Brooklyn Bridge. Oil by Joseph Stella, 1917 - 1918
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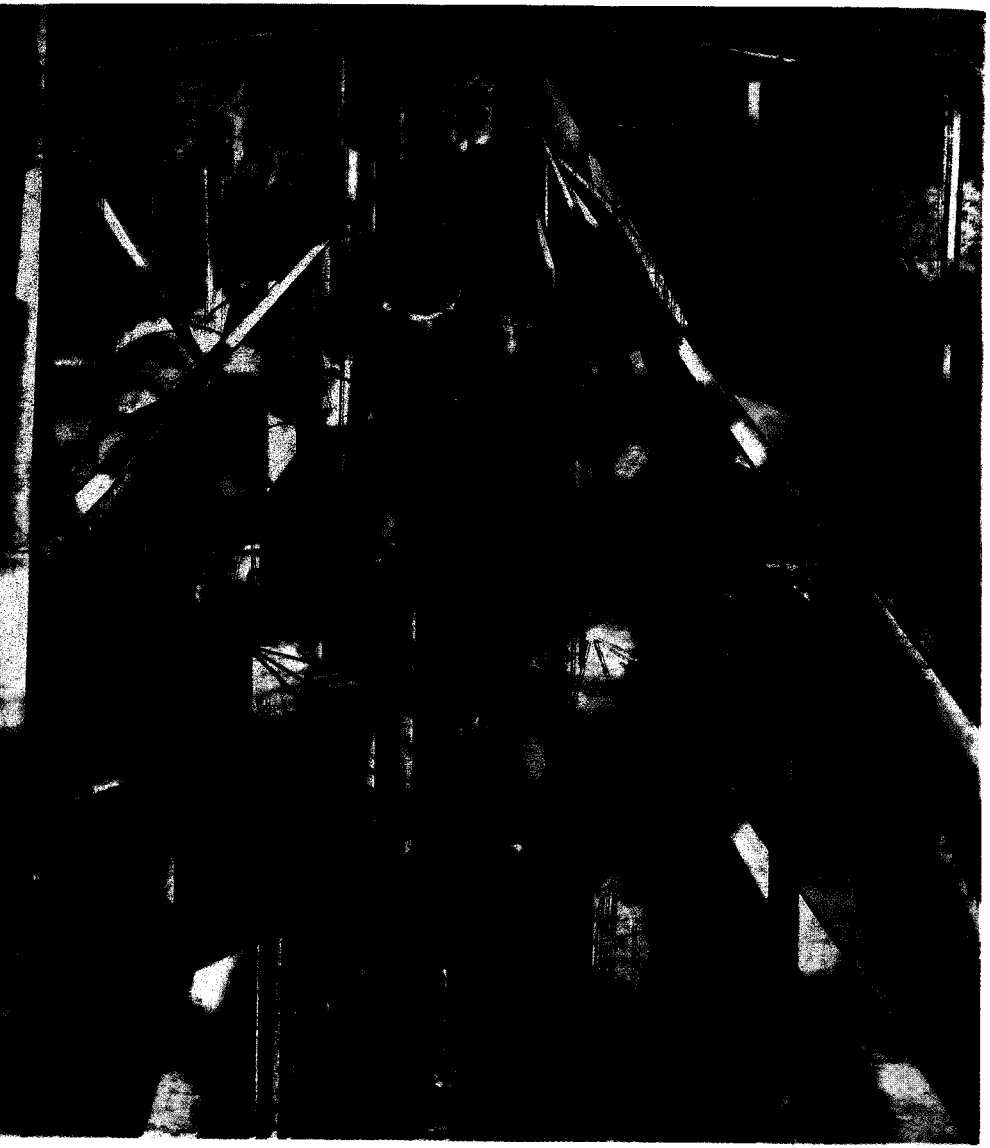

BROOKLYN BRIDGE

FACT AND SYMBOL

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Preface

One purpose of this study is to establish the importance of Brooklyn Bridge as a cultural symbol in America. Another is to examine the process whereby the bridge, an artifact, became a symbol. By distinguishing between "fact" and "symbol" I mean to designate two separate modes of existence: one has a specific location in time and space; the other, its place in the mind, or in the collective imagination of Americans. Coming into existence in a time of change—change from a predominantly rural to an overwhelmingly urban and industrial society—Brooklyn Bridge seemed to represent that change. As a major construction in America's leading city, it became the vehicle for ideas and feelings associated with the new conditions. Americans have tended to invest the fact with feelings about the great alteration in their common lives, and thus it became for them a symbol.

A symbol serves a culture by articulating in objective form the important ideas and feelings of that culture. It serves, Alfred North Whitehead writes, to enhance what is being symbolized. Brooklyn Bridge symbolized and enhanced modern America. But symbols, Whitehead continues, frequently become fixed and hard, arousing automatic responses. The health of a people depends largely on their ability to question their inherited symbols in light of contemporary actualities, to keep them fluid, vibrant, and responsive. The process of interrogation will not destroy valuable symbols, but may replenish their cohesive meanings.

In the course of this study I have received generous assistance from many sources. To Bernard Bowron and Leo Marx I owe my chief intellectual debts. Mr. Bowron shared with me his abundant insights and advice. Without his encouragement and stimulation

the work might never have materialized. Any one familiar with Leo Marx's studies in American literature and culture will recognize how indebted I am to his formulations. From Dmitri Tselos I learned much that I needed to know regarding architectural history and scholarly method. Philip Young tried to save me from the usual mistakes of pedantry. His standards are strenuous, and he is not to blame if I have not met them.

To give the names of all who have contributed to my work, perhaps unwittingly, would result in an endless list. My obligations, and gratitude, extend to numerous colleagues, librarians, administrators, and friends. I would like to single out the staffs of the Rensselaer Polytechnic Institute library and the Rutgers University library, who tend valuable Roebling collections. Their assistance quite literally made this study possible.

A grant from the American Council of Learned Societies enabled me to reach certain materials otherwise unavailable. Time released from teaching from the Department of English, The Pennsylvania State University, allowed me to prepare the final manuscript. Funds supplied by The Pennsylvania State University also made it possible to include the color reproduction of Joseph Stella's "Brooklyn Bridge."

Betty Trachtenberg was throughout a gracious partner; many of her responses are woven into the text.

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A. T.

State College, Pennsylvania
March 1965

Contents

The idea of each epoch always finds its appropriate and adequate form.

G. W. F. Hegel

Prologue

Brooklyn Bridge belongs first to the eye. Viewed from Brooklyn Heights, it seems to frame the irregular lines of Manhattan. But across the river perspective changes: through the narrow streets of lower Manhattan and Chinatown, on Water Street or South Street, the structure looms above drab buildings. Fragments of tower or cable compel the eye. The view changes once again as one mounts the wooden walk of the bridge itself. It is a relief, an open space after dim, crowded streets.

On most traffic bridges the only foot passage is a pavement alongside rushing vehicles. Here the walk is a promenade raised above the traffic; one can lean over the railing and watch cars speeding below. The promenade is wide enough for benches — for walkers and for cyclists. Old-fashioned lamp posts remind the walker that it is, after all, a thoroughfare. But the walk is narrow enough for the promenader to reach over and touch the large, round cables, wrapped in wire casing, or the rough wire rope of the vertical suspenders. Crossing the verticals is a rigging of diagonal wire ropes — stays, attached somewhere below to the floor of the roadway.

One has the illusion of an enclosure. The web formed by the diagonals and the verticals captures the walker's attention; it is a diagram of the physical forces of the bridge. Each diagonal is lashed to the verticals it crosses in a series of iron knots. These knots are points for the eye as one strolls along; with each succes-

sive step, one is tempted to raise one's head to follow the sequence of knots. The movement is upward, until one reaches the stairs leading to the balcony which widens around the massive piers of the towers. Before one climbs the steps, the eye climbs the tower itself, swept there by the rising knots of the diagonals. Meanwhile the roadway itself has been rising, slowly, in a slight bow.

