attention to the improvements in food safety that electricity brings.⁴⁷²

In addition to showing how electrification makes reproductive labor safer for both humans and human use of animals, the visualization of the creamery interior is important to both the message of *Bip Goes to Town* and for the establishment of an infrastructural aesthetic. The message in *Bip Goes to Town* is that electricity in town will soon be available on the farm as well, and that the REA is responsible for expanding electricity to rural areas. Upon driving away from town toward the end of the film, Bip and Frank see signs for the REA along the side of the road and Bip asks, "Are we going to get REA electricity?" The journey back out from town on the road parallels the expansion of electricity from town out to farms, and the combination of narration and aesthetic strategies communicate this clearly. The narration explains, "There go the electric lines from town. They'll be out there by fall, Bip—they're going out all over the country. Only one farm in four has electricity now, but every day the lines go farther." The journey from

⁴⁷² Kendra Smith-Howard, *Pure and Modern Milk: an Environmental History Since 1900*, (Oxford: Oxford University Press, 2013). Smith-Howard argues that rather than calling attention to the differences between urban and rural environments, milk actually brings them together, which is also reflected in *Bip Goes to Town*.

farm to town and back reflects a visual exploration of a node in the larger infrastructural network; a circuit of productivity increased through electrification. The stop at the creamery and a brief tour of the machinery inside is crucial to the message the REA perpetuates about modernity and labor saving by way of connectivity through infrastructure. Similar moves are made in *Summer Storm* as the film moves viewers through spaces connected by electricity, each a specific node in the wider network of modernizing infrastructural development.⁴⁷³ The interior shots of the creamery also reflect elements of the process genre as it overlaps with infrastructural aesthetics. While the process genre seeks to show the steps involved in a process, it can also signal a shift from material to affective labor. In emphasizing the mechanical processes of the electric creamery, from conveyor belts to cooling pipes, *Bip Goes to Town* both serves as a smaller piece in the larger puzzle of the rural electrification process while also focusing on a specific mechanical process at the creamery and emphasizing the shift that occurs from material to affective work through the introduction of electricity.

Worst of Farm Disasters strikes a radically different tone from the previous three films, as it focuses on destruction rather than construction. The overt appeal to fear tactics, while based on the genuine risk of fires, sets this short film apart from the others that emphasize positive lifestyle changes that come with electrification. A character in the film writes a letter, the contents intentionally visible to the audience, describing the fear of a fire starting on the farm and the dangers of barn fires. The final shot of the film reveals that the letter is addressed to the REA, implying that the farmer writing the letter is contacting the REA to get started as a member of the cooperative this electrify their farm. Like *Power and the Land* and *Bip Goes to Town*, the

⁴⁷³ *Master Hands* and the *Story* films feature similar aesthetic strategies that meditate on a node within the larger network, for example the car manufacturing plant, or the oil refinery, lingering in a space for longer depending on the overarching goals of the film.

film contains voiceover narration. In and *Worst of Farm Disasters*' case, the voiceover extends the points made in the letter being written during the film, explaining that fires are hard to fight with a "meager water supply" and that the farm shown in the film "had no electricity for water pumping" that could have helped put the fire out faster. The lack of electricity thus has a chain reaction. Indeed, the narrator notes that "with electric light this fire might not have started." The film is short and straightforward and compares the concerns of the letter writer with that of the media, as newspaper headings such as "Rural Fire Losses Appalling: Reach Annual Total of \$225,000,000" highlight the financial losses from fires. This visual strategy mirrors that of Lorentz in *The River*, as sensational news headlines drift across the frame in that film, quantifying the money and lives lost from flooding. The key similarity *Worst of Farm Disasters* has to other films about electricity is the second to last shot, a 30-second panning shot of power lines running between electric poles.



Figure 35 A barn fire & power lines in *Worst of Farm Disasters*

The stark visual design of these shots, the orderly, minimalist lines created by the wires, contrast with the chaotic movement of the barn fire shots in previous scenes (Fig. 35). The movement of the camera down the power lines, emphasizing their length, order, and visual simplicity, represents the ideas of forward political motion, connection, and progress. The lines alone,

stretching from one side of the frame to the other, feel visually infinite. This sense of infinity reflects the overarching ideology permeating both government and corporate films about electricity during the era: that electricity offers endless possibilities.

