

SOOT IN THE MORTAR:  
CLIMATE CRISIS INTERPRETATION AT THE ELMS

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## Chapter I: Introduction

### A Proposal for Climate Crisis Heritage

The Elms is a magnificent Gilded Age mansion, rising an impressive three stories above surrounding elegant landscaping. Edward Berwind, a millionaire from Philadelphia, Pennsylvania hired architect Horace Trumbauer to create The Elms as an elite summer residence modeled on the palaces of French royalty. Berwind built The Elms in Newport, RI, the location of many other summer homes for wealthy elites and industrial magnates from the same period. Today, the visiting public can tour The Elms' grand rooms to experience intricate architectural decoration, ornate furniture, and valuable art. In the attic and basement, servant workspaces are furnished with period kitchen appliances, laundry supplies, and cleaning tools. And below the basement, down another flight of stairs, is an unusual relic that tells the origin story of the splendor above – a miniature coal train.

Berwind started a coal mining company in 1874. By the time he died in 1936 he was known as the United States' largest owner of bituminous coal mines.<sup>1</sup> Only twenty-five years after starting his company, he accumulated enough capital to build a second home in one of the poshest resort towns along the Northeast coast. He harnessed the explosive growth of coal, first by fueling the United States Navy through his military connections, and then by selling to the broader economy. He managed the mining and transportation of millions of tons of coal over the life of his business. During the years the Berwind-White Coal Mining Company operated, annual

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<sup>1</sup> "E. J. Berwind Dies," *The New York Times*, August 19, 1936, 21.



Figure 1: The Elms from the rear gardens. Jack Boucher, photographer, "West Front from the Garden," Historic American Building Survey HABS RI-344, 1971, Library of Congress Prints and Photographs Division, *HABS RI, 3-NEWP 60*, <https://www.loc.gov/pictures/item/ri0049/>.

coal extraction and use in the United States grew over eight times its initial volume until coal dominated American energy use.<sup>2</sup>

The first measurable human effects on the earth's atmosphere from burning fossil fuels occurred before Berwind was born, but catastrophic changes accelerated exponentially during the duration of his business.<sup>3</sup> The growth of the coal industry financed and funded The Elms; therefore the mansion is directly tied to the causes of the climate crisis. Despite Berwind's direct ties to coal usage acceleration and climate change, public interpretation at The Elms includes little information about Berwind's coal business nor any mention whatsoever of The Elms' connection to our present climate crisis.

Climate crisis heritage is an unrecognized and underutilized cultural asset in the fight to slow climate change. In this thesis, "climate crisis heritage" refers to historic sites, objects, and archives that preserve the origins of the climate crisis and tell that history and story, not heritage threatened by the effects of climate change. The latter dominates the discourse in the museum and historic preservation fields, but the former has as much to teach us as civilization approaches the brink of a massive shift.

This thesis proposes that historic sites related to the fossil fuel industry can and should inform our public discourse about climate change. Compelling, historically-grounded, and relevant public interpretation about climate change can and should be conducted not only at former industrial sites, but also at historic house museums that were built using the profits and fortunes created from fossil-fuel industries. There are important precedents in the fields of museum practice and historic preservation for revising long-established interpretive narratives.

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<sup>2</sup> Sam H. Schurr, Bruce C. Netschert, and Vera F. Eliasberg, *Energy in the American Economy, 1850-1975: an Economic Study of Its History and Prospects*, (Baltimore, MD: Johns Hopkins Press, 1960), 37 and 63.

<sup>3</sup> Andres, R. J., D. J. Fielding, G. Marland, T. A. Boden, N. Kumar, and A. T. Kearney. "Carbon Dioxide Emissions from Fossil-Fuel Use, 1751–1950." *Tellus B: Chemical and Physical Meteorology* 51, no. 4 (January 1, 1999): 759–65. <https://doi.org/10.3402/tellusb.v51i4.16483>.



Figure 2: The dining room at The Elms. Jenn Elizabeth, photographer, "Weekend Guide to the Newport Mansions." Jen Elizabeth's Journals (blog), August 14, 2018. <https://jenelizabethsjournals.com/2018/08/14/guide-newport-mansions-weekend/>.

These precedents offer models for thinking about climate change as an interpretive theme. However, it is very rare for historic house museums that are built using wealth and power from fossil-fuel industries to include the negative history of that industry and its ties to climate change in the sites' interpretation. Using the Gilded Age mansion of wealthy coal industrialist Edward Berwind as a case study, this thesis will describe opportunities to use the architecture, artifacts, and histories of a residence funded by fossil fuel profit to convey climate crisis history to the public. This history is embedded in the place as an object and only requires interpretation and discussion to help the public "see" climate change at The Elms. A climate change narrative offers an opportunity for some sites that struggle to share their histories in ways that have contemporary relevance. Mansions in particular pose an opportunity to include the motives, economic structures, and cultural factors behind the climate crisis in our understanding of its roots and consequences, expanding beyond the usual scientific perspective. By seeing mansions like The Elms as manifestations of the large-scale societal shifts that caused the climate crisis, it may become more possible for the public to conceptualize the scale of change necessary to slow the climate crisis. If we fail to redefine the meaning of these spectacular homes, we reinforce the values that led to the crisis in the first place.

This project has multiple urgencies. In light of the climate crisis, every institution that serves the public good, such as any nonprofit or museum, has a social and moral obligation to examine the role it can play in solving the crisis. Historic houses with fossil fuel connections have unique opportunities to contribute to a national public understanding of the climate crisis by providing historical context for its origins. As some historic sites begin to acknowledge the human exploitation that was involved in their founding – from slavery to indigenous dispossession – now is also the time to recognize environmental exploitation. Historic mansions like The Elms are popular attractions that stand as concrete evidence of the origins of the climate

crisis. Considering the high levels of trust placed in museums by the public, they have a unique role to play in shifting consciousness.<sup>4</sup>

The effects of the climate crisis are complex, cumulative, diverse, and unevenly distributed across place and time, which makes them difficult to perceive and grasp. Connecting centuries of human activity in one place to specific climate events in another is especially difficult. Despite that its effects overall are intensifying, the climate crisis remains abstract and difficult to understand.<sup>5</sup> By telling the history of climate change associated with a physical manifestation of extracted wealth, such as at The Elms, the human actions and motives at the center of the crisis will become clearer.

Another motivation for this project is to envision a future of the preservation field. In one hundred years, when climate change has reshaped our physical environment and society, what sites will we visit to make sense of our new reality? As I will discuss in chapter II, adaptation to climate change is an active discussion in the field of preservation. But how does the climate crisis impact the grounds upon which we find sites significant in the first place? What Character Defining Elements (specific architectural features) will define them and therefore deserve preservation priority? What histories does the climate crisis require we interpret for the public at the sites we steward? This thesis is a speculation on the near future of the field, a future that is already present more than we acknowledge.

Finally, this paper is motivated by the historic and ongoing injustice in the historic preservation and museum fields that results in a plethora of historic sites and artifacts dedicated to the histories of wealthy, white men, and very few to anyone else. There is great social and

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<sup>4</sup> Wilkening Consulting, “Museums and Trust,” American Alliance of Museums, 2021, <https://www.aam-us.org/2021/09/30/museums-and-trust-2021/>. Foundation and corporate funding is another important issue I will address later in the thesis.

<sup>5</sup> Andreas Malm, *Fossil Capital: The Rise of Steam-Power and the Roots of Global Warming* (London: Verso, 2016), 4.

professional need for new historic sites to be dedicated to a more representative spectrum of our society. However, it is also necessary for those great white men's houses to tell additional stories. There is a need to put existing historic sites into wider contexts. The meaning of sites is not inherent but assigned by culture, and it manifests in the way it is stewarded and used. The effects of injustice are often pointed to in its victims, but it is as visible in the benefits to the winners as it is in the violations upon the losers. The history of human and environmental exploitation that fuels the climate crisis is similarly evident not only in ravaged landscapes and sick people, but also in well-preserved palaces created with resources from extracted wealth. As a society, we have frequently celebrated exploitation through preservation without recognizing that we do. If we interpret industrial heritage sites and sites built with industrial wealth from fossil fuel extraction as the sites of environmental and human exploitation that they are, they can be an asset to climate justice.

### Terms and Methodology

The word interpretation has many definitions in the context of built heritage, from analysis of a historical object, to living history presentations. Interpretation is communication. In this paper, interpretation is information presented to the public about the history and meaning of a historical site. Interpretation (the message) can be presented in many forms (the modes) and can include signage, audio tours, docent tours, public programs, art commissions, demonstrations, podcasts, or information online that is directed to the public.

I use the terms climate change and climate crisis throughout this paper to refer respectively to the process of anthropogenic atmospheric shift due to fossil fuel emissions, and the current existential threat that has resulted from it. Many other terms also relate to the climate crisis, such as the term Anthropocene. I choose not to use Anthropocene for two reasons. First, it has been challenged by some authors on the grounds that it masks inequality, a topic I discuss further in the literature review following this chapter. Second, many argue that the Anthropocene

did not start with the industrial revolution and the subsequent widespread adoption of fossil fuels but instead began much earlier. They propose that the Anthropocene must be conceived of within the longer context of humans' alteration of the global environment, and therefore dates not to the start of the industrial revolution but to the origins of imperialism, resource extraction, slavery, and settler colonialism.<sup>6</sup> Acknowledging these points, I employ the phrase "origins of the climate crisis" to refer specifically to the period in which widespread fossil fuel usage began to dramatically impact the earth's atmosphere, not to the essential historical shifts and trends that led up to that occurrence.

To gather data for this project, I used a combination of historical research and in-person observation. I conducted a site visit to Newport, Rhode Island and the offices of the Preservation Society of Newport County, the organization that owns and stewards The Elms and nine other historic properties. During my visit I toured The Elms with the Chief Curator, Leslie Jones, and the Curator of Collections, Dr. Nicole Williams. I also discussed my project in relation to The Elms' history with Digitization Specialist, Lauren Landi; Curator of Historic Landscapes, Jim Donahue; Museum Registrar, Amanda Quink; and Resident Fellows, Francis Mahon, Adrian Cato, and Luli Zou. Ideally, I would have also visited the mansion as a typical visitor would have, but this was not possible due to The Elms being closed to the public in the winter of early 2022 and the Coronavirus pandemic.

The Elms offers most interpretation through an audio tour app that mentions Berwind's business only briefly and does not mention the topic of climate change. The Elms does not use interpretive signage inside, and guided tours are delivered by docents only for a special twice-daily Servant Life Tours. The audio tour covers over sixty stops, and only four of them mention

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<sup>6</sup>Heather Davis and Zoe Todd, "On the Importance of a Date, or, Decolonizing the Anthropocene," *ACME: An International Journal for Critical Geographies* 16, no. 4 (December 20, 2017), 761–80; Kathryn Yusoff, *A Billion Black Anthropocenes or None*, Forerunners: Ideas First from the University of Minnesota Press 53 (Minneapolis: University of Minnesota Press, 2018).



Berwind's business, while the Servant Life Tour only mentions it in the introduction and on one additional stop. The interpretation focuses on the splendor of the mansion, the lifestyle of its occupants, their family and social connections, the artwork on display, and the servant labor required by the Berwinds' lifestyle. The tour's attention to conspicuous wealth lays the groundwork for adding climate crisis history as an additional topic and interpretive layer.

To generate ideas for expanded interpretation of climate narratives, I reviewed the information I learned from The Elms' historical and interpretive materials and its Curator, and further researched the history of The Elms, Edward Berwind and his family, and the Berwind-White Coal Company using secondary sources as well as primary sources and The Elms' archives. I investigated the site's archives and collections storage for possible stories and artifacts related to the site's financing and fossil fuel connection, seeking manifestations of the coal industry in The Elms mansion, site, and grounds. I spoke with staff about the site's potential for climate reinterpretation, and possible features and artifacts to employ. Finally, I took photographs and notes of the mansion and grounds to generate ideas about how to connect the global climate issue with the specific documentary and artifactual material in front of me, seeking to create new connections between the past, present and future around the issue of climate change from my research and observations.

There are many directions I could have taken this investigation, but masters these are necessarily narrow. In addition, I had only five months to research and write this project, my access to the site was curtailed by COVID and a six-hour drive, and my research was self-funded. I must keep my topic specific and exclude many compelling lines of inquiry. This paper is likewise limited by the interdisciplinary nature of climate crisis history. I am not an expert in every topic that bears on the subject of climate change.

This paper will not evaluate questions related to efficacy, such as whether interpretation about climate change has an effect on visitor behavior. The intent of this thesis is to demonstrate

that the material culture and historical documentation is available at The Elms to add a layer of climate interpretation. Future research on how this kind of interpretation affects visitor thinking or behavior using sociological methods or behavioral psychology would be useful.

Also, this paper will not attempt to quantify or describe the specific effects of climate change that may have been caused by Berwind's business. Climate change is characterized by a fragmentation of agency.<sup>7</sup> If this is even possible, it would entail a significant digression into climatological science far beyond the scope of my research. More importantly, the intention of this thesis is less to blame specific individuals than to use the material heritage of the site to investigate the overall historical and social context for the origins of climate change.

This paper will not evaluate financial or organizational feasibility of any new interpretation recommendations. The purpose of this thesis is to demonstrate that a climate-focused interpretation is possible in terms of the historical information and material heritage available. Whether the site is able to introduce additional interpretive content from a standpoint of financial or organizational capacity is a separate matter that will not be considered. However, my proposal for additional stops in The Elms audio tour is a relatively affordable option that layers easily onto existing interpretation (see Appendix A).

Finally, this paper takes as given the anthropogenic origins of the climate crisis, and the catastrophic effects that have been in effect globally for some time. By now, the statement that "science is in agreement" on these matters is a tired phrase that is beyond needing to be repeated. Any reader who would like a reminder can refer to the reports released by the United Nations Intergovernmental Panel on Climate Change.<sup>8</sup>

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<sup>7</sup> Stephen M. Gardiner, *A Perfect Moral Storm: The Ethical Tragedy of Climate Change*, *Environmental Ethics and Science Policy Series* (Oxford University Press, 2011), <https://doi.org/10.1093/acprof:oso/9780195379440.001.0001>, page 24.

<sup>8</sup> "IPCC - Intergovernmental Panel on Climate Change," IPCC, accessed March 7, 2022, <https://www.ipcc.ch/>.

## Overview

Following this introduction, Chapter II is an assessment of the literature on the most relevant subjects: historic site interpretation, and climate change history. It offers a brief analysis of writing in the preservation and museum fields on shifts in interpretation at historic house museums, recent attention to “difficult” and “hidden” histories, and how museums and historic sites are addressing the climate crisis. It also provides an overview of the current state of climate change history, the disciplines involved in writing it, and the gaps that remain. The literature review provides a multi-disciplinary context for the questions and ideas in this paper.

Within this context, Chapter III addresses the history of The Elms and why it is a particularly useful case study for investigating how historic sites can interpret the history of the climate crisis. This third chapter evaluates the relative merits of various types of historic sites related to the fossil-fuel industry according to their interpretation potential, numerates other fossil-fuel financed mansions, and summarizes the historic and physical assets that make The Elms a strong candidate for climate change interpretation. Berwind’s profits were enabled by many factors, from the invention of the steam engine and the expansion of railways, to the turn away from waterpower for industrial manufacturing. This chapter puts Berwind and his company into the historical context of the United States’ energy economy, the coal industry, and the nascent climate crisis.

The most extensive, Chapter IV proposes adding the history of the climate crisis as a new narrative at The Elms, using several artifacts in The Elms’ collection as the basis for interpretation. This chapter will suggest additional stories and evidence from the history of The Elms, as well as objects and architectural features that illustrate these stories. This chapter presents a history of The Elms’ heating system, miniature coal train, and two artifacts related to the Berwind-White Coal Company and analyses their connections to climate change history for the purposes of public interpretation.

Chapter V concludes the thesis and returns to a general argument on interpreting climate change history at historic sites. Appendix A, designed as a practical guide, provides sample scripts that if added to the current tour app would enable The Elms to easily incorporate climate change into its existing audio tour. Each interpretive script is based on an artifact presented in Chapter IV and proves that interpreting climate change at The Elms is not a complicated undertaking. The origins of the climate crisis are all around us, and readily apparent in our built environment.

## Chapter II: The Difficult History of the Climate Crisis

Two principal bodies of scholarship situate the project of climate crisis interpretation at The Elms' – literature in historic house museum interpretation, and literature on the history of climate change. First, the chapter provides an overview of some of the most relevant texts related to house museum interpretation and reinterpretation along with other efforts to trace the environmental and financial origins of buildings and objects generally. Second, the chapter discusses findings on museums interpreting climate change, and the historic sites that currently do so. Lastly, the chapter concludes with a preliminary overview of writing on the history and origins of the climate crisis, a wide-ranging and interdisciplinary subject that does not fall into a neat category of scholarship. By bringing climate change history into the interpretation of a historic house museum, this thesis asks questions of two very different fields of literature, that are themselves wide-ranging and not discretely defined. It is here that I clarify the gap in the literature that this paper seeks to repair.

### Interpretation at Historic Sites

Narrative evolution is an ongoing reality in historic house museum interpretation, one that has been a constant since the origins of house museums themselves. Shifts in society propel correlative shifts in house museum interpretation and institutional values, most recently demonstrated by house museums' strong interest in historical narratives and contemporary input from communities of color in the era of Black Lives Matter and other contemporary justice movements.<sup>9</sup> The climate crisis is likewise a justice issue (not to mention a survival issue), and

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<sup>9</sup> Linda Young, *Historic House Museums in the United States and the United Kingdom: A History* (Lanham, Maryland: Rowman & Littlefield, 2017), 146.

likewise necessitates a social shift. Increasing numbers of museums are interpreting climate change and climate crisis, but few are historical institutions. This section will provide an overview of interpretive shifts and climate change museum interpretation as background for the project suggested in this paper.

Interpretation at historic house museums reflects broader thinking in both social and academic contexts, a pattern inherent to historic house museums from their outset in the United States. Linda Young points to the early history of American house museums as places designed to inspire pride in national identity.<sup>10</sup> Patricia West adds that house museums were a public example of an ideal home, demonstrating appropriate domesticity to provide "moral uplift" and examples of "civility," as part of a growing tourist industry.<sup>11</sup> The implication for both authors is that house museums interpreted the histories of their original owners, and their greatness in lifestyle, affluence, and public service, as a standard for the general public to emulate, rendering house museums a tool in a nationalist project.

Young writes that until the later part of the twentieth century, house museums generally continued in a similar mode of celebrating the great white men of the past.<sup>12</sup> There were a few exceptions, such as museums based on the new disciplines of anthropology, archeology, and folklife, that systematized antiquarian collecting practices of vernacular objects into public displays of the "common man."<sup>13</sup> Then in the 1960s and 1970s, social history emerged in academia, challenging historical scholarship and public sites to center ordinary people and those historically excluded. Slowly, graduates from these programs entered the heritage industry and

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<sup>10</sup> Young, 152.

<sup>11</sup> Patricia West, *Domesticating History: The Political Origins of America's House Museums* (Washington [D.C.]: Smithsonian Institution Press, 1999), 2.

<sup>12</sup> Young, *Historic House Museums in the United States and the United Kingdom*, 145.

<sup>13</sup> Young, 146.

brought new interpretive themes to historic house museums based on identity categories such as workers, women, and enslaved people.<sup>14</sup>

More recently, social movements such as Black Lives Matter, indigenous sovereignty, criminal justice reform, reproductive rights, and LGBTQ equality have further pushed social institutions, particularly museums and the cultural sector, to examine their roles in supporting or repairing oppressive structures. The Monument Lab project has catalogued and supported calls across the United States to reexamine public monuments.<sup>15</sup> Many historic house museums are taking these critiques seriously and embarking on projects to revise their interpretation, public programs, and even their missions, from attempts to collaborate and co-curate with descendants of the enslaved workers at James Madison's Montpelier in Virginia, to a reproductive justice tour at Matilda Joslyn Gage's home in upstate New York.<sup>16</sup>

Literature in the historic site field represents this shift through prolific case studies and instructive essays related historic site operations and interpretation. Ken Turino and Max van Balgooy's book *Reimagining Historic House Museums* (2019) covers everything from finances to communications and dedicates eight of its twenty-six chapters to various authors' social justice reinterpretation efforts.<sup>17</sup> Masum Momaya's chapter in *Active Collections* (2017) proposes ten practical principles for an anti-racist and anti-colonialist approach to museum collections.<sup>18</sup> Many public historians characterize these shifts as essential to the relevance of historic sites, and

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<sup>14</sup> Notable programs to the history of interpretation include Cooperstown Graduate Program in Museum Studies, Winterthur Program in American Material Culture, Columbia University and University of Pennsylvania Historic Preservation were all founded around this time.