It is tempting to linger on the balcony, to walk around the center pier, to gaze up at the underside of the arches, to feel the coarseness of the Maine granite, or to read the plaques attached to it. But another experience lies ahead, and one soon descends the few steps back onto the promenade. The diagonals and their knots now swoop down toward the center of the bridge. But at the same time the roadway slopes upward: its bow has become more pronounced, an upward counterpoint to the descending knots. At the very center of the bridge, the main cables and their smaller ropes drop out of sight altogether, somewhere below the railing. The walker has a clear plateau to himself at the highest point of the promenade. He has a view of the harbor on one side, the Navy Yard on the other. He has the New York skyline, the Bay, the Statue of Liberty. Sea gulls wheel and dip into view; one may fly across the bridge and pivot out of sight below.

As the walker continues the upward-downward motion begins again; the cables rise into view and mount the sky, up to the next tower. The walker is once more carried along, up to a balcony, and down, down into the dark opening of a subway concourse.

I

SOURCES

1

The whole earth is the lords Garden & he hath given it to the sonnes of men with a generall Condicion, Ge: 1.28. Increase & multiply, replenish the earth & subdue it . . . why then should we stand hear striveing for places of habitation . . . and in ye mean tyme suffer a whole Continent, as fruitful & convenient for the use of man to lie waste without any improvement.

JOHN WINTHROP, "Conclusions for the Plantation in New England" (1629)

The Americans entered the wilderness as masters, determined to subdue it; and not as children of nature, nursed and brought up in its bosom. They could not at first love what was not theirs; and when it became theirs, they had already changed its face.

FRANCIS GRUND, *The Americans* (1837)

Wilderness Transformed

At the Opening Ceremonies of Brooklyn Bridge on May 24, 1883, the Honorable Abram S. Hewitt began his oration with an image of primitive Manhattan.

> Nature wore a hardy countenance, as wild and as untamed as the savage landholders. . . . The trees were lofty; and old, decayed and withered limbs contrasted with the younger growth of branches; and wild flowers wasted their sweetness among the dead leaves and uncut herbage at their roots. The wanton grape vine swung carelessly from the topmost boughs of the oak and the sycamore.

Here was the primal wilderness: the "fresh green breast of the new world" witnessed by Dutch sailors two hundred and seventy years before. Savage, rich, and going to waste — unrestrained nature had sole possession of the island.

The picture was affecting indeed, particularly side by side with "the panoramic view" that now "presents itself to the spectator standing upon the crowning arch of the Bridge":

> In the place of stillness and solitude, the footsteps of these millions of human beings; instead of the smooth waters "unvexed by any keel," highways of commerce ablaze with the flags of all nations; and where once was the green monotony of forested hills, the piled and towering splendors of a vast metropolis, the countless homes of industry, the echoing marts of trade, the gorgeous palaces of luxury, the silent and steadfast spires of worship!

The first scene had been "the product of natural forces working through uncounted periods of time"; "patiently through ages," glaciers had carved a river between the two islands of "Manahatta" and "Seawanhaka" (Long Island). But the hand of man had "reversed" the "work of separation wrought so surely, yet so slowly, by the hand of Time"; the islands were "joined again, as once they were before the dawn of life in the far azoic ages." True, the wilderness was no more: the "green monotony" and "wanton grape vine" had given way before "piled and towered splendours." But was not this itself a fulfillment of man's "never-ending struggle . . . to subdue the forces of nature to his control and use?" The bridge was "not merely a creation," but a "growth": "It stands before us today as the sum and epitome of human knowledge; as the very heir of the ages." [1]

Mr. Hewitt, a prominent Congressman, industrialist, and philanthropist, provided the fitting note for the occasion. Hailed as the Eighth Wonder of the world, the Great East River Bridge was tangible proof of America's achievement. Manhattan and Brooklyn were now major cities. And the country was united: more than a decade ago the railroad had reached the west coast. Now, wrote one observer, "with the completion of this bridge, the continent is entirely spanned, and one may visit, dry and shod and without the use of ferry boats, every city from the Atlantic to the Golden Gate." [2] For many Americans in 1883, Brooklyn Bridge proved the nation to be healed of its wounds of civil war and again on its true course: the peaceful mastery of nature. The bridge seemed to

1. *Opening Ceremonies of the New York and Brooklyn Bridge*, May 24, 1883 (Brooklyn, 1883), 43–7. The description of primitive Manhattan was taken by Hewitt from Martha Joanna Reade Nashe Lamb, *History of the City of New York: Its Origins, Rise and Progress* (New York, 1877–81).
2. Willard Glazier, *Peculiarities of American Cities* (Philadelphia, 1886), 315. Manhattan had been connected to the mainland as early as 1842 by the "High Bridge," an aqueduct to bring the Croton water supply into the city.

embody those forces which had pruned the wild forest and set a city upon a hill.

I

Economic necessity had led to the vast transportation developments in pre–Civil War America. Roads and canals, the paths of commerce, had followed the axe into the wilderness. But the economic motives of this exciting movement frequently lay obscured beneath a rhetoric of myth. To many, roads fulfilled fervent dreams of the West as a new Garden of Eden, as the long-sought passage to the Orient. "Geographical predestination" was an argument as persuasive as the needs of commerce.[3]

"Providence designed us to be a great and united nation," an orator had proclaimed in 1794, and geography was his proof: "Our lines are marked by the very hand of nature." [4] It became clear, however, that the "hand of nature" created barriers as well as gateways to western expansion. The eastern mountain ranges and the many north-south rivers posed serious obstacles to communication. Moreover, the promising landscape raised a political doubt: could the republican principle, hitherto most successful in small nations, survive on so large a scale? Perhaps the very size of the continent would be the nation's undoing.[5]

3. See Henry Nash Smith, *Virgin Land: The West as Myth and Symbol* (Cambridge, 1950), chs. 1–4, for a discussion of the role of the "passage to India" argument in the rhetoric of agrarians; Albert K. Weinberg, *Manifest Destiny* (Baltimore, 1935), ch. 2, for the idea of "geographical predestination"; and George Rogers Taylor, *The Transportation Revolution, 1815–1860* (New York, 1951), for an account of the role of transportation in the rapidly changing economic life of the early republic.
4. John B. Johnson, *An Oration on Union* (New York, 1794); quoted in Merle Curti, *The Roots of American Loyalty* (New York, 1946), 43.
5. This idea stemmed from the political theory of Plato, Aristotle, Rousseau, and Montesquieu. It insisted that a democracy had "natural limits," determined by the distance between the central government and the most remote citizens. The entire body of citizens should be able to convene as often as public functions require. In

Transportation became the country's most urgent need. If geography bestowed a favor upon the young society, it also presented a challenge. In the early republic, the idea of "opening up" the West and binding it to the East became the focus of national unity. The high theme of "manifest destiny" required at first adequate roads. The verb used over and over again to express the idea of unity, "to cement the Union," was more than a figure of speech. Facing a landscape covered with barriers to its own promises, American society had to become technological in order to survive. It had to develop an industrial force in order to exploit the promise of the land.

Many Americans, however, had interpreted the promise of the land to be a great agrarian republic, spreading westward from the tide-lands. Jefferson envisioned such a republic, rooted in the soil, as America's best defense against the corruption of the Old World. Europe represented intrigue, superstition, crowded, fuming cities — evils America might avoid. The virgin land seemed to promise a new chance for man. As a republic of small, independent farms, America might escape the ravages of history. As long as the class of self-sufficient husbandmen predominated, Jefferson argued, the opportunity for liberation would remain. And separated from "the exterminating havoc of one quarter of the globe," the land itself encouraged optimism: "a chosen country, with room enough for our descendants to the hundredth and thousandth generation." [6]

No. XIV of The Federalist Papers, Madison tried to allay the fear that the vast extent of the American continent was an argument against federalism. Madison claimed that "improvements" will shortly eliminate distances. Moreover, he argued, the geography would assist rather than hinder union. "The communication between the western and Atlantic districts, and between different parts of each, will be rendered more and more easy, by those numerous canals with which the beneficence of nature has intersected our country, and which art finds it so little difficult to connect and complete."

