

Power-Lined

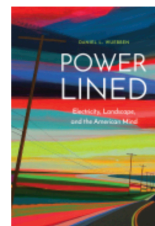
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Introduction

POWER-LINED LANDSCAPES

In 1832, during a transatlantic voyage, the artist Samuel Finley Breese had a eureka moment. Morse had engaged fellow passengers in a conversation about electricity. Years later he described how the conversation made him realize that “if the presence of electricity can be made visible in any part of the circuit,” then intelligence can be “transmitted instantaneously by electricity.”¹ That sudden, brilliant *if* initiated the lining of the American landscape.

By the time the packet ship *Sully* docked in New York, Morse was obsessed with electrically transmitting intelligence. He converted his art studio into an electrical workshop, where easels and paintbrushes competed for space with batteries, spools of wire, and paper ribbons that future generations would call “ticker tape.” After five years of experiments and tinkering, on September 2, 1837, Morse displayed his prototype, an apparatus built with copper wire and a wooden canvas stretcher. Using a lever, Morse could open and close the circuit, which consisted of a mile of looped wire. Breaks in the circuit were “made visible” as a magnetized iron pen zigged and zagged across strips of paper. A young man in the audience that day, Alfred Vail, became Morse’s assistant. Vail made crucial improvements to the machine. He helped transform the lever used to open and close the circuit into the telegraph “key” and the V-shaped markings into the dot and dash cipher referred to as “Morse code,” or simply “Morse.” Despite additional innovations such as a “relay” to help the signal travel farther distances, Morse’s enthusiastic self-promotion in the press, and a success-

ful inspection by President Martin Van Buren in 1838, Morse's telegraph seemed more of a curious parlor trick than a practical tool.

Morse's break came in the spring of 1843, when Congress considered a bill to appropriate thirty thousand dollars for Morse to build an experimental telegraph line. During the floor debate Tennessee congressman Cave Johnson scoffed that if the United States government was to fund a plan as ludicrous as sending messages through an electric wire, then it might as well fund research into mind reading. As one of the first devices to put the mysterious fluid of electricity to use, the telegraph inspired suspicion and wonder. Fortunately, the appropriation passed through House and Senate. Morse confidently predicted "the whole surface of this country" would be "channeled for those nerves to diffuse, with the speed of thought, a knowledge of all that is occurring throughout the land, making, in fact, one neighborhood of the country."² Now he prepared to lay the first nerve between Baltimore and Washington D.C.

The telegraph keys that sent and received the coded messages represented electricity made visible; the connecting wires, according to Morse's initial plan, would not. Morse wanted to channel his telegraph lines underground to protect them from inclement weather and vandals. Therefore, after securing government monies, Morse hired a team of workers to dig trenches and lay tubes with insulated copper wires. In October 1843 the first contractor's lead tubes corroded. Then the wire's insulation failed. By December, Morse was behind schedule, short of funds, and facing financial lawsuits and a breach of contract. He realized his error, and to gain an excuse for the delay, he asked Ezra Cornell (who would create Western Union and cofound Cornell University) to sabotage his own trenching machinery. Morse then instructed Vail to order "stout spars, of some thirty feet in height, well planted into the ground . . . along the tops of which the circuit might be stretched."³ Approximately five hundred chestnut poles were placed alongside the Baltimore and Ohio Railroad tracks about sixty-six yards apart. The number 16 copper wire was insulated with a mixture of asphaltum, beeswax, resin, and linseed oil and held onto the poles with glass plates.⁴ The overhead forty-mile circuit worked.

On May 24, 1844, Morse sat in the Supreme Court Chambers of the Cap-

itol Building and used his telegraph key to make breaks in a 50-milliamperere current (a fraction of the current that typically passes through a wall outlet to charge a smartphone). Vail, sitting in the Monte Clare train station outside Baltimore, which housed an 80-volt battery, recorded the message and sent it back. The ciphered message was a biblical quote, Numbers 23:23—“What Hath God Wrought.” With this ambiguous phrase, one that can be read as both a statement and a question, Morse unleashed the so-called electrical age.