The trip from the farm to the creamery and back in *Bip Goes to Town* is illustrative of the transportation infrastructure praised at the beginning of *GE Effects on Farm Life*. It is relatively easy for Bip and Frank to drive to town with the family supply of milk with a vehicle. Whether it is likely a child from a farming family would visit the creamery where the family's milk is tested and pasteurized is uncertain, but for the sake of the REA film project, Bip served as the liaison between city and farm, much like the wife in *GE Effects*, who is from the city and has moved to the farm after marrying into the Howard family. The movement of a character across the invisible boundary between city and farm life illustrates the ease with which modern life can move with right infrastructural help, and character movement across these spaces is central to an electric infrastructural aesthetic. As Nye explains of rural electrical infrastructure itself, "The electric distribution line linking the house to the larger world is not visible."⁴⁷⁴ To counter the invisibility of these lines, the films about rural electrification from the New Deal era rely on other aesthetic and narrative strategies to visualize electrification. This visualization was crucial to the project of rural electrification during the period. Furthermore, though film was only one of many media channels through which information about electrification was distributed, the documentary and promotional representation of electrification onscreen brought this otherwise invisible force to life while also establishing new visual patterns. Ultimately, this reinforced the iconography of electrification emphasizes high visual contrast, ease, and referents to the

⁴⁷⁴ Nye, *Electrifying America: Social Meanings of a New Technology*, 335.

electrical network such as appliances in homes, electrical poles being erected, and of course the line itself, abstract and minimalist against the sky.

Film captures the minimalist aesthetic associated with electrical power in a similar style but with different messaging than, for example, Beall's posters. While the posters focused on minimalistic design to better represent data, minimalism onscreen evokes a sense of immateriality to better convey the contrast between labor before and after electricity. Unlike the heaviness and materiality of labor without electricity, farm work after electrification is made to seem easy to the point of nothingness. Weightlessness; minimalism; the lack of a heavy footprint—this aestheticization of electrical power and labor powered by electricity, while hopeful and ultimately a positive development, also obfuscates electrification's connection to other parts of the infrastructural network that are damaging or dirty such as dams and fossil fuels. Indeed, the wider network of infrastructure, and infrastructural aesthetics, is marked by a strong contrast between darkness and light, as the visual focus in a documentary like *Power and the Land*, and by a sense of material and immaterial, visible and invisible, and the need to hide parts of the network to elevate the whole.

Chapter 4 Conclusion: “The place that always had power”

While the rural electrification films focus almost exclusively on rural spaces, and films focused on domestic labor center in the home, the city is consistently situated as “the place that always had power,” as the narrator in *Power and the Land* describes it. Because of this claim, few films from the era appear to focus on electricity in cities. A brief discussion of electricity in two films, *The City* (1939 dir. Ralph Steiner) and *Behind the Bright Lights* (1935 Jam Handy Corporation) reveals how power in urban spaces was represented from two distinct angles,

creating a fuller picture of what this other place was like in the 1930s filmic imaginary. *The City*, which was made for visitors to the 1939 New York World's Fair, contrasts congested, dirty urban spaces with new utopian cities described as being the perfect size and having the ideal balance between work and play for their inhabitants. The film is sweeping in its critique of modernity, simultaneously praising "old" ways of life in smaller towns with fewer people while acknowledging there is no going back. *Behind the Bright Lights* offers a niche glimpse into the work of employees maintaining the massive Chevrolet sign that overlooked the Chicago rail yards in the 1930s.⁴⁷⁵ The can be read as monument to electrical extravagance, and yet it isn't hard to imagine that far below the sign, squalor to the degree shown at the beginning of *The City* remains commonplace. Indeed, urban areas are not necessarily the places that always had power, but rather spaces of hyper-concentrated power and activity that remain starkly uneven in their development.