6. *The Writings of Thomas Jefferson*, ed., Paul Leicester Ford, Vol. VIII (New York, 1897), "Inaugural Address, March 4, 1801," 4. Also, A. Whitney Griswold, *Farming and Democracy* (New York, 1948), "The Jeffersonian Ideal," 18–46.

But to benefit from the land required an efficient system of communications. Thus, the building of roads and canals was to President Jefferson's mind one of the functions of the central government. Anticipating the liquidation of the public debt in 1806, Jefferson announced an ambitious program for the "progress of improvement." This program was to be, Henry Adams has pointed out, Jefferson's last bequest to mankind; it contained the crown of his hopes for republican government in America. The proposal was twofold, a national system of public higher education, and a national system of roads "commensurate with the majesty of the country." The roads would guarantee the Union: "New channels of communication will be opened between the States, the lines of separation will disappear, their interests will be identified, and their union cemented by new and indestructible ties." Jefferson's message of 1806 led to Secretary of the Treasury Albert Gallatin's *Report on Public Roads and Canals* (1808). Gallatin followed Jefferson in arguing that internal improvements should be federally controlled because their benefits were national:

> Good roads and canals will shorten distances; facilitate commercial and personal intercourse; and unite, by a still more intimate community of interests, the most remote quarters of the United States. No other single operation within the power of government can more effectively tend to strengthen and perpetuate that union, which secures external independence, domestic peace, and internal liberty.

The main benefit was unity. In the Jeffersonian plan roads would protect the agrarian republic.[7]

7. Henry Adams, *The Life of Albert Gallatin* (New York, 1879), 349; *The Writings of Thomas Jefferson*, "Sixth Annual Message, December 2, 1806," 494; *Report of the Secretary of the Treasury on the Subject of Public Roads and Canals*, March 2nd, 1807 (Washington, 1816), 73. For the setting of the Gallatin report, see Carter Goodrich, "National Planning of Internal Improvements," *Pol. Sci. Q.*, Vol. LXIII (1948), 22–30, and, "Public Spirit and American Improvement," *Am. Philos. Soc. Proc.*, Vol. XCII (1948), 305–9.

But improvements had ambiguous consequences. The first function of roads was to bring the farmer to market; hence they facilitated the commercial entanglements Jefferson hoped to avoid. In this alone, not to speak of the industrial plant necessary to construct them, roads threatened rather than protected agrarian self-sufficiency.

Alexander Hamilton, Jefferson's rival, recognized that internal improvements spelled the end of agrarianism; and as an advocate of manufacturing, he applauded this development. Roads and canals, he wrote in 1791, "put the remote parts of a country more nearly upon a level with those in the neighborhood of the town." For this reason, they are "the greatest of all improvements." The "cultivation of the remote" would equalize the level of civilization between town and country; it would produce a uniform society, devoted to industry rather than farming, to the town rather than the country. Productivity through the "application of ingenious machinery" to nature, not closeness to nature, would be the cardinal value.[8]

In retrospect Hamilton appears to have been wiser than Jefferson; he stood on the side of historical inevitability. Jefferson had used the image of the "noble husbandman" to affirm the value of an organic way of life; but Hamilton foresaw that economic necessity would defeat this hope. What Jefferson affirmed lay beyond logic: it was a dream of timeless harmony with nature. Such a dream could hardly prevail against the dynamics of an expanding society.

Take, for example, the arguments of agrarians themselves. They supported Gallatin's program with considerable force. In 1810, a congressman from western New York, Peter B. Porter, spoke on the

8. *Industrial and Commercial Correspondence of Alexander Hamilton*, ed. Arthur Harrison Cole (Chicago, 1928), "Report on Manufactures," 247–323. Hamilton argues that the idea that agriculture is "natural" in that "nature cooperates with man," is "both quaint and superficial." Rather, he argues, the husbandman is at the mercy of nature, while the "artificer," with the "application of ingenious machinery," makes nature his "auxiliary."

issue. In that year, he pointed out, more than a million farmers were scattered throughout the remote sections of New York, Pennsylvania, and Virginia. They were out of touch with the seaboard markets. Such isolation naturally caused hardships:

> There is no place where the great staple articles for the use of civilized life can be produced in greater abundance with greater ease, and yet as respects most of the luxuries and many of the conveniences of life the people are poor.

The people are poor in luxuries and conveniences because "they have no vent for their produce at home." The lack of a market mocks the great fertility of the land.

> Such is the fertility of their land that one-half of their time spent in labor is sufficient to produce every article which their farms are capable of yielding, in sufficient quantities for their own consumption, and there is nothing to incite them to produce more.[9]

These farmers, it is clear, wanted no part of self-sufficiency; they apparently preferred agrarian business to agrarian independence. They judged the value of the land by how quickly they could convert its products into cash.[10]

And roads were to lead away from the land more often than to it. An effective argument for persuading farmers to support local improvement projects was that construction would inflate the cash value of nearby lands. Land values rather than the land itself seemed to keep Americans on the go in this pre–Civil War period. A new land bubble further west might make one's fortune. Roads were a good investment; they offered a double opportunity, a fast killing and a fast get-away. Not the old homestead but modern capitalism lay at the end of the line.

9. Quoted in Goodrich, "National Planning . . . ," 24.

10. For the farmer's greater attachment to land values than to the land itself — for the failure, in short, of a true peasant class to emerge in America — see Richard Hofstadter, *The Age of Reform* (New York, 1960), "The Agrarian Myth and Commercial Realities," 23–60.

II

It is well known that American society followed Hamilton's course toward manufacturing and capitalism. But Jefferson's dream did not die; in fact, the rapid movement toward cities and bigness contributed as much as any intrinsic force in the dream itself to keep it alive. As Leo Marx has so forcefully shown, the pastoral ideal persisted as a reaction — unconscious as well as calculated — to what Carlyle in 1831 called "industrialism." [11] In particular, while industrialism was transforming America into a land of cities and railroads, some Americans continued to celebrate the road in the language of the Jeffersonian utopia.

The utopian vision of the road has its fullest, most affecting expression in Walt Whitman's "Song of the Open Road" (1856). Translating "the long brown path before me" — an obviously rural image — into an idea of light-hearted freedom, the poet invites his readers to take his hand. "Allons," he cries: "the road is before us!" An adventure in freewheeling democracy, the fluid pathway leads to the earth, "expanding right hand and left hand," to the "open air," where all "heroic deeds" are conceived, and to an "interchange" with strangers. "I think I could stop here myself and do miracles," Whitman writes. The road expresses his — and his culture's — yearnings for individual power and self-possession:

> From this hour I ordain myself loos'd of limits and imaginary lines,
> Going where I list, my own master total and absolute,
> Listening to others, considering well what they say,
> Pausing, searching, receiving, contemplating,
> Gently, but with undeniable will, divesting myself of the holds that would hold me.

Whitman infuses the poem with credibility: ". . . it is safe — I have tried it — my own feet have tried it well — be not detain'd."

11. *The Machine in the Garden* (New York, 1964), esp. "Two Kingdoms of Force," 227–354.

