
American Technological Sublime

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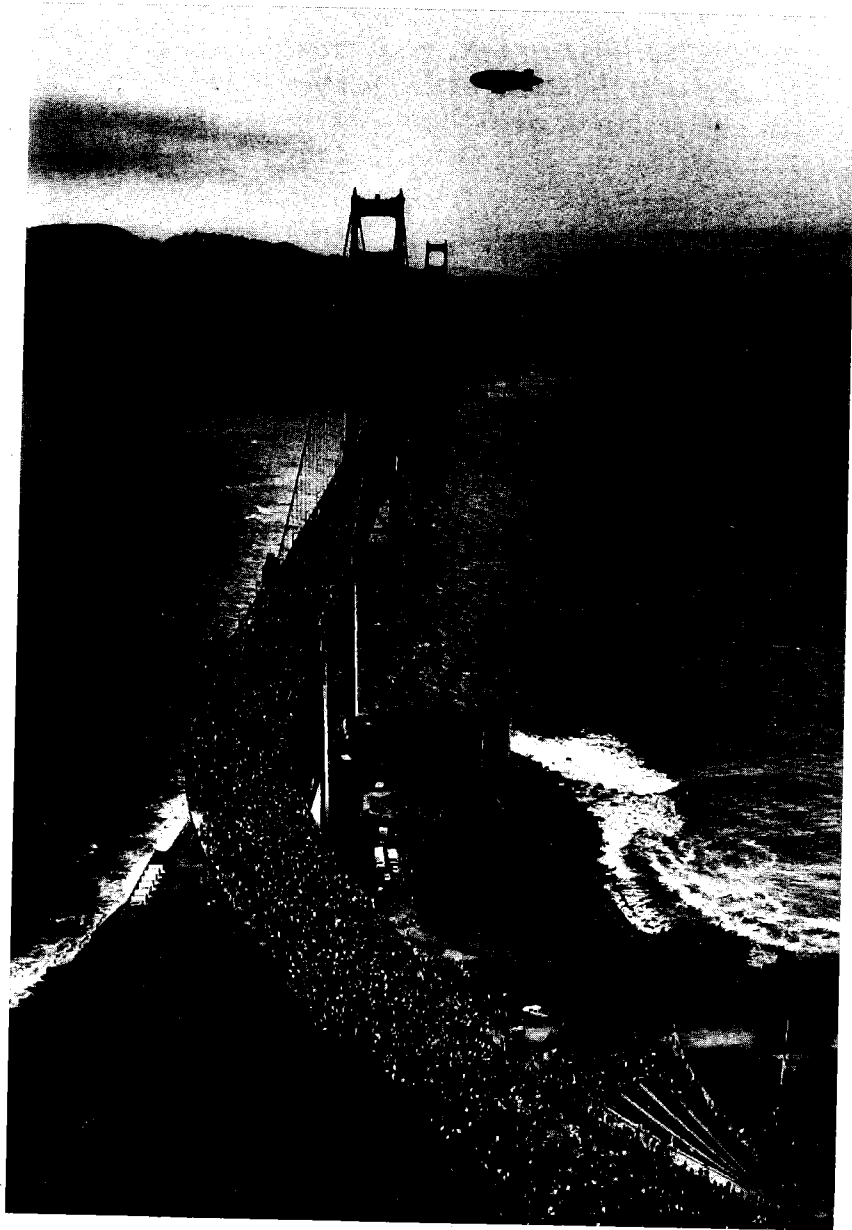
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Introduction

If any man-made object can be called sublime, surely the Golden Gate Bridge can. More than a mile long, it crosses the turbulent waters of San Francisco Bay between rocky headlands. Three times the height of the Brooklyn Bridge, it arches through crosswinds, clouds, and fog, slim and elegant, a triumph of engineering skill.¹ Icon of San Francisco and constantly featured on travel posters, postcards, and brochures, it has become an instantly recognizable landmark. Yet, like every sublime object, this magnificent piece of civil engineering cannot be comprehended through words and images alone. When visited, it outstrips expectations.

