**American Icon: Incorporating Tensions in the Brooklyn Bridge**

**Introduction**

On a wintry 1853 day, John Roebling found himself stranded on the East River between New York and Brooklyn when ice chunks in the East River prevented the ferry from moving. According to his son Washington, the incident inspired the progressive engineer and nascent philosopher to build a bridge that would tame the tumultuous CHANNEL and connect the two cities. Tales like this regarding the Brooklyn Bridge abound even at the turn of the twenty-first century. In fact, legends may outweigh facts for, since its opening, the roadway has enjoyed monumental status. On May 26, 1883, two days after the bridge inauguration, Harper's Weekly announced, "The work which is most likely to become our most durable monument, and to convey some knowledge of us to the most remote posterity, is a work of bare utility; not a shrine, not a fortress, not a palace, but a bridge." The symbolic—if "bare"—function and form of the bridge, however, explain its success and phenomenal staying power. Above all, they integrate the contradictory values of a rapidly changing America.

In The Incorporation of America, Alan Trachtenberg describes the evolution of the corporation in the late-nineteenth century and uses the business model to explain the "emergence of a changed, more tightly structured society" (3-4). Trachtenberg's trope, however, overlooks an increasingly divisive culture. At the same time that modernism IMPROVED communication and transportation—via the railroad, for example—it widened the gap between the working and middle classes, simultaneously unifying and stratifying. The Brooklyn Bridge lies at the point where these processes intersect. Significantly, the success of a suspension bridge relies on the inherent tension of its structure, and in the case of the "Great Bridge," everyday conflict and myriad obstacles prolonged and burdened the work, adding to its emblematic power. Just as with the physics of a suspension bridge, tensions bind America; its society stands on—and gains strength from— the incorporation of conflicting interests and ideologies.

**Revolutionary Lifestyles**

In an 1893 address to the American Historical Association, Frederick Jackson Turner presented his frontier thesis, which asserted that the rugged individualism, restlessness, and strength of character vital for survival on the frontier CONTINUED to influence the national spirit even after the West had been conquered. Turner's myth offered a rational connection between America's agrarian past and its progressive future. It remains a cornerstone of American intellectual and, as figures such as Buffalo Bill attest, public history (Incorporation, 17). The Brooklyn bridge, a physical link between Brooklyn and New York, is a tangible symbol of the shift from agriculture to industry in the late nineteenth century.

Even before William Bradford arrived on its Eastern shores, America promised unrestrained opportunity for "otherness," a chance to create a civilization diametrically opposed to that which drove them from Europe. On this "virgin land," colonists established an society unencumbered by the tribulations of crowded urban life that has become nearly synonymous with Thomas Jefferson. However, this promise included a mandate to fulfill the fledgling nation's manifest destiny. "Facing a landscape covered with barriers to its own promise," Trachtenberg notes, "American society had to become TECHNOLOGICAL in order to survive…to exploit the promise of the land" (Bridge10). As farmers pushed west, Americans built roads, waterways, and eventually railroads to maintain communication and facilitate transportation, ironically fostering agrarianism through TECHNOLOGICAL advancements. As early as 1828, the Erie Canal linked West to East, the frontier became more accessible, and "the other was an ancient dream" (Trachtenberg, Bridge20). The very existence of the Jeffersonian ideal slowly disintegrated under pressure from the most sincere attempts to further it.

Although John Augustus Roebling began his American journey two hundred years after Bradford, he followed a course remarkably similar to that of the colonists. He was born on June 12, 1806, into a respectable clan of tradesmen in Mühlhausen, Germany, and later attended the Royal Polytechnic Institute of Berlin. While there, John fell under the tutelage of Hegel, who taught that self-realization can be achieved only in a state where Reason prevails, and such a state exits only where "man as such is free—not only one man but all men" (Trachtenberg, Bridge43). After graduation, John accepted a position as an assistant engineer for the Prussian government but quickly perceived that state bureaucracy would severely impede his dream of building suspension bridges (McCullough 41). Thus, in 1831, encouraged by Hegel and looking for that which his home country could not offer, John departed for America. In his personal diary, a few months after his arrival, he wrote:

I have found all that I sought: a free, reasonable, Democratic government and reasonable, natural relationships of the people toward each other; freedom and equality; a peaceful, generous, beautiful country the blessings of which are not forcefully and deceitfully taken away from the land toiler by tyrants (qtd. in Trachtenberg, Bridge49).

Cognizant of America's agrarian foundation, John appropriately founded a farming community in western Pennsylvania. Once Saxonburg had proved itself a self-sufficient town, though, he grew bored and frustrated. He recognized the country's still underdeveloped transportation system and went to work on the Pennsylvania Canal in 1837.

Within two decades, Roebling began laying plans for perhaps the most culturally transformative transportation project yet proposed in America: the Brooklyn Bridge. Mid-eighteenth-century Brooklyn hardly represented the paradigmatic agrarian society, but in a country-versus-city power structure, Brooklyn played second fiddle to New York in terms of economics and social considerations. Thus, Brooklynites sought to reconcile the difference by identifying themselves with the larger city. In fact, as early as 1800, the as yet unchartered city of Brooklyn sought to conquer the East River and link itself with New York. That year Jeremiah Johnson, who would later become mayor of Brooklyn, wrote:

It has been written that a bridge should be constructed from this village cross the East River to New York. This idea has been treated as chimercial [sic], from the magnitude of the design; but whoever takes it into serious consideration, will find more weight in the practicability of the scheme than at first view is imagined (qtd. in Trachtenberg,Bridge23).