It is likely that the tone derives in part from the real road-building accomplishments of American society. The mastery of space and time implicit in the poem seemed to have an analogue in daily triumphs over nature, triumphs which ironically resulted in mechanizing American life: brown pathways more and more gave way to shining steel rails. Nonetheless, the theme of "wilderness transformed" still aroused emotions of rapture and hopes of liberation from history. "A new dispensation" still seemed the destiny of Americans.[12]

Whitman's road changed accordingly to accommodate the old vision to the new technology. In "Passage to India" (1868), a poem less light-hearted but more utopian, the road is frankly technological. And its dimensions are now cosmic. The drama is no longer personal and individualistic, no longer full of the gaiety of a country jaunt. Now all of history is somberly implicated. To enlarge his conception, Whitman exploited what Henry Nash Smith has called "the oldest of all ideas associated with America — that of a passage to India." This idea had obsessed the imagination of Jefferson's followers, most notably the Missourian statesman, Thomas Hart Benton. In the 1840's, discussion of a transcontinental railroad had revived the old dream of Columbus; Benton, a leading proponent of the railroad and western expansion, cited the riches of Asian trade as his chief argument. But the argument was not exclusively — or mainly — commercial; it was a quasi-religious

12. See Charles L. Sanford, *The Quest for Paradise: Europe and the American Moral Imagination* (Urbana, 1961), esp. "The American Cult of Newness: A Rebirth Out of Hell," 94–114. Mr. Sanford explores the provocative hypothesis that "the Edenic Myth . . . has been the most powerful and comprehensive organizing force in American culture" (vi). The term "new dispensation," was used by Edward H. Knight in "Mechanical Progress," *The First Century of the Republic* (New York, 1876) — a collection of essays. The first century of American history, he wrote, "was no common century"; "it may be said to have leaped into existence." And machinery was the cause of newness: "It was as if by a mysterious impulse all started at once, the utilization of buried stores of coal by means of the Watt engine being the great fact of the new dispensation."

vision of national destiny and fulfillment. Cathay and its riches, Benton wrote, would free America from Europe and place her "at the highest pinnacle of wealth and power." The passage to India thus became, Mr. Smith comments, "a symbol of freedom and of national greatness." [13]

Whitman's poem, "Passage to India," projects a theory of history which joins the theme of an Asian route to the technological thrusts of the new nation. In this theory, the engineers who had built the Pacific Railroad, the Atlantic Cable, and the Suez Canal, had thereby linked the separate parts of the world. They had completed Columbus's voyage. Columbus himself was but the "chief histrion" in the main drama of history — a drama until now "inscrutable." But now the hidden purpose was clear:

> Lo, soul, seest thou not God's purpose from the first?
> The earth to be spann'd, connected by network . . .
> The lands to be welded together.

Thus the "strong light works of engineers" fulfilled the strivings of the past.[14]

The spatial connections, however, were not ends in themselves. They introduced a new phase of history, and inaugurated "a worship new." They opened the way, in short, for the poet.

Whitman placed all his hopes upon the prophetic role of poetry; only the poet could perceive and proclaim the true import of modern technology. All of history thus far had amounted to suffering and alienation: "What is this separate Nature so unnatural?" History was the career of man's frustrated quest for a restored wholeness. The geographical gaps were now closed, but the quest would not be fulfilled until a poet-messiah, "the true son of God," appeared. Then: "All these separations and gaps shall be taken up and hook'd and link'd together. . . . Nature and Man shall be disjoin'd and diffused no more." "India" was more than a place;

13. *Virgin Land*, chap. 2, *passim*.
14. *Leaves of Grass and Selected Prose*, ed., Sculley Bradley (New York, 1951), 339–47.

it was a form of consciousness, a synonym for Edenic harmony.

In the drama of restoration America would play a central role. Columbus's discovery was the first act:

> thou born America
> For purpose vast, man's long probation fill'd,
> Thou rondure of the world at last accomplish'd.

America is the appropriate emblem for the new worship, the new brotherhood, the new Eden. On its shores East and West shall meet in peace, the cultures of the world shall mingle freely, and man shall regain his ancient harmony with nature.

The most striking feature of Whitman's poem is its circular definition of progress. Progress is a "return" to the past. By linking the modern West with the traditional East, the engineers have brought forward "the dark unfathom'd retrospect." Roads return to nature, to "reason's early paradise" and "innocent intuitions." They lead away from history. This view of progress is striking if only because in the American world outside the poem, roads traveled in the opposite direction — not toward nature, but toward the city. More than any other factor before the Civil War, transportation represented change; it struck down geographical barriers and tied all regions to their major market cities. Roads brought commerce and capitalism, factories and warehouses. They brought history to the New World.

III

What Whitman failed to consider was that the engineer could not open a path to nature without first taking an attitude toward the land and toward society that would very likely postpone appreciably the metaphysical passage to India. Elsewhere, especially in *Democratic Vistas* (1871), Whitman expressed reservations about the course of development of American society, but in "Passage to India," he seemed not to concede that a basic conflict between two ways of life was at stake in the massive transformation of nature.

The poet was not alone in his confidence. Ralph Waldo Emerson, for example, in a lecture "The Young American" (1844), saw internal improvements as "beneficent for America"; they eliminate "local peculiarities and hostilities," and reveal a "sublime and friendly Destiny." Most of all, he found, the railroad carries city people into the country and introduces them to the land. The railroad might even plant a garden in the West; he calls it a "magician's rod, in its power to evoke the sleeping energies of land and water." Emerson, like most of his contemporaries, expected the machine to serve what was still basically an agrarian society.[15]

Thomas Ewbank had no such illusions. At one time a manufacturer, Ewbank was Commissioner of Patents in the 1840's. In his Report of 1849 he spread before Congress the prospect of "an infinity of work" for Americans. Man's original sin, he wrote, was indolence, not disobedience. But shirk it as he will, man's work will not be finished until "the planet is wholly changed from its natural wilderness . . . into a fit theatre for cultivated intelligences." Until then, all other activities were pointless; technology provided all the poetry and morality man needed. A steamer, he wrote, was a mightier epic than the *Iliad*, and "a lever, hammer, pulley, wedge, and screw, are actual representations of great natural truth." Ewbank foresaw endless progress through machinery. Engineers and inventors held "the future destinies of the planet in their hands." [16]

Ewbank's ideas were an outgrowth of eighteenth-century empiricism and deism. He saw the world as an immense mechanism. In *The World a Workshop* (1855), Ewbank claimed that the inventor is the true man; to be human is to be a "Manipulator of Matter." In regard to agrarianism, Ewbank echoed Hamilton: "the

15. *The Complete Works of Ralph Waldo Emerson*, Centenary Edition (Boston, 1904), Vol. I, 361–95.
16. 31st Cong., 1 Sess., "Report of the Commissioner of Patents," Part I, *House of Representatives, Executive Documents*, no. 20 (Washington, 1849), 486.

hypothesis that the chief employment of man was to till the soil and raise cattle, is an unworthy one." Food, he argued, is a mere adjunct to life; agrarians are "surface dreamers." He did not want a reconciliation between agarianism and industrialism, but a total surrender to the machine. This, he saw, would establish a new way of life, a way of rapid transportation, cities, and capitalism. The following passage admirably describes the conflict.

> For what classes then chiefly was the world of inorganic matter provided? Observe that dwelling; it belongs to a family neither rich nor poor; neat, commodious, and attractive in itself; it has a garden in front, an orchard and corn-field behind. Mark the social enjoyments, intelligence, and contentment of its inmates; the abundance of necessaries, of comforts and conveniences; the ornaments and elegances in dress and furniture, with contributions from almost every productive and decorative art.
>
> But, hark! a train of cars is approaching. It stops one moment and starts the next with a shriek for the city, whirling us along level and undulating lands, through tunnelled mountains, over rivers on bridges of granite, and others of iron. In the quick-moving panorama arise before us, and in a moment pass by, brick and lime kilns; potteries; tanneries; machine shops, chair, cloth, and carpet factories. We come in sight of a bay, on which ships laden with foreign merchandise are floating in with the tide, and others with home manufactures passing out. Crossing over in a steamer we find an extensive border of leafless forest resolved into masts of vessels crowded into continuous docks, and on landing, feel the air rent and agitated, like rippled water, with the noise of stevedores and draymen. We have business to transact for a friend, and pick our way along the sidewalks, among packing cases of dry-goods, casks of hardware, bundles of sheet and hoop iron, and loads of other goods. Next we stop at a telegraph office, and in five minutes our friend, though five hundred miles distant, receives and answers our note. On leaving the street of the merchants for others occupied by watchmakers, jewellers, opticians, philosophical

> and musical instrument makers, engravers and printers, we call at a newspaper office to insert an advertisement and order the daily sheet for a neighbor. Need we proceed? It was for men who bring such things out of inert matter that this world of matter was made.[17]

Ewbank describes the rural life quite fairly, even fetchingly. Peaceful and self-sufficient, it is an orderly relation to nature. But the moment the train invades the scene, we are meant to realize that the rural life is based on the wrong mode of nature, that which is fertile, growing, but subject to decay. The civilization represented by the railroad and the city is based on inorganic matter, the true riches of nature. This civilization, Ewbank was sure, Americans would recognize as their own; the other was an ancient dream.