The invention of the electromagnetic telegraph and subsequent electric networks has had truly astonishing consequences. Inventors, engineers, and electricians have made invisible electric currents “visible” in telegraph keys, telephones, incandescent bulbs, and increasingly complex circuits, transistors, and microprocessors that keep humankind connected across the cosmos. The success of electric telegraphy wrought a technological revolution that continues today and may be considered as important as any in human history. Morse’s success also initiated the proliferation of overhead lines upon the American landscape.

By 1851 more than seventy-five companies were sending electric messages across 21,147 miles of the so-called lightning lines.⁵ A decade later, in 1861, at the start of the Civil War between North and South, the first transcontinental telegraph message—“May [this line] be a bond of perpetuity between the states of the Atlantic and those of the Pacific”—passed through thousands of miles of unsettled desert and prairie to reach the East. While lines carried messages and power from sea to shining sea, wiring the continent for telegraph (and later for telephone and electric power) was rarely linear or interconnected. Instead, patchwork networks connected major cities, industrial centers, and urban cores. Some companies and their routes failed because of competition, others due to technological constraints. In 1858 a line that had been dropped to the bottom of the Atlantic Ocean connected North America and Europe for a few months before it permanently failed. In the 1860s a team trying to connect San Francisco to Moscow across the Bering Strait was halted somewhere near the border of Alaska.

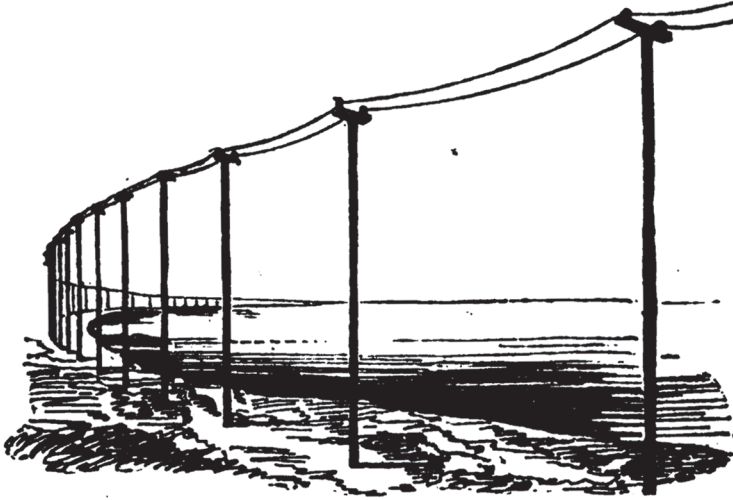
Despite the setbacks, by 1880, 291,213 miles of telegraph wire and 34,305 miles of telephone wire connected every contiguous state and spanned

the Atlantic. By the turn of the twentieth century the American landscape was lined by 15 million miles of telegraph and telephone lines. Approximately 80 percent were strung from poles, rooftops, or other overhead structures. Another 16,677 miles of wire crossed oceans and rivers.⁶ The telephone pushed the telegraph toward obsolescence as the twentieth century advanced, but the spread of electric power systems for street lighting, factories, and household appliances added taller towers and thicker cables to the overhead net. Fast-forward to the twenty first century, and approximately 600,000 miles of transmission lines, 6 million miles of lower-voltage distribution lines, and 1.5 trillion miles of telephone lines connect three hundred million electricity consumers across the continent. Stitched together, these networks form the largest and most interconnected machine in human history.