In 1834, Brooklyn officially attained the status of "city." By 1880 the flourishing industrial town boasted 5000 factories, ranked among the top five largest cities in America, and possessed a distinct sense of local pride. Still, many Brooklynites hoped to increase property values, as well as trade with New York, via a bridge to that better-known city. Progress was inextricably tied with money from the start.

**Corporate Deals**

Progress meant not just an increased interest in TECHNOLOGY, but also a change in the economics enabling that technology. An examination of the New York Bridge Company (so named, incidentally, by its Brooklyn founders because for them, it was a bridgeto New York) reveals the rise of the corporation and its often-dubious effect on society, and especially politics.

That a public work such as a bridge should be undertaken by a private organization would have struck no one as unusual in an era when men like Andrew Carnegie were crisscrossing the country with train tracks. Therefore in 1867, when Henry Murphy, the lawyer, former politician, and owner of the Brooklyn Eagle, wanted to bridge the East River, he culled thirty-eight men to form a board of directors for the proposed company. They petitioned the state legislature for a charter and, a month later, were invested with broad and ambiguous powers. According to bridge historian David McCullough, the company "was to have the power to purchase any real estate for the bridge and its approaches and to fix tolls." In addition:

The legislation fixed the capital stock at five million dollars, with the power to increase it, and gave the cities of Brooklyn and New York authority to subscribe to as much of the stock as determined by their respective Common Councils. The stock was to be valued at a hundred dollars a share. The company was to be run by a president who would be elected annually (116).

The state expressed no concern about how the bridge would alter urban life, requiring only that company obtain federal approval.

In later years, possibly because the corporation had become more pervasive in daily life, the public grew more knowledgeable about both bridge construction and business. In 1874, the seemingly unlimited power of the New York Bridge Company was challenged, and both Brooklyn and New York won greater representation on the board. A year later, the state legislature dissolved the company. However, demonstrating the power of business over government, the company's membership remained static, changing only their titles, from board members to "trustees."

Still, in 1867, secret meetings and questionable, if not corrupt, politics characterized company proceedings. A month after obtaining the charter, the board elected Murphy its president, and soon after, John Roebling was named chief engineer. William Kingsley, a wealthy Brooklyn contractor with known ties to Brooklyn's Boss Hugh McLaughlin, agreed to bankroll the project, though no such agreement was ever officially recorded. The Brooklyn contingent, however, still needed support from the New York side, and the infamous Boss Tweed happily complied—for a price.

The extent of Tweed's involvement has never been precisely determined. The story extrapolated from later testimony contends that the boss promised to secure the required vote in exchange for $65,000 (some versions claim $55,000), and someone, probably Kingsley, delivered the cash in a carpetbag. In addition, Tweed purchased company shares at an 80 percent discount. Kingsley, too, received a kickback, though the conditions are hazy (McCullough 127-131, 259). A financial investigation of the bridge company later uncovered that a disproportionate amount of money had been paid to Kingsley. He eventually returned the sum, offering only vague explanations about the matter. Equally enigmatic was the process by which the bridge company chose John Roebling. His early association with Murphy and Kingsley remains unclear in historical accounts, though it is known that the company chose the man, not a plan. According to official records:

Confidence on the part of the public and of those whose money was to be invested in the undertaking would best be insured by employing the Engineer who had achieved the most successful results, and who was thus most likely to accomplish this great enterprise (qtd. in McCullough 117).

Roebling submitted a formal bridge proposal to the New York Bridge Company onlyafterhe'd been awarded the title of chief engineer.

This new, politically charged business climate also required a certain flair for personal salesmanship, a skill Roebling acquired early. In 1840, he lost the opportunity to build a suspension bridge over the Schuylkill River in Philadelphia because a lesser engineer, Charles Ellet Jr., had promoted himself better (McCullough 72-75, Trachtenberg, Bridge, 54-56). Five years later, he nearly lost the Niagara River crossing to Ellet, as well. Thus, in New York, Roebling played to the concern of his detractors. The shipping industry, including riverside warehouse owners, claimed that a bridge over the East River would hinder navigation, and some engineers alleged the technical impossibility of such a structure, touting instead the feasibility of a tunnel. In his proposal to the New York Bridge Company, Roebling predicted an increase in commerce between Brooklyn and New York due to the increased ease of and speed of travel afforded by a bridge. Ice jams, for example, would no longer impede travel. In addition, Roebling cleverly quelled safety concerns by securing the approval of a hand-picked collection of superior engineers, including Colonel Julius Adams, a highly respected Brooklynite who had voiced sharp anti-Roebling sentiments (McCullough 22, 35). Finally, to guarantee congressional approval, Roebling organized what came to be known as the "Bridge Party," consisting of three Army engineers on whose assessment Congress would base its decision, these engineers, Brooklyn businessmen and politicians, and Kingsley toured Roebling's previous work in Pittsburgh, Cincinnati, and Niagara. Upon the trip's completion, all emphatically endorsed Roebling. In 1869 Congress voted its approval and established the Bridge as a legal post road.

