1

Narrating the Assimilation of Nature

Alexis de Tocqueville remarked that white Americans observed the rapid disappearance of the Native American with equanimity and naturalized it as part of an inevitable process. The "Anglo-American race," he wrote, "fells the forests and drains the marshes; lakes as large as seas and huge rivers resist its triumphant march in vain. The wilds become villages, and the villages towns. The American, the daily witness of such wonders, does not see anything astonishing in all this. This incredible destruction, this even more surprising growth, seems to him the usual progress of things in this world. He gets accustomed to it as to the unalterable order of nature."[1] Yet how could one reconcile the contradiction between Native American decline and white American growth? How could radical change be a part of an "unalterable order"?

   Most nineteenth-century Americans believed in a deceptively simple story in which the natural world was incomplete and awaited fulfillment through human intervention. Being incomplete, the land needed technological improvements that would express the pattern latent in it. The transformations Americans envisioned were thought of less as violations of nature than as useful improvements. John Greenleaf Whittier contrasted the American and British views of such matters:

When the rail-cars came thundering through his lake country, Wordsworth attempted to exorcise them by a sonnet; and were I not a very decided Yankee, I might possibly follow his example, and utter in this connection my protest against the desecration of Pawtucket Falls, and battle with objurgatory stanzas these dams and mills. . . . Rocks and trees, rapids, cascades, and other water-works are doubtless all very well; but on the whole, considering our seven months of frost, are not cotton shirts and woolen coats still better? As for the spirits of the river, the

Merrimac Naiads, or whatever may be their name in Indian vocabulary, they have no good reason for complaint; inasmuch as Nature, in marking and scooping out the channel of their stream, seems to have had an eye to the useful rather than the picturesque. After a few preliminary antics and youthful vagaries up among the White Hills, the Merrimac comes down to the seaboard, a clear, cheerful, hard-working Yankee river. Its numerous falls and rapids are such as seem to invite the engineer's level rather than the pencil of the tourist; and the mason who piles up the huge brick fabrics [of mills] at their feet is seldom, I suspect, troubled with sentimental remorse or poetical misgivings.[2]

Rather than protest against the creation of an industrial landscape, Whittier appealed to the practicality of producing clothing in factories, and he read the landscape for nature's intentions. The river had been created not to be picturesque but to be useful. There was no need for sentimental misgivings about building dams; the sites themselves "seem to invite the engineer's level." For Whittier, and for most Americans of the middle of the nineteenth century, the river was waiting to be dammed; similarly, the prairie was waiting to be farmed, the woodlands to be cut down, and the desert to be irrigated. In this view, Americans used new technologies not to overrun nature but to complete the design latent within it. The second creation, though man-made, was in harmony with the first.

Nineteenth-century Americans repeatedly told themselves stories about the mastery and control of nature through technology in which radical transformations of the landscape were normal developments. Ralph Waldo Emerson, in his essay "Wealth," argued: "Men of sense esteem wealth to be the assimilation of nature to themselves, the converting of the sap and juices of the planet to the incarnation and nutriment of their design. Power is what they want, not candy—power to execute their design, power to give legs and feet, form and actuality to their thought; which, to a clear-sighted man, appears the end for which the universe exists, and all its resources might be well applied."[3] In this vision, which was by no means limited to Emerson, the land exists for a purpose, and humans are expected to facilitate "the end for which the universe exists."

Emerson's self-reliance was teleological, aiding an inevitable organic process. In the larger scheme of things, it did not matter that Emerson's "clear-sighted man" was by Emerson's own admission a "monomaniac" whose thoughts were riveted to one project. Emerson had seen "the men of the mine, telegraph, mill, map and survey—the monomaniacs who talk

up their project in marts and offices and entreat men to subscribe—how did our factories get built? How did North America get netted with iron rails, except by the importunity of these orators who dragged all the prudent men in?"[4] In his formulation, unimpeded exercise of the imagination might encourage single-minded obsessions, but these were necessary to prod the citizenry into action. 'Monomania' is an unsettling word, but it seems to be balanced by 'prudence'. A century and a half later these remarks suggest less sanguine observations, however; "monomaniacs" with an aggrandizing view of nature are still lobbying in state legislatures and in Congress.

The persistent desire to assimilate nature to a second technological creation was the central feature of technological foundation stories.[5] In each case, popular narratives explained how Americans were using new tools and machines to assimilate nature. These stories described the creation of new social worlds, ranging from frontier settlements to communities based on irrigation. In each case, a new form of society based on successful exploitation of a new technology became possible. The stories were central to the new nation's perception of history and geography, which is to say its perception of time and space.