On May 24, 1987, the bridge was 50 years old, and to celebrate the occasion officials closed it to traffic for one day and allowed the public to walk across from both sides. On the day it was inaugurated,² 200,000 pedestrians paid a nickel each for a first look; in 1987 it seemed appropriate to ban cars once again for a day, abandoning the bridge's transportation function to emphasize its symbolic role. Since the novelty of the bridge had worn off, officials expected a smaller crowd than in 1937, and they were amazed to see an immense multitude gathering before dawn. The impatient crowd was as heterogeneous as the Bay Area's population and included every race, religion, and age group. A surprising number had been there 50 years earlier for the opening. Already at 5:30 A.M. some people flocked onto the bridge when a chain was dropped to let a truck drive across. By sunrise the deck was jammed, and the arched span flattened out under the weight of 250,000 people, with more than half a million more moving forward along the approach roads. Those trapped on the center of the bridge were pressed tightly together and could not move for hours. Police tried to get the crowd to back up, while engineers calculated whether the structure would buckle or collapse. The bridge began to sway in the wind, adding to



The fiftieth-anniversary celebration of the Golden Gate Bridge, May 24, 1987.
Photo by Paul Kitagaki; courtesy of *San Francisco Examiner* and SABA Press
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the tension. By late morning "footlock" had been overcome, but the majority never got to walk across. Yet most stayed through the day and into the evening for a massive fireworks display, a concert, and the spectacular lighting of the bridge's towers.³ Despite the crush, the mood was surprisingly good. The people clearly loved their bridge.

San Francisco officials were unprepared for the massive turnout because they did not understand the American public's affection for spectacular technologies. Each day crowds visit the Kennedy Space Center, ascend St. Louis's Gateway Arch, and visit the observation decks of prominent skyscrapers in New York, Chicago, Boston, Minneapolis, and other major cities. The public response to the birthday of the Golden Gate Bridge was matched by the excitement at the centenary of the Brooklyn Bridge or the Statue of Liberty. For almost two centuries the American public has repeatedly paid homage to railways, bridges, skyscrapers, factories, dams, airplanes, and space vehicles.

The sublime underlies this enthusiasm for technology. One of the most powerful human emotions, when experienced by large groups the sublime can weld society together. In moments of sublimity human beings temporarily disregard divisions among elements of the community. The sublime taps into fundamental hopes and fears. It is not a social residue, created by economic and political forces, though both can inflect its meaning. Rather, it is an essentially religious feeling, aroused by the confrontation with impressive objects, such as Niagara Falls, the Grand Canyon, the New York skyline, the Golden Gate Bridge, or the earth-shaking launch of a space shuttle. The technological sublime is an integral part of contemporary consciousness, and its emergence and exfoliation into several distinct forms during the past two centuries is inscribed within public life. In a physical world that is increasingly desacralized, the sublime represents a way to reinvest the landscape and the works of men with transcendent significance. As Émile Durkheim concluded: "The ideal society does not stand outside the real society: it is part of it. Far from being torn between two opposite poles, we cannot be part of the one without being part of the other. A society is not simply constituted by a mass of individuals who compose it, by the territory they occupy, by the things they use and the actions they perform, but above all by the idea it has about itself." Since the early nineteenth century the technological sublime has been one of America's

central "ideas about itself"—a defining ideal, helping to bind together a multicultural society. Americans have long found the sublime more necessary than Europeans, so much so that they have devised formations of the sublime appropriate to their pluralistic, technological society. Precisely because American society is so pluralistic, no single religion could perform that function. Instead, ever since the early national period the sublime has served as an element of social cohesion, an element that was already quite evident when the first canals were dug and steam engines were first harnessed to trains.

The members of a multicultural society need not agree on the precise meaning of a rite; it can create solidarity through participation. In David Kertzer's neo-Durkheimian view, "ritual can produce bonds of solidarity without requiring uniformity of belief."⁵ The millions who travel to the Grand Canyon or Cape Canaveral can share an awed response to what they see without discussing or even articulating what their sublime encounter means. The crowd's infectious enthusiasm is an essential part of the atmosphere surrounding a world's fair, the celebration of a new technology, or an Independence Day celebration.⁶ At such events organizers mediate the crowd's response through speeches, music, fireworks, and spectacular demonstrations, but unanimity is not necessary. The specific advantage of the sublime as a shared emotion is that it is beyond words.⁷

Yet the emotion, although ineffable, is not inevitable. Over time, the same objects cannot always be counted upon to evoke the sublime response. Their power often decays, and other alternatives are sought. Ultimately, the constant is not the technological object *per se*; it is the continual redeployment of the sublime itself, as a preferred American trope. Since the 1820s a number of interrelated American sublimines have emerged. Each of these articulates a distinct political and social relation to technology, and to some extent these coexist uneasily as alternative social constructions. Yet these contradictions are more latent than expressed, because the sublime encounter leaves observers too deeply moved to reflect on the historicity of their experience. Sublimity seems not a social construction but a unique and precious encounter with reality.