The dream of a tenderly cultivated plot has consistently appealed to Americans, perhaps never more so than now, in an age of automation. But strong as that appeal has been, American behavior toward the land has been something else again. Americans have always subscribed to Eden, and proceeded to transform it in the name of progress. This was true even before modern mechanical devices. It was true from the very beginning, when the sight of untamed wilderness going to waste converted transplanted Europeans

17. *The World a Workshop* (New York, 1855), 22–3. This passage expresses an interesting variant of what Leo Marx has discovered to be a basic episode in American literature — the intrusion of a machine (usually a railroad) upon a pastoral setting. In literature, the event usually causes dislocation, generates a conflict — and leads to a reaffirmation of the pastoral ideal as a reconciliation. In this passage, however, the invasion of the railroad upon a scene described in conventional pastoral terms (the modest dwelling, the corn-field, the abundance, the homely arts — in other words, the garden) is meant to leave us reeling with pity for the inadequacy of the ideal. Rather than a conflict, this invasion results in total victory for the railroad — and the emotion of power, fulfillment, and mastery. It is clear, moreover, that Ewbank sees the railroad not only as an agent of "industrialism," but a servant of capitalism: the pastoral scene is not shown as wrong or bad in itself, but simply swept under by a new social order. For this reason, it can be said to possess a power of its own in Ewbank's language — as a dream. *Machine in the Garden*, 15–16.

into Americans. Francis Grund, an Austrian traveler, observed in 1837 that Americans had always

> treated nature as a conquered subject: not as a mother who gave them birth. They were the children of another world, who came to burn, ransack and destroy, and not to preserve what they had found. They burned the forests, dug up the bowels of the earth, diverted rivers from their course, or united them at their pleasure; and annihilated the distances which separated the North from the South, and the East from the West.[18]

Americans were such excellent transformers of nature, Grund wrote, that no single change seemed permanent; they "live in the future, and *make* their country as they go on." To many Americans, the going itself was the main business of man on a wild continent beyond the reach of history. Jefferson's hopes for local attachments to the soil were defeated by the very means necessary to open the continent, the means of transportation. Not the land, not the garden, but the road, from Jefferson's own national turnpike to the latest superhighway, has expressed the essential way of American life.[19]

18. Francis Grund, *The Americans* (Boston, 1837), 317.

19. I mean, of course, not only the literal road — but all that is implied by it: cities, automobiles and the power of the automobile industry, construction companies — and boondoggles. In other words, an entire social order which values "quick turnover" above planning and harmony. For vivid illustrations of the consequences of the transvaluation of Jefferson's ideal, see Peter Blake, *God's Own Junkyard: The Planned Deterioration of America's Landscape* (New York, 1964).

2

Then asked Ganglere: *What is the path from earth to heaven?* Har answered, laughing: *Foolishly do you now ask. Have you not been told that the gods made a bridge from earth to heaven, which is called Bifrost? You must have seen it. It may be that you call it the rainbow. It has three colors, is very strong, and is made with more craft and skill than other structures. Still, however strong it is, it will break when the sons of Muspel come to ride over it, and then they will have to swim their horses over great rivers in order to get on.* Then said Ganglere: *The gods did not, it seems to me, build that bridge honestly, if it shall be able to break to pieces, since they could have done so, had they desired.* Then made answer Har: *The gods are worthy of no blame for the structure. Bifrost is indeed a good bridge, but there is no thing in the world that is able to stand when the sons of Muspel come to the fight.*

The Younger Edda, v:13

The Rainbow and the Grid

In a scrap-book referred to as "the first written history of Brooklyn," Jeremiah Johnson entered in 1800 the following note:

> It has been suggested that a bridge should be constructed from this village across the East River to New York. This idea has been treated as chimerical, from the magnitude of the design; but whosoever takes it into their serious consideration, will find more weight in the practicability of the scheme than at first view is imagined.

The weight of the scheme lay in the fact that the bridge "would be the means of raising the value of the lands on the east side of the river." Johnson, then a supervisor of the town but later to become, as a general in the War of 1812 and a mayor, "Brooklyn's first and foremost citizen," seemed to approve of the idea. "Every objection to the building of the bridge could be refuted," he observed, and only "a combination of opinion to favor the attempt" was wanting. Plans were already "laid down on paper" by a "gentleman of acknowledged abilities and good sense." The gentleman would "engage to erect it in two years' time." [1]

1. Henry R. Stiles, *A History of the City of Brooklyn*, 3 vols. (Brooklyn, 1867), Vol. 1, 383–4. Also, Harold Coffin Syrett, *The City of Brooklyn, 1865–1898*, Columbia University Studies in History, Economics and Public Law, No. 512 (New York, 1944), 146. Although a major general, Johnson never actually commanded a division. Born in 1766, he became a wealthy farmer and landholder; from 1837 to 1840 he served as mayor of Brooklyn. He died in 1852.

This note, scribbled among newspaper clippings and miscellaneous data in an old scrap-book, contains the germ of all future talk about Brooklyn Bridge. It would be a plan of great "magnitude"; it would require a devoted builder and a sympathetic public. And a chief argument on its behalf would be the increase in real estate values on Long Island. At the outset of its career as an idea, in other words, the bridge was already thought of as a practical fusion of two sets of values: the visionary ("chimerical") and the pecuniary.

I

It is possible that General Johnson's gentleman was the same man who proposed in 1811 to raise a "rainbow bridge" across the East River. He was Thomas Pope, a craftsman then living in New York. Described by his friend, the architect Benjamin Latrobe, as a "perfect master of the practice of building and surveying," Pope had devised a method of constructing a cantilever arch out of wooden parts. He explained his method, and proposed to demonstrate it across either the Hudson or the East River, in *A Treatise on Bridge Architecture* — the first study of its kind to appear in America.[2]

Like the more famous Pope, the American builder declaimed frequently in rhyme. His epigraph blazed on the title page:

> Exulting Science now disdains
> The ties of custom's proud controul,
> And breaks the rude and barbarous chains
> That fetter'd down the free-born soul.

And like Jefferson, Pope gave "the ancients" their due, but respected "experience" most of all. In a study of the past, he pointed out in his Preface, we discover "those fundamental rules which

2. Very little is known of Thomas Pope beyond the few comments made by Latrobe. See Talbot Hamlin, *Benjamin Henry Latrobe* (New York, 1955), 419. The full title of Pope's book was, in proper eighteenth-century style: *A Treatise on Bridge Architecture, in which the Superior Advantages of the Flying Pendant Lever Bridge are Fully Proved* (New York, A. Niven, 1811). All page references are to this edition.

have, in later times, governed the improvement of every age." But the past cannot answer the questions of the present. There is no true standard except "experience." The practical men, the craftsmen, are the genuine scientists; the academicians are "unskilled pretenders."

There is nothing distinctly American about Pope's ideas. They were prevalent throughout western Europe in the last half of the eighteenth century. The work of engineers like Perronet in France, and Rennie and Telford in England, had demonstrated that the age of steam required a new marriage between theory and practice. But in advocating that such a marriage take place in America, Pope argued for America's unique historical and geographical advantages.