That Morse's experimental telegraph line could not be buried underground was a curious twist of fate for this aspiring artist and the first professor of painting and sculpture at New York University. Before inventing the telegraph, Morse painted portraits, historical scenes, and American landscapes. His artwork never earned the praise he thought it deserved. One prescient critique of Morse's paintings came from a patron, Phillip Hone. After a large group show in New York City, Hone said Morse's rigid brushstrokes produced "straight lines, which look as if they had been stretched to their utmost tension to form clotheslines."⁷ Soon after this show, a bitter Morse quit painting altogether and focused his attention on building an electric device that might transmit intelligence. His invention's success meant that telegraph lines, which looked similar to clotheslines, would stretch across the continent.

Morse's legacy remains tied to his technological contribution. Some contemporaries, however, found humor in the fact that a professor who lectured on the aesthetics of landscape gardening and landscape painting had invented a device that had such severe impacts on the physical landscape. In a cartoon published in 1846, *Yankee Doodle* magazine sarcastically noted the "unity of design" displayed by the telegraph line, which it called Professor Morse's "great national historical work of art" (fig. 3).⁸ The cartoon seems to be mocking Morse, who had attempted, and failed, to create great historical works of art with his paintbrush. Then again, the

Professor Morse's Great Historical Picture.



YANKEE DOODLE expressed himself much pleased with the unity of design displayed in this great national historical work of art.

3. As a trained portrait painter and first university professor of fine arts, Morse made many attempts to paint grand historical pictures. Ultimately, he failed to achieve the success he desired as a painter, making it easier to abandon his creative ambitions after the successful demonstration of his telegraph in 1844. "Professor Morse's Great Historical Picture," *Yankee Doodle*, October 10, 1846.

telegraph was a great national achievement. In the nineteenth century the image of telegraph lines striding toward the horizon repeatedly symbolized American technology and progress.⁹

Morse's training as an artist helped him to conceive and build his telegraph, but poles connected by dipping wires had not been part of his original design. He did not intend for the overhead line to be viewed as a sculpture or as a subject for landscape painters. Nor was the first overhead line, the one that provided a template for future infrastructure, the first meme in the most pervasive (and likely most horrible) art installation in human history. Or was it?

To consider Morse's inaugural telegraph line as an extension of his artistic practice and therefore accept the familiar form of poles or towers linked by a concatenated wire as a "historical work of art" reveals a deep division between traditional approaches to electric technologies and electric infrastructure. In the popular imagination electric infrastructure is often rendered invisible. Attention is drawn to the machines at either end of the line, those clicking, spinning, and blaring products that put electric currents to work. Morse's inaugural telegraph key and many other historic light bulbs and motors are on permanent display at the National Museum of American History; likewise, an iPod can be seen at the Smithsonian Design Museum. Although many recent studies of electric technologies and culture resist the idea that networked technologies emerge as the result of a single inventor or dominant corporation, they also tend to focus on sites of production and consumption (such as laboratories, telegraph offices, call exchanges, power plants, or street lighting) or histories of specific artifacts (such as batteries, telegraph keys, telegrams, incandescent light bulbs, radios, televisions, cell phones).¹⁰ By comparison, the telegraph, telephone, and power lines, the network's materials and the guts of the grid, have been discarded, relegated to the fringes, or buried out of sight. With a few notable exceptions, such as Nicole Starosielski's *Undersea Network* (2015), electric lines have been pushed to the margins of academic discourse.

Power-Lined brings electric lines to the center. Like a single pole with cables radiating in different directions, this narrative about the webbing of the American landscapes points in at least two disciplinary directions. The history of technology and culture—and more specifically, the history of overhead electric networks—constitutes one direction. The technical development of electric telegraph, telephone, and power lines can be gleaned from accounts of noteworthy projects published in newspapers, history books, and trade journals. These records suggest that competing systems and interests, including aesthetics, influenced the lines' construction and their reception. Owners and promoters used images of the telegraph and power lines to sell visions of their products and systems; opponents often pointed to similar images as signs of blight and degradation. Conductive

threads transmitted currents between network nodes; they also reflected the intersecting meanings and values of places lined by electric wires.