This book is organized historically, exploring forms of the sublime as they have emerged between 1820 and the present. Chapter 1 briefly examines the sublime as described by Edmund Burke and then sketches Immanuel Kant's synthesis and extension of previous

sublimines
as real

why 1820

theory. The purpose here is to provide background to readers unfamiliar with the sublime and to demonstrate the continuing relevance of the term in understanding present-day responses to natural objects. Chapter 2 examines the early-nineteenth-century emergence of the sublime in the United States as a distinctive form related to religion, gender differences, and politics. Chapters 3-5 describe the emergence of the technological, geometrical, and industrial sublimes in relation to railroads, bridges, skyscrapers, and factories. Chapters 6-8 turn to the electrical sublime, which emerged in the last decades of the nineteenth century in spectacular displays at world's fairs and pageants and soon became the basis for permanent night illuminations and the phantasmagoria of the Great White Way. These developments culminated in the integration of the technological, geometrical, and electrical sublimes in the stagecraft of the New York World's Fair of 1939. The final chapters examine three subsequent examples of the technological sublime: ¹ the atomic bomb, ² the first manned flight to the moon, and ³ the rededication of the Statue of Liberty on July 4, 1986. Manifestations of the sublime on Independence Day will be a recurrent theme in each of the periods examined, marking the changing relations between technology and politics.

In view of these subjects it should be clear that, although this book deals with the history of technology, it is not a history of machines and structures from an engineering point of view. Rather, it is concerned with the social context of technology, with how new objects are interpreted and integrated into the fabric of social life.

The technological sublime was first discussed in Perry Miller's book *The Life of the Mind in America*. Miller appears to have coined the term, which was taken up and elaborated by Leo Marx in *The Machine in the Garden*. The most fully developed application of the term until now is to be found in John Kasson's *Civilizing the Machine*, an analysis of political, aesthetic, and utopian responses to mechanization in nineteenth-century America. Barbara Novak has also employed the term to discuss American painting. More recently, Roland Marchand, in his study of American advertising, wrote of the "power of man to manufacture the sublime," and John Sears devoted several pages to the technological sublime in his analysis of nineteenth-century tourism.⁸ These authors have used the concept of the technological sublime in roughly comparable ways, and since they often have cited one another it is fair to say that the term has become common. Each has helped to define the concept, chiefly by

example, yet to date it remains largely unexplored as a full-scale subject. Other research on the sublime in America has focused primarily on poetry and on nineteenth-century landscape painting, with little work on the years after 1890. The present volume systematizes and extends previous work to include both a wider range of phenomena and a longer time span.⁹

To trace such a broad topic through 200 years in one volume requires considerable selection. Expressions of the technological sublime are abundant, and I have adopted the strategy of examining a smaller number of examples in some depth rather than trying to survey the widest possible field. The Grand Canyon, Niagara Falls, and Virginia's Natural Bridge appear repeatedly in discussions of the natural sublime, for example, while most of the national parks are left out in the belief that their inclusion would lengthen the argument without changing it very much. One major area has been omitted: the experience of battle. The national anthem evokes "the rockets' red glare and bombs bursting in air," a reminder that the most powerful experiences of technology for many have long been encountered in warfare. This subject merits a study of its own.¹⁰

What are my criteria of selection? First, I have searched for the things that awed the public. Second, I have focused on phenomena that attracted maximum national attention: the Grand Canyon, Niagara Falls, the explosion of Mount St. Helens, the Erie Canal, the first transcontinental railroad, the Eads Bridge, the Brooklyn Bridge, the major international expositions, the Hudson-Fulton Celebration of 1909, the Empire State Building, Boulder (Hoover) Dam, the first atomic bomb, Apollo XI, and the rededication of the Statue of Liberty. Each of these was a national event that awed the multitude. In analyzing them I have not presupposed a trickling down of aesthetic theory to the masses; rather I have examined experiences which ordinary people have intensely valued. They have often, but not always, used the term 'sublime' to describe their experience. I want to emphasize that this study is not about the aesthetic education of the public and does not seek to trace the shifting definitions of 'sublime'. Rather, it is about repeated experiences of awe and wonder, often tinged with an element of terror which people have had when confronted with particular natural sites, architectural forms, and technological achievements. This book is about the social construction of certain powerful experiences in industrial society, which is to say it is about the politics of perception. It does not primarily concern literature or the arts, but rather the public's experience of particular technologies.