Like Horatio Greenough in the next generation, Pope condemned the Georgian style of public architecture on behalf of simpler vernacular forms. About façades he writes, "we have the painful mortification to witness the whole of an extended front, though built with marble, crowded with glaring absurdities from one end to the other." This situation ill bespeaks "the wisdom, grandeur and correct taste of a great nation." (p. xxi) Pope blamed the academic imitators, the "gentlemen of the gown," those flimsy pretenders to Science, and enemies to the useful Arts, who now strut about like so many crows dressed in a few borrowed plumes, which only serve to make their deformity more conspicuous." (p. xxii) His solution was "a combination formed of ingenious mechanics and learned mathematicians." The list of subscribers to his *Treatise* consists largely of craftsmen: masons, carpenters, stone cutters, shipwrights, and merchants. Professional and educated classes are also represented by Governor Daniel D. Tomkins, Lieutenant Governor Dewitt Clinton, James Renwick, Robert R. Livingston, the president of the New York American Academy of Arts, and several faculty members of Columbia College.[3]

3. Horatio Greenough, *Form and Function*, ed. Harold A. Small (Berkeley, 1958), 64–5. For the impact of engineering upon the theory of design, see Nikolaus Pevsner, *Pioneers of Modern Design: From William Morris to Walter Gropius* (Penguin

Pope's main concern, however, was bridges. The study consists of four parts; a historical account of the development of bridges, a description of Pope's own patented invention, a cantilever "Flying Pendant Lever Bridge," an appraisal of the structural uses of native timber, stone, brick, and iron, and an extraordinary conclusion, a verse essay of 105 heroic couplets proposing a model bridge at New York. On the eve of the nation's first period of modern technological change, Pope enlists history and invention, science and poetry in America's campaign to master the continent.

Pope's historical account of "sundry bridges," still a major source of information, serves in the *Treatise* as a prologue to the yet unwritten chapter on American bridges. In the New World, geography had prepared a new phase in bridge building:

> It is a notorious fact that there is no country in the world which is more in need of good and permanent Bridges than the United States of America. Extended along an immense line of coast on which abound rivers, creeks, and swamps, it is impossible that any physical union of the country can really take place until the labours of the architect and mechanic shall have perfectly done away with the inconvenience arising from the intervention of the waters.

If nature created the problem, it also provided for the solution: "Our forests teem with the choicest timber; and our floods can bear it on their capacious bosoms to the requisite points." In short, "Public spirit alone is wanting to make us the greatest nation on earth; and there is nothing more essential to the establishment of that greatness than the building of bridges, the digging of canals, and the making of sound turnpike roads." (p. 127)

From this argument Pope proceeds directly to a "mathematical description" of his invention, a prefabricated timber bridge which can be mass-produced and assembled on the building site. Using

Books, 1960), rev. ed., 118–48, and, Walter Curt Behrendt, *Modern Building: Its Nature, Problems and Forms* (New York, 1937), 71–6.

the method of his masters, Archimedes, Galileo, and Newton, Pope demonstrates through axioms and deductions the practicality of his vision. Furthermore, the mathematical nature of the plan, together with the reliance upon native timber, meant that the Flying Pendant Lever Bridge was universally applicable in America: potentially, it was a national form.

The bridge itself was a very flat arch, consisting of twin cantilevers joined at the center, and stiffened with diagonal bracing. The two cantilever arms were made of longitudinal ribs formed into a solid sheathed girder. Pope claimed that such a structure could reach 3000 feet across the Hudson River; if the principles were mathematically sound, he felt, only the strength of the material would limit the size of the span. But, as a start, Pope told of a 94-foot model of a Flying Pendant Lever Bridge, or, as it came to be known, the "rainbow bridge," which he had exhibited in New York as a proposed East River Bridge. He included testimony by a group of New York shipwrights about the soundness of the plans. The "rainbow bridge" was to soar 1800 feet from shore to shore, 223 feet above high water — dimensions which exceed John Roebling's East River Bridge.

It is significant that Pope did not design his bridge to fit any specific place; it was an invention in the broadest sense, a contrivance to be used wherever a bridge was needed. In this sense it can be spoken of as a "pure" bridge, making its national significance all the more forceful. Pope's invention represented the "free-born soul" which "breaks the rude and barbarous chains" of academic tradition; it represented America itself.

In the long poem which serves as his conclusion, Pope writes:

> Let the broad arc the spacious HUDSON stride,
> And span COLUMBIA's rivers far more wide;
> Convince the world AMERICA begins
> To foster arts, the ancient work of kings.

The poem is a plea for the chance to build one model bridge (in this case, over the Hudson River, which has the double virtue of being wider than the East River, and of fitting the metrical pattern of the line). The very boldness of the plan was, Pope thought, its most attractive feature:

> Stupendous plan! which none before e'er found,
> That half an arc should stand upon the ground . . .
> Like half a rainbow rising on the shore,
> While its twin partner spans the semi o'er,
> And makes a perfect whole, that need not part,
> Till time has furnished us a nobler art.

About half of the poem describes the technical aspects of the bridge, the "simple rules" upon which this self-evident structure is based. The rest of the poem is taken up with a dialogue between the author and a skeptic, who wonders "how to reconcile those novel truths/With what the *Doctors* teach their college youths." The poet argues for experiment and freedom against those "fools" who teach "That nothing strange or new can e'er be brought,/But what in ancient times were known or wrought." Pope casts himself and his bridge — a "perfect whole" — as defenders of truth and science against ignorance and superstition.

Thomas Pope was not given the opportunity to build his bridge; three years later he was in Pittsburgh, without work. Latrobe tried his best to procure a position for the unemployed architect, who "has with a large & expensive family shared the fate of others in our seaport towns and is now out of business." But his effort failed: "I feel most exceedingly sorry for Pope. . . . He is besides crazy about his patent lever bridge." In any case, his bridge would not have arched either the Hudson or the East river; wood is too light a material to support a single span of such measurements. But the span was more than anything else a vision. Pope seemed obsessed, in fact, with the visual form rather than the function of his bridge;

he failed to describe a roadway, or the kind of traffic it might carry. Illustrated in the *Treatise*, the "rainbow bridge" is a flat, graceful arch, flanked on the New York side with two spires. The slender, tapered arms of the arch foreshadow the stark lines of Robert Maillart's reinforced concrete arches in Switzerland. For Pope, the rainbow arch was an ideal for America. To "cultivate its growth" would bespeak nobility of heart and mind. Poor as he was, Thomas Pope remained convinced that to raise his bridge would be a tribute to science, to art, and to America for fostering both.

II

A more accurate sign of what was being fostered is the report in 1811 of a New York commission appointed four years earlier to propose "Improvements touching the layout of streets and roads in the City of New York." This report established the gridiron street plan for Manhattan, a plan which, according to one historian, "marks the division between old and modern New York."[4] If Pope's vision belonged to the eighteenth century, the commissioners' report, whose sole concern was efficiency and exploitation of the land, belonged to the nineteenth. They make a nice contrast in values.

The gridiron plan of 1811 has been blamed for many of the unpleasant features of modern Manhattan: the narrow east-west streets, the congestion, the unimproved condition of riverside areas. The grid became a vise. Strictly speaking, it was not a city plan at all; compared to L'Enfant's plan for Washington, it was simply a street map. One modern study has called it a drainage system.[5]

Compared to Pope's "rainbow bridge," the gridiron was totally

4. I. N. Phelps Stokes, *The Iconography of Manhattan Island, 1498–1909* (New York, 1918), III, 478.
5. Thomas Adams, Harold M. Lewis, Lawrence M. Orton, *The Building of the City: Regional Plan of New York and Its Environs*, II (New York, 1931), 51.

devoid of art or beauty; it was a strict application of plane geometry. Its only intention was to lay out streets and divide the land into salable packages. The commissioners were unmoved by thoughts of national grandeur. Explaining their choice of the gridiron pattern, they wrote that they had considered "whether they should confine themselves to rectilinear and rectangular streets, or whether they should adopt some of those supposed improvements, by circles, ovals and stars, which certainly embellish a plan, whatever may be their effects as to convenience and utility." Embellishment was so far from their purpose that they used the term with disdain.