The second direction of my narrative considers the lines in relation to the development of the American landscape. Painters, poets, novelists, and philosophers also viewed, interpreted, and appropriated the lines in their environment. The treatment of lines in these more figurative landscapes speaks further to the lines' rhetorical influence. If, as Morse suggested, the lines signaled an attempt to "make one neighborhood of the country," then the presence of lines led some viewers to ask what kind of neighborhoods were lined with wires and what unseen forces may own and control them? Some critics of the telegraph questioned whether the telegraph lines indicated democracy and progress or capitalism's expanding web. Reviewing the history of resistance to overhead telegraph, telephone, and electric power lines contributes to a broader understanding of how Americans have engaged both electricity and landscape.

The coupling of these two narrative threads—electricity on one side and landscape on the other—has been inspired by two distinct histories: Daniel Czitrom's *Media and the American Mind* (1982) and Roderick Nash's *Wilderness and the American Mind* (1967). Czitrom shows that Morse's "lightning lines" penetrated nature, separated communication from transportation, and rewired the ways Americans worked, learned, and constructed beliefs. Days after Morse's inauguration of the first telegraph line, the *New York Herald* said the device "has originated in the mind an entirely new class of ideas, a new species of consciousness."¹¹ Each successive widespread electrical invention—telephones, light bulbs, home appliances, televisions, and computers—has seemed to spark a "new" consciousness along with new orientations of space. Czitrom adds, "New media [telephone, radio, television] reshape our perceptions of the past and the contours of knowledge itself."¹² Media formats the messages that are sent through the wires. Whether the messages transform into dots and dashes or ones and zeros, media codes and decodes electrical impulses. Media technologies, like infrastructure, also shape human relationships to knowledge and consciousness. Devices connected by wires are not merely, as Morse suggested, the conduits of "intelligence made visible"; they signify intelligence and

literally shape how it is transmitted between senders and receivers. From telegraphs to killer apps, electricity influences what and how we know about our ancestors, our universe, and ourselves.

Electricity's force in American history has been mapped far beyond its scientific underpinnings and technological applications. Czitrom, Thomas P. Hughes, David Nye, Linda Simon, David Hochfelder, Jill Jonnes, and Daniel French have each displayed electric technology's revolutionary impact on American finance, commerce, politics, war, journalism, and entertainment.¹³ Literary scholars have also analyzed electricity's dynamic relationship to the arts and sciences. The power and flexibility of electricity-as-metaphor gave rise to what James Delbourgo calls the "political electricity" of the Enlightenment, what Paul Gilmore calls the "aesthetic electricity" of Romanticism, and the "net-works" that Laura Otis argues formed feedback loops between novelists and biologists rethinking communication and the nervous system in the age of Charles Darwin. Sam Halliday suggests electricity in the nineteenth century was something "to think about and with." Thomas Edison and his team used a range of genres, rhetorical devices, and representational systems to invent the allure of artificial light. Twentieth-century novelists including Charlotte Perkins Gilman, Jack London, and Ralph Ellison seized the "polysemous" emblem of electricity because "it already had a rich aesthetic legacy and because its new industrial applications correlated this energy with interconnection and action at a distance."¹⁴ Clearly, electricity interweaves history, language, and culture; it charges how we think, act, and feel. Previous examinations of this multimodal and tenebrous force, however, have not fully accounted for how electric infrastructure and the sight of lines in the landscape influence electric ideas and texts. I revisit some of the authors and texts treated in previous studies to show wires and lines as actors and artifacts.

Only a handful of scholarly articles have analyzed transmission lines as cultural and aesthetic artifacts. In a short piece written for the National Park Service, Leah Glaser argues that transmission towers are more than "a blemish on the landscape"; they are, she notes, also "valuable cultural resources with a crucial story about the impact of long-distance power."¹⁵ In his excellent history of transmission tower designs Eugene Levy reviews the

power industry's attempts to reduce public hostility by building modernistic, "aesthetically pleasing" structures. Levy concludes, "Rather than being defined as symbols of industrial progress or as monumental structures that are an integral part of the contemporary land-scape, for most Americans transmission structures remain merely another example of the trashing of the environment."¹⁶ My narrative takes a similar approach, valuing the cultural and symbolic power of the power line expanding the scope to include distribution, telephone, and telegraph lines. Each of these similar-looking types of overhead lines transmit electric currents between points in a circuit; they also transmit subtle and sometimes conflicting messages into the landscape.