Young, *Historic House Museums in the United States and the United Kingdom*, 160-164.

<sup>15</sup> "Monument Lab," Monument Lab, accessed December 15, 2021, <https://monumentlab.com/>.

<sup>16</sup> American Association of State and Local History, "AASLH Statement on Montpelier Board and Montpelier Descendants Committee," *AASLH Blog* (blog), March 29, 2022, <https://aaslh.org/aaslh-statement-on-montpelier/>.

<sup>17</sup> Kenneth Turino and Max van Balgooy, eds., *Reimagining Historic House Museums: New Approaches and Proven Solutions*, American Association for State and Local History Book Series (Lanham, Maryland: Rowman & Littlefield, 2019).

<sup>18</sup> Masum Momaya, "Ten Principles for an Anti-Racist, Anti-Orientalist, Activist Approach to Collections," in *Active Collections* (Routledge, 2017).

therefore part of securing their futures. David Young's *The Battles of Germantown* (2019) and Beth Uzwiak's "Memorializing Dinah and Reckoning with Enslavement" (2021) each explore the efforts of historic sites to repair relationships with neighbors through collaboratively interpreting histories of racial injustice.<sup>19</sup> (Young and Uzwiak) Their work builds on some of the principles of community involvement suggested in Vagnone and Ryan's *Anarchists Guide to Historic House Museums* (2016).<sup>20</sup> These titles are a sample of the writing that captures a wave of reinterpretation focused on uncovering histories and people previously unacknowledged or marginalized by public history institutions.

Most reinterpretation projects at historic house museums address people and events that existed at the site itself, but a few recently have begun to investigate a site's historic connections to events far away. The National Trust in the United Kingdom recently released a report on connections to slavery and colonialism at ninety-three of the historic properties in their care, most of which are country house estates, even though all of the sites are far from British colonies and very few had enslaved people who worked on site. The introduction characterizes the ninety-three properties as "created or remodeled as expressions of the taste and wealth, as well as power and privilege, that derived from colonial connections and in some cases from the trade in enslaved people."<sup>21</sup> National Trust Director Sally-Ann Huxtable writes in the report's first essay that recent years have shifted British country house interpretation from the art, architecture, design and landscapes of the houses to the stories and individual histories that played out inside them, but

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<sup>19</sup> David W. Young, *The Battles of Germantown: Effective Public History in America* (Philadelphia, PA: Temple University Press, 2019); Beth A. Uzwiak, "Memorializing Dinah and Reckoning with Enslavement: Community Integration, Arts-Based Emplacement, and Racial Justice at Stenton Historic House in Philadelphia," *The Public Historian* 43, no. 3 (August 1, 2021), 55–86, <https://doi.org/10.1525/tph.2021.43.3.55>.

<sup>20</sup> Franklin D. Vagnone, Ryan, Deborah E, and Cothren, Olivia B, *Anarchist's Guide to Historic House Museums* (London: Routledge, 2016), <https://www.taylorfrancis.com/books/e/9781315435053>.

<sup>21</sup> Dr Sally-Anne Huxtable, Christo Kefalas, and Emma Slocombe, "Introduction," in *Interim Report on the Connections between Colonialism and Properties Now in the Care of the National Trust, Including Links with Historic Slavery* (Wiltshire, UK: National Trust, 2020), 5.





Figure 3: Nostell Priory, one of the country house estates included in the National Trust report. Matthew Antrobus, photographer, "The Story of Nostell." *National Trust Images*, accessed April 11, 2022. <https://www.nationaltrust.org.uk/nostell-priory-and-parkland/features/the-story-of-nostell>.

that "neither of these views of the country house considers it as a dynamic site, in which global and national histories played out in a local setting. They overlook the origins of the wealth that helped fund those places, spaces and collections."<sup>22</sup> She concludes by writing that "the influence of the inhabitants of country houses, their power to affect world history, and the ways that owning country houses helped them to consolidate that power, should not be underestimated."<sup>23</sup> The report makes the case that the economic actions and influence of historic house owners in places at a distance from their country retreats are an integral part of country house history and intrinsically tie the materiality and design of those houses to global histories of exploitation and violence. Exploitive investment and extraction and oppressive labor practices frequently enabled and supported the grand scale and beauty of these estates.

Current interpretation scholarship so frequently refers to histories of oppression and violence that it has developed new shorthand for this broad type of history, calling it "difficult" or "hidden" history.<sup>24</sup> The terminology references the relationship of public history audiences to these sometimes emotionally challenging narratives, though the words are perhaps doubly useful to excuse historic sites for waiting so long to include them. Julia Rose writes for an AASLH technical leaflet on "Interpreting Difficult Knowledge" that these histories are "difficult" in that they are histories which audiences may not "stand to know or bear to hear. . . . Interpreting difficult knowledge questions how people understand history and how they have long viewed the world."<sup>25</sup> The National Trust United Kingdom report also uses "difficult," stating that "these

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<sup>22</sup> Dr Sally-Anne Huxtable, "Wealth, Power and the Global Country House," in Interim Report on the Connections between Colonialism and Properties Now in the Care of the National Trust, Including Links with Historic Slavery (Wiltshire, UK: National Trust, 2020), 7.

<sup>23</sup> Huxtable, page 13.

<sup>24</sup> Madeline C. Flagler, "Interpreting Difficult Issues," in *The Small Museum Toolkit*, ed. Cinnamon Catlin-Legutko and Stacy Klingler, American Association for State and Local History Book Series 5 (Lanham, Md: AltaMira Press, 2012), 26.

<sup>25</sup> Julia Rose, "Interpreting Difficult Knowledge," Technical Leaflet (American Association for State and Local History, 2011), 2.

histories are sometimes difficult to read and to consider."<sup>26</sup> In Madeline C. Flagler's instructive essay, "Interpreting Difficult Issues," she observes that "difficult" histories are also called "hidden," in part because they are not widely interpreted, and in part because primary source documents are scarcer for historically oppressed populations by the very mechanisms of their oppression.<sup>27</sup> As at The Elms, work and service was literally hidden within the architectural design of elite and aristocratic houses, relegated to cellars, attics, rear yards, hidden passages and stairways, and separate buildings. She writes that women's history overcame these obstacles of scholarship in the 1960s and 1970s, and that racial inclusion in historical site interpretation has been slowly growing since the late 1980s.<sup>28</sup>

The climate crisis fits both definitions, being both "difficult" by challenging how people understand history and "hidden" in that it is not widely interpreted. The museum sector is just beginning to interpret climate change, often in response to public pressure. Climate change interpretation can be seen as another theme of social justice in public history, since its consequences are not borne equally and therefore it intersects fundamentally with race, class, gender, and other determinants of power.<sup>29</sup>

Science and natural history institutions, which have not included the more "difficult" social aspects of climate change were the first museums to interpret the issue. In their introduction to *Curating the Future: Museums, Communities, and Climate Change*, Newell, et al write that climate has been primarily framed as a scientific issue, and taken up by science and natural history museums as part of special exhibitions starting in the early 1990s.<sup>30</sup> In their essay

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<sup>26</sup> Huxtable, Kefalas, and Slocombe, "Introduction," 6.

<sup>27</sup> Flagler, "Interpreting Difficult Issues," 35.

<sup>28</sup> Flagler, 35 and 29.

<sup>29</sup> Rob Nixon, "The Anthropocene and Environmental Justice," in *Curating the Future: Museums, Communities and Climate Change* (New York: NY: Routledge, 2017), <https://upenn.alma.exlibrisgroup.com>.

<sup>30</sup> Jennifer Newell, Libby Robin, and Robin Wehner, "Introduction: Curating Connections in a Climate-Changed World," in *Curating the Future: Museums, Communities and Climate Change* (New York : NY: Routledge, 2017), <https://upenn.alma.exlibrisgroup.com>, 6-7.

about natural history museums, “Museums in the Climate Emergency,” Steve Lyons and Kai Bosworth write that there is no question of whether museums are relevant in the climate crisis, but “who for and to what end.” They urge museums to “play an important role in educating the public about the unpredictable and overlapping effects of climate change on the earth’s ecological and social systems.” When science museums do interpret climate change, Lyons and Bosworth argue that their narratives obscure the political and economic forces that cause it, and that they even may accept funding from fossil fuel industries.<sup>31</sup> Their observations reveal that science museums have largely presented climate change while avoiding its “hidden” and “difficult” social aspects.

More recently, a few museums have started to interpret the climate crisis from a social perspective, as well as a scientific one. Newell writes that ethnographic and other types of museums have begun to interpret the effects of the climate crisis and work to become a forum for public discussion and processing of the crisis and its implications.<sup>32</sup> Historic sites with connections to the climate crisis, like The Elms, could also fulfill this purpose. Recently, coalitions of museums have pledged to engage their staff and visitors in climate education and mitigation, such as Canada’s Coalition of Museums for Climate Justice founded in 2016, Museums for Future, founded in Europe alongside Greta Tunberg’s Fridays For Future Movement in 2018, and The American Alliance of Museums’ Environment and Climate Network.<sup>33</sup> The 2022 American Alliance of Museums Annual Survey for Museum-Goers, which

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<sup>31</sup> Steve Lyons and Kai Bosworth, “Museums in the Climate Emergency,” in *Museum Activism*, ed. Robert R. Janes and Richard Sandell, 1st ed, Series: Museum Meanings (New York, NY : Routledge, 2019), <https://doi.org/10.4324/9781351251044>, 174-179.

<sup>32</sup> Jennifer Newell, “Talking Around Objects: Stories for Living with Climate Change,” in *Curating the Future: Museums, Communities and Climate Change* (New York : NY: Routledge, 2017), <https://upenn.alma.exlibrisgroup.com>, 49.

<sup>33</sup> “Coalition of Museums for Climate Justice,” Coalition of Museums for Climate Justice, accessed October 14, 2021, <https://cmcj.ca/>; “Museums For Future,” accessed December 11, 2021, <http://museumsforfuture.org>; American Alliance of Museums, “AAM Environment and Climate Network,” Accessed October 14, 2021, <https://www.aam-us.org/professional-networks/environment-and-climate-network/>.

includes museums across the sector, included questions such as, “How important is it to you for museums to be on the forefront of educating the public about the challenges of global climate change?” and “What types of museums should be educating the public about climate change in exhibitions and programming?”<sup>34</sup> A few museums wholly dedicated to climate change have just opened or are in planning stages, including the Jockey Club Climate Museum of Hong Kong, founded in 2013, and the Climate Museum in New York City, which started programming in 2017 and eventually plans to open its own space.<sup>35</sup>

However, history museums, historic sites, and historic house museums have been largely absent from the new wave of museums interpreting climate change for the public. Anne Lindsay observes in her book on reinterpretation at eighteenth-century historical sites in the United States that they almost never interpret their connections to global history or the environment.<sup>36</sup> Industrial heritage museums and sites offer clear opportunities for the interpretation of the climate crisis, because their histories are directly connected to the issue and their interpretations sometimes already include the environment and geological timescales. However, the International Committee for the Conservation of Industrial Heritage’s thematic study on The Heritage of the Oil Industry from 2020 only mentions climate change once, briefly in passing, in 91 pages.<sup>37</sup> Over the course of this project, I have only confirmed two industrial heritage sites that interpret their historical connection to the climate crisis. One is Lowell National Historical Park, a complex

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<sup>34</sup> American Alliance of Museums, “Annual Survey of Museum-Goers,” accessed April 9, 2022, <https://museumgoers.aam-us.org/>.

<sup>35</sup> “Jockey Club Museum of Climate Change - 賽馬會氣候變化博物館,” accessed December 17, 2021, <https://www.mocc.cuhk.edu.hk/en-gb/>; “Climate Museum,” Climate Museum, accessed October 14, 2021, <https://climatemuseum.org>.

<sup>36</sup> Anne Lindsay, *Reconsidering Interpretation of Heritage Sites: America in the Eighteenth Century*, Museums and Heritage (New York : NY: Routledge, 2020), 47 and 59.

<sup>37</sup> James Douet, “The Heritage of the Oil Industry: TICCIH Thematic Study” (The International Committee for the Conservation of the Industrial Heritage, 2020), <https://ticcih.org/wp-content/uploads/2020/07/Oil-industry-thematic-report.pdf>.



Figure 4: The Climate Museum Hub, a temporary exhibition presented by The Climate Museum on Governor’s Island, New York, NY in 2018. Climate Museum, “The Climate Museum Hub,” accessed April 11, 2022. <https://climatemuseum.org/the-climate-museum-hub>.

of historic textile mills in Massachusetts, that mentions the “unintended consequences of the Industrial Revolution” as an interpretive narrative on their website.<sup>38</sup> Ironbridge Gorge in the United Kingdom has long billed itself as the “Birthplace of the Industrial Revolution,” and as of October 2021, the museum is starting to plan interpretation around its identity as the “Birthplace of Climate Change.”<sup>39</sup>

This lack of engagement with climate change history at historic sites is despite the fact that climate change is a frequent topic in historic preservation. However, mitigation concerns for built structures rather than social issues dominate the preservation conversation around climate change. Conservation research seeks to uncover the most effective strategies for protecting historic structures from new weather patterns. Preservationists advocate for accounting for flood and fire risk based on new climate projections.<sup>40</sup> The Climate Heritage Network aims to mobilize the arts, culture, and heritage sectors “to help communities reduce greenhouse gas emissions and strengthen adaptive capacity,” but its manifesto doesn’t mention the value of interpreting heritage sites with climate change origins.<sup>41</sup> The International Council on Monuments and Sites (ICOMOS) formed a working group on climate change and released a report in 2019. It is focused on ways heritage sites are vulnerable to climate threats and can promote climate action. In over 60 pages of strategies and recommendations, it only includes two brief points about heritage as a tool for interpreting human impacts on climate.<sup>42</sup> Connections to the origins of the

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<sup>38</sup> U.S. National Park Service, “Climate Change - Lowell National Historical Park,” accessed March 18, 2022, <https://www.nps.gov/lowe/learn/nature/climatechange.htm>.

<sup>39</sup> “Ironbridge Must Accept ‘unflattering’ Climate Change Role,” accessed December 17, 2021, <https://www.shropshirestar.com/news/environment/2021/10/23/ironbridge-must-accept-unflattering-climate-change-role/>.

<sup>40</sup> Elizabeth Brabec and Elizabeth Chilton, “Toward an Ecology of Cultural Heritage,” *Change Over Time* 5, no. 2 (2015): 266–85, <https://doi.org/10.1353/cot.2015.0021>.

<sup>41</sup> “Climate Heritage Network,” Climate Heritage Mobilization, accessed October 14, 2021, <https://climateheritage.org/>.

<sup>42</sup> Climate Change and Cultural Heritage Working Group International, *The Future of Our Pasts: Engaging Cultural Heritage in Climate Action* (Paris: International Council on Monuments and Sites - ICOMOS, 2019), <http://openarchive.icomos.org/id/eprint/2459/>, 31.



Figure 5: A painting of Bedlam Furnace, now part of the museum complex at Ironbridge Gorge. de Loutherbourg, Philippe Jacques, *Coalbrookdale by Night*, oil on canvas, 68x106.7cm, 1801, Science Museum Group Collection, London, UK, <https://collection.sciencemuseumgroup.org.uk/objects/co65204/coalbrookdale-by-night-oil-painting>



climate crisis has not widely engaged preservationists, neither as a topic for interpretation, nor as a factor in determining significance or meaning of a site.

Current scholarship on house museum interpretation has laid the groundwork for interpreting the climate crisis from a historical perspective by having developed strategies and language around more complex and “difficult” histories. At the same time, engagement with the climate crisis is growing across the museum and preservation sector. Interpreting climate crisis at historic sites seems the logical next step. However, historic site interpretation is based on site-based research informed by historical scholarship at large. History as an academic discipline has not yet fully engaged with the climate crisis. The second section of this review of related research and practice argues that the lack of climate crisis history at historic sites is indicative of a larger gap in the field.

### Climate Crisis History

The lack of dialog in public history and historic preservation on the origins of the climate crisis may be related to the complexity of the field of scholarship on climate change history. The history of the climate crisis is addressed in writing by scholars in a wide range of fields, from climate science to art history. However, writing about the origins of the climate crisis does not seem to be a specific area of focus for the field of history, and mostly exists on the fringes of other historical subfields. Some have speculated that this is because of the cultural division between nature and culture, or the sciences and the humanities, others because of the disconnection between human agency and intention that climate change reveals. This section is an effort to assemble an initial review of scholarship on climate crisis history, with the caveat that this subject would make an interesting topic for an entire thesis.

A search for historical writing on the origins of the anthropogenic climate crisis leads down many paths that approach climate change history but peter out before reaching the destination. The most obvious is climate history, the study of how climate has impacted human

history, and to a lesser degree, the history of climate science. The Climate History Network “is an organization of scholars who reconstruct past climate changes and, often, identify how those changes affected human history.”<sup>43</sup> Lamb, Weart, Behringer, and White et al. are a few definitive authors in this field.<sup>44</sup> The introduction to a special issue of the journal *Climatic Change* gives an overview of some of the literature, as does a proposal for a people’s history of climate in *History Compass* by Pallavi Das.<sup>45</sup> However, the field lacks explorations of causation in the other direction: that of humans influencing the climate. This paper and the proposal to interpret climate change at The Elms is an attempt to do the reverse operation of what the climate history field is dedicated to doing: instead of revealing how climate impacts human history, interpretation of The Elms can reveal how human history has impacted climate.

Environmental history is an obvious place to look for a historical account of human impacts on the global climate, yet less attention to climate has been paid in this field than would be expected. A section of the 2016 issue of *Environmental History*, dedicated to the question of climate change, laments that “relatively few environmental historians are studying climate or have examined it in the past.”<sup>46</sup> A 2021 anthology of environmental history in the United States includes a final chapter on the effects of climate change in the late twentieth and early twenty-first centuries but does not use climate as a lens through which to reframe colonialism, the American Industrial Revolution, or other eras outlined in previous chapters of the book.<sup>47</sup>

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<sup>43</sup> “Climate History Network,” CHN, accessed April 5, 2022, <http://www.climatehistory.net/about>.

<sup>44</sup> H. H. Lamb, *Climate, History, and the Modern World* (London ; Methuen, 1982); Spencer R. Weart, *The Discovery of Global Warming* (Cambridge, Mass. : Harvard University Press, 2003); Wolfgang Behringer, *A Cultural History of Climate* (Cambridge : Polity, c2010.); Sam White, Christian Pfister, and Franz Mauelshagen, eds., *The Palgrave Handbook of Climate History* (London, United Kingdom: Palgrave Macmillan, 2018).

<sup>45</sup> Sverker Sörlin and Melissa Lane, “Historicizing Climate Change—Engaging New Approaches to Climate and History,” *Climatic Change* 151, no. 1 (November 1, 2018): 1–13, <https://doi.org/10.1007/s10584-018-2285-0>; Pallavi V. Das, “People’s History of Climate Change,” *History Compass* 16, no. 11 (November 1, 2018): e12497, <https://doi.org/10.1111/hic3.12497>.

<sup>46</sup> Mark Carey et al., “Forum: Climate Change and Environmental History,” *Environmental History* 19, no. 2 (April 2014): 281–364, <https://doi.org/10.1093/envhis/emu004>.

<sup>47</sup> Louis S. Warren, *American Environmental History* (John Wiley & Sons, 2021).

Geographer Andreas Malm theorizes that climate change is a problem for environmental history as a field because its effects are on a delay unlike any other issue.<sup>48</sup> Whatever the reason, environmental history has generally left climate change history out.

Various other historical subfields dive into much of the historical research necessary for climate crisis history without focusing primarily on how human events have contributed to the climate crisis. Industrial history, energy history, economic history, and the history of capitalism all supply in-depth analyses of some of the major factors driving the climate crisis from a historical standpoint. Recent chronicles of fossil fuel histories include Brian Black's *Petrolia* (2003), a place-based study of America's first oil boom.<sup>49</sup> Sean Patrick Adams has written several articles and a three-volume book (2014) about the American coal industry.<sup>50</sup> Andrew Arnold's book *Fueling the Gilded Age* (2014) offers a richly detailed account of the complex relationship between coal companies, railroads, and miners.<sup>51</sup> Though this writing was all published well after climate change became a public topic in the 1980s and 1990s, none of them include climate as relevant to their subjects.

Other titles in energy, industrial, and economic history include climate as an important aspect, but not a focus. *Routes of Power* (2014) by Christopher Jones investigates how fossil fuel power was transported to consumers in nineteenth-century America, growing new markets and accelerating fossil fuel extraction.<sup>52</sup> *The Birth of Energy* (2019) by Cara Daggett is focused on

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<sup>48</sup> Andreas Malm, *Fossil Capital: The Rise of Steam-Power and the Roots of Global Warming* (London: Verso, 2016), 5.