The rise of corporations such as the New York Bridge Company not only changed the way business was transacted, but also altered the people involved by revolutionizing the jobs available. Incorporated America enabled greater social mobility, offering innumerable white-collar, managerial positions. However, not all segments of society benefited from modern economics.

**Constructing Class**

The latter half of the nineteenth century witnessed the emergence of a burgeoning middle class thanks to the educational and professional opportunities afforded by the Gilded Age. Membership in this stratum, however, was precarious due to economic fluctuations caused by a Wall Street crash in 1873 and labor strikes throughout that decade. The upper and middle classes sought to maintain their status by squelching such uprisings and maintaining poor working conditions, widening the gulf between them and the struggling laboring class.

John Roebling's early efforts to establish himself as an American engineer demonstrated the subordinate and tenuous status of civil engineers fifty years prior to the Gilded Age. During his tenure as an assistant engineer working on the Pennsylvania Canal, for example, he unexpectedly was laid off for a period. He also submitted design improvements for canal locks and railroad switches, but these were ignored because Roebling had neither the clout nor the financial backing for such changes. The construction firm dictated projects, and he was merely in its employ. Within four years, however, Roebling's gamble on an innovative wire rope—one lighter and stronger than the commonly used hemp—paid off. The canal company agreed to test it if he paid to produce it. John soon had a successful manufacturing business and financial freedom that enabled him to submit serious contracts for several open CONSTRUCTION BIDS. By the time he began work on the Niagara bridge in 1851 he had six suspension bridges to his credit, as well as a lucrative wire rope company. Additionally, he now could dictate his own terms as a salaried engineer with total freedom of design (Trachtenberg,Bridge50-55).

Within a generation, however, engineering became a highly regarded field, and the experiences of Washington Roebling greatly differed from that of his father. At 17, Washington enrolled at Rensselaer Polytechnic Institute, in Troy, New York, where he successfully completed a grueling course of study. As Trachtenberg explains, "With their close ties to private industries, their willingness to design their curricula to meet industrial needs, such schools fostered specialization of functions" (Trachtenberg, Incorporation64). In 1857 Washington began working with his father on bridge sites in Pittsburgh and Cincinnati until the Civil War erupted. During this time, he proved himself a valiant union soldier, fighting at Antietam and Gettysburg, among others. However, the bridges Washington built across the Rappahannock and Shenandoah rivers also contributed to his rapid ascent from private to colonel: by mid-century an engineer was worthy of promotion to officer.

Shortly after the war's end, at the request and expense of his father, Washington enjoyed a TOUR OF EUROPE. By this time, the elder Roebling had begun preliminary designs for the East River bridge, and the success of his plans rested on a technique in use across the Atlantic, pneumatic caissons. Thus, he sent Washington to study the process of building and sinking the cavernous structures. Still, the possibility of such a trip, regardless of its purpose, demonstrates the significantly increased respectability of the engineer. The opportunity for transatlantic travel previously had been reserved for the middle and upper classes only.

However, the evolving respect for the engineer did not extend to other construction employees. The relationship between the New York Bridge Company and the laborers it hired reveals worsening, rather than improved, conditions, a situation typical of the time. As Trachtenberg notes, TECHNOLOGY did more than improve daily life. He writes: "[I]t also seems responsible for newly visible poverty, slums, and an unexpected wretchedness of industrial conditions. While it inspired confidence in some quarters, it also provoked dismay, often arousing hope and dismay in the same minds" (Bridge38-39). Trachtenberg refers mainly to factory conditions, but the bridge company wage-earners—mostly Irish, German, and Italian immigrants who completed much of the highly dangerous and grueling work—fit the description, as well. Below the water surface alone, approximately 264 men, worked twenty-four hours a day, in three eight-hour shifts, six days a week. They earned $2 a day until hitting twenty-eight feet, at which point they received a quarter more per hour (McCullough 202-204). Inside the caissons, horrendous conditions caused an average of 100 men a week to quit. Calcium lamps and specially designed candles provided meager light, and temperatures, even in the dead of winter, exceeded eighty degrees, resulting in perpetually muggy conditions (McCullough 192-193). Inside the New York caisson, crews had to dig up sewage, and though compressed air impedes the sense of smell, many men took sick.

In the caissons, however, the most treacherous danger was the dreaded "bends," so named for the contorted form of its victims' bodies. Formally known as caisson's disease, the bends causes muscular paralysis and sometimes death due to nitrogen bubbles caught in the bloodstream when the body is subjected to high pressure. The workers repeatedly entered and emerged from intense pressures—in the New York caisson, the pressure reached more than thirty-five pounds per square inch—but no one knew neither how to prevent nor how to treat the condition. They were urged to consume much red meat and abstain from liquor; many frequently rubbed a mixture of salt and whiskey on their bodies to restore circulation (McCullough 213, 276). Still, nothing helped ease or prevent the pain. (A slower transition time from high to low pressure would have prevented the disease.)