If electricity and electric technologies have been one of the most potent physical and rhetorical forces in American culture, constructs of landscape have provided some of the most powerful frames. *Landscape* comes from the Dutch *landschap* and Old English *landship* and combines a familiar noun, *land*, with a variation of the verbs *scap* or *scheppan*, which generally meant "to shape, form, or create." As the term's meaning has evolved, standing at a particular vista, crossing a field with a plow, putting paintbrush to canvas, even looking through a viewfinder, can "create land" into a landscape. To name something "landscape" implies an exercise of certain beliefs and values about space, aesthetics, and environment. As W. J. T. Mitchell has noted, *landscape* is a noun and a verb, "both a represented and presented space, both a signifier and a signified, both a frame and what the frame contains, both a real place and its simulacrum, both a package and the commodity inside the package." This duality and a series of especially flexible and sometimes contradictory frames have created what Mitchell argues is a compelling "instrument of cultural power"—the *American landscape*.¹⁷

Nash's study of wilderness unearths some of the specific myths and realities of the American landscape. In the popular imagination wilderness is the *absence* of civilization, but repeated encounters with (and projections of) seemingly unsettled lands fostered the rugged individuality and self-reliance that came to define American identity and culture. To retain its wilderness quality, humans cannot stay, but when they leave, they carry qualities of "wildness," or "wilderness," away.¹⁸ A similar influence can be

seen in the values attached to, and drawn from, agrarian and pastoral landscapes. According to Leo Marx, Thomas Jefferson believed that the “physical attributes of the land” were less important than its “metaphoric powers” and that “what finally matters most is its function as a landscape—an image in the mind that represents aesthetic, moral, political, and even religious values.”¹⁹ Since the early nineteenth century detailing and revising images of American wilderness, frontier, and family farm have been paramount to American conservation and environmentalism. Forester and philosopher Aldo Leopold observed that developing recreational spaces “is not a job of building roads into lovely country, but of building receptivity into the still unlovely human mind.”²⁰ For Leopold building receptivity begins with patience and respect for landscapes and the diffuse and delicate ecosystems they contain. Each era develops new means of understanding and appreciating the American landscape’s particular power. Of course, the process of exploring, defining, and revising the meanings and values of a landscape brings with it all kinds of hopes, prejudices, and errors.

However flawed or biased, framings of the American landscape, like our electric technologies, position collective perceptions of space and place. John Conron maintains that the United States has repeatedly renewed this exceptional relationship with landscape. “In no culture has the spatial construct of landscape been more indispensable,” Conron argues, “for we seem to see ourselves as a people living in space more than in time, in an environment more than in history.”²¹ Our history and our worldviews are embedded with spatial reckonings of the immense and unsurpassable, the endless and tame, the awe-inspiring and the mundane. Charles Olson opens *Call Me Ishmael*, another monumental work of American studies, with the statement: “I take SPACE to be the central fact to man born in America, from Folsom cave to now. I spell it large because it comes large here. Large, and without mercy.”²² This large, open, jubilant space, in Olson and elsewhere, is transformed into place by the physical, psychological, and aesthetic process that *creates* land, that is, via landscape.

The overhead electric wires and cables that have ranged, as Morse predicted, “the whole surface of this country” represent a powerful, albeit troubling synthesis of electricity and landscape. The lines that carry electricity

through American landscapes seem restrictive, redundant, and prosaic. Nevertheless, these lines represent points where electricity is made *visible*. Closer readings of the American landscapes through which electric lines pass can help to clarify the meanings sent by lines and wires. Conversely, the siting and reception of electric lines reflects how particular groups and communities use and value landscapes.