<sup>49</sup> Brian Black, *Petrolia: The Landscape of America's First Oil Boom* (Baltimore, United States: Johns Hopkins University Press, 2003), <http://ebookcentral.proquest.com/lib/upenn-ebooks/detail.action?docID=3318156>.

<sup>50</sup> Sean Patrick Adams, "The American Coal Industry in the Nineteenth Century," *Economic History Association Encyclopedia*, edited by Robert Whaples., 2003, <https://eh.net/encyclopedia/the-us-coal-industry-in-the-nineteenth-century/>; Sean Patrick Adams, ed., *The American Coal Industry, 1790-1902* (London; Brookfield, Vermont: Pickering & Chatto, 2014).

<sup>51</sup> Andrew Bernard Arnold, *Fueling the Gilded Age: Railroads, Miners, and Disorder in Pennsylvania Coal Country*, Culture, Labor, History Series (New York: New York University Press, 2014).

<sup>52</sup> Christopher F. Jones, *Routes of Power: Energy and Modern America* (Cambridge, MA: Harvard University Press, 2014).

how ideas about energy were formed by the politics of labor.<sup>53</sup> Both mention understanding climate change as a possible application for their research but it doesn't structure their investigation.

Only a few authors take up historical research for the purpose of better understanding the mechanics, motivations, and minutiae of the climate crisis' origins. Andreas Malm's 2016 book *Fossil Capital* is an in-depth historical account of Britain's transition to coal and the impact it had on the climate. Malm describes his motivations for the project, writing that now that we understand climate change, the events in the history of industry and geopolitical conflict "are retroactively suffused with a new significance, calling for a return to history, eyes wide open."<sup>54</sup> However, Malm does not seem to have many colleagues answering this call as directly as he does.

While threads of climate change history extend only in the margins of historical subfields, climate scientists refer to it constantly. Changes in society over time are an inherent factor in climate scientists' research. "Pre-industrial" and equivalent terms are common in climate science literature to indicate a major historic shift with dramatic effects on climate.<sup>55</sup> Scientists tracking the history of carbon emissions speculate on how fluctuations may have been caused by historical events: wars, recessions, population changes.<sup>56</sup> However, broad statements about past eras have sufficed so far to serve the purpose of climate science. Specifics about individuals,

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<sup>53</sup> Cara New Daggett, *The Birth of Energy: Fossil Fuels, Thermodynamics, and the Politics of Work* (Durham: Duke University Press, 2019), <https://doi.org/10.1215/9781478005346>.

<sup>54</sup> Malm, *Fossil Capital*, 5.

<sup>55</sup> Michiel Schaeffer et al., "Long-Term Sea-Level Rise Implied by 1.5°C and 2°C Warming Levels," *Nature Climate Change* Published online 24 June 2012 (June 24, 2012): 867–70, <https://doi.org/10.1038/nclimate1584>; R. J. Andres et al., "Carbon Dioxide Emissions from Fossil-Fuel Use, 1751–1950," *Tellus B: Chemical and Physical Meteorology* 51, no. 4 (January 1, 1999): 759–65, <https://doi.org/10.3402/tellusb.v51i4.16483>.

<sup>56</sup> David J. Hofmann, James H. Butler, and Pieter P. Tans, "A New Look at Atmospheric Carbon Dioxide," *Atmospheric Environment* 43, no. 12 (April 1, 2009): 2084–86, <https://doi.org/10.1016/j.atmosenv.2008.12.028>.

companies, inventions, habits, and how change manifested throughout societies are not usually addressed, which is understandable: these are the purview of history.

But history doesn't seem to be picking up the story where climate science leaves it. In 2012, Sam White wrote for the American Historical Association newsmagazine that "when it comes to public discussion of climate change, historians are nearly invisible. Even within academic communities, climate and history rarely mix. Despite recent progress, the subject remains a small specialty among environmental historians, with no journal and few conferences of its own. Both inside and outside universities, what most people know about climate and history comes from a handful of popular works by non-historians."<sup>57</sup> This was reinforced five years later by Pallavi Das in *History Compass*: "When compared to the studies on climate change by geographers and anthropologists there have been relatively few studies done by historians."<sup>58</sup> Even sustainable business policy analysts are doing historians' work by attempting to describe how institutions and technology co-developed to lock us into the current emissions trajectory.<sup>59</sup>

The neglect of climate change history by the historical field is partly explained by the concept of the Anthropocene. The term Anthropocene was coined by atmospheric chemist Paul Crutzen in the early 2000s, to refer to a new geological epoch marked by permanent human intervention into the geological record— now under consideration by the International Union of Geological Sciences.<sup>60</sup> Theories of the Anthropocene hold that it is very difficult to integrate

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<sup>57</sup> Sam White, "Historians and Climate Change," *Perspectives on History: The Newsmagazine of the American Historical Association*, 2012, <https://www.historians.org/publications-and-directories/perspectives-on-history/october-2012/historians-and-climate-change>.

<sup>58</sup> Das, "People's History of Climate Change," 2.

<sup>59</sup> Gregory C Unruh, "Understanding Carbon Lock-In," *Energy Policy* 28, no. 12 (October 1, 2000): 817–30, [https://doi.org/10.1016/S0301-4215\(00\)00070-7](https://doi.org/10.1016/S0301-4215(00)00070-7).

<sup>60</sup> Paul J. Crutzen, "Geology of Mankind," *Nature* 415, no. 6867 (January 2002): 23–23, <https://doi.org/10.1038/415023a>; "Working Group on the 'Anthropocene' | Subcommittee on Quaternary Stratigraphy," accessed December 12, 2021, <http://quaternary.stratigraphy.org/working-groups/anthropocene/>.

human and geological timescales. The intellectual project of rewriting human history as planetary history is indeed daunting, but not the first paradigm shift academia has faced.

The term Anthropocene has its critics, who point out that the term “anthro” evokes all humans equally, erasing vast differences in who is to blame, who has profited, who feels the worst effects, and who has been sacrificed in an intentionally earth-altering project for hundreds of years before the industrial revolution. Environmental literary theorist Rob Nixon points out that Anthropocene obscures the inequality inherent in climate change - that some people carry much greater responsibility for the crisis than others, and that there are vast differences in who will suffer most from its effects.<sup>61</sup> Alternate proposed terms account for or avoid hiding this imbalance, including “capitalocene,”<sup>62</sup> “plantationocene,”<sup>63</sup> “chthulucene” (using a mollusk as a reference for interspecies connection)<sup>64</sup> and even “White (M)Anthropocene.”<sup>65</sup> However, critics of the term “Anthropocene” do not contest the difficulty of merging geological with historical time.

Anthropocene authors from a range of disciplines have offered hypotheses about why the field of history lacks engagement with the climate crisis. The ICOMOS Climate Change and Cultural Heritage Working Group simply explain it as a difference in research methods, and writes that “the methods for studying culture tend to be narrative-based and qualitative...data from these methods do not sit comfortably with the quantitative approaches prevalent in other

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<sup>61</sup> Rob Nixon, “The Anthropocene and Environmental Justice,” in *Curating the Future: Museums, Communities and Climate Change* (New York: NY: Routledge, 2017), <https://upenn.alma.exlibrisgroup.com>.

<sup>62</sup> Jason W. Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (Brooklyn, NY: Verso, 2015).

<sup>63</sup> Donna Haraway et al., “Anthropologists Are Talking – About the Anthropocene,” *Ethnos* 81, no. 3 (May 26, 2016): 535–64, <https://doi.org/10.1080/00141844.2015.1105838>.

<sup>64</sup> Donna Jeanne Haraway, *Staying With the Trouble: Making Kin in the Chthulucene*, Experimental Futures: Technological Lives, Scientific Arts, Anthropological Voices (Durham: Duke University Press, 2016).

<sup>65</sup> Giovanna Di Chiro, “Welcome to the White (M)Anthropocene?: A Feminist-Environmental Critique,” in *Routledge Handbook of Gender and Environment* (Routledge, 2017).

social and natural science on climate change.<sup>66</sup> Levene et al. write in their essay collection *History at the End of the World* that “historians are not much interested in the natural world.”<sup>67</sup> These authors blame the disciplinary boundaries as the root of the issue.

Other theories indicate the problem could be more particular. According to historian Dipesh Chakrabarty in his widely cited 2009 essay, “The Climate of History: Four Theses,” the Anthropocene poses an existential crisis for history: how do we use the past to think about the future if there is no pattern to follow forward?<sup>68</sup> In his new book, *The Climate of History in a Planetary Age* (2021), Chakrabarty writes that the difficulty is inherent to the issue of writing history across three timescales: “the history of the Earth system, the history of life including that of human evolution on the planet, and the more recent history of industrial civilization (for many, capitalism). Humans now unintentionally straddle these three histories, which operate on different scales and at different speeds.”<sup>69</sup>

But Chakrabarty also blames the issue partially on disciplinary differences in approach. He explains that post-colonial studies generated a wave of new social history (as described above by Linda Young), which was founded on the idea that class, race, sex, gender and other social categories create the basis for oppression and power. Though the environmental movement emerged soon after, it was based on a “one world” concept that tied humanity together in a shared environmental fate. This made social historians rightfully skeptical of its relationship to structures of oppression that generate very different consequences for different populations, and reluctant to take up the topic.<sup>70</sup>

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<sup>66</sup> Climate Change and Cultural Heritage Working Group International, *The Future of Our Pasts*, 6.

<sup>67</sup> Mark Levene, Rob Johnson, and Penny Roberts, *History at the End of the World? History, Climate Change and the Possibility of Closure* (Penrith, UK: Humanities-Ebooks, LLP, 2009), <http://ebookcentral.proquest.com/lib/upenn-ebooks/detail.action?docID=3306076>.

<sup>68</sup> Dipesh Chakrabarty, “The Climate of History: Four Theses,” *Critical Inquiry* 35, no. 2 (2009): 197–222, <https://doi.org/10.1086/596640>.

<sup>69</sup> Dipesh Chakrabarty, *The Climate of History in a Planetary Age* (University of Chicago Press, 2021), <https://doi.org/10.7208/9780226733050-002>, 49.

<sup>70</sup> Chakrabarty, page 17-18.

Finally, art historian Robin Kelsey theorizes that a disruption in the concept of human agency is the issue for historians. He argues that Darwin's disruption of Biblical history revealed that natural history lacked intention. While human action and therefore human history were motivated by intention and had morality, natural history was a product of systems without a mind or heart: mutation, erosion, statistics of survival.<sup>71</sup> Climate change forces mindless agency into the historical discipline. "Historians must contend with the fact that the most important developments of our time are cumulative and largely unintended effects of everyday economic activity. Histories brimming with intention, including biographies, as well as histories ignoring environmental repercussions to focus exclusively on social conflict or political liberation, will increasingly seem myopic."<sup>72</sup> Writing about human history with the unintentional agency of the natural world is a new skill to be developed by the historical field.

In the end, despite many authors' important contributions to the topic of climate change history, a historic site that wishes to include new interpretation connecting itself to the history of the climate crisis does not have a clear set of scholarly sources to situate the site in a wider historical context or other sites to look to who are already modeling climate change interpretation as a practice. Historic sites engage original research, but they also rely on historians as partners to frame and contextualize the materials at hand. History's avoidance of climate crisis history leaves a void that other disciplines are working to fill, and many scholars have met the challenge with insight and rigor. However, the history field's voice at large is missing from the conversation. As a humanities discipline with a long legacy and a deep methodology, history's contribution is vital to the academic and national conversations on the climate crisis and could help humanity imagine the change needed in the values and systems that are rapidly advancing climate crisis.

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<sup>71</sup> Robin Kelsey, "Ecology, Sustainability, and Historical Interpretation," *American Art* 28, no. 3 (September 2014): 8–13, <https://doi.org/10.1086/679694>, page 10.

<sup>72</sup> Kelsey, page 11.



## Climate Crisis Heritage: A Tool for A New History

Under the Anthropocene, disciplinary boundaries blend together: industrial history is climate science is environmental history is social history. Writing climate change history requires taking in an enormous amount of previous research, recontextualizing it, and integrating it across humanities and sciences. But perhaps it is helpful, particularly for the public, to develop climate change history at a historical site rather than in the abstract. Here we have a place, objects, people, that exist in specific positions according to both their human and geological history. The full panoply of place, objects, and people can be simultaneously presented as social entities, personal objects, players in environmental histories, and products of geological process. As National Trust Director Sally-Ann Huxtable writes, a historic house museum is “a dynamic site, in which global and national histories played out in a local setting.”<sup>73</sup> Without a definitive history of climate change onto which to map the Berwind story, this thesis project has become an attempt to layer and blend the disciplines on site using the material culture of The Elms as a concrete point of intersection for these varied fields of study. If climate change history has not supported a rise of climate change heritage, perhaps the reverse is possible.

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<sup>73</sup> Huxtable, “Wealth, Power and the Global Country House,” page 72.

## Chapter III: Why The Elms?

### Historic Sites and Climate Change

Where are the historic sites about climate change? Aside from the two mentioned in the previous chapter, I have been unable to find public historic sites that interpret the history of climate change as a major narrative. The reasons this topic is neglected are many. Climate change is highly politicized, so site managers may be reluctant to wade into the issue.<sup>74</sup> Widespread acknowledgement of the climate crisis is scarcely a decade old in the United States, and museum interpretation moves relatively slowly in picking up new interpretive topics. Finally, climate change continues to worsen through the present day, making it more of a contemporary issue than a historical one.

The absence of climate crisis interpretation at historic sites is exacerbated by the very reasons climate change exists in the first place: a sense that humans are separate from nature. Climate change is seen primarily as a scientific problem instead of a problem resulting from a series of historic forces and trends, and therefore outside the purview of a historic site. It's also hard to draw straight lines of cause and effect in the climate crisis story. As Malm writes in *Fossil Capital*, "Every impact of anthropogenic climate change carries the imprint of every human act with radiative forcing, such that they are infinitesimally representative of two moving aggregates - the aftermath and the source - intimately coupled yet strangely disconnected from each other."<sup>75</sup> It is therefore not surprising that the history of climate change is not commonly taken up by historic sites.

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<sup>74</sup> Many historic sites have a sense that they should be "objective" and not take sides on controversial topics. Yet avoiding an issue leaves potentially controversial topics to fester. Sites lose opportunities to engage around topics that are relevant in contemporary society, and their avoidance of issues can make for bland and uninspiring interpretation. Most importantly, anthropogenic climate change is a scientific fact.

<sup>75</sup> Malm, *Fossil Capital*, 7.

However, climate change is historical: a defining characteristic of human history that began over 150 years ago, resulting from widespread social and technological changes. “Industrial economies have been locked into fossil fuel-based energy systems through a process of technological and institutional co-evolution.”<sup>76</sup> Industry, transportation, media, society evolved over time to depend on and reinforce dependency on fossil fuels.<sup>77</sup> The evolution of civilization happens over time and tracing this evolution, its causes and effects, is the subject of history. Historic sites are a trusted source of historical information for Americans and should include this most significant outcome of human history.<sup>78</sup>

Which existing public historic sites *could* interpret the history of climate change if they chose to? Which ones would lend themselves especially well to this layer of additional interpretation? To begin to answer these questions, I selected a particularly compelling site and created a proposal. This section explains my reasoning for choosing The Elms. Later in this chapter, I will provide an overview of the site’s and the owner’s histories in the context of the climate crisis to inform more specific artifact interpretations later in the paper.

I live in Philadelphia, and I limited my search to sites within a day’s drive. Fortunately, this area encompasses coal mines, oil refineries, power plants, railroads, mansions, libraries, and many other places where fossil-fuel extraction or the use of its profit shaped the built environment.

### **Sites of Extraction**

In many ways, the most obvious sites for interpreting the history of the climate crisis are coal mines or oil fields -- the sites of extraction. The No. 9 Mine and Museum in Lansford, PA

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<sup>76</sup> Unruh, “Understanding Carbon Lock-In.”

<sup>77</sup> Malm, *Fossil Capital*, 7.

<sup>78</sup> Wilkening Consulting, “Museums and Trust,” American Alliance of Museums, 2021, <https://www.aam-us.org/2021/09/30/museums-and-trust-2021/>.

and the Lakawanna Coal Mine Tour near Scranton, Pennsylvania are two examples. Or perhaps an industrial site that used a high volume of fossil fuel to operate, such as the Richmond Generating Station in Philadelphia, which was a coal-fired power plant.

However, at sites of extraction or large-scale use like these, the local environmental impact of fossil fuel extraction on water, land, air, and human health is so prominent, it distracts from the global impact of the climate crisis instead of pointing to it. Environmental destruction, water pollution, and smog are serious environmental issues that are strongly evoked by landscapes of extraction and post-industrial sites. Climate change is a more distributed and less specifically perceivable issue that manifests elsewhere as much as (or more than) at the location of mining or burning.

### **Mansions**

Fossil fuel expansion funded another type of construction, in addition to industrial sites and mining towns: the mansions of the company owners. Mansions of powerful, wealthy, white men are more traditionally the focus of historic preservation and interpretation efforts, and many of them are already established as historic sites. Though a mansion may seem distant from the climate crisis, it is key to its history because it represents the wealth and power of its owner, frequently gained through investment in extractive industries.

Wealth and power are key to the history of climate change; fortunes were built on fossil fuel, and the industry established new dynasty families. The Rockefellers, Carnegies, Pews, and others made extraordinary sums of money dealing in fossil fuels. The display of their wealth makes the demand for these substances, and their profitability, very apparent. The visibility of wealth in the form of massive mansions and elaborate furnishings makes clear the material motivations that have driven the crisis.

Wealth and influence are also key to the future of the climate crisis. Impressive mansions are a powerful context in which to discuss the history of the climate crisis because they represent

the economic forces that are preventing essential change. Far less profitable than they used to be, fossil fuels are still seen by many as a sound investment. Senator Joe Manchin, under pressure from coal mine owners in West Virginia, has blocked recent climate legislation put forward by the Biden administration. Wealth, or the perceived potential for it, is a major factor in the future of the climate crisis. Interpreting the history of the climate crisis in the context of conspicuous wealth and consumption gives the narrative more contemporary relevance as well.

Of the many historic mansions built by fossil fuel industrialists, only some exist today as historic house museums open to the public. Many have been demolished, such as steel and coal baron Andrew Carnegie's house in Pittsburgh, demolished in 1999 to make way for the Steelers' Heinz Football Field<sup>79</sup> Others are still in private use, such as Knollbrook in the suburbs of Philadelphia, owned and renovated by members of the Pew family whose fortunes derive from the oil industry.<sup>80</sup>

Mansions preserved for public use include ones located near the industrial landscapes that financed them. These include the Asa Packer Mansion, in Jim Thorpe, Pennsylvania, built by a coal baron near his mining operations and now a historic site interpreting the story of its owner. Interpreting the history of climate change at this kind of mansion would be compelling, but like at an industrial site, could be somewhat confused by the powerful story of the local landscape of extraction.

Other fossil fuel mansions have been converted to non-historical museums, such as Carnegie's house in New York City, now the Cooper-Hewitt Design Museum, and The Frick mansion, built by a partner of Carnegie in coke and steel, now an art museum. Though these sites

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<sup>79</sup> David Laskin, "Where a Tycoon Made It Just to Give It Away," *The New York Times*, October 21, 2007, sec. Travel, <https://www.nytimes.com/2007/10/21/travel/21footsteps.html>.

<sup>80</sup> "Main Line History: Three Pew Family Mansions Are Main Line Treasures" accessed January 31, 2022, <https://www.mainlinemedianews.com/2009/10/03/main-line-history-three-pew-family-mansions-are-main-line-treasures/>.

can and should include climate crisis history as part of their stories, they are not primarily places for interpreting history for the public.

A very compelling type of historic fossil fuel mansions is the seaside retreat. Some fossil fuel industrialists built enormous and elaborate vacation homes in coastal resort towns, from Rhode Island to Florida. Often built with an ocean view, these mansions bring the climate story full-circle as sea-level rise threatens their futures or that of the surrounding area. One particularly striking example is Whitehall, a mansion built on Palm Beach by Henry Flagler, one of Rockefeller's partners in the Standard Oil Company. Flagler then founded the town of Miami, now mortally threatened by inundation from the sea.

The Elms mansion in Newport, Rhode Island stands out among seaside resort mansions built by fossil fuel industrialists due to its coal origins, grand scale, and elaborate design. In addition, aspects of the collection and particular architectural features, mechanical systems, as well as the immense tourist popularity of the mansion, mean it is primed for interpreting climate change history.