Edmund Burke declared at the end of his *Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*: "It was not my design to enter into the criticism of the sublime and beautiful in any art, but to attempt to lay down such principles as may tend to ascertain, to distinguish, and to form a sort of standard for them; which purposes I thought might be best effected by an enquiry into the properties of such things in nature as raise love and astonishment in us. . . ."¹¹ Where Burke hoped to lay down immutable principles concerning both the sublime and the beautiful, I have a more modest goal: to sketch the emergence of new sublime objects that have "raised astonishment." I do not take the sublime to be immutable, and therefore its changing cultural and political meaning must form part of the subject. My first working title, *Varieties of Sublime Experience*, echoed William James's title *The Varieties of Religious Experience*. It suggested no historical development, but rather a range of possible experiences that coexist in time. However, I want to stress the historicity and the politics of sublime experiences, presenting them as emotional configurations that both emerge from and help to validate new social and technological conditions. This volume traces the emergence of new forms of the sublime, considering them not as absolute categories of aesthetic experience but as contingent categories within social and political systems.

Each new form of the sublime may undermine and partially displace older versions. Durkheim understood that "when . . . conflicts break out . . . they do not take place between the ideal and the real but between different ideals, between the ideal of yesterday and the ideal of today."¹² One person's sublime may be another's abomination. An environmentalist finds the Grand Canyon or Niagara Falls sublime and dislikes technological "improvements" such as bridges, canals, and dams. To an engineer, a bridge may simultaneously be both a work of art that is sublime in its scale and power and a technical feat that is legible to the trained eye; the same engineer may balk at the idea of trimming a bridge in ornamental lights, preferring the unadorned technological sublime to the electrical sublime. What seems sublime can vary from one individual to another. Longinus argued that sublimity was established by the consensus of people from different backgrounds; only a work that could arouse universal admiration qualified. But we live in a world splintered into interpretive communities, each claiming the right to establish its own aesthetic standards. Conservationists and ecologists disagree with civil engineers on the sublimity of dams; this results in conflicts such as the one over the Storm King Dam proposed by New York's

the "new" not all persons perceive such

Consolidated Edison Company in the 1960s.¹³ Were these differences merely private opinions without public consequences, the variable social construction of the sublime would be only a curiosity. But in the United States, where the sublime has increasingly become a group experience rather than a moment of private contemplation, these experiences often have overt political consequences, both as matters of public display and as issues of social policy. The questions of central concern in this study are these: What objects have Americans invested with sublimity? What responses have there been to these different objects? What is the larger ritual or political framework within which the sublime appears? What patterns emerge when the sublime is studied over time?

Americans were not the first to admire feats of engineering and architecture. Though the term 'technology' did not exist in antiquity, some classical authors did adapt the sublime to describe both man-made and natural landscapes. Statius was perhaps the first author "to devote whole poems to the praise of technological progress," and Pliny "successfully introduced this poetic topic to prose."¹⁴ While earlier poets such as Horace and Lucretius extolled simplicity and a primitive life without luxury, the poets of the Roman empire regularly praised villas, baths, and aqueducts and the blending of nature with art. Statius even devoted an entire poem to "the praises of a good modern road . . . expressing joy at man's successful effort at levelling mountains, cutting down forests, building a firm surface across soft and shifting sands. . . ."¹⁵ The ancient world likewise had established the notion of the "seven wonders of the world," all of which were man-made.