The challenge of balancing the forces and frames wrought by overhead electric lines may be best exemplified by the opening sentences of Thomas Hughes's groundbreaking history of technology, *Networks of Power* (1983). "Of the great construction projects of the last century," Hughes begins, "none has been more impressive in its technical, economic, and scientific aspects, none has been more influential in its social effects, and none has engaged more thoroughly our constructive instincts and capabilities than the electric power system."²³ The superlatives of the first sentence—"none has been more" and "none has engaged more"—seem appropriate. Electrification was selected as the "greatest engineering project" of the twentieth century.²⁴ The true scale of the cooperation, ingenuity, and insight required to conceive, construct, and revise the massive electrical infrastructure spanning the earth's surface and pulsing with the lifeblood of modern commerce seems to rival even the wonders of the internet and our explorations of the solar system.

Hughes's summary of electrification's effects is certainly optimistic. One could counter his superlatives by arguing that of all the human-made systems built in the last century, none has had such damaging environmental impacts (e.g., air pollution, light pollution, and sprawl), and none made us so hopelessly dependent on infrastructure about which most of us know so little. Electrification's equivocal powers are made clearer by the second sentence of Hughes's tome, as he moves from a series of superlatives to a totalizing claim: "A great network of power lines which will *forever* order the way in which we live is now superimposed on the industrial world."²⁵ *Forever* is a curious word choice here, particularly for Hughes, a scholar who helped establish the social construction of technology (SCOT) theory and the idea of "technological momentum."

The SCOT approach to technological systems, introduced by Wiebe Bijker

and Trevor Pinch in the 1980s, explains the emergence of technological artifacts in terms of social processes such as “variation and selection,” rather than the sheer genius of an inventor or an inherent usefulness of a technology. SCOT works to understand the alternative models and failures that belie successful technologies and surrounding systems. It calls attention to social groups that engaged with the technology and the “interpretative flexibility” that arises from contemporaneous debates and framings of artifacts such as bicycles or light bulbs. Hughes applied SCOT theory to the development of large electrical systems to show how the success of individual artifacts, such as the alternating current motor or electrical outlet, was dependent upon and connected with broader organizational, economic, and political circumstances. Hughes explains, “Persons who build electric light and power systems invent and develop not only generators and transmission lines but also organizational forms as electric manufacturing and utility holding companies.”²⁶ Heterogeneous teams of engineers, electricians, financiers, advertisers, and managers invented and developed pieces of power grids with the intention of imposing a particular kind of order on the world and stabilizing their own lucrative business practices. Of course, the social (and environmental) effects of such systems are not permanently closed, and the interpretative flexibility encouraged by SCOT theories suggests that even seemingly antiquated technologies, such as power lines, can adopt new functions and be laced with new meanings.

The adaptability of power networks also explains Hughes’s idea of technological momentum. Hedged between fixed determinism and social constructivism, technological momentum suggests that technologies and their systems are open to change. A prosperous technology begins with a series of technical, scientific, and social interventions and adjustments. Successful decisions help the technological artifact and the system surrounding it to proliferate. As telegraph networks or power grids spread, it becomes more difficult, but not impossible, for subsequent generations to change or replace the system or for the system to perform new functions. Early in the twentieth century electric power shaped society, and in turn, society shaped electric power. However, the construction materials, engineering practices, codes, laws, regulations, corporate structures, and cultural con-

ventions that helped electric power systems expand and multiply increased the technological momentum of a specific kind of grid. In North America, for example, the fact that our grid operates at 60 hertz is one aspect of strong momentum. It would be difficult, but not impossible, to create a different kind of grid that transmitted electric currents at a different frequency just as it would be difficult, but not impossible, to remove all overhead wires and bury them underground. Therefore, the more rigid grid we have inherited is, as Hughes explains, “less shaped by and more a shaper of its environment.”²⁷