### **Tourism Today**

The Elms' popularity solidifies it as an interesting choice for a case study. The Preservation Society of Newport County, which owns and manages The Elms as well as nine other historic houses in Newport, hosts an average of one million visitors per year.<sup>81</sup> The Elms is one of the top three most popular mansions in visitation terms.<sup>82</sup> An introduction to climate change history would touch many more people at The Elms than at a smaller site hosting far fewer visitors.

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<sup>81</sup> The Preservation Society of Newport County, "40 Millionth Tour Celebration at the Newport Mansions," 2019, <https://www.newportmansions.org/about-us/40-millionth-tour-celebration>.

<sup>82</sup> Leslie Jones, conversation, February 14, 2022.

Do tourists want to learn about contemporary issues like climate change when they visit historic sites? One model for this is Eastern State Penitentiary (ESP) a historic prison complex in Philadelphia, Pennsylvania that hosts 275,000 visitors per year.<sup>83</sup> The site incorporated information on present-day mass incarceration into its site and exhibition starting in 2014. Exit surveys conducted after the changes recorded only 4% of visitors reporting that learning about a contemporary issue was detrimental to their visit; 91% said that they had learned something “thought-provoking.”<sup>84</sup> Since adding the new interpretation “with its explicit discussion of race, poverty, and incarceration,” ESP’s audience has grown by more than 40%. The Senior Vice President and Director of Interpretation, Sean Kelley, writes that “many Americans do want to engage in honest and direct dialogue.”<sup>85</sup> The Elms could be the first historic site in the United States to introduce climate change interpretation in a domestic setting.

#### The Elms in the History of Climate Change

Edward Berwind, a prominent coal industrialist, commissioned The Elms after the first twenty-five years of his financially successful career. Given what is established about the role of coal emissions in the climate crisis, this statement allows contextualization of the mansion as materially connected to the current crisis through the great profit that was (and still is) reaped at

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<sup>83</sup> Eastern State Penitentiary, “ESP to Break Ground on Project to Pave the Way for Future Visitor Center,” 2019, <https://www.easternstate.org/press-room/press-releases/esp-break-ground-project-pave-way-future-visitor-center>.

<sup>84</sup> Sean Kelly, “Beyond Neutrality,” *History News: The Magazine of the American Association for State and Local History*, 2017, 26-27.

<sup>85</sup> Kelly, 27.



Figure 6: Portrait of Julius Edward Berwind. Moses King, *Notable New Yorkers of 1896-1899: A Companion Volume to King's Handbook of New York City*, M. King, 1899, 430.



the expense of the planet. However, I would like to draw a more detailed picture of the position of Berwind's company and its relationship to historical CO<sub>2</sub> emissions globally. Berwind was one of the top businessmen in the most active coal region in the United States, at a time when coal comprised the majority of the United States fossil fuel energy production. The United States was by far the top CO<sub>2</sub> producer globally, and global carbon emissions were at a historic acceleration point. The Elms was built after the first twenty-five years of the Berwind-White Coal Mining Company and remained a showcase of his wealth for the rest of his life - wealth generated by economic trends that became the foundation of a new geologic era.

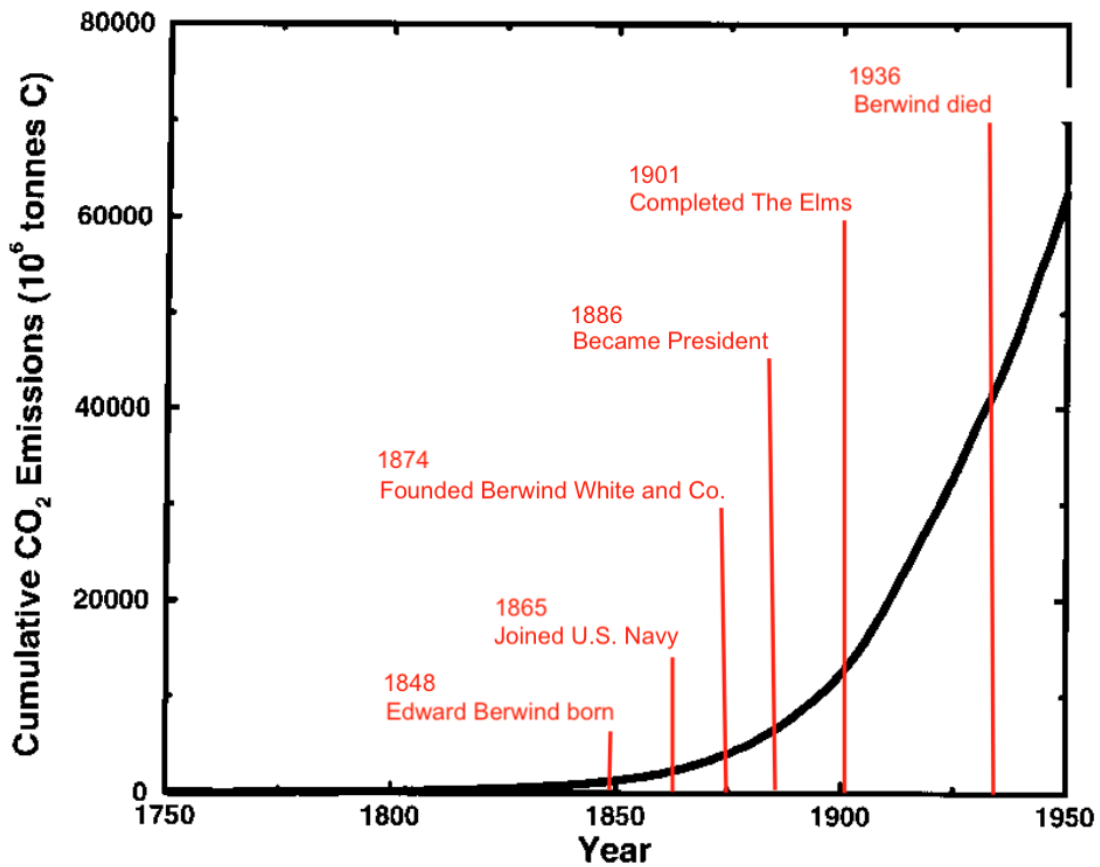


Figure 7: Cumulative emissions of CO<sub>2</sub> from the production of fossil fuels, 1750-1950. Andres, R. J., D. J. Fielding, G. Marland, T. A. Boden, N. Kumar, and A. T. Kearney. "Carbon Dioxide Emissions from Fossil-Fuel Use, 1751-1950." *Tellus B: Chemical and Physical Meteorology* 51, no. 4 (January 1, 1999): 759-65. <https://doi.org/10.3402/tellusb.v51i4.16483>.

In the mid-nineteenth century, accumulation of global CO<sub>2</sub> in the atmosphere began increasing with heightened acceleration. The cumulative global emissions from fossil fuels, graphed below, illustrates a curve now familiar from the news and alarm calls of scientists around the world. Marked atmospheric CO<sub>2</sub> growth starts around the year 1800 and increases exponentially toward the end of the nineteenth century (see Figure 7).

By 1850, the United States was by far the global leader in CO<sub>2</sub> emissions, with cumulative emissions at 840 million metric tonnes, slightly under half of total global emissions to date. The second highest cumulative emitter in that year was Russia, at 351 million tonnes. At that time, most emissions reflected land-use changes. In the United States and globally, people were clearing land for agriculture and burning wood for fuel. Exceptions to these emissions cause were a few European countries like the United Kingdom, Germany, and France, which had already cleared most land and were transitioning to coal.<sup>86</sup>

As the nineteenth century progressed, the United States maintained its position as top emitter, but the composition of the source of its emissions changed. Energy consumption in the United States shifted rapidly after the Civil War, and by 1900 bituminous coal had replaced wood as the main source of energy in the United States (see Figure 8).<sup>87</sup>

Edward Berwind's life began as the United States transitioned to a fossil fuel economy, and his career was propelled by the dramatic rise of coal extraction and use during the late nineteenth century. Born in 1848, Edward was the son of a Philadelphia cabinet and violin maker. His parents, John and Augusta Berwind, immigrated to the United States from Prussia in

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<sup>86</sup> Simon Evans, "Analysis: Which Countries Are Historically Responsible for Climate Change?," *Carbon Brief*, October 5, 2021, <https://www.carbonbrief.org/analysis-which-countries-are-historically-responsible-for-climate-change>.

<sup>87</sup> Anthracite coal was also in use at this time, but bituminous coal was much more plentiful, cheap, and widely used.

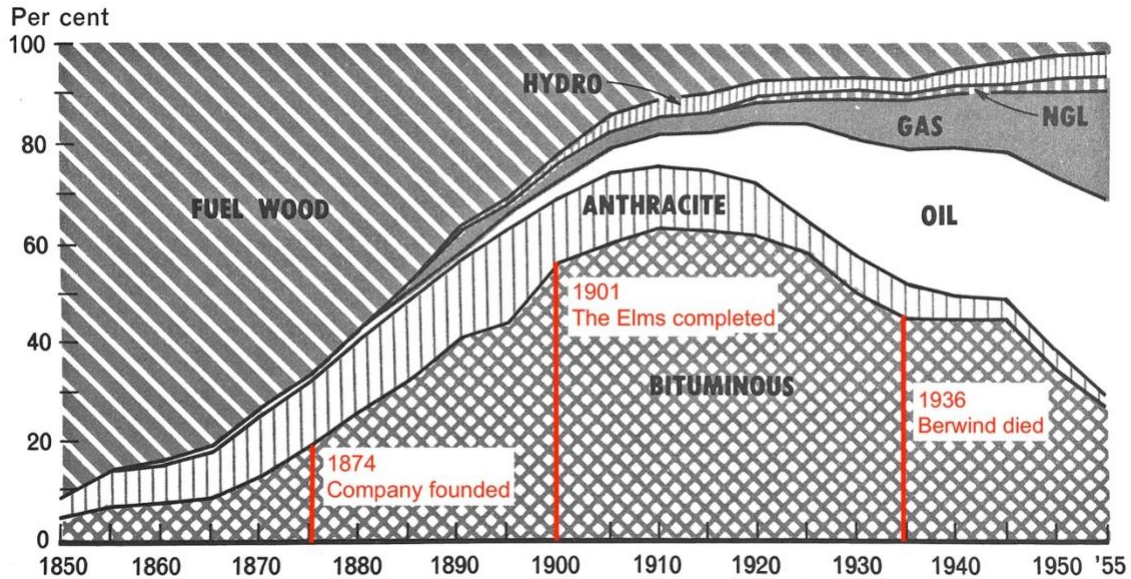


Figure 8: Specific energy sources as percentages of aggregate consumption in the United States. *Energy in the American Economy, 1850-1975; an Economic Study of its History and Prospects*, by Sam H. Schurr and Bruce C. Netschert, with Vera F. Eliasberg, Joseph Lerner and Hans H. Landsberg, 37.

the 1840s.<sup>88</sup> They were able to live in a comfortable Philadelphia neighborhood and pay for private school for their children.<sup>89</sup> President Lincoln appointed Edward to the United States Naval Academy in 1865, when Berwind was seventeen.<sup>90</sup> He served until 1872, when he was discharged because of a physical disability caused in the line of duty. He then worked for the Pennsylvania Railroad.<sup>91</sup>

Meanwhile, his older brother Charles had been working his way through the ranks of The Powelton Coal and Iron Company. He started as an office boy and was named a partner by age

<sup>88</sup> Ed Dinger and Lorraine Savage, "Berwind Corporation," in *International Directory of Company Histories*, Sarah Robertson and Neil Schlager, ed. vol. 230 (Farmington Hills, MI: St. James Press, 2021), 50–54, <https://link.gale.com/apps/doc/CX8080400019/GVRL?sid=summon&xid=d0141500>, 51.

<sup>89</sup> The Berwind Group and Charles Graham Berwind, *The History of Berwind* (Philadelphia, PA: Berwind Group, 1993), 5; Dinger and Savage, "Berwind Corporation," 51.

<sup>90</sup> Richard Cheek and Tom Gannon, *Newport Mansions: The Gilded Age* (Little Compton, R.I: Foremost Publishers, 1982), 30.

<sup>91</sup> Dinger and Savage, "Berwind Corporation," 51.

twenty-one. In 1874, Edward joined him, and they separated from Charles' old firm and formed a new business together with Judge Allison White called Berwind, White, and Company.<sup>92</sup>

The United States coal industry was growing rapidly. In 1840, just before the Berwinds immigrated, American companies mined 2.5 million tons of coal. By the time Edward was twelve, production had grown almost ten-fold to 20 million tons in 1860, driven partially by urban population growth and the movement of people away from rural power sources such as wood and water. The Civil War increased demand and prices, and new railroads expanded the territory that was practical to mine. Many coal companies filled the market; new technology enabled deeper mines and higher production, and the flood of coal kept prices low, boosting the industry's competitiveness.<sup>93</sup> The rapid growth and maneuvering for market share may explain Charles Berwind's frequent company reorganizations.

In 1880, six years after the brothers formed Berwind, White and Company, American coal companies produced 80 million tons of coal.<sup>94</sup> Berwind leveraged his military connections to become a coal supplier for the United States Navy.<sup>95</sup> According to the International Directory of Company Histories, the company also relied on Berwind's "ability to win contracts supplying coal to New York steamship companies and skill in acquiring coal mines in Pennsylvania, West Virginia, and Kentucky."<sup>96</sup>

Edward Berwind became president of the company in 1886, and reorganized the firm again, renaming it the Berwind-White Coal Mining Company. He would remain in charge until 1930, six years before his death. He became friends with J.P. Morgan, and learned Morgan's technique of vertical integration, or the control of all aspects of the industry and its supply chain.

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<sup>92</sup> Ibid.

<sup>93</sup> Adams, "The American Coal Industry in the Nineteenth Century."

<sup>94</sup> Ibid.

<sup>95</sup> The New York Times, "E. J. Berwind Dies," August 19, 1936, 21.

<sup>96</sup> Dinger and Savage, "Berwind Corporation," 51.

To this end, Berwind purchased controlling shares of stock and joined boards of directors in railroad, steamship, dock, lumber, and banking companies that worked in the coal industry.<sup>97</sup> His connections at the Pennsylvania Railroad likely formed the foundation of a long-standing relationship between the two companies. The Pennsylvania Railroad had a preferential relationship with Berwind-White. For example, the Railroad offered reduced rates and priority access to highly in-demand coal-cars to the largest companies.<sup>98</sup> In addition, their relationship was close enough that Charles Berwind expected the Pennsylvania Railroad to enforce payment rates when the Railroad collected the coal from independent miners and was furious when they did not.<sup>99</sup> Berwind's strategies enabled him to greatly control coal production and influence the industry to serve the growth of his bituminous coal empire.

As Edward Berwind took control of the Company, there was a shift in power across the industry. Mining companies expanded, reorganized, and utilized increasing levels of machinery, challenging the relative power of mine workers to control prices and working conditions. The 1870s-1890s were marked by the formation of coal unions and massive strikes.<sup>100</sup> Berwind had a reputation for ruthless business practices, while also avoiding publicity generally.<sup>101</sup> He sometimes offered what the unions demanded, without meeting with or recognizing the unions, to limit the incentives to organize.<sup>102</sup> The Berwind-White mines were among the last in the coal industry to unionize.<sup>103</sup>

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<sup>97</sup> Ibid.

<sup>98</sup> Arnold, *Fueling the Gilded Age*, 92.

<sup>99</sup> Arnold, 103.

<sup>100</sup> Adams, "The American Coal Industry in the Nineteenth Century."

<sup>101</sup> Dinger and Savage, "Berwind Corporation," 51.

<sup>102</sup> Arnold, *Fueling the Gilded Age*, 204.

<sup>103</sup> Dinger and Savage, "Berwind Corporation," 51.

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## **E. J. BERWIND DIES; COAL OPERATOR, 88**

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**Said to Have Been Country's  
Largest Individual Owner  
of Bituminous Mines.**

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**ALSO A PATRON OF ARTS**

---

**Colleague of J. Pierpont Morgan  
Had Wide Railroad, Utilities  
and Steel Interests.**

---

**Edward Julius Berwind, chairman  
of the board of the Berwind-White  
Coal Mining Company, director in  
many corporations, and an interna-**

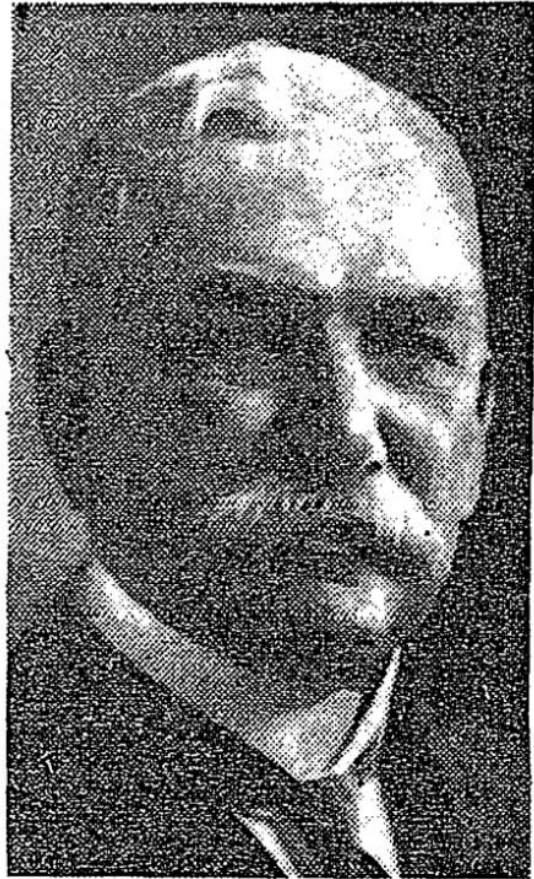


Figure 9: Edward Berwind's obituary. *The New York Times*, "E J. BERWIND DIES," August 19, 1936, 21.

By 1893, the Berwind-White Coal Mining Company was producing 3.5 million tons annually. They owned 29 mines, 300 coke ovens, 3,000 coal cars, and 60 coal barges.<sup>104</sup> The Company fueled the principal Atlantic steamship companies in New York City and Philadelphia, "nearly all the railways in the eastern and middle states for locomotive use," and the New York

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<sup>104</sup> Sydney A. Hale and Frederick Edward Seward, "The Berwind-White Coal Mining Co.," *The Coal Trade: A Compendium of Valuable Information Relative to Coal Production, Prices, Transportation, Etc., at Home and Abroad, with Many Facts Worthy of Preservation for Future Reference (1874-1919)*, 20 (January 1, 1893): 107-8.

City transit system.<sup>105</sup> An 1893 article in the journal *The Coal Trade* stated that, “The Berwind-White Co. is the largest Bituminous coal mining company in America, employing 5,000 men and an extensive staff of mining engineers, accountants, etc... The business transacted by the Berwind-White Co. is by far the most extensive in steam coals in Europe or the United States.”<sup>106</sup>

By the year of his death, Berwind had a reputation as “the bituminous coal king of Pennsylvania.”<sup>107</sup> During the late nineteenth century, Pennsylvania dominated the United States’ coal industry.<sup>108</sup> In 1889, Pennsylvania mined over seven times more coal than the next highest coal producing state. As United States’ coal extraction expanded and altered the planetary atmosphere, Berwind led the industry in the highest coal producing state in the country.

State	Coal Production in 1889 (Thousands of Tons)
Pennsylvania	81,719
Illinois	12,104
Ohio	9977
West Virginia	6232
Iowa	4095
Alabama	3573
Indiana	2845
Colorado	2544
Kentucky	2400
Kansas	2221

Figure 10: Leading Coal Producing States, 1889. Thirteenth Census of the United States, Vol. XI, Mines and Quarries, 1913.

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<sup>105</sup> Hale and Seward; Dinger and Savage, “Berwind Corporation,” 51.

<sup>106</sup> Hale and Seward, “The Coal Trade.”

<sup>107</sup> Arthur D. Howden Smith, *Men Who Run America; a Study of the Capitalistic System and Its Trends Based on Thirty Case Histories*, 1st ed. (Indianapolis: The Bobbs-Merrill company, 1936), 301.

<sup>108</sup> Adams, *The American Coal Industry, 1790-1902*, xi.

In 1888, two years after taking control of the company, Edward Berwind purchased land and an existing vacation “cottage” in Newport, joining a growing culture of wealthy summer vacationers.<sup>109</sup> Ten years later he commissioned Philadelphia architect Horace Trumbauer to design and build the existing French revival mansion on the spot, with interior design by French decorator and art dealer Jules Allard.<sup>110</sup> What happened in the intervening decade that allowed him such a substantial expense?