Technological foundation stories also provided a framework for the individual's "pursuit of happiness." They were narratives of abundance that emerged during the period of Enlightenment and were actualized during industrialization. To put it another way: These stories emerged when new machines, notably railways and textile mills, exceeded the power of humans, draft animals, or simple grist mills. A surplus of mechanical force was taken to be axiomatic, making possible new landscapes, boomtowns, sudden profits, personal success, and national progress. For most Americans, the foundational belief in naturally abundant power described (and was inseparable from) a laissez-faire ideology in which the self-reliant individual had only to exert himself in order to rise in the world. This story flourished in the nineteenth century in many forms. It continues to resonate powerfully with the American public despite the increasing awareness of environmental limits to growth.[6]

A technological narrative is selective. It singles out particular objects while deemphasizing or even deleting others. Outside the confines of training manuals and how-to books, the stories told about tools and machines

are not cluttered by technical details. Foundation narratives appear not only in the work of novelists and poets but also in travelers' accounts, in newspaper stories, in editorials, in political speeches, in diaries, in world's fair exhibits, in letters, in legal cases, in history books, in media events, in pageants, in paintings, in advertisements, and in popular songs. These narratives within politics, commerce, and popular culture form a common storehouse that poetry and fiction explore, amplify, play with, and sometimes subvert.

Second-creation stories can be found in the loose fabric of a newspaper or in the midst of a speech, a travel book, or a diary. These often short narratives articulate the common understanding of technologies in the creation of society and serve as a discursive bridge between social history and fiction. They refer to verifiable things and events, but they have begun the process of translating them into literature. For example, a wide range of earlier stories about steamboating on the Ohio and Mississippi Rivers drawn from newspapers, travelers' accounts, and local histories place Mark Twain's writings within the larger discourse about the settlement of the Mississippi Valley.[7] In this context, the publication of *Life on the Mississippi* in the 1870s marks the final stage in the development of a set of second-creation narratives focused on steamboats.[8] During the nineteenth century, similar narratives developed based on the axe, the mill, the canal, the railroad, and irrigation. In each case, the dominant narrative was inseparable from building a house or founding a community in the wilderness.

Technological foundation narratives appealed to most but not all Americans. Their popularity arose from their *apparent* ability to explain historical events and fuse them with cultural values. They structured a selected set of events in a way that appealed to many white middle-class Americans as a reasonable account of their history. During the nineteenth century, however, a complex narrative system emerged that extended, defended, amended, or contradicted the foundational, progressive formulation.[9] Many of these alternative narratives, or "counter-narratives," were written by or addressed to groups that had been silenced in or absent from the original formulation.

Although no fixed structure lies beneath the many technological creation stories, there are recurrent features. My purpose is not to establish a

"deep" structure underlying hundreds of individual examples, nor is it to suggest an idealized form that such stories ought to "live up to." Rather, it is to suggest what a technological foundation story may contain and how it unfolds:

- A group (or an individual) enters an undeveloped region.
- They have one or more new technologies.
- Using the new technologies, they transform a part of the region.
- The new settlement prospers, and more settlers arrive.
- Land values increase, and some settlers become wealthy.
- The original landscape disappears and is replaced by a second creation largely shaped by the new technology.
- The process begins again as some members of the community depart for another undeveloped region.

The order and the meaning of these elements vary with the author and with the audience. In subsequent chapters I will explore this narrative variety; I will not focus on how completely any individual instance realizes the pattern that is abstracted from the many individual cases and presented as an introduction, not a conclusion. Not every story contains all the elements, their order may vary, and the meaning given to the whole changes over time. However, a few generalizations can be made:

- A foundation narrative is usually not about an individual hero.
- Often it is told in the passive voice and emphasizes the technology.
- In such cases, it is the technology—the axe, the mill, the canal, the railroad, or the irrigation ditch—that "causes" the chain of events.
- Though an individual or a corporation is acknowledged to have initiated the process or to have profited from it, the story is presented as a typical case of what "inevitably" will take place.[10]
- The narrative is less a story about a hero than an example of a developmental process. It is an exemplary tale of progress in which human will is conflated with natural forces (as in Emerson's essay, where individual entrepreneurship merges with men's "assimilation of nature to themselves").
- These stories are about "the end for which the universe exists, and all its resources might be well applied."[11]

The foundation narratives were progressive and optimistic. Not merely descriptions written after the fact, they were stories that encouraged settlers to give up a familiar life, move westward, and put new lands into production. They gripped the imagination and convinced people to leap into the unknown.

A foundation story had to appear to be both a sober matter of fact and a promise of betterment. It had to seem a verified part of the past as a guarantee of its probable reenactment in the immediate future. Because a story had to seem repeatable, its action emphasized not the struggles and triumphs of an extraordinary individual but the movement of a people as a whole. The narrative of second creation was about the unfolding of "destined" processes. Therefore, although the foundation narrative was a story of national transformation, the state's role was reduced to a guiding influence. If the state were to play a decisive role, then the repeatability of the narrative would come into question, and it would become a tale about politics rather than a matter of manifest destiny. The narrative was, therefore, implicitly based on laissez-faire economics and a whiggish sense of history—assumptions that a majority of nineteenth-century Americans shared.