The City veers from the type of praise one might expect based on how cities are discussed in rural electrification films. Based on those films, the city is a place where work is easy, or even nonexistent. It is assumed that in cities, infrastructure is in place to serve the wider needs of human beings beyond mere survival. However, the first half of *The City* focuses exclusively on the squalor of urban areas. To set up a contrast between a seemingly pure and honest way of life and the dirty, unpleasant existence of city dwellers, the film begins on a farm, and then shifts to a small village, both of which lack new technology, including electricity. The romantic view of pastoralism is palpable as people work together to make repairs to a wagon wheel, attend a community gathering, and harvest crops. The narration during the opening sequence, which lasts for about five minutes, focuses on the connection between people and the land before explaining

⁴⁷⁵ "20 Feet High? How about 23 stories? The forgotten sign that Trumped Trump" *Architecture Chicago Plus*. June 18th, 2014. <http://arcchicago.blogspot.com/2014/06/20-feet-high-how-about-23-stories.html>

that in these communities, “we never let our cities get too big.” The fear of size expressed in the film foreshadows the fear of chaos within that ever-expanding size, the unwieldy shadow of modernity’s progress. The film instills this fear effectively by matching on action in a transition to urban space. The hammering of a blacksmith in a barn gives way to the thundering sounds of an urban forge, the center of industrial manufacturing. Trains rumble down the tracks to and from the forge and the music shifts from gentle to jarring. The voiceover narrator laments that the machines and the smog “black out the past” and thus the way of life that once was the norm. By showing and questioning urban squalor, *The City* contradicts the claims made by rural electrification films about cities as realms of progress.

The City emphasizes the plight of the urban poor, lamenting that those who are spending their days working to mine the coal that drives electrical power and forge the steel that builds skyscrapers don’t have access to either of these things. After asking existential questions from the perspective of the impoverished workers such as “Who built this place? Who put us here? How do we get out again?” the setting moves downtown, with buildings towering high against the sky, austere and emotionless in comparison to the human figures in the previous scene. Low angle shots emphasize their sheer size, and the contrast between the dark foregrounds, close to the ground, and the bright backgrounds where the skyscrapers climb toward the sunlight further articulate the verticality and inequality of city spaces (Fig. 36).



Figure 36 Imposing skyscrapers in *The City* (1939)

The divergence between low and high, dark and light, affirms the social realities of these spaces through the film's visual strategies. As *The City* navigates from areas where the poorest workers reside, the critique of modern life focuses on the speed with which people and vehicles move through urban spaces. Frenetic scenes of streets congested with cars and people include shots of the street signs that exemplify the dangers of living in such a space. The scene is of a dark city symphony, a condemnation rather than a celebration of the technologies and lifestyles unfolding therein. Diners at a café counter drink coffee as loaf upon loaf of bread is sliced, toasted, and served. The diner scene moves at a dizzying speed, raising doubts about the better quality of life these urban dwellers experience. For them, food is plentiful, but it is prepared by machines and eaten in a hurry before they must return to the tumultuous streets. The invisible force of electrical power works in the background of a scene like this one. Electricity powers the toaster, the coffee

maker, the indoor lighting. While these early scenes don't focus on electricity or electrical infrastructure specifically, its signifiers are everywhere.

In *The City*, the mere presence of electricity doesn't make life ideal. Rather, more technological intervention must be applied for cities to reach their potential. As Kline explains, "The City, a 1939 film directed by Willard Van Dyke, with commentary by Lewis Mumford and sponsored by the Carnegie Corporation, also saw technology (urban planning of Greenbelt cities) as the solution to problems created by technology (crowded living conditions in Machine Age industrialization and urbanization)."⁴⁷⁶ While a less technologically advanced way of life is romanticized early in the film, the ultimate message is that true happiness for human beings lies in the development of green cities. This idea still feels relevant in the present day. A 2012 Bloomberg City Labs article by Sarah Goodyear argues that the film feels eerily similar to the problems of today, albeit in other countries such as India and China. Have American cities achieved the ideal set forth in *The City*, however? Should they? While *The City* is human focused, the way humankind is discussed also feels sinister at times. The film both praises green cities and acknowledges that the purpose behind improving cities is to benefit the state through biopower, rather than a revolution for the fundamental human right to a safe and healthy environment. In the green cities in *The City*, everyone is healthy, able-bodied, white, and happy. Indeed, Goodyear explains that the green cities in the film look like the suburbs of the present (though arguably suburbs are less-than in relation to the rosy vision in the film). She quotes the narration focused on how technology has achieved the ideal, how "science takes flight at last for human goals." But what goals are being achieved, and for whom?

⁴⁷⁶ Kline, 26.