In 1900, a year before *The Elms* was finished, United States coal had grown 340% since 1800, to 269 million tons a year, and made up 65% of the United States energy consumption.<sup>111</sup> Economic historian Sean Adams writes of this period that “the influence of coal was so pervasive in the United States that by the advent of the twentieth century, it became a necessity of everyday life...where smokestacks equaled progress.... Cheap coal undoubtedly helped America’s rapidly industrializing economy.”<sup>112</sup> Berwind positioned himself and his company to take every advantage of this growth, profiting from it to the maximum possible extent.

The *Elms* mansion’s origins are the profits of this historic event: the unprecedented extraction and consumption of coal in the second half of the nineteenth century, led by Berwind himself. The mansion was built from this accelerated consumption of coal and Berwind’s ability to encourage and control it. America’s economy reorganized around cheap coal, and the climatological changes first observed in the 1850s accelerated. *The Elms* stands as a monument to the fossil fuel economy and the global effects of its emissions. This story can be easily added to the existing layers of historical interpretation at *The Elms* and can serve as an outstanding

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<sup>109</sup> Cheek and Gannon, *Newport Mansions*, 6 and 30.

<sup>110</sup> Michael C. Kathrens, *American Splendor : The Residential Architecture of Horace Trumbauer*, Rev. ed. (New York: Acanthus Press, 2011), 69.

<sup>111</sup> Adams, “The Coal Industry in the Nineteenth Century.”

<sup>112</sup> Adams.



example of how any site with climate change connections can present the origins of the crisis to contribute to an important and relevant public understanding of the origins of the crisis.

### The Long Memory of the Climate System<sup>113</sup>

The Elms is an especially compelling place to interpret climate change in 2022 because Berwind's business likely fueled some of the very emissions that created the environmental impacts our current generation now faces. There are ethical issues inherent in the time-delay of the climate crisis: the CO<sub>2</sub> we burn today will have the greatest impact after we are gone on people who do not yet exist. The Elms' relationship to the climate crisis is an example of how choices that are rational in the present can be devastating for the future.

“The climate change that the earth is experiencing is primarily the result of emissions from some time in the past, rather than current emissions.”<sup>114</sup> Approximately three quarters of the CO<sub>2</sub> emitted through fossil fuel use takes several hundred years to be absorbed by the ocean, and the remaining quarter takes millennia to absorb.<sup>115</sup> As some of the CO<sub>2</sub> emitted early in the atmospheric CO<sub>2</sub> curve above, Berwind's coal is some of the oldest out there. Because climate change operates cumulatively, emissions released during Berwind's lifetime constitute much of the CO<sub>2</sub> that has the greatest impact on the climate to date. Most of Berwind's coal is still in the atmosphere, and it has a greater impact on the planet today than the CO<sub>2</sub> emitted last week. When we experience the storms, fires, and heatwaves of the climate crisis, we are experiencing the effects of the fuel Berwind extracted over one hundred years ago more than the effects of our own choices last year.

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<sup>113</sup> Schaeffer et al., “Long-Term Sea-Level Rise Implied by 1.5°C and 2°C Warming Levels”; quoted in Malm, *Fossil Capital*, 8.

<sup>114</sup> Gardiner, *A Perfect Moral Storm*, 33.

<sup>115</sup> David Archer, “How long will global warming last?,” *Real Climate* (blog), March 15, 2005, <https://www.realclimate.org/index.php/archives/2005/03/how-long-will-global-warming-last/>.

Berwind and nineteenth-century emissions are an essential historical topic to present to the public because this historic carbon causes the climate crisis we experience in 2022. To share these scientific climate facts and the history of carbon emissions can contribute to a general public understanding of individual and systemic accountability and responsibility for change in the present. By articulating Berwind's delayed impact on our world, we can better imagine our own impacts on the generations that follow us. Berwind's story illustrates in detail the system that caused the disaster that is dawning on us today, and his life history can help us reflect on how the economy we participate in will impact future generations.

### The History of Climate Change Science

As written previously, this thesis does not intend to blame Edward Berwind for knowingly destroying the climate for profit. However, it is worth noting that the scientific tools to observe and understand climate change had begun to develop early in the nineteenth century. Anthropogenic climate change caused by industrial CO<sub>2</sub> emissions was predicted before The Elms was built at the turn of the twentieth century. Though public attention didn't turn to the issue until the 1980s, growing awareness of atmospheric changes to the CO<sub>2</sub> was concurrent to the growth of coal.

A series of scientific discoveries in the nineteenth century formed the foundation of climate science today. In 1824, French physicist Jean Baptiste Joseph Fourier (1768-1830) theorized how the earth's atmosphere kept the earth at a warmer temperature than space. He is credited with first describing the "greenhouse effect," though he did not use that term.<sup>116</sup> American inventor and scientific researcher Eunice Foot (1819-1888) was the first scientist to document the absorption of thermal radiation by CO<sub>2</sub> in 1856, and even suggested that variations

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<sup>116</sup> James R. Fleming, "Joseph Fourier, the 'Greenhouse Effect', and the Quest for a Universal Theory of Terrestrial Temperatures," *Endeavour* 23, no. 2 (January 1, 1999): 72–75, [https://doi.org/10.1016/S0160-9327\(99\)01210-7](https://doi.org/10.1016/S0160-9327(99)01210-7).

in CO<sub>2</sub> in the atmosphere could create changes in climate. (Irish physicist John Tyndall published similar findings in 1859).<sup>117</sup>

Then, in 1896, Swedish scientist Svante Arrhenius (1859-1927) was the first to quantify the influence of changes in the concentration of atmospheric CO<sub>2</sub> on the temperature of the earth's surface.<sup>118</sup> Arrhenius connected his findings to industrial CO<sub>2</sub> emissions and predicted future climate change as a result of human activity, writing that “we are evaporating our coal mines into the air.”<sup>119</sup> Though he inaccurately viewed potential global warming as a benefit to human life and to land fertility, his characterization of the situation was accurate.

It is possible that Berwind heard about the research on the effects of coal on the atmosphere. However, it is probable that if he did, he did not consider an increase in atmospheric CO<sub>2</sub> to be dangerous. In 1938, two years after Berwind's death, British coal engineer George Callendar confirmed that both atmospheric CO<sub>2</sub> and global temperatures were rising, and like Arrhenius, he concluded that this was a positive effect.<sup>120</sup> Though they didn't yet realize the catastrophic impact it would have, as coal became the dominant energy source in the western world, humans were watching CO<sub>2</sub> and temperature rise in real time.

### Labor Rights at the Origins of Climate Crisis

Labor rights were key to Berwind's profits in two ways. First, Berwind had to manage the enormous labor force that mined the coal for his company at a time when miners were not company employees, and coal miners were leaders in national labor organizing strategy. And

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<sup>117</sup> Roland Jackson, “Eunice Foote, John Tyndall and a Question of Priority,” *Notes and Records: The Royal Society Journal of the History of Science* 74, no. 1 (March 20, 2020): 105–18, <https://doi.org/10.1098/rsnr.2018.0066>.

<sup>118</sup> Henning Rodhe, Robert Charlson, and Elisabeth Crawford, “Svante Arrhenius and the Greenhouse Effect,” *Ambio* 26, no. 1 (1997): 2–5.

<sup>119</sup> Center for and Science Education, “History of Climate Science Research,” n.d., <https://scied.ucar.edu/learning-zone/how-climate-works/history-climate-science-research>.

<sup>120</sup> George S. Callendar, “CAN CARBON DIOXIDE INFLUENCE CLIMATE?,” *Weather* 4, no. 10 (1949): 310–14, <https://doi.org/10.1002/j.1477-8696.1949.tb00952.x>.

second, plentiful access to workers and control of labor relations were part of what motivated the transition from water to coal for industrial power in the first instance. Workers' labor and their decisions, individually and collectively, greatly impacted the rise of coal and the character of the new industry as it determined late nineteenth century CO<sub>2</sub> emissions.

The labor force that pried the coal from the earth and brought it to the surface is a widely-studied element of the nineteenth-century coal industry. Coal mining in the late nineteenth century relied on the bodies and expertise of individual miners and was a truly dangerous occupation. The rise of the industry in the United States motivated an era of activism and conflict between workers and mining companies that has been written about extensively and is not the primary subject of this paper.<sup>121</sup> However, Berwind had a reputation for strategic and ruthless labor relations that must be considered as a key factor in the remarkable growth and profit of his business. The relatively cheap cost of coal to consumers accelerated the climate crisis and put Berwind and miners in intense opposition with each other.

Throughout the nineteenth century, coal mining was intense physical labor. Even as companies grew after the Civil War and began to use machinery for sorting and transporting coal, mechanical coal cutters were not invented until 1890.<sup>122</sup> Until then, coal companies depended on miners to cut the coal from the ground by hand and bring it to the surface. During this period, miners were paid according to the tonnage of coal they mined as independent contractors rather than as wage workers.<sup>123</sup>

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<sup>121</sup> Mildred Allen Beik, *The Miners of Windber: The Struggles of New Immigrants for Unionization: 1890s-1930s* (University Park: Pennsylvania State University Press, 1996), <https://www.proquest.com/docview/56735538?https://hdl.library.upenn.edu/1017/6893&parentSessionId=Gz8zDqqdYtd%2B89R947811VVCT4%2FOUrcyz6Akwm0Wsf4%3D&pq-origsite=summon&>; Arnold, *Fueling the Gilded Age*; William Graebner, *Coal-Mining Safety in the Progressive Period: The Political Economy of Reform* (Lexington, KY: Kentucky University Press for the Organization of American Historians, 1976); Trish Kahle and Yale University, "Coal Mining and Labor Conflict," Curriculum Resources, Energy History Online, accessed March 20, 2022, <https://energyhistory.yale.edu/units/coal-mining-and-labor-conflict>.

<sup>122</sup> Adams, *The American Coal Industry, 1790-1902*, xiv.

<sup>123</sup> Adams, *The American Coal Industry, 1790-1902*, xiv.

The labor of mining was highly specialized and inherently risky. Miners cut the coal from underground rooms created at regular intervals off the main mineshaft. The heights of the rooms were determined by the thickness of the coal seam, which could be anywhere from two and a half to six feet. Each miner usually shared a room with a partner or brought a son or younger assistant. Together they engineered supports for the ceiling, laid track for coal carts, bailed out the floor if there was water, cut and blasted the coal from the seam without making the room collapse, loaded it into coal cars, and hauled it to the main shaft. Mining required extensive technical knowledge and experience in reading the geology of the seam and surrounding rock, ensuring the stability of the room, and working with heavy tools and explosives in extremely close quarters.<sup>124</sup> Because they were paid by the weight of their haul, miners were incentivized to work as quickly as possible.

In the late nineteenth century, coal miners faced an industry in flux. After the Civil War, the price of coal dropped, and the coal industry reorganized. Railroad companies began to take advantage of the enormous size of the United States' coal deposits by expanding the territory it was practical to mine. Deeper shafts and new technology meant higher production. More companies and lots of coal kept prices low, which made the industry cutthroat and meant competition between coal companies was fierce.<sup>125</sup> This competition created pressure to cut costs, and companies tried to reduce rates paid to miners, penalize them for "impurities," and pay company "scrip" instead of real United States currency. This in turn led to the first coal mining unions, which formed and dissolved starting in the 1870s, just as Berwind was entering the business.<sup>126</sup>

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<sup>124</sup> Eileen Mountjoy, "Spraggers and Sunshine Lamps," Coal Culture Project, Indiana University of Pennsylvania Special Collections and University Archives, accessed April 9, 2022, <https://www.iup.edu/library/departments/archives/coal/mining-history/spraggers-and-sunshine-lamps.html>.

<sup>125</sup> Adams, "The American Coal Industry in the Nineteenth Century."

<sup>126</sup> Adams, *The American Coal Industry, 1790-1902*.

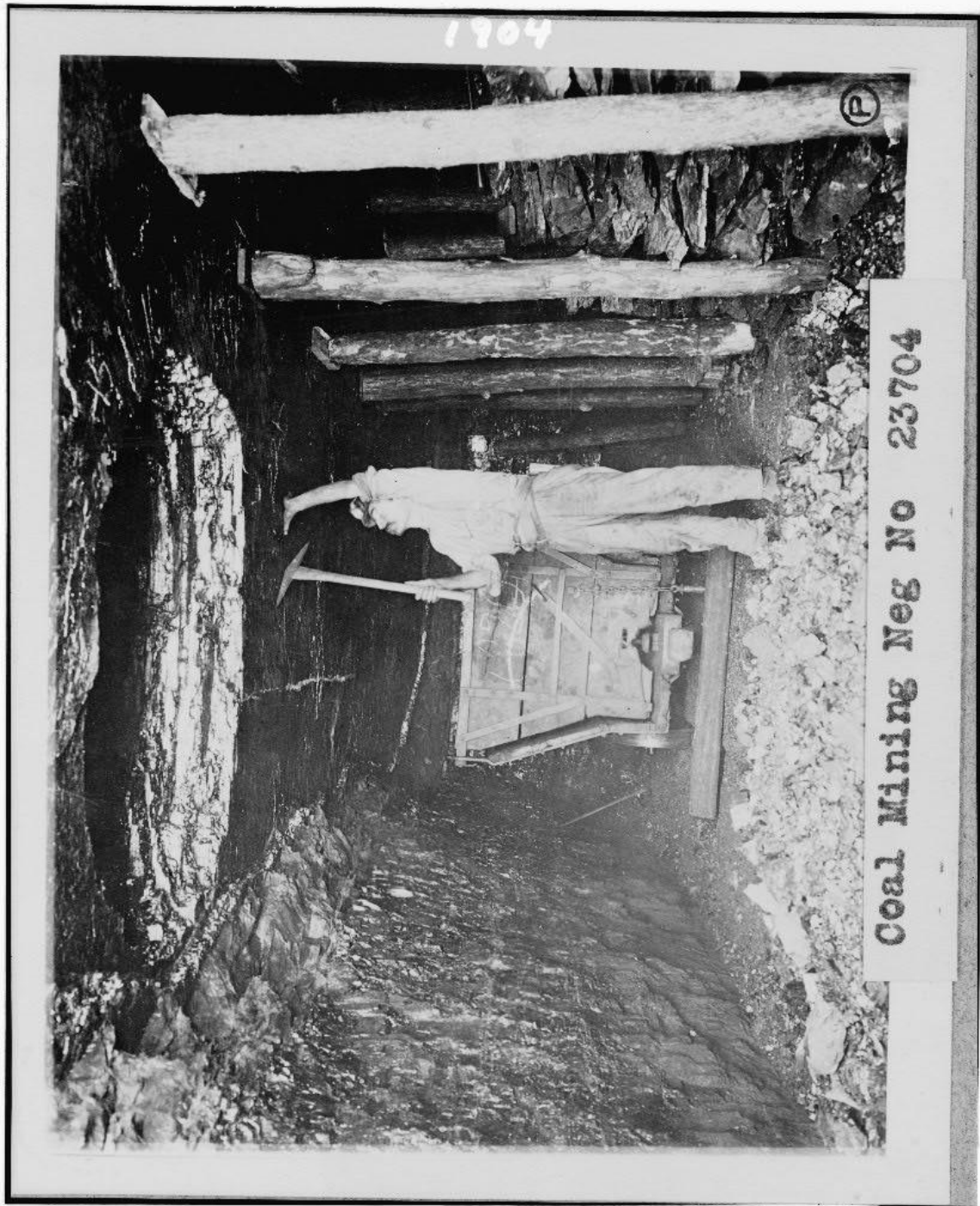


Figure 11: Coal miner testing ceiling of a coal room, with coal cart in background. Lewis Hine, photographer, *Coal Mining Neg. No. 23704*, c. 1909-1932, photograph, Library of Congress Prints and Photographs Division, [https://energyhistory.yale.edu/sites/default/files/styles/adaptive/adaptive-image/public/coal\\_miner\\_in\\_a\\_mine.jpg?itok=QsQcoYGR](https://energyhistory.yale.edu/sites/default/files/styles/adaptive/adaptive-image/public/coal_miner_in_a_mine.jpg?itok=QsQcoYGR)

Berwind created many strategies to capitalize on this situation. To stabilize the price of coal, he controlled production and the amount of coal transported to market. To this end, he purchased interest in railroads, docks, and other transportation enterprises that serviced the coal industry,<sup>127</sup> and Berwind-White had a special relationship with the Pennsylvania Railroad.<sup>128</sup> Berwind refused to meet officially with any miners' union, but on occasion he awarded miners the raises the unions demanded to undermine the incentives for organizing. Berwind's business relied on reliable supply and large clients. He "wished to avoid any expensive cessation in production, but also to avoid recognizing the union."<sup>129</sup> He also resisted cutting wages, because he surmised that customers would read about it and demand a price cut.<sup>130</sup> Berwind-White ran its mines on an open-shop basis, meaning that one could work there without union membership. "It enforced this policy through discharges, blacklists, an espionage and police system, and control of local organizations and halls."<sup>131</sup> He made a point to stay out of the public eye, to prevent the pro-union press from writing about him. In the end, Berwind-White mines were among the last in the coal industry to unionize.<sup>132</sup>

Workers in the manufacturing sector were part of what motivated the shift to coal in the first place. Waterpower dominated the United States industrial economy until urbanization expanded after the Civil War, and industry moved away from rural water supplies to be where workers were more plentiful. A more portable power source – coal – enabled this shift.

From the earliest settlement of the American colonies, United States manufacturing was water-powered. Waterpower was safe, free, and found in copious quantities on rivers and streams within the steeper terrains of the eastern United States that provided the downhill flow necessary

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<sup>127</sup> Dinger and Savage, "Berwind Corporation," 51.

<sup>128</sup> Arnold, *Fueling the Gilded Age*, 92.

<sup>129</sup> *Ibid*, 211.

<sup>130</sup> *Ibid*, 162.

<sup>131</sup> Beik, *The Miners of Windber*, xxi.

<sup>132</sup> Dinger and Savage, "Berwind Corporation," 51.

to turn a water wheel. Water fueled the antebellum cotton industry and many other types of manufacturing. However, by the 1880s, steam power from coal had overtaken water.<sup>133</sup> Water was still a free resource, and many feasible streams remained undeveloped - why had this energy transition occurred?

Steam was more portable and reliable in all seasons than water, and as industry grew and became more competitive, any edge became crucial. In his book *Fossil Capital*, Andreas Malm describes the United States manufacturing transition to coal and quotes *Scientific American* in 1849. "A man sets down his steam-engine where he pleases, where he is sure of always having hands near him, without loss of time in seeking for them."<sup>134</sup> Malm argues that waterpower was the perfect source of energy in early America because it reflected the distribution of population, which was "sprinkled in agricultural enclaves, only tenuously connected by trade across long distances arduous to traverse."<sup>135</sup> (Malm 318) Manufacturing occurred in rural rather than urban locations. When droughts, freezes, or floods interrupted power and therefore production, workers could focus on other subsistence tasks.

With urbanization, workers concentrated in cities. To access steadier power and a larger pool of workers, factories moved to cities and switched to coal power. Although more expensive, coal power offered location flexibility. Whereas "by dint of its spatial fixity, waterpower obliged the manufacturer to form personal relations to his hands," steam power enabled manufacturers to hire and fire workers at will, treating labor more as a commodity to be purchased and sold as needed.<sup>136</sup> It also offered total reliability - manufacturing could happen at all times of year, regardless of weather or season, around the clock. As reliable production became more

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<sup>133</sup> Malm, *Fossil Capital*.

<sup>134</sup> *Ibid*, 318.

<sup>135</sup> Malm, 318.

<sup>136</sup> Malm, page 152.



customary, clients came to expect it, and further motivated the transition to coal.<sup>137</sup> Constant production enabled the standardization of working time in factories, which exacerbated the regimentation of labor, continuing the trend towards labor commodification.<sup>138</sup>

Coal power enabled new leverage over the manufacturing worker, creating a labor relationship that relied on the commodification of people. This new relationship enabled greater scales of production at higher rates, driving more demand for the coal providing the power. Labor commodification and coal power reinforced each other as the use of coal in the United States rapidly expanded. Labor rights in the factories and in the mines were essential elements in the acceleration of the climate crisis.

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<sup>137</sup> Malm, page 319.

<sup>138</sup> Malm, 152.

## Chapter IV: The Material Culture of Coal at The Elms

Given the intrinsic connection between The Elms and the climate crisis, the entire mansion can be interpreted as an artifact of the crisis' origins. However, specific artifacts and architectural features at The Elms can be employed to present these connections and illustrate details of the histories presented in the previous chapter. The following objects are those at The Elms which are most obviously connected to the history of coal, Berwind's business, and the climate crisis: the coal cart in the basement, the heating system it serves, a medal commemorating the 50th Anniversary of the Berwind-White Coal Mining Company, and a letter left at The Elms by a miner's descendant. An artifact-specific approach demonstrates that climate connections can be communicated and understood using a material culture method of object analysis, a tool of public history that historic sites already employ.