Overhead power lines may order the way humans live “forever.” Overhead electric lines (some of which still look like they did in Morse’s day) could be more permanent than our homes, railroads, highways, and internet protocols. What does seem clear is that the power systems our lives require will not be easily rewired. In 1934 theorist Lewis Mumford noted, “Wires carrying high tension alternating currents can cut across mountains which no road or vehicle can pass over.”²⁸ These mountain-leaping lines helped to establish the “utility,” an entity that Mumford warned would, once established, be entrenched with political and sociotechnical power. Almost ninety years later, the utility, and the grid it owns and controls, has been reluctant to change. As Bakke suggests, our grid today is “a technological monument to recalcitrance.”²⁹

Power-lined landscapes will not vanish. Electric infrastructure will not readily disappear. Instead, like decrepit buildings, unexploded bombs, or abandoned mines and quarries, wires and poles will likely occupy large swaths of the earth’s surface for decades and possible centuries after they become obsolete. The potential success of wireless transmission of power could make the word *wireless* seem superfluous (just as the notion of a wireless telephone or landline has nearly lost all currency). Such a technological revolution could turn power lines into historic artifacts. Certain models may be considered as culturally significant as the wagon ruts across Nebraska or the Roman aqueduct in Segovia, Spain. The obsolete power line will provide a visible example of the pathways, grooves, and channels built by our ancestors. It will remind future generations about the ways a former people lived and worked and viewed the landscape.

How strong is the momentum of our overhead lines? Has our society been permanently power-lined? If our metallic lines and the steel poles and towers do survive thousands of years longer than our civilization, how might they be interpreted by historians or archaeologists thousands of years in the future? Those investigators, who might represent a distinct species, would likely discover more advanced machines and systems, but how might they account for the fact that metallic threads touched billions of inhabited spaces and extended across deserts, oceans, mountains? What might they imagine was our relationship with the wires with which we webbed our planet?

To better understand the order that power lines impose on the present and how new lines may determine our energy future, it is necessary to track them into the past. The next two chapters of *Power-Lined* follow electricity, landscape, and the wires uniting them as they converge and diverge from the period just before the spread of telegraph networks to the rise of telephone and power networks that eventually made the telegraph lines obsolete. Chapter 1 focuses on the electric aesthetic cultivated by Morse and the other artists and writers of the American Renaissance. Chapter 2 examines “frontier” lines developed in historiography by Frederick Jackson Turner and at Niagara Falls by Nikola Tesla. The state of New York provides two competing visions of nature harnessed by power lines and inundated by a wire forest. Chapter 3 shifts to California to examine telegraph lines in two of the first westerns made in Hollywood, the public reactions to long-distance transmission of power from the Sierra Nevada, and the pressures that led to the first, and last, attempt to design and build aesthetically pleasing power lines. Chapter 4 recounts the history of rural and suburban perceptions as told in Rural Electric Administration materials, popular films, and book-length exposés. It concludes with an analysis of the recent struggle between Southern California Edison and Chino Hills. Finally, the conclusion reviews the current state of the power-lined landscape and calls for a power lines poetics to help balance grid literacy with the other interpretations of lines in the visible environment.

Throughout, my narrative recounts a range of reactions to and representations of overhead lines as they appeared in the American history, prose,

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poetry, fiction, film, paintings, industrial design, and various elements of popular culture (e.g., editorials, advertisements for electric power, and made-for-television movies). I have only scratched the surface of the scientific and technological developments of telegraph, telephone, or power lines. This narrative is not geared specifically towards line workers, engineers, or utility managers, though of course I welcome them as readers and potential advisors who might help me learn more about their fascinating fields. Instead, my focus rises and falls toward the cultural, rhetorical, aesthetic powers of overhead lines. I believe that by tuning our minds to the physical and conceptual threads that have occupied and defined our landscapes, we might calibrate the seemingly disparate frequencies of large-scale energy systems and environmentalism.