The goal of mere electrification has already been achieved in *The City*. In this way, the film starkly contrasts with electrification films by relegating the issue of electrification to the background. It is a given that the green cities have electricity; there was never any question. The film's brief visuals of electrical infrastructure solidify its omnipotence; the visual signifiers of electricity verify its usage in the green cities. But the generation of electricity in this green city is remarkably different than in the dark, intimidating city shown first. For one, the film implies that the green city's power is hydroelectric, emphasizing that it will be less dirty than coal-powered electricity. A shot of the immediately recognizable Hoover Dam visually transitions the viewer from dangerous urban space to green city. Thus begins a flight of fancy. The green city scenes in *The City* were filmed in Greenbelt, Maryland, making it impossible for the city's power supply to be generated by the Hoover Dam.⁴⁷⁷ The city really exists, however, and was the first of three planned city experiments from the New Deal era.⁴⁷⁸ After the Hoover Dam shot, an aerial shot from a plane in flight shows the ideal city from above before shots of transmission towers, power lines, and strain insulators flash across the screen in quick succession. The factories and homes in the green city are powered by electricity, and no smoke or steam is created to cloud the air in the process. For the development of green cities, an unblighted environment is requisite and electricity is standard. In contrast to the "poison in the air we breathe, poison in the river" highlighted in the darker urban scenes, the pristine, tree-lined streets and forest paths of the green city signify the presence of electric power imagined as pure and without any environmental downsides.

Despite key differences, one similarity *The City* has to the rural electrification films is the idealistic connection between humans and electricity. In a scene focused on workers going to and

⁴⁷⁷ "About Greenbelt Maryland" *Greenbelt Online*, www.greenbeltonline.com, n.a. n.d. accessed 9/30/21

⁴⁷⁸ *Ibid.*

from a factory in the green city, the narrator explains, “Here, science serves the worker and the work together, making machines more automatic and the men who govern them more human.” This idea parallels the aspirations for electrification in the other films as well, as they insist upon machine’s ability to do harder work than humans. While from an energy standpoint this is objectively true, the idea that machines allow men to be more human is questionable considering the conformity expected of humans in the green city, and the claim that “you can’t tell where the playing ends and where the work begins. We mix them here, we learn by living.” This implies that in the green city, rather than autonomy, human beings still have strict expectations that foreshadow neoliberal models of the workplace that sound more like twenty-first-century startup culture than a New Deal era experiment. Indeed, the switch from a separation of work and leisure to the overlap of the two in the green city is a harbinger of things to come unknown to viewers at the time, but intimately familiar in the present. Underlying this irrevocable connection to work is the expectation that efficient, clean power is always present, invisible, and all-encompassing.

In contrast, *Behind the Bright Lights* focuses on a specific technology supported by electric power, emphasizing its distance from the street below and ultimately its status as a spectacle. The film is concerned with the daily operation and maintenance of a Chevrolet sign visible at night thanks to its thousands of individual lights. In addition to these lightbulbs, the billboard also has a motograph, a type of sign that can display messages that move across a display. The purpose of the film is twofold: to promote Chevrolet, and to show how the motograph works on a technical level. The film takes place on location, following “sign monkeys” who change the light bulbs and otherwise inspect the sign itself, in addition to the electrical engineer on duty behind the scenes operating the motograph. “Want to know how it works?” the narrator asks the viewer. A combination of animation and live action shots illustrate

the operation of the motograph, which was designed to register electrical current at distinct, programmed moments to display a moving message on the sign. As the narrator explains, the words look like they are in motion, yet they are not—different sets of bulbs light up at different intervals to create this effect. Upon closer inspection, the motograph's operation for the Chevrolet sign is complex, with hundreds of wires and rotating parts. These complex, typically hidden processes of the motograph's operation and design can be read as a symbol for the larger energy networks connecting people and places to electricity.

As a film by the Jam Handy organization, *Behind the Bright Lights* follows the familiar pattern of engaging in both promotional and educational content in the style Handy was known for. It also raises the unique question: who is behind the work of making the sign visible? Who maintains and programs this technology? I see the question “who is behind the bright lights?” as a frame for larger questions about labor and electricity that have spanned the length of this chapter, and how films do the work of making electric power visible in specific ways. The motograph, like a film, displays a message specific to the intention of those responsible for its creation. In the case of the Chevrolet sign, a simple commercial, but in the case of electricity films, an array of different foci and ideological stances crisscross like the very networks they connect to. Taken together, the analyses in this chapter gesture toward a way of understanding electrical power, and energy more broadly that still resonates in the present day—the commercial and government desire to obfuscate infrastructural processes in favor of an aesthetic sensibility that is reassuring and uplifting. Paradoxically, in the present, infrastructure is both more visible and more hidden than ever, depending on one's positionality. From a privileged economic standpoint, power is accessible and energy abundant. However, as infrastructure ages and a reliance on fossil fuels to supply the alleged cleanest power we have—electricity—continues, a

look into New Deal era films sheds light on the political scripts, cultural norms and infrastructural aesthetics that have contributed to the present state of energy production in the United States.