Other methods could be used to draw connections between The Elms and climate crisis that are not addressed here. For example, an art historical approach could analyze art objects in The Elms to make inferences about how the people of the Gilded Age positioned themselves in relationship to nature, and what this relationship might reveal about the values and cultural context that enabled the climate crisis. This method would likely be fruitful and fascinating but is outside the scope of this study.

Many of the artifacts at The Elms are not original to the time the Berwinds were in residence. Unfortunately, when Edward Berwind's sister died, the house was sold to a developer who sold almost the entire contents at auction, including the furniture and artworks.<sup>139</sup> Over time, some of these items have been returned to The Preservation Society of Newport County, and

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<sup>139</sup> Parke-Bernet Galleries Inc., *Furniture & Works of Art in The Elms, Newport Residence of the Late Miss Julia A. Berwind*, (Newport, RI: Parke-Bernet Galleries Inc.), June 27, 1962.

others have been purchased with funds from private donors.<sup>140</sup> At this time, approximately 25-30% of The Elms' collections are original to the house.<sup>141</sup> The artifacts suggested for interpretation in this chapter are original, with exceptions clearly noted.

### Coal Cart and Heating System

Although designed for concealment beneath The Elms, the coal train offers an obvious opportunity to engage with the mansion's connection to the climate crisis. This section will describe The Elms' heating system and the underground train that supplied it with coal. The coal train tunnel and The Elms boiler room are visually compelling, industrial, and functional spaces with clear aesthetic contrast to the ornamented and decorated mansion rooms above. These underground spaces hold great interpretive potential and untapped opportunities for rich storytelling in industrial, domestic, and ecological history. Although traditional and historically inspired in its architecture and décor, The Elms is modern in its comforts, sanitary fittings, and engineering. The Elms' relationship to the climate crisis is tangible in the heating system's industrial materials, fuel, function, and design. The system's elements are symbolic of the nineteenth-century coal boom, Berwind's coal company, and coal consumption more broadly during this period.

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<sup>140</sup> The Preservation Society of Newport County. "Preservation Society Acquires Desks Original to The Elms." *Newport Mansions* (blog), December 30, 2003, <https://www.newportmansions.org/about-us/press/press-releases/preservation-society-acquires-desks-original-to-the-elms>.

<sup>141</sup> Leslie Jones, conversation, February 14, 2022.

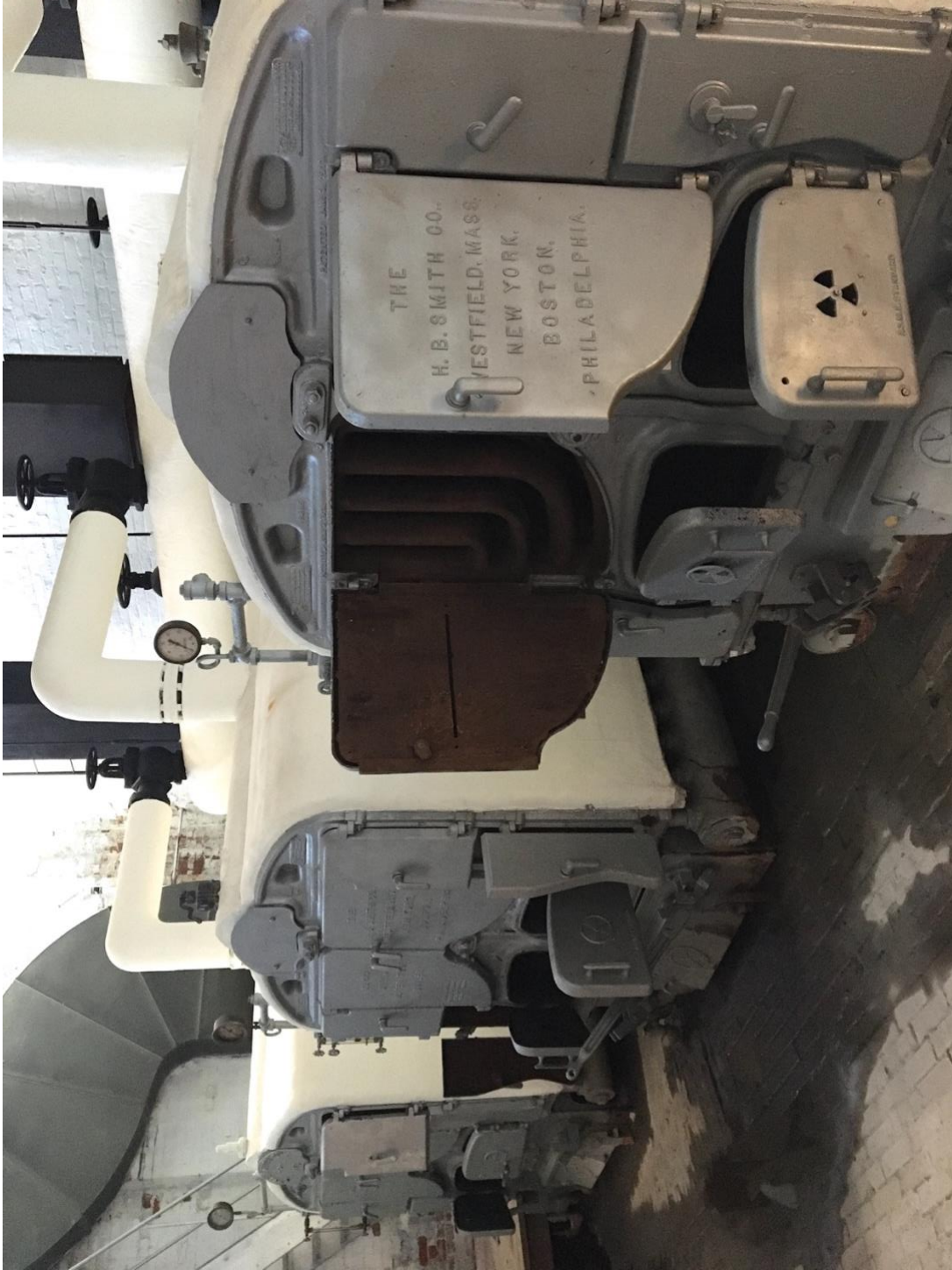


Figure 12: The three Mills No. 44 boilers in The Elms sub-basement, manufactured by the H. B. Smith Company. Photo by author.

## Boiler System

The Elms used coal to fire three boilers coupled to run simultaneously and generate steam for an extensive radiator and heat exchange system.<sup>142</sup> The Elms' boilers were manufactured by the H.B. Smith Company, a furnace company headquartered in Westfield, MA with branches in Philadelphia, New York, and Cleveland.<sup>143</sup> The No. 44 Mills Water Tube Boiler was one of the larger models the company offered during that time, distinct from the "Cottage" boiler invented shortly later for the general home heating market. Mills refers to the inventor John Mills, who originally patented boilers for institutional use. According to a company history published by the H.B. Smith Company, the Mills No. 44 was first manufactured in 1907.<sup>144</sup> Since The Elms was finished in 1901, this suggests they may have been an upgrade a few years after building completion. The boiler room has a sunken brick floor to safely trap hot ashes when the furnaces were being cleaned.<sup>145</sup> The boiler room is also two stories tall, perhaps to let the heat rise so working at the boilers was less uncomfortable.

The three Mills No. 44 boilers burned coal to turn water into steam, which heated a radiator system. The existence of a central heating system attests to Berwind's wealth. Most homes in Berwind's period did not have central heat and instead burned coal in individual stoves or fireplace grates in each room. Central heat through forced air or steam was only affordable to large institutions and wealthy customers until after World War I.<sup>146</sup>

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<sup>142</sup> Eric Tints, "Elms Construction and Technology Report" (Preservation Society of Newport County, 1992), 6.

<sup>143</sup> The H.B. Smith Co., *Boilers and Radiators: Catalog Number 1444* (Westfield, MA: The H.B. Smith Co., 1929).

<sup>144</sup> Susan Reed Stifler, *The Beginnings of a Century of Steam and Water Heating* (Westfield, Mass.: H. B. Smith Co., 1960), <https://catalog.hathitrust.org/Record/009986555>, 107.

<sup>145</sup> Tints, "Elms Construction and Technology Report," 6.

<sup>146</sup> Sean Patrick Adams, *Home Fires: How Americans Kept Warm in the Nineteenth Century* (Baltimore: Johns Hopkins University Press, 2014), 124-128.

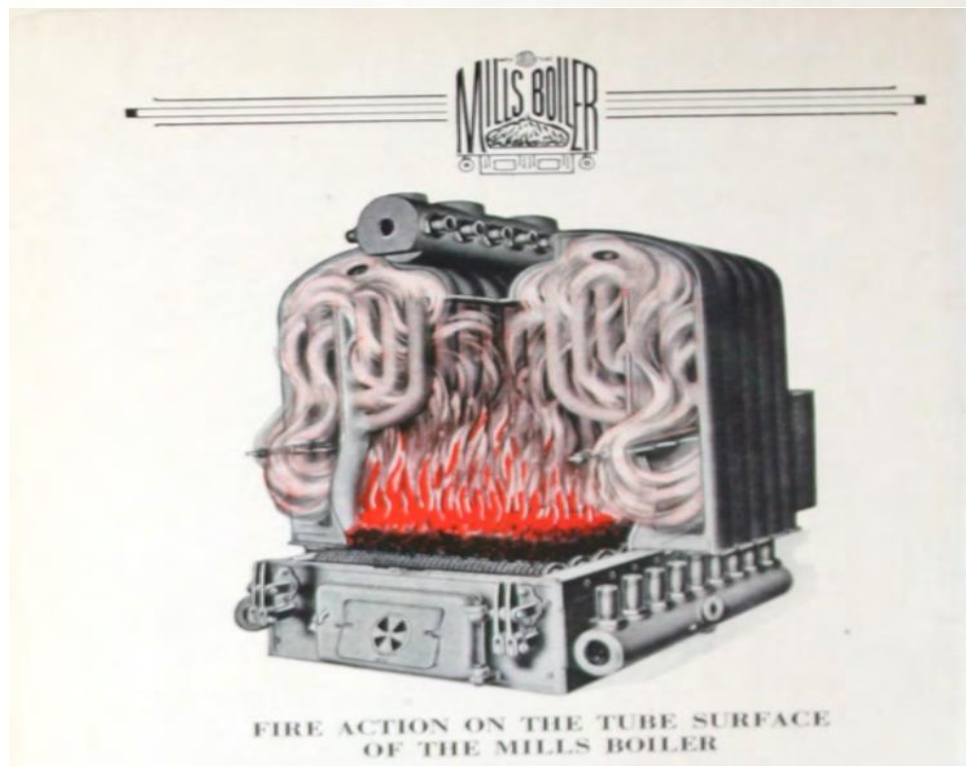
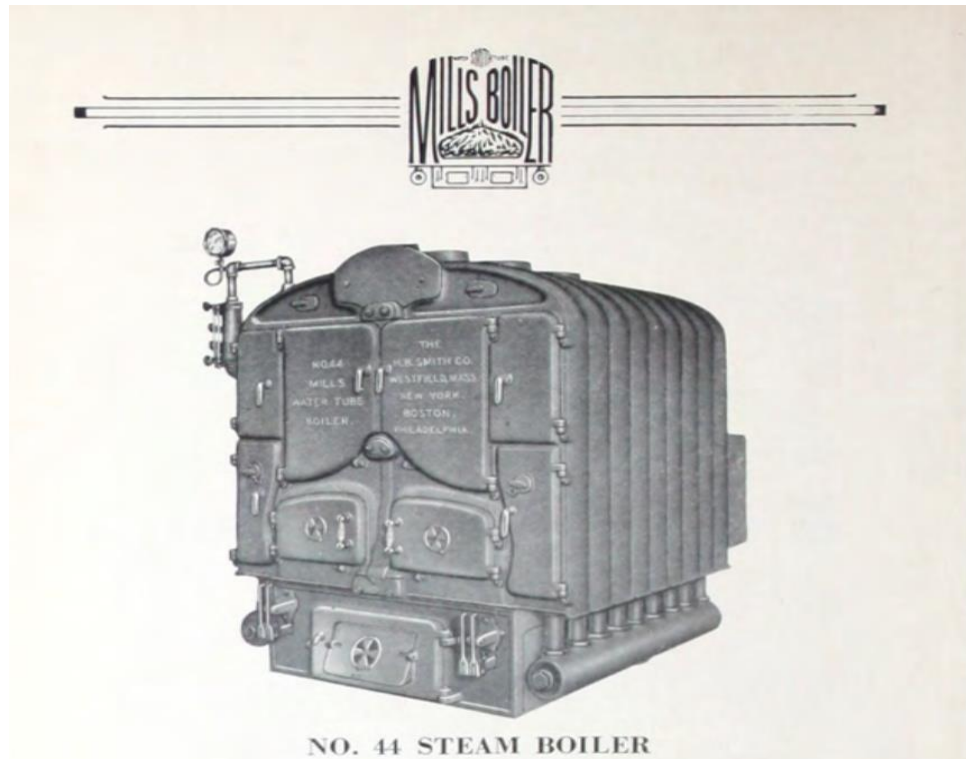
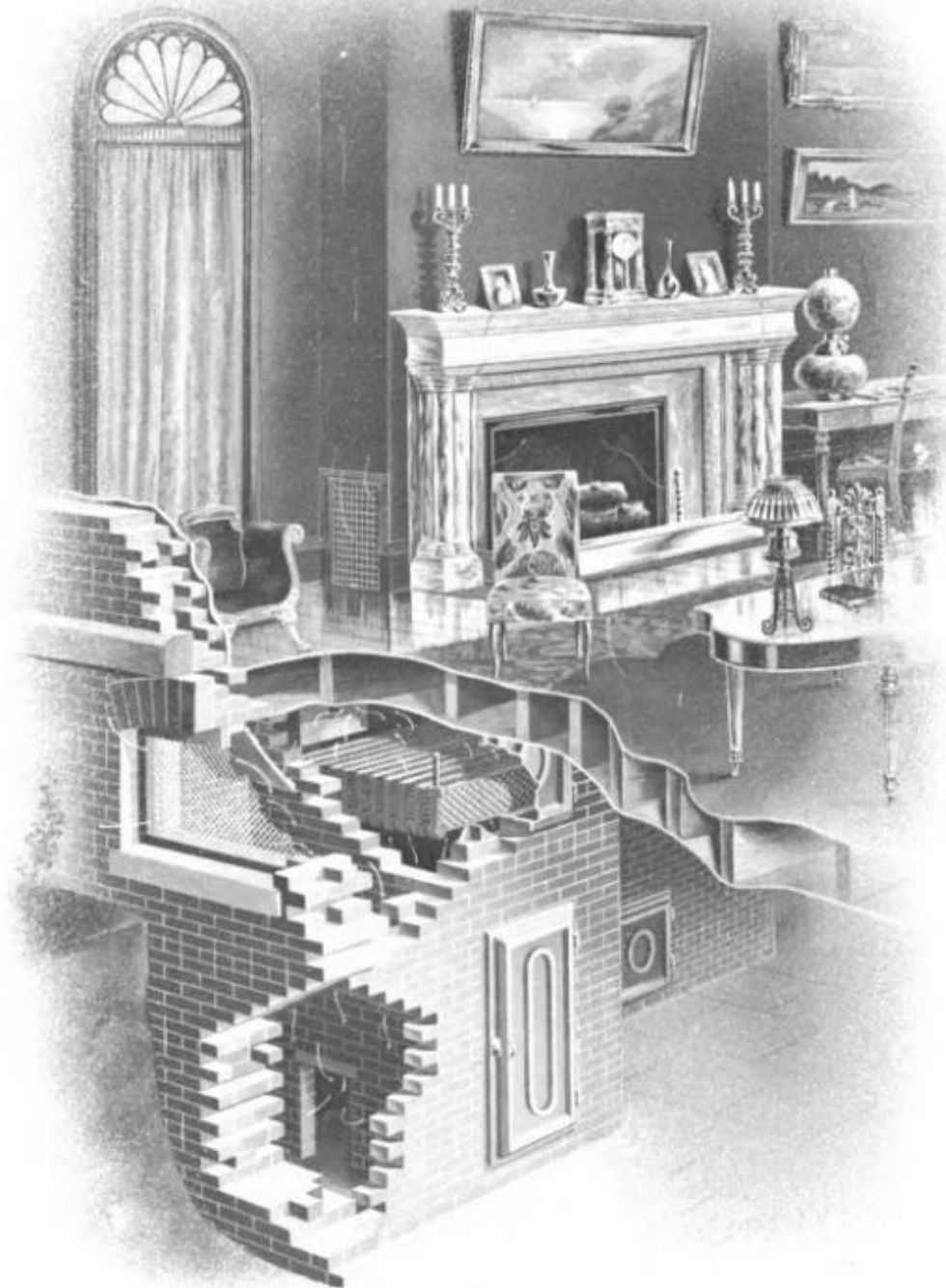


Figure 13: Drawings of the Mills No. 44 Boiler from an H. B. Smith Company Catalog, illustrating the exterior and an artist's rendering of the coal and flame on the inside. The H.B. Smith Co., *The H.B. Smith Co. Boilers and Radiators: Catalog Number 1444*, Westfield, MA: The H.B. Smith Co., 1929, 10 & 12.



Charm and comfort as pictured  
by H. B. Smith Company  
in the gay nineties

Figure 14: A page from the H. B. Smith catalog illustrating a heat exchange system. The H.B. Smith Co., *The H.B. Smith Co. Boilers and Radiators: Catalog Number 1444*, Westfield, MA: The H.B. Smith Co., 1929.

However, rather than have radiators in the rooms, most public and family rooms in The Elms were warmed using a heat exchange system. A radiator heated the air in a small chamber below each room, which flowed into the room via a grate.<sup>147</sup> This design allowed the room to be unencumbered by unsightly radiators, keeping the functional and mechanical part of the heating system out of view and not occupying floor space. Servant rooms, however, had radiators in the rooms in keeping with their simplicity and functionality.

### **Miniature Railway**

The Elms staff moved coal into the mansion's boiler room via a small underground coal train, which enabled workers to bring coal from the street to the mansion concealed from the view of inhabitants and guests. The carts entered the 150-foot tunnel through two iron doors in the sidewalk on Dickson Street on the south side of the property, where they could be raised and lowered into the tunnel from street level by a hand-cranked elevator.<sup>148</sup> Once in the tunnel, Elms staff pushed the carts by hand through the tunnel on narrow-gauge track. The tunnel, track, carts, and remains of the elevator mechanism still exist in their original locations at The Elms.

A report commissioned by the Preservation Society of Newport County in 1992 refers to common knowledge to explain the underground train, stating "as we all know, Mr. Berwind didn't want to have any trucks on the property or take the chance of coal or ash being spilled on the gardens."<sup>149</sup> This reasoning is echoed in Kathrens' book about Trumbauer in his chapter on The Elms. "Berwind may have made his money in coal, but he would not suffer the dust and residue emanating from coal-fired furnaces within the house."<sup>150</sup> Even on Dixon Street, the exit point of

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<sup>147</sup> Tints, "Elms Construction and Technology Report," 4.

<sup>148</sup> Tints, 7.

<sup>149</sup> Tints, 7.

<sup>150</sup> Kathrens, *American Splendor*, 72.





Figure 15: The coal room in The Elms sub-basement. The entrance to the tunnel is on the left, the coal storage area is directly ahead, and the doorway to the boilers is on the right. Photo by author.



Figure 16: One of the coal carts in the entrance to the tunnel in The Elms' basement. Photo by author.



Figure 17: The coal tunnel under The Elms' garden. Photo by author.

the train is hidden from The Elms by the stone wall that runs the perimeter of the property. It is ironic that a man whose fortunes relied on coal did not want it to be visible from his windows.

The end of the tunnel opens into The Elms coal storage room through wooden double-doors. This room is taller than the rest of the basement, equivalent to the heights of both the basement and the sub-basement, with a window near the ceiling. The train track continues into the room, where a round turntable facilitates turning the cart to be wheeled to the end of the storage room for emptying. Previously, a wooden partition wall likely separated the coal storage area from the track area to prevent coal from spilling onto the tracks.<sup>151</sup> The track then crosses the coal storage room, through an arched brick doorway on the other side, to the boiler room.

The miniature rail system was manufactured by C.W. Hunt, New York. Charles Wallace Hunt owned an engineering firm that designed and manufactured industrial equipment, especially equipment for the transport of industrial materials. C.W. Hunt sold small or “narrow-gauge” railway systems for factories and mines, including many types of small rail carts for moving coal, ash, and coal products. He sold a line of carts specifically designed for “charging” (fueling) coal furnaces that had hinged sides, one or both, which dropped down for shoveling materials easily.<sup>152</sup> The standard Hunt charging car had the doors on the sides, but the company made many custom cars for specific clients, including a car with front-opening doors like the one at The Elms.<sup>153</sup>

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<sup>151</sup> Tints, “Elms Construction and Technology Report,” 11.