During the sinking of the second caisson, workers, knowing the hazards and undesirability of their work, finally struck, demanding $3 for a four-hour workday. The strike, itself a novelty of the Gilded Age, demonstrated a growing knowledge among workers of how to negotiate with corporate America. Within hours, the Bridge Company offered $2.75, but the workers refused, dragging the negotiations on for three days. When the Company threatened to fire everyone, the workers conceded (McCullough 291-292). The incident, therefore, also demonstrated the widening gulf between the "haves" and the "have-nots," for job security outweighed principles in the end.

Despite the increasing socioeconomic discrepancies between those involved with the Brooklyn Bridge, the conflict, though bitter, proved productive. The workers may have conceded to the corporation, agreeing to wages they deemed unacceptable, but more important, they exercised their right to challenge management—and won. In addition, they CONTINUED to show up, completed the project, and even the lowliest and most briefly employed laborers took pride in what they recognized to be a monument in the making. The situation demonstrates a successful conflict, a paradox mirrored by the contradictory qualities of the chief engineers, themselves.

**Chief Engineers**

The contrasting personalities of the chief engineers—John and then Washington Roebling—epitomize the notion of tensions working in tandem: the idealistic yet stoic father provided the vision, while the pragmatic and amiable son sustained it to fruition.

David McCullough describes John Roebling as "a man of iron" who was "poised," "confident," "yielding," "imperious," "severe," and "proud" (39). Despite his scientific training, John practiced hydropathy, or the "therapeutic use of water," and allegedly emerged unscathed from a cholera epidemic in Niagara by sheer force of will (McCullough 38). According to a witness in Niagara, John simply "determined not to have it" (qtd. in McCullough 295). John's professional resolve eclipsed all other aspects of his life. As David McCullough remarks:

[John] was living in a time characterized by extraordinarily industrious men, when hard work took up most of everyone's life and was regarded, as a matter of course; but even so, his immense reserves of nervous energy, his total devotion to the job at hand, whatever it might be, seemed superhuman to all who came in contact with him (51).

Thus, the engineer's relationship with his first wife and their children was often strained. In fact, when Washington, the oldest Roebling child, was born on May 26, 1837, his father was working on the Allegheny Mountain.

Washington, however, somehow related to his exceedingly driven and intellectual father. From a young age Washington, demonstrated the same studiousness, if not innate genius and vision, as his father; he also demonstrated the elder's calm composure, though Washington was generally regarded as more personable. According to McCullough, Washington "was consistently more interested in his fellow man, in the flesh rather than the abstract, and though he never managed his father's commanding presence, he was really far better at working with people" (145). John sold the bridge project to New York in a manner Washington probably could not have mustered, and credit for the extraordinary design of the arched towers must be given to the elder Roebling, as well. In the end, however, Washington's technical knowledge surpassed that of his father, and he, not John, actually erected the tremendous structure over the East River.

John Roebling did not live to see his dream a reality. He died, in fact, before construction even began. On June 28, 1869, he stood surveying the site of the Brooklyn tower from the vantage point of the Fulton Ferry slip. As a boat approached, he tied to step out of the way, but his foot was crushed. Tetanus quickly set in. After weeks of physical and mental agony, John died on July 22 (McCullough 88). Thus the structural details of the bridge, which the elder Roebling had not yet worked out, the plethora of daily decisions that accompany a BUILDING PROJECT, and the title of chief engineer fell to Washington. As the son later explained: "I had assisted my father in the preparation of the first designs—he of course being the mastermind. I was therefore familiar with his ideas and with the whole project—and no one else was" (qtd. in McCullough 98).

Washington, however, also endured physical suffering and mental frustration for his sense of duty to the bridge project. On December 1, 1870, while fighting a fire that broke out within the roof of the Brooklyn caisson, Washington suffered a minor attack of the bends. During the final days of work on the New York caisson, however, in 1872, Washington suffered a more acute attack from which he never recovered. He retained his post as chief engineer but directed the work from his bedroom WINDOW in Brooklyn Heights. He remained in constant contact with his engineers thanks to his wife's role as liaison (McCullough 213-214, 295-296).

The respective choices in wives of John and Washington, in fact, well reflected the nuances in their personalities; John's unrelenting tenacity prevented him from enjoying family life while Washington not only accepted but sought his wife's assistance with the greatest work of his life. Johanna Herting, while loving, could not match John's quick intellect, though the opportunity never seems to have been offered her. He spent the greater part of their marriage away on BUILDING PROJECTS and missed not only a number of his children's births, but also Johanna's death. Washington, on the other hand, incorporated his wife into his professional life. She accompanied him to Europe after their wedding while he studied caissons and then joined him in Brooklyn during the work on the "Great Bridge." After her husband fell ill, Emily, though not as well schooled as Washington, gleaned a good deal of technical knowledge from the letters he dictated to her. She soon could speak nearly as intelligently as he on all matters concerning the bridge, and the entire engineering staff accepted her word without hesitation. Moreover, some of the younger engineers, who had never met Washington in person, believed him to be mentally incapacitated and Emily—a woman—to be running the show (McCullough 421-423). Emily's name even adorns the bridge today, a plaque in her honor having been placed on each of the two towers.