In eighteenth-century England the sublime also included architecture. Just as Roman literature adapted the sublime to its roads and other monumental public works, Burke took it for granted that two basic categories of the sublime, namely difficulty and magnificence, particularly applied to architecture, Nicholas Taylor points out that Burke's writing on this point was often less a theory than a codification of already-existing architectural achievements—"fling into appropriate categories for criticism the raw materials of a new sensibility which had already appeared among artists." In the following century Victorian cities were filled with structures that were not meant to be beautiful or picturesque, but rather awesome, astonishing, vast, powerful, and obscure, striking terror into the observer. The new railway stations, aqueducts, factories, and warehouses were rhetorical structures, demonstrating the power of the builders in

what Taylor calls "a permanent harangue to the public." What later generations often came to perceive as Victorian ugliness had, Taylor writes, "a direct relationship to the permanence of the social hierarchy. It is, I believe, central to Sublimity, with its hugeness and massiveness and unashamed arrogance, that it was the aristocratic taste of the time."¹⁶

In the United States the sublime took a different turn, for a variety of political and economic reasons. Democratic principles were translated into a strong preference for Greek Revival architecture in public buildings. Furthermore, because the United States urbanized and industrialized considerably later than England, there were fewer impressive buildings in the private sector. With no royalty or aristocracy, architects had little opportunity to design massive, sublime structures for private use. Engineers, rather than architects, built the first man-made objects that Americans regarded as sublime, and what particularly distinguished their response from that of the classical age or the English Enlightenment was the focus on moving machines. Americans often favorably compared their technological achievements to those of the ancient world. Daniel Webster emphatically declared that "the hydraulic works of New York, Philadelphia, and Boston surpass in extent and importance those of ancient Rome."¹⁷ Writing of the Philadelphia Exposition of 1876, Walt Whitman proclaimed:

Mightier than Egypt's tombs,
Fairer than Grecia's, Roma's temples.
Prouder than Milan's statued, spired cathedral,
More picturesque than Rhenish castle-keeps,
We plan even now to raise, beyond them all,
The great cathedral sacred industry, no tomb,
A keep for life of practical invention.¹⁸

Song of the Exposition

"Sacred industry" rivaled the religious architecture of antiquity; in America technological achievements became measures of cultural value.

The two-century-long American project of the technological sublime is not identical to the currently fashionable postmodern "sublime." Jean-François Lyotard, who adapted Kant's theory of the sublime to his analysis of the postmodern condition, gave increasing emphasis to the sublime in his later work. He attacked the project of modernism, making little distinction between the sublime in the arts and

the direct experience of the sublime. But the Grand Canyon or a rocket launch, unlike a book or a painting, is apprehended with all five senses. There is a very real difference between observing a volcanic eruption and, to use Lyotard's examples, looking at a Picasso or reading James Joyce. A volcano, unlike a painting, can kill the observer. An eruption can cause the terror that lies at the core of Burke's philosophy of the sublime and which later was an essential part of Kant's theory of the dynamic sublime. Take out terror and the mind is not transfixed; rather, it is free to engage in games of reference and to lose itself in an interior hall of mirrors.¹⁹ Lyotard's early writing on the sublime celebrates avant-garde art and its continuous rule-breaking, which pushes the viewer toward the limits of perception and the intuition of the unrepresentable, producing an emotion that he calls "the sublime." Yet this emotion has nothing to do with fear. When Lyotard speaks of postmodern art, he is writing not about the sublime but about another form of the unspeakable, which might better be called the aesthetic of the strange.²⁰ Apparently unaware of the long tradition of the technological sublime, he sets his form of the sublime in opposition to what he (mis)conceives to be the rationality of the technicians.

In fact, the reemergence of the natural sublime in the eighteenth century soon led to technological versions of the sublime that have persisted down to the present.²¹ Nineteenth-century engineers, architects, and inventors were hardly rational technicians, and they often embraced transcendental ideas. Along with clergymen, writers, and artists, they imbued technology with moral values. Likewise, ordinary Americans repeatedly demonstrated en masse their love of technological objects, from the Erie Canal and the first railroads to the space program of the 1960s and the 1987 celebration of the Golden Gate Bridge. The *San Francisco Examiner* editorialized that the bridge is "a gateway to the imagination," noting that "in its artful poise, slender there above the shimmering channel, it is more a state of the spirit than a fabricated road connection. It beckons us to dream and dare. First seen as an impossible dream, it became a moral regenerator in the 1930s for a nation devastated by depression." Like other forms of the technological sublime, the bridge seemed to confer not only economic benefits but "can do proof" that the nation's "inventive and productive genius" would prevail.²² It was, and is, an outward and visible sign of an ideal America. This book will examine how such objects fuse practical goals with political and spiritual regeneration.