<sup>152</sup> C.W. Hunt Company, *No. 9306: Coal Handling Machinery*. (Staten Island, NY: C. W. Hunt Company, 1893), <http://archive.org/details/coalhandlingmac00compgoog>, 24.

<sup>153</sup> *Ibid*, 37.



No. 001

"INDUSTRIAL" RAILWAY TRACKS AND EQUIPMENT. BOILER-ROOM FLOOR IS MADE OF OUR CAST-PLATE TRACKS. GOVERNMENT TRAMWAYS POWER STATION, SYDNEY, NEW SOUTH WALES

Figure 18: C.W. Hunt coal-charging miniature railway system for a power station. *C.W. Hunt Company, No. 9306: Coal Handling Machinery*. Staten Island, NY: C. W. Hunt Company, 1893, <http://archive.org/details/coalhandlingmac00compgoog>, 44.

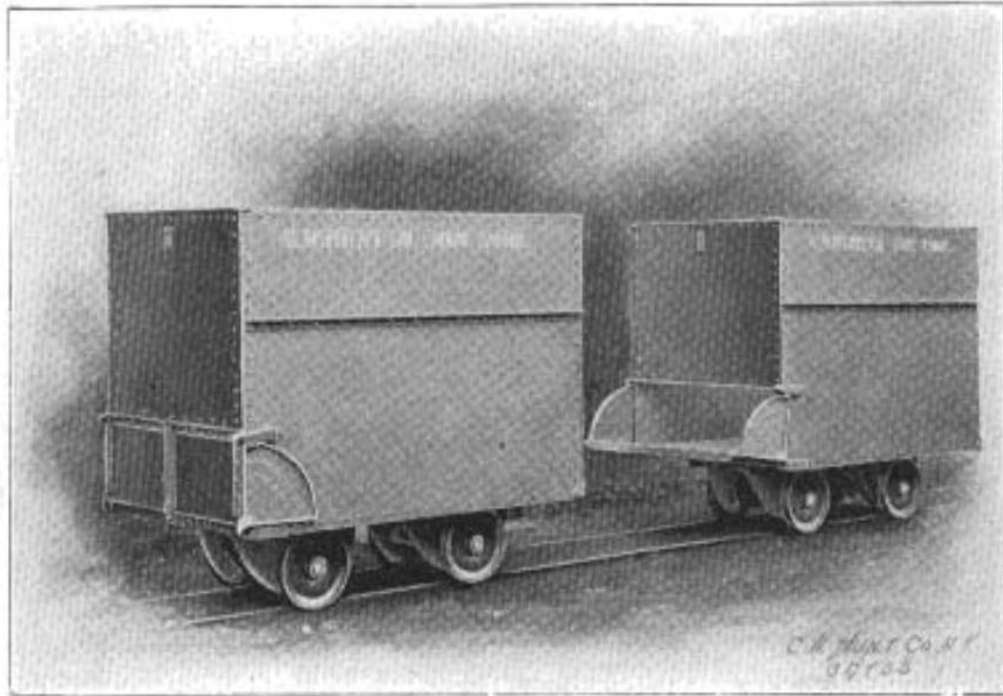


Figure 19: A drawing of a custom coal cart in the C.W. Hunt catalog. C.W. Hunt Company, *No. 9306: Coal Handling Machinery*. Staten Island, NY: C. W. Hunt Company, 1893, 37, <http://archive.org/details/coalhandlingmac00compgoog>.

Figure 20: A coal cart in The Elms boiler room. Photo of artifact PSNC.14540.1 by Preservation Society of Newport County.

These carts were designed to be pushed by hand. The rounded knobs at the top corners were advertised as comfortable to grip. The tracks under the wheels made the carts easier to push when full. The door on the end hinges downwards (like a chute) to allow the person unloading the cart to shovel coal smoothly without having to reach over the upper edge.<sup>154</sup>

Most of Hunt's clients were industrial spaces and large institutions, not homes.<sup>155</sup> The coal cart system in The Elms was designed to charge the furnaces of factories and heating systems for large institutions, not the boilers for heating a private house. The use of coal to power a factory, as Hunt's merchandise did, was a relatively new phenomenon in the late nineteenth century. As described in Chapter III, most factories in the United States used waterpower until the 1870s. When companies like Berwind's made coal widely available at a low price, factories made the switch to coal to be closer to urban labor pools. The rising carbon in the atmosphere during Berwind's lifetime was partially due to factories switching from waterpower to coal boilers.

The miniature train also has symbolic connections to the work of coal mining and to labor rights: similar small hand-pushed rail carts have been used in mines for centuries and were still in use in coal mines during Berwind's time in the business. One of the earliest documented rail-guided carts is a wooden and wrought iron cart in a mining manual from 1550.<sup>156</sup> Late nineteenth-century coal miners still used hand-pushed carts to move the mined coal from their individual coal "rooms" to the main mineshaft for transport to the surface. Some miners knew how to lay their own tracks for the carts, which had to be repaired if the floor of the mine shifted. Coal carts were also part of the coal miners' process for receiving fair pay. Miners didn't

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<sup>154</sup> C. W. Hunt Company, 24.

<sup>155</sup> For example, Girard College in Philadelphia may have had a similar system to the Elms, according to Kathy Haas, Director of Historical Resources at Girard.

<sup>156</sup> Georg Agricola, Lou Henry Hoover, and Herbert Hoover, *Georgius Agricola De Re Metallica. Tr. from the 1st Latin Ed. of 1556, with Biographical Introduction, Annotations and Appendices upon the Development of Mining Methods, Metallurgical Processes, Geology, Mineralogy & Mining Law, from the Earliest Times to the 16th Century* (New York: Dover Publications, 1950), <https://catalog.hathitrust.org/Record/001526068>, 156.

accompany their mining carts out of the mine, so they hung a small metal ID tag on each one so the weigh station on the surface would credit the correct miner.<sup>157</sup> As mentioned in the previous chapter, Berwind fought with his miners over the payment rates for this tonnage. Coal carts were still so prevalent in mines in the early twentieth century that in 1921, coal miners went on strike across Central Pennsylvania because pushing heavily loaded cars was causing muscle strains, ruptures, and other health issues.<sup>158</sup> The small carts in the basement of The Elms evoke the dangerous labor of coal miners and tell the story of their struggle for fair pay and safe working conditions, a key factor in the acceleration of coal usage in the United States.

The miniature coal train in the bottom of The Elms is also symbolic of the deeply intertwined history of the railways and coal industries, and of the essential role of rail in Berwind's success as a coal merchant. As stated in the previous chapter, the coal industry and the rail industry were mutually dependent during Berwind's time. Coal fueled train engines and the furnaces that manufactured the rails. Rail companies bought coal to power trains that transported coal from remote mines to urban customers.<sup>159</sup> The two industries reinforced each other as they grew. Berwind's close relationship with the Pennsylvania Railroad was key to his success. The expansion of the rail system was one of the major factors that created both the demand and the access to coal that drove the nineteenth-century acceleration in CO<sub>2</sub>. The Elms' train is a reminder of the essential role the railroad played in creating and feeding the climate crisis and in the role of rail in Berwind's capitalist strategies to generate as much profit as possible from the exploitative industry of nineteenth-century coal.

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<sup>157</sup> Mountjoy, "Spraggers and Sunshine Lamps."

<sup>158</sup> Indiana University of Pennsylvania Special Collections and University Archives, "Coal Culture Timeline," Coal Culture Project, accessed March 2, 2022, <https://www.iup.edu/library/departments/archives/coal/coal-culture-timeline.html>.

<sup>159</sup> Adams, "The American Coal Industry in the Nineteenth Century."



## Heating Grates

The Elms heating system includes another artifact type relevant to climate interpretation – the vents for the heat exchange system. The studio of French art dealer and renowned interior decorator, Jules Allard, designed all the heating vents for The Elms.<sup>160</sup> Under Berwind’s employ and in coordination with Trumbauer, Allard oversaw each element of The Elms’ rooms, from furniture, art, fixtures, and even walls.<sup>161</sup> Many of the heating vents feature an open basket-weave pattern with tiny flowers. At first glance, nothing outside The Elms’ basement seems to reveal its financing or connections to the origins of climate change. However, thanks to the heating system and Allard’s vents, heat produced by coal, and thus coal itself, is in every room.



Figure 21: Decorative heating grate in The Elms drawing room. Photo by author.

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<sup>160</sup> Leslie Jones, conversation, February 14, 2022.

<sup>161</sup> “Newport Mansions: The Elms,” Preservation Society of Newport County, accessed February 6, 2022, audio tour, stop 504.

### Commemorative Medal

Tiffany & Co. issued a commemorative medal for the 50th Anniversary of the founding of the Berwind-White Coal Mining Company in 1936.<sup>162</sup> The medal is the only artifact in the Preservation Society of Newport County's collection that relates directly to Edward Berwind's business. Its imagery romanticizes the technological advancement and human sacrifice at the center of Berwind's trade and provides an opportunity to consider the three primary industries that purchased Berwind's coal. The medal was perhaps never owned by Berwind nor his family (Edward Berwind died the year it was issued), but it offers myriad interesting opportunities to help viewers understand Berwind's business and its relationship to the climate crisis.

Tiffany issued artistic medals commemorating significant events, from the discovery of America to the chartering of New York City to a famous racehorse.<sup>163</sup> Medal collecting is and remains a hobby related to coin or stamp collecting, with conventions, dealers,<sup>164</sup> and a trade journal.<sup>165</sup> The decision to manufacture this medal suggests that Tiffany determined the Berwind-White Coal Mining Company was significant enough that there would be a market for a medal dedicated to its legacy. At least two of the Berwind Medals exist, one in the PSNC collections and one in the John E. Marqusee Collection of the Herbert F. Johnson Museum of Fine Art at Cornell University.<sup>166</sup> Like most medals of this type, was likely manufactured as a collectible and not given as an award.

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<sup>162</sup> Preservation Society of Newport County, "A Bronze Commemorative Medal," Newportal, accessed March 20, 2022, <http://www.newportalri.org/items/show/23788>.

<sup>163</sup> "A Brief History of Tiffany & Company," Medallist Art Collector, accessed March 22, 2022, <https://medallicartcollector.com/tiffany.shtml>.

<sup>164</sup> "About MCA," Medal Collectors of America, accessed March 22, 2022, <https://www.medalcollectors.org/>.

<sup>165</sup> American Numismatic Society, "American Journal of Numismatics," accessed March 22, 2022, <http://numismatics.org/publications/ajn/>.

<sup>166</sup> Susan Luftschein, *One Hundred Years of American Medallist Art, 1845-1945: The John E. Marqusee Collection* (Ithaca, NY: Herbert F. Johnson Museum of Art, Cornell University, 1995), <https://www.mullenbooks.com/pages/books/143224/susan-luftschein/one-hundred-years-of-american-medallist-art-1845-1945-the-john-e-marqusee-collection>.



Figure 22: The Elms library, Edward Berwind's office. The commemorative medal is on the table in the small, square frame towards the front of the arrangement of objects on the desk. Rhode Island Commerce Corporation, "The Elms," visit Rhode Island, accessed April 12, 2022. <https://www.visitrhodeisland.com/listing/the-elms/8333/>.



Figure 23: Obverse side of the Berwind-White Coal Mining Company commemorative medal celebrating the coal miner as classical hero. Preservation Society of Newport County, "A Bronze Commemorative Medal," Newportalri, accessed March 20, 2022, <http://www.newportalri.org/items/show/23788>.

The Preservation Society purchased the medal in 2010. Displayed in a red velvet setting within a wood frame with a gilded inner molding, the medal measures 3.25" in diameter and is

cast from bronze.<sup>167</sup> In February 2022, it was exhibited on the desk in Berwind's library on the first floor of The Elms. This room served as his summer office but was rarely used as he purportedly preferred to do business from his yacht in the harbor.<sup>168</sup>

### **Medal Obverse Side**

The obverse side of the medal depicts the image of a kneeling miner in low relief, in a moment of ecstatic discovery. His left hand rests on the handle of a pickaxe and his right holds a lump of coal up to the light of his helmet lamp. Behind him, rocky surfaces are faintly visible. His torso is shirtless and his pants are rolled down around his waist, while rays of light radiate around him. Encircling him are the words "The Berwind White Coal Mining Co 50th Anniversary" along the edge of the medal.

Tiffany's design portrays the coal miner as a heroic figure. His bulky, smooth muscles and proportions imitate the physical ideals of classical Greek or Roman sculpture. His naked, muscled torso curves slightly forward in a crouch, enhancing his athletic appearance. He holds the lump of coal with reverence, implying he is caught in the moment of discovery.

Neither his body nor his attitude reflect the reality of coal mining. The work of mining, hours spent underground, and the low standard of living it enabled took a heavy toll on the body. Coal businesses did not treat miners as heroes. Between 1880 and 1923, more than 70,000 miners were killed on the job, and more died from coal-related disease but weren't tallied in official statistics until much later. "Miners were crushed to death in roof collapses, killed by gas explosions, by machinery, and more."<sup>169</sup> As described in Chapter III, coal miners responded to the safety issues and hazards of their work by forming unions at an unprecedented rate, using strength in numbers to demand better working conditions and pay.

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<sup>167</sup> Preservation Society of Newport County, "A Bronze Commemorative Medal."

<sup>168</sup> Leslie Jones, conversation, February 14, 2022.

<sup>169</sup> Kahle and Yale University, "Coal Mining and Labor Conflict."

Berwind's success depended on his ability to manage the demands of miners. He needed to keep coal flowing without increasing his costs. The widespread use of coal depended on low prices. Berwind's business predicament illustrates the importance of cheap labor to the coal boom. Without the exploitation of coal miners, coal may not have been inexpensive enough to be adopted widely. Without coal, our world and our climate would look very different today.

### **Medal Reverse**

The reverse of the medal is imprinted with a relief image that reference the industries that purchased Berwind's coal. Two smaller vignettes of a ship and a factory are separated by a laurel branch and encircled with a banner ribbon stating, "Eureka 1886 - 1936." Eureka was the brand name that the Berwind-White Coal Mining Company gave to the coal from their first commercially successful mine.<sup>170</sup>

The left vignette depicts a steamship at sea. Steamships were a transformative client for Berwind. His company controlled the steamship fueling business in Philadelphia and New York,<sup>171</sup> two of the most important ports for Atlantic steamer travel. Steamships were a lucrative market for a coal business: the ship *St. Paul*, built by the American Line in 1895 using state-of-the-art technology, burned 310 tons of coal per day.<sup>172</sup> To secure steamship contracts Berwind-White had to promise great volumes of consistent quality coal, delivered at specific times without fail, at set prices. To achieve this consistency of quality and service, Berwind again followed the

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<sup>170</sup> The Berwind Group and Berwind, *The History of Berwind*, 9.

<sup>171</sup> "E. J. Berwind Dies."

<sup>172</sup> "The Transatlantic Steamship," *Scientific American* 75, no. 4 (1896): 52–55.



Figure 24: Reverse side of the Berwind White Coal Mining Company commemorative medal. Preservation Society of Newport County. "A Bronze Commemorative Medal." Newportalri. Accessed March 20, 2022. <http://www.newportalri.org/items/show/23788>.

principle of vertical integration and invested in his own portside coal transfer facilities. He also purchased controlling interest in railroads and docks to support the steamship contracts.<sup>173</sup> Locking into the steamship contracts left Berwind vulnerable to production issues like labor strikes, and he was sometimes forced to purchase coal from other companies if workers stopped

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<sup>173</sup> Dinger and Savage, "Berwind Corporation," 51.

production, even shipping coal across the Atlantic from the UK.<sup>174</sup> The steamship contracts shaped Berwind's business by setting a high floor for consistent production. This in turn affected his hard-nosed strategy with on labor relations and helped establish the company's prominent position in the coal industry.

The other small vignette on the reverse of the medal is a factory with two smokestacks, visibly emitting smoke. In addition to steamships and rail, Berwind's coal company also provided coal to manufacturing facilities and coking plants with smokestacks like this. Sean Adams, coal industry historian, has written that the nineteenth century was "an era where smokestacks equaled progress."<sup>175</sup> They represented the shift away from waterpower to coal power for manufacturing, which brought with it greater standardization of labor and intensified urbanization (as described in Chapter III). As the economy shifted to rely on coal, CO<sub>2</sub> emissions accelerated, and contributed to the climate crisis we know today. The medal's imagery depicts the shift in energy sources from water to coal. The medal tells the story of coal extraction and use, and by extension illustrates the origins of the climate crisis.

### **Letter from Coal Miner's Daughter**

After The Elms became a museum, a letter was left by a visitor in a sideboard drawer in one of the public spaces of the mansion.<sup>176</sup> In it, the visitor writes of her father's death from black lung, after working in one of the Berwind-White coal mines.

October 14, 1999

To Whom It May Concern: I am writing this note regarding my father, George Richard Gladis, who was born on August 13, 1916. My father was a coal miner for the Berwind Coal Company for approximately ten years. He went into the mines when only 15 years

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<sup>174</sup> Arnold, *Fueling the Gilded Age*, 215.

<sup>175</sup> Adams, "The American Coal Industry in the Nineteenth Century."

<sup>176</sup> Leslie Jones, conversation, February 14, 2022.



old; he died in 1972 at the age of 55 from black lung disease that he contracted while working in the bowels of the earth. This is my first visit to Newport and, therefore, The Elms. For years I have thought I wanted to make some gesture that would recognize the lives of those men, like my father, who worked tirelessly [sic] to supply the revenue that, in part, built this house. May this note stay in The Elms in memory of my father.

Respectfully,

Susan Gladis Rickey, New York, NY

While the medal depicts and describes the coal miners from an idealized perspective, the letter reveals the miner's experience and supports interpretation of the coal industry from the perspective of exploitive labor practices. Coal extraction could not have happened on the scale that created such vast wealth, or such dramatic CO<sub>2</sub> increases, without exploiting the people that worked at the heart of the industry.

All objects in The Elms are connected to the climate crisis through the origins of Berwind's wealth. Several in particular identified here stand out with clear, direct connections. The boilers that burn coal in the basement are one. The miniature train, representing the pivot from waterpower to coal power, tells the story of the railways that were coal's partner in dominance. The decorative heating vents bring coal's climate to every room. And the medal and letter illustrate coal's legacy in the labor movement, the climate, and individual lives. The Elms is an example of how mansions built far from the sites of extraction nevertheless contain stories of their fossil-fuel financing and climate crisis connections. This "hidden history" is waiting to be discovered, and once noticed, it cannot be unseen. It is not a matter of how, but when - and whether museum management will tell the climate crisis story at historic sites before the public does.

## Chapter V: Conclusion

The last few centuries of human history are inseparable from the history of climate change. Though not all humans are equally responsible, climate change resulted from the social and economic structures in which all our ancestors lived, and in which we still operate. As a result, any public historic site from the last two hundred years can interpret the history of climate change. However, sites dedicated to preserving industrial histories, or histories of industrial wealth, have the most direct potential to make climate change history available and overtly visible to the public. Antique train museums call forth nostalgic scenes of cheerfully colored engines sounding their signature whistle as they round the mountain. Mine tours impress with darkness, depth, feats of engineering, and the stories of hardworking people. Preserved eighteenth-century iron furnaces with towering stacks lend a sense of majesty to the ingenuity of early manufacturing. What if in addition to these stories, we also saw the nascent forces that now determine the greatest challenge of the current age, perhaps of human civilization? What if we marveled at invention, honored labor, ogled splendor, AND noted the seeds of crisis?

The basement coal train isn't The Elms' only climate talking point. The house itself begs the question: Where did this money come from? The answer given can be narrow, or it can open a new perspective on the origins of both the house standing in front of the visitor, and the world the house and the viewer are standing in. Any historic site asks a similar question through the simple fact of its existence: why am I here? What does my materiality represent? Particularly for sites with industrial ties, answering these questions fully includes an explanation of the forces that created the climate crisis.

The Elms represents the astounding profits that resulted from the economic transition behind the climate crisis. Through his personal connections, his business strategy, and his disregard for safe and fairly compensated labor, Edward Berwind shaped and harnessed a period

of rapid growth in the United States coal industry. His prominent position in Pennsylvania coal mining earned him a reputation as the “Coal King” of Pennsylvania, at a time when the state supplied most of the coal in the United States, and the United States produced almost half of global CO<sub>2</sub> emissions. After almost twenty-five years in the business, Berwind commissioned The Elms as a display of his wealth and status. As if soot were mixed into the mortar, The Elms is built from climate crisis profit.