The plight of the Roebling wives adds women's issues to the list of social phenomena represented by the Brooklyn Bridge. According to social historian Anne Rose, "Emily Roebling battled critics to retain her effective role as chief engineer of the Brooklyn Bridge, a post inherited from her husband." She offers Emily as an example of "growing numbers of Victorian wives [who] assumed that their work could be tailored to satisfy their inclinations" (Rose, 180). Whether Emily consciously sought personal achievement through her husband's work remains debatable, but the degree of influence that the two Roebling men allowed their wives to exert in professional matters still demonstrates the changing roles of women within the scope of a generation. The world will never know, for example, whether Emily possessed a greater capacity to learn or desire for professional participation than did Johanna. Only one was offered only one the opportunity to be tested.

**An Icon is Born**

The mechanics of conquering a river of such power and width proved challenging, but in an age when man lauded his ability to conquer nature, to move from agrarian sensibilities to industrial prowess, John Roebling ultimately tamed nature with nature. As David Nye asserts, "nineteenth-century Americans saw no irreconcilable contradiction between nature and industry; rather, they enjoyed contemplating the dramatic contrasts created by rapid progress" (39).

The first proposed scheme for a Brooklyn bridge lacked structural soundness. In 1811, Thomas Pope proposed a wooden, 1800-foot-long, 200-foot-high "Rainbow Bridge." These dimensions actually exceed the size of the Roebling bridge, and a material as light as wood never could have supported a span of such proportions—especially over what is actually a turbulent tidal strait. Nevertheless, Pope plan's offered vision, a precursor to John's innovation (Trachtenberg,Bridge27).

John incorporated awe-inspiring artistry and sublime eloquence with forward-looking TECHNOLOGY. As Trachtenberg observes, he envisioned a Hegelian whole, where the engineering and architecture "intersected theoretical, physical, economic, and historical considerations" (Bridge67-68). The primary technical benefit of a suspension bridge was the employment of a single span, unencumbered by supporting columns and, therefore, more open to navigation. More significant, given the formerly agrarian American setting, the suspension bridge operates on a basic principle of nature: the catenary curve. It forms when CABLES are draped, from anchorages on either shore, over two towers positioned in the river. Trachtenberg summarizes the efficacy of the structure: "Because they are extended, the CABLES are in tension, while the towers, resting upon foundations on the river bed, are in compression. Viewed theoretically, the structure was a unity of opposite forces, harmonizing tension and compression" (Bridge, 69). Above all, John stressed the importance of weight and stiffness: the longer the span, the greater the weight necessary for a more stable structure. Therefore, he reinforced the cables with a system of diagonal inclined stays, which extend from the top of the towers to sequential points on the roadway, each forming the hypotenuse of a right triangle—another feature gleaned from nature—with the roadway and the towers. This system, known as the trussing, can support the roadway even without the cables (Trachtenberg, Bridge70-71).

The overall design, though Gestalt-like, works largely due to the interaction of individual technical feats mastered by Washington. Pneumatic caissons, for example, though unseen, provide the foundation of the project. Basically, upside-down, hollowed-out boxes made of wood and iron, they are constructed on land then launched into the river. Compressed air fills the inside space, keeping the water out and enabling men to enter, through specially designed air locks, to dig out the riverbed beneath. At the same time, another crew lays bricks on the roof. The combined effort causes the caisson to sink to the bedrock, where it is then filled with concrete, offering greater stability to the bridge than had it been planted at a lower depth. Europeans had employed the technique for years and, in St. Louis, Captain James Eads had begun sinking caissons when John Roebling was still presenting his plans to the New York Bridge Company. Washington, however, sunk substantially larger caissons (three times the size of that in St. Louis) to depths at least thirty feet greater than any in Europe. The 172-foot-by-102-foot New York caisson, for example, is grounded 78 feet and 6 inches deep. However, unlike that on the Brooklyn side, the New York caisson rests on sand. Washington, who agonized over the potentially deadly and costly decision, but halted digging there before reaching bedrock. The increased stability gained by further excavation, he was convinced, would not outweigh the toll on the lives of the workers, among whom the incidence of bends attacks were increasing, or the additional cost to the project (McCullough 293-294).

Similarly, Washington devised an intricate pattern for the wire laid in the CABLE , ensuring that no single wire endured a disproportionate amount of stress. Workers spun the wire into strands, then bound nineteen strands into a CABLE of fifteen and a quarter inches in diameter. The strands, however, were carefully arranged in four tiers of five, five, five, and four strands each. Seven strands, rather than one, forming the core (McCullough 408).

Issues of practicality and safety aside, few bridges match the Brooklyn Bridge in its TECHNOLOGICAL sublimity. Originally an esoteric, European theory, the sublime "is an essentially religious feeling aroused by the ocnfrontation with impressive objects" (Nye xiii). The American sublime, however, incorporated a decidedly democratic quality. Burke and Kant discuss the natural sublime, but in America this outlook crumbled under the weight of TECHNOLOGICAL mastery. The tremendous effort of overcoming nature proved more easily impressive than the mere admiration of nature. Additionally, the more accessible American sublime, as John Roebling well knew, enabled one to apply Reason to the world. Ultimately a sublime structure, such as the Brooklyn Bridge, inspires awe and wonder. The experience, however, surpasses mere feeling: "the specific advantage of the sublime as a shared emotion," according to David Nye, "is that it is beyond words" (xiv). In America, where loyalties other than religion or politics, cannot bind, a pluralistic experience such as the technological sublime enables cohesion. Here it facilitates a common bond.