The commissioners did not hide their assumptions: utility meant nothing more or less than a straight line between any two points. Speaking of themselves in the third person, they wrote:

> In considering that subject, they could not but bear in mind that a city is to be composed of the habitations of men, and that strait sided and right angled houses are the most cheap to build, and the most convenient to live in. The effect of these plain and simple reflections was decisive.[6]

Moreover, economy was a matter of the *cash* value of land, rather than any other salutary values — the *disposal* rather than the use of land.

> Those large arms of the sea which embrace Manhattan Island, render its situation, in regard to health and pleasure, as well as to convenience of commerce, peculiarly felicitous; when therefore, from the same causes, the price of land is so uncommonly great, it seemed proper to admit the principles of economy to greater influence, than might under circumstances of a different kind, have consisted with the dictates of prudence and the sense of duty.

The same geography which moved Thomas Pope to dream of a

6. Quoted in Christopher Tunnard and Henry Hope Reed, *American Skyline* (New York, 1956), 57.

rainbow, here is an excuse to surrender "prudence" and a "sense of duty."

The peculiar style of the 1811 plan is, then, its unrelenting adherence to the single motive of exploitation. In this it was unambiguous; the landscape *had to be* subdued, not for the sake of achieving a harmonious life between man and nature, but for the sake of quick sale of private building lots. A modern city was to be imposed upon the island; nature was granted no part in determining how that city should grow and organize itself. As an exasperated critic of the plan wrote in a pamphlet in 1818, the gridiron ignored the changing levels of land, which was expected to surrender its character to the platte. The city seems, this irate citizen wrote:

> resolved to spare nothing that bears the semblance of a rising ground. . . . These are men, as has been well observed, who would have cut down the seven hills of Rome, on which are erected her triumphant monuments of beauty and magnificence and have thrown them into the Tyber or the Pomptine marshes.[7]

The land was a hindrance in the minds of the commissioners; it had to be transformed into geometry.

How did the gridiron serve the city? At first it was a means of earning public revenue. Late in the seventeenth century, the city corporation had been the leading land-owner on Manhattan Island. The land tax was the corporation's major source of revenue. The easiest way to raise large sums of money for public projects such as swamp reclamation, was either to lease or sell packages of the land. In the eighteenth century, the city used both methods; long-term leases were issued with the expectation that improvements upon the land would increase values and thus rents and taxes. The city continued this practice throughout the eighteenth century. At the beginning of the nineteenth century, there were improved lots

7. Quoted in Stokes, III, 478.

scattered across the island, most of which was still wilderness. "New streets were needed," writes one historian, "to serve the land already sold and to open up the common land still in city ownership." [8] In 1807, the legislature authorized a commission to design an efficient method to expedite the further sale of land for revenue, as well as to encourage private building that would raise tax values.

The grid of 1811 was a major step toward the transfer of ownership of the island from public to private hands. After 1811, municipal ownership and the leasehold system slowly disappeared in favor of outright sale; the real-estate speculator, like John Jacob Astor in the 1820's, assumed control of the city's land. In 1844, to settle an enormous public debt, the city finally auctioned off what remained of its original heritage of common land.

Thus the city surrendered control over its own destiny. As the *Regional Plan* of 1931 put it, the division of the land into salable packages made individual profit rather than "architectural control in the interests of the community" the decisive factor in the city's growth and appearance.[9] The residential square, development of waterfront lands, and the planning of civic centers were the most obvious casualties.

Another consequence of the 1811 plan affected the architecture of the city. Buildings necessarily were shaped by the limited space of individual lots. Narrow spaces, together with the danger of costly fires in crowded sections, made the rural New England methods of wood frame construction risky, and led to the more appropriate iron-frame structures of James Bogardus in the 1830's. These in turn led to the steel-skeleton skyscraper. This line of architectural development, based primarily on the internal structure of single narrow buildings rather than the treatment of spaces wider than the individual lot, became America's unique contribution to modern architecture. One interesting result of the emphasis

8. Cleveland Rodgers, *New York Plans for the Future* (New York, 1943), 34–53.
9. Adams, *et al.*, 50.

upon a uniform internal structure is that monumentalism in building was restricted to façades rather than the arrangement of buildings in relation to each other. The gridiron eliminated the chance to create a zone of buildings in relation to nature; instead, Frederick Law Olmsted's Central Park is set aside from the essential life of the city, in its own rectangular space, and Bogardus's iron front developed into a standard pseudo-Renaissance form that lined the crowded streets of lower Manhattan.[10]

The 1811 plan determined the character of Manhattan. It prepared the way for real-estate speculation: every street was a potential investment, a potential business street. And every street might become, by the same utilitarian logic, a highway. "The city," writes Lewis Mumford, "from the beginning of the ninteenth century on, was treated not as a public institution, but a private commercial venture to be carved up in any fashion that might increase the turnover and further the rise in land values." This was the attitude toward the land and the city fostered by the grid.[11]

III

In their mood of expansion Americans rarely paused to consider that the rainbow and the grid denoted alternative ways of creating the future. Thomas Pope's was a lofty vision based on native materials and vernacular crafts: it implied an organic culture ruled by nature and experience. The grid implied mechanization of the land — a culture devoted to accumulation, profit, and narrow utilitarianism. Needless to say each image implied a set of emotions: one was aesthetic, the other acquisitive. There would seem to be no common ground between them.

But in the inflationary feelings of pre–Civil War America,

10. See Carl Condit, *American Building Art: The Nineteenth Century* (New York, 1960), 30–50.
11. Lewis Mumford, *The City in History* (New York, 1961), 426.

economic growth did seem to have a visionary aspect. Miracles were wrought overnight, and left their trace in statistics. In the 1820's New York merchants had won control of both inland and overseas trade — a control consolidated by the opening of the Erie Canal in 1825. Thereafter, population, capital, and real-estate values climbed enormously. The population of Manhattan grew from 95,000 in 1810 to 205,000 in 1830. A conservative prediction at that time was one million by 1900; by 1860 it had already reached over 800,000. In 1825, 500 new businesses opened, and 3000 new buildings went up. Twelve banks had a combined capital of 13 million dollars, and ten insurance companies together held 10 million. By 1860, 57 banks had attained control of over 67 million dollars. Real estate was valued at about 400 million dollars; personal property was worth close to 180 million dollars. The prospects of wealth and population for the fish-shaped island seemed unlimited. And this unmistakably meant progress.[12]

Transportation became a crucial matter to the daily life of the city, particularly since the municipal government, hampered by its subordination to the state government at Albany, was unable to mobilize public resources to meet the needs. Transportation was left in the hands of private developers, and the result was confusion. The first street railroad appeared in 1831, New Yorkers already demanding "rapid" transit; by 1860 there were twenty competing lines, each operating its own self-determined route. Not until the 1890's did the city itself enter the tangled field of public transportation.[13]

12. See Robert Greenhalgh Albion, "New York Port and Its Disappointed Rivals, 1815–1860," *Journal of Economic and Business History*, Vol. III (1930–31), 602–29. Albion observes that the success of New York commerce was based on four factors: 1) an attractive auction system for disposing of imports; 2) a regular transatlantic packet; 3) the development of trade along the coast, especially with southern cotton interests, and 4) the Erie Canal. See also Blake McKelvey, *The Urbanization of America, 1860–1915* (New Brunswick, 1963), 4–35.

13. Rodgers, 47. Also, Arthur Meier Schlesinger, *The Rise of the City, 1878–1898* (New York, 1933), 78–121.

One of the most trying transportation problems concerned the masses of people — something like one-tenth of the population of Brooklyn — who crossed the East River twice daily. The experience of Walt Whitman in the 1840's and the 1850's, of living in Brooklyn and working in Manhattan, was common. The passage was, of course, by ferry.