Conclusion: The Lives of Energy

In *The Lives of Energy* from 2010, Rick Prelinger compiles sections of educational, promotional, and other orphan or ephemeral films into a feature-length montage film. *Lives*, which premiered in the United States at the Walker Art Center in Minneapolis, Minnesota, is broken up into seven parts and uses an array of films to illustrate the numerous transformations and applications of energy that have appeared on film over the nineteenth century.⁴⁷⁹ The chapters—Forces Unused; Forces Harnessed; Fuel; Push and Pull; Forces Domesticated; Your Body Engine; and Laws Give Way to Dreams—echo many of the ideas my own project has grappled with. Waste, unproductive expenditure, harnessing and controlling nature, machine power and manpower, the technological imperative, the spatial dimensions of energy distribution—many of the ideas from the individual films analyzed here are represented in Prelinger’s work. The shape of his narrative in many ways mirrors my own interests and questions as a researcher of both film history and energy infrastructures: that cinema and energy are intimately connected, that cinema is itself a form of energy infrastructure, and that these cinematic forms coalesce into a powerful apparatus that teaches audiences to see infrastructurally.

The title *The Lives of Energy* implies that each film has a much wider story to tell, a through-line or plot that we can only glimpse on our first viewing. This also applies to energy writ large. When an energy phenomena is filmed, an index of the phenomena is created. By recording energy, we transform it. And cinema, like energy, is about transformation. According to Smil, energy “must be transformed to get anything done.”⁴⁸⁰ Likewise, according to the logic

⁴⁷⁹ “The Lives of Energy,” Walker Art Center, accessed 11/20/22 <https://walkerart.org/calendar/2010/the-lives-of-energy>

⁴⁸⁰ Smil, 1.

of the infrastructural cinema analyzed in my work and making up Prelinger's film, perception must be transformed to get anything done. Yet, Smil also acknowledges that energy remains a mysterious force *because* of its transformative nature: "But what is energy?... What we do know is that all matter is energy at rest, that energy manifests itself in a multitude of ways, and that these distinct energy forms are linked by numerous conversions, many of them universal, ubiquitous, and incessant, and others highly localized, infrequent, and ephemeral."⁴⁸¹ Energy phenomena, like cinema, can be universal, ubiquitous, and incessant, or highly localized, infrequent, and ephemeral. The ephemerality of the films both Prelinger and I focus on in our respective projects make them all the more worth understanding, and all the more worth indexing both archivally and analytically.

To illustrate the elusive and at times spectacular lives of energy, Prelinger's film begins with powerful visuals of natural phenomena. The opening scenes are from the 1960 film *Hawaii's Spectacular Volcano Eruptions*, and feature scenes of dark steam billowing from the earth in addition to lava flows and a volcanic eruption (Fig. 37).



Figure 37 Stills from *The Lives of Energy* opening scene (2010)

⁴⁸¹ Smil, 3.

This live, unbridled energy is independent of human use – except for the camera. Because the camera has filmed this energy, the film is itself a type of energy, or a keeper of energy. It is an index, a filmic measure of the ways in which energy lives, and its strange immortality. From this, we learn implicitly that energy never dies, it merely changes form. Prelinger’s film exemplifies this—and connects it to cinema, which also never dies.⁴⁸² Depending on its form, it can be used for different purposes and by different people. Each individual film has its message, but Prelinger’s overarching message seems to be one of awe: awe at the sheer ingenuity of human beings to capture, transform, and use energy, awe at the ways in which it has gone wrong, and awe at the lengths to which humans have gone to capture and bend energy to our will. Thus, the opening of Prelinger’s film reflects the temporary endeavor of cinematic creation focused on an eternal force, energy. This in turn gives infrastructural cinema writ large an eternal quality. It not only shows us the lives of energy, but it also brings energy to life through its indexicality.