The bridge speaks volumes in its imposing, silence. The towers, for example, powerfully lift the roadway high above the tallest ships and bear the weight of the tremendous cables. However, each tower also boasts two Gothic arches through which the roadway passes. In uniting the past with the present—medieval architecture enjoyed a revival in nineteenth-century America—the gate-like towers offer an entrance to the future. The REFINED masonry of the towers adds to the monumental proportions. In comparison, the all-steel Manhattan Bridge, which can be spied just upstream from the Brooklyn span, is a work of bare utilitarianism and offers only an industrial aesthetic. Furthermore, the New York terminus faces city hall, and the entire bridge gleans a certain authority in its proximity to the municipality's center of government. Finally both the Brooklyn and New York anchorages were originally designed as treasury repositories, marking, as Trachtenberg notes, "a historical reality—a shift of the center of civilization from Europe to America" (Bridge75). In short, the Brooklyn Bridge satisfies Nye's definition of the American sublime as an "amalgamation of natural, technological, classical, and religious elements into a single aesthetic" (23).

In addition to its symbolic presence, though, the Brooklyn Bridge invites visitors to participate in its greatness. John planned for five lanes across the span; the two outer lanes were designed for horse-and-wagon travel and the two the inner lanes for CABLE cars, but an elevated promenade, lined with electric lights from the start, also allows safe and scenic passage for pedestrians. Therefore, while locals and tourists can note, as does Nye, the "somber colors" that add to the overall effect of the bridge whereas bright colors would have ruined it, they can also sit on a bench and look out at the river. They can walk across the span, feel the gentle upward slope of the roadway, and watch as the opposing shore slowly comes into view. According to Nye, the roadway juxtaposed with the downward course of the cables adds beauty by avoiding "the banality of a merely horizontal span" (86). The bridge offers a unique opportunity to feel opposing forces at work. More important, it offered the experience to all. Lewis Mumford explains the effect of the finished structure: "This wasn't something that was exclusive to literary people, or to intellectuals. It was something that the ordinary man felt, too, because he walked back and forth across the bridge" (Burns).

**Appropriating Control**

In a century of intense change—in lifestyles, business, labor, technology, and the home—a sense control or at least the illusion of it became a highly sought commodity as Americans scrambled to find order in the chaos. As cultural historian Thomas Schlereth observes while explaining the Victorian compulsion for statistic, "the hierarchical and organizational control prompted by the rapid incorporation of America touched the daily life" of all classes, genders, and ethnic groups (xiii). While disputing authority over various aspects of the bridge, however, the citizens of Brooklyn and New York only found common ground, ironically showing the peaceful coexistence of incorporation and conflict.

John Roebling be found order in philosophy. According to Trachtenberg, after coming to America, John "absorbed transcendentalism and spiritualism of Swedenborg, Channing, Emerson, Henry James, and Andrew Jackson Davis, the 'Poughkeepsie Seer' and 'Clairvoyant'" (Trachtenberg, Bridge 60). He borrowed pieces of each, formulated an abstract, individualized belief system, then applied it to his East River crossing. His design not only conquered the waterway and organized the hundreds of thousands who crossed it each day, but as previously suggested, his towers dictated how New Yorkers and Brooklynites alike should embrace the future. Determining who owned the actual structure, however, proved more difficult.

The New York Bridge Company unquestionably was in possession of the project from its inception, but over the course of fourteen years, the trustees grudgingly began to share this right with the two municipalities. The more power granted the two cities, the more they tried to steal. In 1883, just months before the opening ceremony, new and younger bridge company trustees—politicians with constituents to impress but little technical knowledge of bridge building—led an attempted coup against Washington Roebling. Mayor Seth Low of Brooklyn complained: "I am convinced that at every point there is a weakness in the management of the Brooklyn Bridge. The engineering part of the structure—the most important—is in the hands of a sick man" (qtd. in McCullough 449). Washington's unwavering dedication to the project, however, convinced the majority of trustees otherwise, and in a vote of 10 to 7, he stayed.

Architect Montgomery Schuyler led a similar insurrection against the Roeblings, though he waged his war on the pages ofHarper's Weeklyrather than in a corporate boardroom. On May 26, 1843, just two days after the bridge opened,Harper's Weeklyprinted an essay in which Schuyler decries Roebling's lack of architectural flair, deeming the bridge "a woeful lack of expression." An architecturally sound structure, he argues, while aesthetically pleasing, also would have indicated its utility in the very design. Centuries from now, when the Brooklyn Bridge span crumbles and the towers stand alone in the river, an unschooled traveler will be left with no indication of their purpose. Schuyler writes of one tower: "With its flat top and its level coping, indicating that the whole was meant to be evenly loaded, it would seem to be the base of a missing superstructure rather than what it is." An architect would have advised the engineer to create "a crest of roof, its double slope following the line of the cable which it shelters." Schuyler accuses Roebling of "architectural barbarism," but his complaint is based on a feeling of powerlessness. The article, titled "Bridge as Monument," recognizes the Brooklyn Bridge for the icon it will become—an icon built without architectural input and for which he can take no credit. Thus, in voicing his criticism, Schuyler gains a sense of empowerment.