Not only the house’s opulence but also the details of its heating system and a few business artifacts provide tools for a powerful coal and climate change narrative that can foster visitors’ understanding of the origins of the climate crisis and ultimately of the role that everyday economic structures and our society’s values have in the ongoing nature of the crisis. The coal carts in the basement reference the mutually reinforcing relationship between the coal and rail industries and represent the industrial manufacturing boom fueled by coal. The massive boilers and the indirect radiator heat exchange system made coal an integral, yet invisible, presence, warming every public and family room through the grates. The Tiffany & Co. Anniversary Medal valorizes an idealized coal miner, which sublimates the harsh and uncaring reality of Berwind’s workforce relations, as revealed in the letter from the coal miner’s daughter. With an understanding of the greater economic, ecological and social context of The Elms, many objects present options for climate crisis historical interpretation.

Because objects are made by humans and reflect both cultural values and the materials available from the earth, they are important intellectual tools for the development of ideas around climate change history. Climate change and the Anthropocene challenge the separations people artificially create between nature and culture, geology and history, and human agency and planetary process. Various disciplines with their own methods and epistemologies claim expertise in each of these areas, making a cohesive approach to climate change difficult in the abstract. However, an object is inherently interdisciplinary. It is possible to document and theorize the

social, chemical, economic, climatic, geologic, historical, cultural, and individually personal aspects of a lump of coal. Historic sites are intellectual institutions that specialize in the care and public presentation of objects. Some have committed new attention to the more difficult and hidden aspects of their pasts and are therefore situated to test new methods of presenting climate change history. As the climate crisis deepens, it will become a pervasive and overwhelming fact of life that no discipline can avoid. History as a field has neglected climate change thus far but is poised to catch up. Historic sites have an opportunity to help shape this discourse.

### Climate Change History and Historic Site Relevance

Interpreting climate history may seem like a great effort, a tricky project that requires a historic site to invest considerable time if not financial resources. Historic sites are in a constant struggle with resource scarcity, usually with too many projects and problems to think of addressing something that may not feel essential. But climate history can contribute to the solution for a pressing historic site issue: relevance in the present. Climate change history offers sites looking for more connections to important present-day issues an opportunity to meaningfully relate to a constantly newsworthy contemporary story.

Historic sites may be reluctant to approach a topic that has been perceived as controversial, but anthropogenic climate change is becoming increasingly accepted. 79% of Americans say that human activity contributes a great deal or some to climate change.<sup>177</sup> Climate change and its human causes are becoming increasingly present in public discourse, from news media, to art, to science museums. Climate history is part of climate science, and human history is referenced in scientific dialog about the crisis. It is time for historic sites to likewise include climate science in their stories.

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<sup>177</sup> Cary Funk and Meg Hefferson, “U.S. Public Views on Climate and Energy,” *Pew Research Center Science & Society* (blog), November 25, 2019, <https://www.pewresearch.org/science/2019/11/25/u-s-public-views-on-climate-and-energy/>.

Climate change history also offers an opportunity for historic sites to expand their scope of primary school educational curricula. Historic sites are frequent destinations for school field trips. School curricula are currently heavily focused on Science, Technology, Engineering, and Math (STEM) outcomes. School programs that include climate history can touch on atmospheric science, thermodynamics, and chemistry and can also bring together science and humanities learning approaches. Climate crisis heritage creates a bridge between history and STEM that broadens audiences and potential funding sources.

### Historic Sites and Climate Justice

As Lyons and Bosworth ask in their essay “Museums in the Climate Emergency,” who are museums relevant for, and to what end? What would it look like to reexamine The Elms not only from the perspective of climate change history but also from climate justice? This paper has established The Elms’ origins in the unequal economic system and social structure that generated the climate crisis. Now we can consider in what ways The Elms is still connected to those forces today, and how The Elms can participate in a just response to the effects of the crisis. The scope of this paper doesn’t allow for a full investigation of this question, but climate justice is the essential next step.

Public climate history of places like The Elms is an essential part of climate justice. As world leaders argue over climate reparations, a public understanding of who profits from climate change is as important as understanding who is most affected by it.<sup>178</sup> Simply telling the history of The Elms’ connections to the climate crisis contributes to local, national, and global dialog about the origins of the crisis.

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<sup>178</sup> Somini Sengupta, “Calls for Climate Reparations Reach Boiling Point in Glasgow Talks,” *The New York Times*, November 11, 2021, sec. Climate, <https://www.nytimes.com/2021/11/11/climate/climate-glasgow-cop26-loss-damage.html>.

Perhaps the most obvious question this thesis did not address is -- if coal profits built The Elms mansion, what money maintains it now? The organization that manages The Elms, the Preservation Society of Newport County, had a \$38 million-dollar endowment and a \$23.7 million annual budget in FY2020. Where was this money made, and should that matter to the current meaning of the house? Few historic sites are financially thriving without a partnership with the systems that created and still perpetuates the fossil fuel economy. Foundations were created from the profits of extraction. Endowments are invested in fossil fuel energy. Donors share earnings from fossil fuel companies and dividends. The Preservation Society of Newport County is likely not an exception.

Climate activists and scientists have called for museums and other nonprofit educational institutions to disinvest from fossil fuels, and some prominent museums are heeding the call.<sup>179</sup> But engagement in climate justice doesn't only mean losing something. Many smaller historic sites would count themselves lucky to rely on the scale of support that PSNC has built. How many historic sites are in Newport County? How many are eminently threatened by climate crises and are unprotected? How many represent the histories of communities most threatened by climate crisis - working-class, Black, Indigenous, and immigrant histories? A climate justice solution might call for creating a conservation and programming partnership between PSNC and sites who are severely affected by the climate fallout from industries that financed The Elms, funded by PSNC's investment and donation revenue from fossil fuel industries. Such a partnership would be an opportunity for climate justice, another opportunity for PSNC to interpret

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<sup>179</sup> James Hansen and 149 others, "An Open Letter to Museums from Members of the Scientific Community," The Natural History Museum, March 24, 2015, <http://thenaturalhistorymuseum.org/open-letter-to-museums-from-scientists/>; Katherine Bagley, "Science Museums Cutting Financial Ties to Fossil Fuel Industry," *Inside Climate News* (blog), November 16, 2015, <https://insideclimatenews.org/news/16112015/science-museums-cut-financial-ties-fossil-fuel-industry-field-museum-california-academy-sciences/>.

the place of their collection in global history, and a way to build community and audiences across all of the organizations involved.

No matter the approach to climate justice, historic sites that engage in climate change history may find the two are difficult to separate. “Difficult” historic site initiatives, like Montpelier’s efforts to share governing authority with the descendent community, demonstrate that interpreting racist histories is inseparable from confronting the systemically racist present. Likewise, the conversation about climate crisis origins does not end with Berwind. Making connections between history and today’s most crucial societal issues keeps historic sites relevant in the contemporary world.

In the end, the purpose of climate change interpretation is not that historic sites admonish people to drive less and turn their furnaces down. The true purpose is for historic sites to claim the crucial role they can play in equipping the public to recognize climate crisis not only in atmospheric shifts and disastrous weather, but also in our exemplary architecture, our business leaders, our culture and taste, our history. The problem with climate change is not that everyday people are making the wrong choices, it is that we exist in a system that makes better choices very difficult. Our present system reflects cultural values that prioritizes massive profit for winners such as Berwind and his contemporary counterparts. The value of history is often said to be its warning against repeating past mistakes, and in the case of climate crisis, we have continued to commit an ongoing mistake, partly because the effects of the past are on a 150-year delay. Now that past mistakes are manifest in violent and unpredictable weather, fires, floods, water scarcity, and pandemic pathogens, society is challenged to adjust. The necessary cultural and values shift required to salvage the future and ourselves would be easier with history and historic sites at the table for change.

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## Appendix A: Prototype Script for Climate Interpretation in The Elms Audio Tour

Aislinn Pentecost-Farren, May 2022

One of the simplest ways to introduce climate origins interpretation at The Elms is to add information to the existing audio tour for the site. The Preservation Society of Newport County offers its primary public tour of The Elms as an audio-only tour through a smartphone app, which is included with the price of admission (there is also a twice-daily tour of the Servants' Quarters on the top floor and working areas in the basement, which is docent-delivered).<sup>180</sup> Twenty-six primary audio-tour stops lead visitors through each room and the major areas of The Elms. Each stop includes 1-4 secondary stops that engage with specific objects or stories in that area. Visitors can listen to the stops in the suggested order or in any order they wish, navigating the stops using a list or a map of The Elms. The stops are brief, lasting about two minutes or less.

Because of the tour's modular form, adding new content is possible without re-recording the existing audio - perhaps it was designed to facilitate additions. My proposed interpretation below adds new secondary stops to several existing primary stops, and proposes a new primary stop in the sub-basement of The Elms, which is not currently included in the audio tour. For additions to existing stops, I have included an overview of the primary stop to provide context for my proposed additions.

Because this Appendix is intended to stand-alone as a sample script for additions to the existing audio tour, the script will be repetitive for readers of the entire thesis. The proposed stops do not encompass all the research included in the thesis, nor do they approach the full potential of research that can and should be done. These new stops present a sample of the most straightforward climate connections that can be made for The Elms visitors as proof of concept. The

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<sup>180</sup> The Preservation Society of Newport County, "Newport Mansions," Apple App Store/Google Play, Version 3.7. (2021), <https://www.newportmansions.org/plan-a-visit/audio-tours>



intent is for the Appendix to be shared with The Elms' staff and stakeholders in order to facilitate easy consideration and implementation of climate change interpretation for visitors.

### House Entrance

#### **Welcome** (*Existing Primary Stop*)

The first stop on The Elms tour introduces Edward Berwind and the prominence of his business:

“Welcome to The Elms, the 1901 summer home of Edward Berwind and his wife, Herminie. I'm Monty Burnham, chairman of the Board Trustees of the Preservation Society of Newport County. The name Berwind might not be as familiar a name as other titans of industry, such as Vanderbilt and Astor, but in the Gilded Age, Philadelphian Edward Berwind was the merchant-prince of coal. Berwind coal fueled the Vanderbilt railroads, the New York subway, and the United States navy. The Berwinds' new cottage cost 1.4 million to build, about 28 million today, all for a house only used 8-12 weeks of the year.”

The audio goes on to relate the story of The Elms opening as a museum, “3 weeks after its date with the wrecking ball.”

#### **Berwind's Success and Our Climate Today** (*Proposed Secondary Stop*)

Where did the money to build The Elms come from? Berwind made millions because he capitalized on a major shift in American society -- the expanding use of coal, for everything from manufacturing, to transportation, to home heating. Around the time Berwind entered the coal business, American coal companies mined 80 million tons of coal. By the time he built The Elms, coal mining had almost quadrupled.

The explosive growth of coal fueled Berwind's business and financed The Elms. But the impacts of the coal boom can also be seen on the global climate. During the same period in which Berwind established his business, the carbon in the atmosphere accumulated at an exponential rate. This carbon is now a significant contributor to the current global climate crisis.

To learn more about Berwind's business and climate, make sure to visit the miniature coal train in the Elm's basement, featured near the end of the audio tour.

(1 minute)

### Berwind's Library

#### **Library** (*Existing Primary Stop*)

The third stop on the tour takes the visitor into Edward Berwind's library. The tour discusses the masculine Renaissance Revival aesthetic of the room in the context of Berwind's business success. The tour states that the measure of a Gilded Age man was making his fortune through "individualism, hard work and discipline." The tour points out that "he died a millionaire during the depression. He knew how to run a business and make money. So, in a time when showing your wealth was the measure of your success, he certainly made an impression." This picture of Berwind's affluence is a poignant contrast to the interpretation possible around the 1936 Tiffany & Co. Anniversary Medal displayed on Berwind's desk.

The proposed secondary stop for this room also incorporates an object not yet on display at The Elms -- the Letter from the Coal Miner's Daughter. I suggest that the letter be encased in a protective display so that it can be read by visitors on Berwind's desk next to the medal. Alternatively, a scanned copy of the letter could be displayed, which could be handled and easily replaced. If displaying the letter is not possible, the corresponding lines of the script can be edited out.

#### **Medal for Mining Heroes** (*Proposed Secondary Stop*)

On Berwind's desk is a small medal in a gilded frame. This commemorative medal was issued by Tiffany & Co. on the 50th anniversary of the Berwind White Coal Mining Company. The medal depicts a miner who appears to be contemplating a lump of coal while rays of light

glow around him. The design portrays the miner as a hero, with a muscular, naked torso, crouched in a pose reminiscent of Classical sculpture.

In reality, coal miners were rarely treated like heroes. Mining was difficult and dangerous work. In the late 1800s, miners were paid according to the weight of the coal they mined, not the time they spent at work. Any precautions they took were on their own time, which did not encourage safety. Between 1880 and 1923, more than 70,000 miners died on the job. They died in mine collapses, gas explosions, and machinery accidents.

They also suffered from black lung disease caused by breathing coal dust for years in the mines. On Berwind's desk near the medal is a hand-written letter, left at The Elms after it opened as a museum. The author's father died from black lung after working in one of the Berwind-White coal mines. In response to safety issues and others, coal miners formed unions during the early 1900s at an unprecedented rate, using strength in numbers to demand better working conditions and pay.

Berwind's success depended on his ability to manage the demands of miners. He needed to keep miners working without increasing his costs. The widespread use of coal depended on its low cost. If Berwind raised prices, customers might purchase less. Berwind's business predicament reinforces that the coal boom depended on cheap labor. Without exploiting coal miners, coal may not have been inexpensive enough to be widely adopted. Without coal, our world and our climate would look very different today.

This medal was manufactured as a collector's item, and likely not presented to a miner.

(2.03 minutes)

## Heating Grates

### **Stair Hall** (*Existing Primary Stop*)

An introduction to the second floor discusses the numbers of bedrooms, and the weeks of work required to ready The Elms ready for the Newport season.

### **Stairwell Heating Vents** (*Proposed Secondary Stop*)

If you look down from the top of the stairs, you'll see two large rectangular heating vents on the wall by the landing. These vents were designed for The Elms by the studio of Berwind's renowned interior decorator, the French art dealer Jules Allard. Allard oversaw each element of The Elms' interiors, including what we might see as everyday utilitarian details like heating vents. The basket-weave pattern with tiny flowers you see here is repeated in different shapes and sizes on many heating vents throughout the house. The vents connect each room to hot air chambers warmed by the coal-fired furnaces in The Elms' basement. Berwind used three coal-fired furnaces running simultaneously to ensure that The Elms was comfortable.

Berwind made his fortune from the coal boom in the late 1800s and early 1900s. Prior to the time of Berwind's business, most of the energy generated in the United States came from wood burning and waterpower. As the year 1900 approached, the United States transformed into a coal-powered country, and Berwind was one of the biggest names in the business. Coal also fueled a dramatic rise in carbon emissions. By the time The Elms was built, carbon in the earth's atmosphere was increasing exponentially. The first recorded rise in global temperature caused by fossil fuel emissions was recorded in 1938, just two years after Berwind's death. Berwind lived during and profited from the origins of the climate crisis, exacerbated by the coal business.

At first glance, nothing at The Elms seems to reveal its financial background or connections to the origins of climate change. However, thanks to the heating system, coal determines the climate in every room. Today, The Elms is heated with oil, but the Preservation

Society of Newport County is looking into converting it to geothermal heating like several of its other mansions, which would be more sustainable.

(1:55 minutes)

### Coal Storage Room, Coal Carts, and Coal Tunnel

#### **Coal Underneath The Elms** (*Proposed Primary Stop*)

Walk down the basement passageway, past the kitchens and the visitor bathroom. At the end of the hall is a door that leads to a narrow metal staircase into the sub-basement. Descend the stairs and walk through the doorway directly in front of you at the bottom.

Just as a booming coal industry was beneath Berwind's wealth, an enormous coal-fired heating system was beneath his mansion. The miniature railway you see here shuttled coal into the storage room through a tunnel under The Elms' garden. The far end of the tunnel opens with a trap door to the sidewalk, where coal deliveries were unloaded. Records suggest that The Elms architect Horace Trumbauer employed a miniature train system because Berwind did not want coal or ash to be spilled in the garden. It is ironic that a man whose fortunes relied on coal did not want its dirtier characteristics to be visible from his windows.

Berwind's fortunes were not the only thing that relied on coal. Today's global climate crisis, which accelerated during the period of Berwind's business, also has its origins in the coal boom. England, and then the United States, led the world in converting to coal energy, which laid the foundations for increased pollution and the climate disruptions we face today.

Listen to the other stops in this section of the audio guide to learn more about Berwind's business, the climate crisis, and the small train in this basement.

(1:25 minutes)

### **Miniature Trains, Enormous Gains, and Climate Change** (*Proposed Secondary Stop*)

The wheeled carts in this room are original parts of The Elms' miniature railway. They were manufactured by C.W. Hunt, an engineering firm in New York that made transportation machinery for factories and mines.

These carts were pushed by hand. Rounded knobs at the top corners were advertised as comfortable to grip. Tracks under the wheels allowed easier pushing when the carts were full. The door on the end hinges downwards to form a chute that allows the person unloading the cart to shovel coal without having to reach over the upper edge.

During Berwind's day, the coal industry and the rail industry depended on each other. Coal fueled train engines and the furnaces that made the rails. Rail companies purchased coal to power trains and made it possible to bring coal from remote mines to urban customers. Berwind bought rail company stock and joined railway boards, so that he could influence the industry to benefit his coal business.

Railways and coal mining are intertwined with the history of climate change. As Berwind's story shows, rail was a major factor in creating both the demand for and access to coal that drove America's shift to coal power. This expanding use of coal generated some of the original carbon emissions responsible for changing our climate today.

(1:20 minutes)

### **Burning Berwind's Coal** (*Proposed Secondary Stop*)

Follow the small gauge train track through the arched doorway to the boilers, the core of The Elms' central heating system. Three large boilers ran simultaneously to heat The Elms. The boilers burned coal to heat water for steam, which was piped throughout the house. However, instead of heating radiators inside the rooms, the steam heated a radiator in a chamber hidden underneath each room. This prevented heating elements, such as radiators, from detracting from a

room's elegant appearance. Air warmed in the hidden chamber then rose into the room via gravity through decorative vents designed by Jules Allard.

Most homes in this period did not have central heat, and instead burned coal in individual heating stoves in each room. The boilers you see here are more like ones used in large institutions and factories, not in private houses. In Berwind's time, using coal to power a factory was relatively new. Most factories in the United States used waterpower until the 1870s. Manufacturers dammed rivers and streams to push water wheels or turbines that powered machines. Waterpower was cheap, safe, and relatively easy to access on the many waterways of the United States.

However, it was harder to find workers in the countryside, and waterpower was unreliable - freezing, droughts, and flooding could interfere with production. Coal power allowed factories to relocate to cities, where there was cheap labor, independent of location near a waterway, that was reliable year-round. When companies like Berwind's made coal widely available at a low price, factories made the switch. The rising percentage of carbon in the atmosphere during Berwind's lifetime was partially due to factories switching from waterpower to coal boilers like these. Imagine the black smoke that must have puffed out of The Elms' chimneys.

(1:45 minutes)

## Conclusion

### **Conclusion and Goodbye** (*Existing Primary Stop*)

The final stop of The Elms' audio tour thanks the visitor and invites them to take the Servant Life Tour. Then, before giving them directions out of the building, it encourages them to get involved in preservation wherever they live:

“Your ticket contributes to directly to the preservation of this great house for its next century of life. Saving such a house was a great financial risk at the time, but as you've seen, it was worth the effort. Near where you live, there may be historic houses and open space threatened by development. It took the concerned involvement of only a few people to save this historic house. You may be able to make the same difference in your hometown as well.”

### **Culture, Wealth, and Coal at The Elms** (*Proposed Secondary Stop*)

Preserving The Elms allows visitors today to glimpse the splendor of Newport's Gilded Age – from art and architecture, to lifestyle, to the hidden labor that kept the house running smoothly. Preserving The Elms also gives visitors the opportunity to ask how such an incredible home came to exist in the first place. Because of Edward Berwind's coal empire, The Elms is a symbol of economic and social forces that enable wealth to concentrate in the hands of a few, and create catastrophic change in our planet's climate. The climate crisis is caused not only by the unsustainable choices of individuals, but by an economic system that makes better choices very difficult. It prioritizes massive profit for winners such as Berwind – and his contemporary counterparts – the kind of wealth visible at The Elms. Solving the crisis requires not only mitigation of the effects but a shift in our economy and society. By preserving The Elms, we preserve a reminder of what needs to change to ensure the survival of the planet.

(1:05 minutes)



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