Brooklyn in this period was called Manhattan's dormitory. But actually, it was a large city in its own right. Its growth had been even more rapid than New York's. In 1810, as a village on Long Island, Brooklyn had about 3000 people; at the end of the century, just before its consolidation with the other boroughs to form Greater New York, it had a million — the third largest city in the country. Much of its growth came from its absorption of twenty-five other suburban villages during the century, but commerce and industry were also factors. Chartered as a city in 1834, it rose to third in the nation in manufacturing by 1880, fourth in total capital invested in industry, fourth in total value of manufactured products, and second in wages. In 1880 it had over 5000 factories; twenty years earlier, it had had less than 500.[14]

In spite of its industrial and commercial growth a vigorous village pride persisted in Brooklyn throughout the century. Early in its years of growth the spirit of localism was defensive; members of the older generation set their teeth to resist the encroaching metropolitanism represented by Manhattan. New York and Brooklyn have nothing in common, neither in "object, interest, or feeling," argued General Jeremiah Johnson in 1833. Four years before his election as mayor of the city, Johnson spoke of Brooklyn as though it were a distinct region, set apart from the commercial center across the river. Geography would, he felt, preserve the uniqueness of the region. The waters that flow between the two cities "form a barrier between them which, however frequently passed, still form and must forever continue to form an unsurmountable obstacle to

14. Syrett, 140.

their union." This was surely an anachronistic point of view in 1833, at the height of the period when nature's obstacles seemed invitations to surmount them, and when the continent's waterways seemed to guarantee national unity rather than the preservation of regional peculiarities.

General Johnson's localism soon gave way to civic boosting; the charms of Brooklyn were put on the market, so to speak, in competition with the lures of Manhattan. Brooklyn businessmen wanted closer ties with the market of Manhattan; they wanted more New Yorkers to cross the river, to live on Long Island and buy their goods there. Most of all, they anticipated the rise in property values which would accompany such a move. The growth and prosperity represented by the grid was a more attractive vision than General Johnson's provincialism. And eventually the commercial classes of Brooklyn would demand a bridge, as Johnson himself foresaw in 1800, to realize that vision.

But were there no second thoughts about Brooklyn's rise to modern urbanism? One apparently optimistic citizen was Walt Whitman. The poet had divided his youth between city and country, and his poems between 1855 and 1860 show in their images an intimacy with both ways of life. In *Specimen Days* (1882), Whitman cites as one of the "leading sources" of his character the "combination of my Long Island birth-spot, sea-shores, childhood scenes, absorptions, with teeming Brooklyn and New York." There is no apparent conflict in Whitman's poetry between the two ways of life, between Long Island and the cities, except, perhaps, for the poem, "Give Me the Splendid Silent Sun" (1865). There, the poet rejected the peace of the country for the excitement of the city. But in "Crossing Brooklyn Ferry" (1856) he identified himself with both "Brooklyn of ample hills" and "the streets of Manhattan island."

In a group of articles written for the Brooklyn *Standard* in 1861–62, just before he left for the Civil War battlefront, Whitman went so far as to call for political union between the two cities, to

make them one in name. Collected as "Brooklyniana,"[15] the articles were easy rambling accounts of local Brooklyn traditions, old houses, old families, obscure incidents. He referred to stories he had heard as a boy from old-timers like General Johnson, and described his own favorite excursions on Long Island. The entire series is itself a relaxed and whimsical excursion. But the tone is deceptive. Beneath the surface we sense a conflict. The earliest Dutch settlers, he pointed out, had chosen to live in Brooklyn while Manhattan served only as their outpost. Manhattan was "sterile and sandy, on a foundation of rock," while the "aboriginal Island of Paumanock" was a "beautifully rich country, sufficiently diversified with slopes and hills, well wooded, yet with open ground enough." The farmers settled in Brooklyn, the traders in Manhattan. Nothing at all recommended Manhattan as a place to live.

The apparent point of this contrast is simply that Brooklyn and Manhattan complement each other. Whitman foresaw "a great million inhabitants" in Brooklyn alone; he was happy to report that already the smaller city was "steadily drawing hither the best portion of the business population of the great adjacent metropolis." Cheaper gas rates, "the best water in the world," light taxes, honest government — these were the virtues of Brooklyn, and these would attract the masses of New York: pay taxes and drink water east of the East River!

Despite Whitman's apparently cheerful outlook, the substance itself of "Brooklyniana" betrays a certain uneasiness. The War is never mentioned. Most of the space is given over to stories out of the rural past, a past which Whitman admitted was in danger of disappearing. "The whole spirit of a floating and changing population like ours," he observed, "is antagonistic to the recording and preserving of what traditions we have of the American Past." It is deplorable to forget the past; but this was happening " in the huge

15. *The Uncollected Poetry and Prose of Walt Whitman*, ed. Emory Holloway (New York, 1932), Vol. II, 222–325. All page references are to this edition.

cities of our Atlantic seaboard." Brooklyn and New York in particular, he wrote, are "filled with a comparatively fresh population, not descendants of the old residenters, and without hereditary interest in the locations and their surroundings." Still, he was sure, "there will come a time, here in Brooklyn, and all over America, when nothing will be of more interest than authentic reminiscences of the past." We may properly wonder what the poet expected of the sense of the past as those huge cities of the seaboard got even more gigantic. Here Whitman wants to preserve what General Johnson had tried to defend. Yet the chief enemy of tradition was precisely that language of boosting Whitman himself used.

Fortunately, Whitman had at least two languages; "Brooklyniana" is forgotten, and "Crossing Brooklyn Ferry" still lives, still moves readers. The poem addresses the unborn millions, and welcomes them to the ferry as it makes its orderly passage from one shore to another. The imagery evokes eternal objects: water, land, hills, birds. They are "dumb ministers"; they assure the continuity of life and the immortality of the poet. The ferry is a way to reinstate oneself in the "float" of existence. The language of the booster, however, would lead one to conclude that the ferry was, after all, a highly inefficient way for millions to cross a river.

IV

In 1829 the New York *Gazette* reported a proposal for a chain suspension bridge, 2100 feet from toll station to toll station, arching 160 feet above the East River. The promoter had two arguments: such a bridge would supply a monument to rank New York and Brooklyn with London and Westminster, and "the rise of property in Brooklyn alone would defray the expense of the project." He suggested that "pure" water from Brooklyn could be carried to Manhattan in pipes under the bridge floor.[16]

16. Reported in *Engineering News*, Vol. X (May 26, 1883), 241.

A more feasible proposal came in 1835 from a civil engineer and architect, W. Lake, in a letter to the *American Railroad Journal*. He referred to the common inconvenience suffered by ferry users, especially those in a hurry. A solution to the daily interruptions of business, he wrote, would be a suspension bridge which would not interfere with river traffic (although his plan was for a five-span bridge, which would have rather crowded the river with supporting piers). Such a bridge, he pointed out, was not only practical from the engineering point of view, but also commercially profitable: it would be a good speculation for an ambitious company. Also, it would add beauty to the city.

> The rapidly increasing intercourse between New York and Long Island will, probably, soon require the formation of a wide street leading from Broadway. What a beautiful connection would such a bridge, as it is here described, form between this supposed new street and Fulton Street, Brooklyn! It would altogether be one of the most magnificent suspension bridges in the world.[17]

In a subsequent issue of the journal, Mr. Lake reinforced his proposal by describing the theory and history of suspension bridges, referring to Thomas Pope's *Treatise*.

There were other plans and projects. In 1836, someone suggested a dike across the river; in the 1840's, there was talk of a "stupendous" bridge one hundred feet wide.[18] One projector blandly proposed to fill in the East River, giving the city more land, more profit, and settling for all the time the matter of bridges.[19] In these years a street in Brooklyn running down to the river was hopefully named Bridge Street.

17. *American Railroad Journal*, Vol. IX (January 10, 1835), 4–5.
18. Syrett, 146.
19. Rodgers, 56n.