Schuyler's commentary highlights a poignant aspect of the bridge's evolving cultural function: it offers all, regardless of their economic background, education level, or social status, equal opportunity to critique, condemn, or just marvel. The bridge is literally and figuratively larger than any individual or corporate board, and it slowly pervades into all aspects of life, uninhibited. As Mumford explains:

So it's the growing consensus, visible through people's acts and then gradually seeps into thoughts and becomes part of the texture of their lives. It goes into pictures, it goes into poems, and before you know it, there it is, inescapably grand and solid and indestructible, the way ordinary works of art are not (Burns).

Although the original purpose rests in alleviating the difficulties of crossing the East River, the bridge proved into a presences of greater import than who collects the tolls on either side, or whose aesthetic perspective proves more accurate. It is a part of life.

In 1883, however, even its most ardent supporters never could have envisioned the status the Brooklyn Bridge was to assume. Thus, in the shadow of its arches, the trustees laid plans for its inauguration, "The People's Day," and hoped that in offering it as a token to the people of New York and Brooklyn, they could demonstrate to all that it was theirs to give.

The People's Bridge

While the Gilded Age devastated the notion of Jeffersonian agrarianism, it also prompted distinct alterations in urban life. One critical aspect of the new city was the idea of seeing and being seen by other people, and the bridge promenade especially offered ample opportunity for this pastime. However, in the modern city public spaces, such as the bridge, also provided a backdrop for the drama of daily life and a new perspective for the individual.

Fourteen long years of anticipation, observations of daily progress, and spectacles, including mechanic E.F. Farrington's 1876 trip across the river on a boatswain's chair attached to a rope, would have secured a considerable crowd for the Brooklyn Bridge's opening day (McCullough 337-340). However, the New York Bridge Company officially deemed May 24, 1883, "The People's Day": the federal courts shut down, businesses closed at noon, and few children made it to school. Shortly before one o'clock Governor Grover Cleveland and New York-born President Chester A. Arthur left Fifth Avenue Hotel in a carriage—the seventh regiment, a band, and police escorts in tow. Near the New York tower, Kingsley met the delegation and escorted them across the span, via the elevated promenade, to the Brooklyn contingent, headed by Mayor Low, waiting to greet them at the opposite tower. The afternoon included a plethora of speeches—from Kingsley, Low, and others—as well as renditions of the "Star-Spangled Banner," "Yankee Doodle," and "Hail to the Chief." One speaker even compared John Roebling to Leonardo da Vinci and showered similar, if not greater, accolades on Washington.

Once darkness enveloped the bridge, spectators watched as the electric lights lining the promenade sprang to life and cheered the firework display (McCullough 484-495). Washington, of course, watched most of the festivities from his WINDOW , but even he partook of the celebration for Emily ensured that her husband was not overlooked. While Mayor Low planned a reception for the president, Emily planned her own, more exclusive, reception at the Roebling home, where President Arthur made sure to stop and congratulate the tireless chief engineer.

From the beginning, the bridge was established as more than a roadway or pedestrian walkway. Here people came together to celebrate, to congregate, to commute, to ogle, to admire man's strength and abilities. Here, occasionally, man tested this strength. A week after opening day, for example, with an estimated 20,000 people swarming the bridge, twelve people were trampled to death. The swell overcrowded a narrow staircase leading up to the promenade at the New York approach. People could move neither up nor down and panic ensued (McCullough 500). Then, of course, came the jumpers, starting with Robert Odlum on May 19, 1885; the bridge proved too great an opponent for him. The most famous jumper, though doubts remain as to whether he actually made the leap, is Steve Brodie. Still he claims to have survived the jump in 1886, and his story became a successful play calledOn the Bowery.

Most, however, sought to glean from, rather than challenge, the bridge's greatness. In the 1880s, as McCullough notes, "…to be able to walk out on that bridge was a thrill that we have to use our imagination to appreciate…people were suddenly able to walk up out over a river, higher than they'd ever been in their lives…to look out over the harbor, to look out over both cities" (Burns). The experience infused one with the sense of power, of man's superiority over nature. For some, such as Lewis Mumford, it ignited a sense of individualism. Recalling what he deemed a "transcendental experience" in the 1930s, Mumford says:

One March afternoon, I started over on the Brooklyn side. The wind was blowing; there were heavy clouds in the sky moving around, but the sky was light enough to give a complete silhouette of the skyscrapers on the New York side. I began walking over it, and because of it, I had a sense of the great stir of life, the vitality, the power that lay beneath everything. There were the ships and the tugs going up the East River. There were little curls of steam coming out of the skyscrapers. There was the sound of traffic on the bridge itself, and I was walking, young and feeling happily alone, and I had a sense almost of my whole career, of the world I was going to live in being laid out before me. I had a sense of the power and the glory of the present world (Burns).

The people began life ANEW , incorporating the bridge into their daily habits and routines, living rather than verbalizing the feelings of Goldberger who remarks, "Now that it's there, we can't imagine a world without it" (Burns).