In an earlier scene in *Hawaii’s Spectacular Volcano Eruptions*, during which a filmmaker walks over a lava field, the narrator explains, “[a] daring and resourceful cameraman descended in the crater area, proceeding across the newly formed lava lake, which had crusted over, to photograph these fantastic scenes.” Dramatic orchestral music plays in the background, and close-ups of open lava flows transition to the night scenes of the volcanic eruptions we see in the clip used for the opening. Volcanos are one of the most powerful forces on earth, and they are impossible to control. And yet, people film them, capturing their energy in a way for others to see and understand. Thus, Prelinger’s film begins with one of the most powerful, elemental and unending energy phenomena, the energy coming from inside the earth itself, and progresses

⁴⁸² André Gaudreault and Philippe Marion, *The End of Cinema?: a Medium in Crisis in the Digital Age*, translated by Tim Barnard, (New York, New York: Columbia University Press, 2015). Gaudreault and Marion argue that despite the changes to the materiality of cinema, the cultural importance of film lives on.

toward the human designs and dreams of infrastructure that have launched us swiftly through the heady certainty of the modern age into the uncertain present.

By creating such a film, Prelinger is taking unused forces (ephemeral films), harnessing them, fueling audience perception, introducing new ideas and relationships through the montage form, and showing us the power of infrastructural cinema to push forward technologies and ideologies centered more on dreams than reality. Despite the difficulty of their capture, the laws of energy do indeed give way to dreams in infrastructural cinema—dreams that human ingenuity can save the future of energy, and the future of humankind. Film is central to this dream. But when does energy overtake infrastructure? When does the power of energy defy the act of filming, the desire to capture it? I imagine the lost film reels, cameras, and bones in lava flows. If the films discussed here have taught us how to see, what might teach us to unsee infrastructurally? Unbelieve our power?

In this project, I have argued for the power that cinema has to forge connections between energy, image, and belief. Through film form, it is possible to shape perception such that audiences believe in human primacy over nature. By analyzing films that concentrate on hydropower and dams, oil, gas, gas-powered machines, and electricity, I have identified formal cinematic patterns that build a *dispositif* which supports the political, ideological, and aesthetic energy regimes of modernity. Cinema and energy are also connected through their visibility and invisibility. The revealing functions of technology and cinema work to expose elements of energy infrastructure that are beneficial, orderly, and efficient, and obscure elements that are detrimental, unpredictable, and ineffectual. Cinema is complicit in perpetuating the energy regimes upon which we currently rely, and in shaping understandings of the environment in relation with and as subordinate to human energy needs and infrastructures.

Thus, cinematic infrastructure becomes a form of energy infrastructure. Energy infrastructures contain, shape, transform, and harness power to make it useful. The films analyzed in this project also have power. They have a force behind them based in the aesthetic principles that draw together the cinematic means of transmutation. Kracauer describes one of the powers of cinema as giving shape to indeterminacy.⁴⁸³ In the context of infrastructural cinema, this aesthetic force transforms the indeterminate energy offscreen into something understandable onscreen that builds infrastructural knowledge. Cinema insists that energy is readily available to us, that the “raw” might of nature is tempered when apprehended by filmic means.⁴⁸⁴

Prelinger’s film demonstrates that cinema too is a resource that “stands reserve,” and that ephemeral film operates similarly to the elements of nature itself that would be inaccessible without technological intervention.⁴⁸⁵ In their change from a state of concealment in a forgotten archive to their digitization and online access, infrastructural films transform and ultimately reveal infrastructural sight to a new constituency of viewers in the present – audiences that were never meant to see them, but who recognize their own latent power to see infrastructurally when viewing them. The films explored in Prelinger’s film and in my dissertation, then, serve different purposes depending on where they are and how we treat them, much like the natural resources captured and transformed by energy infrastructure. The power of Prelinger’s film, the distillation of myriad perspectives on energy that all add on to a dominant viewpoint of technological supremacy, speaks to the ability of new forms to call attention to the very *dispositif* I have worked to trace in my analysis. Infrastructural cinema teaches audiences to see infrastructurally,

⁴⁸³ Kracauer, 68.

⁴⁸⁴ Ibid.

⁴⁸⁵ Heidegger, 4.

but a film like Prelinger's teaching audiences to *know* that they have been taught to see this way, and that our collective energy dreams have diverted us from the sustainable future we need. By revealing the invisible ways cinema has historically encouraged infrastructural seeing, we might still be able to find new ways of seeing that facilitate new ways of being as well.

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