**Bridge as Image**

Although the drama surrounding the construction of the bridge and its builders helped ensure the Brooklyn Bridge's monumental status, its repeated appearance in all aspects of culture clinched its iconic eminence. According to scholar Lewis Mumford:

If the bridge isn't part if our life, if it…doesn't add to the quality of our thought, it really doesn't exist. Nothing really lasts except what can be translated into terms of the human spirit, the human mind. If it doesn't make its impression on the mind, it will vanish very quickly, no matter how much power or riches is behind it. This was the work of an engineer who was also a great artist, a man whom one might dare to mention almost in the same breath as Leonardo da Vinci (Burns).

Although Mumford discusses not the Roeblings specifically but a certain type of "engineer" who is as much visionary as builder, the ambiguity of Mumford's reference—could he mean John or Washington?—highlights two critical points. First, in the decades that followed the Bridge's opening day, memory has faded the distinction between father and son. The name Roebling is still synonymous with the East River monument, but history has chosen to forget the details. This fact, perhaps more than any other, indicates how tightly the Bridge and the Roebling's have been woven into the American myth for public history, by definition, maintains the spirit while neglecting the facts.

Secondly, according to Mumford's commentary the ubiquity of the bridge determines its cultural relevance. The Brooklyn Bridge has appeared in commercial advertisements to bring the credibility of a recognizable landmark to an unknown product. In movies and television shots of the bridge located the time and place of the action; they also enhanced the emotional context because viewers felt the same excitement and awe as the characters when they themselves beheld the monumnet. The Brooklyn Bridge has been the object of high-brow art—inlcuding sketches, paintings, and a plethora of photographs—a poem by Hart Crane, and a song by Frank Sinatra. Few monuments, especially outside of the capital region, have captured the imagination of so many, so profoundly. "The thing about the Brooklyn Bridge, in the end," claims architecture critic Paul Goldberger, "is that it is just so beautiful." He CONTINUES :

I think that's what's moved poets, sculptors, painters, not to mention architects to sing its praises for all these nearly hundred years since its been finished. The bridge is the archetypal monument really. It's all we want of a monument. I think it has great noble scale, which a monument must have, yet it has something to relate it to human scale at the same time, and it feels very much like a public place. It's a place for all of us, and I think that's UNIVERSAL to good monumental architecture, that it must have some relationship to the shared needs of society (Burns).

Playwrite Arthur Miller succinctly explains, "It makes you feel that maybe you, too, could do something that would last and be beautiful" (Burns). Following is a mere SAMPLING of how artists and others have attempted to demonstrate that relationship.

**Conclusion**

Nearly one hundred and twenty years since its completion, the Brooklyn Bridge remains not just standing but a highly traveled corridor between Brooklyn and Manhattan with an estimated 145,000 vehicles crossing it per day ("Brooklyn Bridge"). The heroic accomplishment of the Brooklyn Bridge cannot be ignored for its structure survives largely intact from its opening day, and it has withstood the effects of automobiles, though its design was conceived in an horse-and-carriage age. Between 1944 and 1954 RENOVATIONS strengthened the trusses, replaced the horizontal stays, removed railroad and trolley tracks (added in 1898), added two additional lanes, and increased the number of approaches. In 1999 another project reinforced the concrete decking that supports the roadway ("Brooklyn Bridge"). In addition, both the federal government and the American Society of Civil Engineers deemed the Brooklyn Bridge a national historic landmark.

Its iconic power, however, has declined due largely to its own success. Because of the increased volume of travelers crossing the East River and the obvious ease of bridge travel, the need for similar passageways arose. Within six years, the Manhattan and Queensboro bridges also spanned the East River and today ten bridge dot just that waterway (McCullough 508, "Brooklyn Bridge"). These later bridges, however, share an aesthetic contradictory to that of the Roeblings: bare steel and utilitarian form replace intricate masonry and symbolic arches. McCullough notes, "By contrast to such gleaming creations, the Brooklyn Bridge [seems] an antique" (508). Perhaps, the best-known structure of this new style is the Golden Gate Bridge, completed in 1937, with its orange-painted steel shining in the California sunshine.

However newer suspension bridges may outdate the Roeblings' masterpiece, though, the Brooklyn Bridge retains its spirit. The architecture may be obsolete, but millions cross it every day. Tourists may not flock to its arches in such great droves, but its form remains alive in works of Stella, O'Keefe, and others. The bridge's unifying tensions continue to mirror the defining aspects of American society, conflict in tension. Since becoming a borough of New York City in 1898, for example, Brooklyn has enjoyed equal legal status with Manhattan, but the former remains the punch line of numerous jokes not targeted at the latter. Perhaps urbanization, corporate business, splintering class systems, and the dismantling of the private sphere no longer capture our notice, but only because analogous contemporary issues such as internet privacy and same-sex marriage now occupy our attention. In a time of political correctness, when glossing over differences is preferable to true appreciation of said differences, America seeks to mask conflict, to deny the reality that our tensions bind us. Still, Lewis Mumford once claimed that "The Brooklyn Bridge CONTINUES to repeat truths that we need to remember" (Burns). And because deep down we know this to be fact, the Brooklyn Bridge continues to capture our attention-just not as conspicuously.

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