Whiggish history, manifest destiny, and technological conquest all are open to questioning today. As Michael Adas notes, "evidence of scientific and technological superiority has often been put to questionable use" and has "legitimized efforts to demonstrate the innate superiority of the white 'race' over the black, red, brown, and yellow."[12] Chapters 3, 5, 7, and 9 explore how mastery of tools and machines became fundamental to the dominant technological creation stories. Chapters 4, 6, 8, and 10 examine counter-narratives based on the same events but seen from the viewpoint of those whom new technologies disturbed or displaced, such as Native Americans and early environmentalists. Counter-narratives resist or reimagine technological change and seek to ground identity not in machines but in other cultural artifacts or values.

Hayden White has argued that differences between historical interpretations arise from contrasting techniques of encoding facts within a larger design. A story achieves its meaning through "the destructuration of a set of events (real or imagined) originally encoded in one tropological mode and the progressive restructuration of the set in another tropologi-

cal mode." When a narrative such as the technological creation story has "become encoded by convention, authority, or custom," it is attacked through "a process of decodation and recodation." The explanatory force of this attack depends on "the contrast between the original encodation and the later one."[13] Native Americans, farmers, fishermen, striking workers, and environmentalists constructed counter-narratives cast in a different figurative mode that emphasized conflict rather than the harmonious unfolding of events. Whereas second-creation stories treat the land as empty space, ignoring the original inhabitants, the counter-narratives are told from the viewpoint of the indigenous community and/or emphasize the ecological effects of technological change. The ways in which the foundation narrative can be recoded are many and can be extremely complex. Though it has no ideal form, the following inversion of the earlier example suggests how a dominant story might be challenged:

• Outsiders enter an existing biotic and/or human community.

• They acquire its land and assets by force or legal trickery.

• They possess powerful new technologies.

• They begin to use these technologies to transform the landscape, undermining the existing community's way of life.

• The existing community and the new one come into conflict.

• The new community wins.

• Additional settlers arrive and complete the transformation of the landscape.

• The original community loses population and goes into decline.

• Its people become marginal and disappear or move away.

Unlike the foundation story, which traces an inevitable working out of "manifest destiny" and the free market for middle-class white Americans, the counter-narrative is often a tragic tale of struggle and defeat that begins with treaty violations or other illegalities. Some farmers opposed the construction of mill dams because they flooded their hay fields, and some fishermen opposed the construction of dams because the prevented fish from migrating upstream. Native Americans along the Columbia River told of how dams prevented salmon from spawning and so undercut the material basis for their way of life.[14]

A classic example of a counter-narrative is the autobiographical book *Black Elk Speaks*.[15] It begins with a depiction of the traditional life of the Oglala Sioux, including a powerful evocation of Black Elk's visionary experiences and his initiation into manhood. It describes the whites' invasion of the Sioux lands, solemn treaties and their violation, the coming of the railroad, the willful destruction of the buffalo, the loss of territory and population, the Phyrric victory against Custer, the continual arrival of more white settlers, the slaughter at Wounded Knee, and the precipitous decline of the Sioux. Black Elk tells this story through a white interpreter, John Neihardt, who transforms it from an oral tale into a written text. Neihardt presents it not as the inversion of a technological foundation story but as a surviving record of "the world we have lost." The railroad, the telegraph, and other technologies are powerful, but the story marginalizes them while validating a Native American cosmology expressed through Black Elk's personal visions, healing ceremonies, and out-of-body experiences. Counter-narratives reconstruct familiar events, sometimes by emphasizing a different ideological orientation or a fundamentally different epistemology.

Two variants of the foundation narrative and the counter-narrative are the utopian story (which can emerge only at the start of the narrative cycle) and the nostalgic tale (which can appear only at its end).[16] Although neither will receive much attention in this study, a brief characterization follows.

The utopian narrative anticipates a sudden technological breakthrough that allows people to create a society of ease and abundance. In the later nineteenth century, this story was often presented at world's fairs, notably the one held in Chicago in 1893. Early in the century, imagining the future was largely confined to written texts, such as J. A. Etzler's *The Paradise within the Reach of All Men, without Labour, by Powers of Nature and Machinery* (1833).[17] Etzler argued that humans could harness the wind (with immense sails driving mills) and the sun (with mirrors boiling water to create steam) to produce perpetual power for every imaginable purpose.[18] He imagined huge earth-moving machines capable of digging canals or ripping out trees and flattening the earth into perfect fields. He proposed making an infinite supply of building materials much as bricks were produced, and he believed that a substitute for cloth could be manu-

factured with equipment modeled on paper-making machinery.[19] Etzler's story anticipated many of the extravagant claims later made for atomic power, plastics, alternative energies, and the Internet. Such visionary stories usually seem probable only to a minority who believe that machines can radically reconfigure society. Whittier met this utopian speculator and reported: "He was possessed with the belief that the world was to be restored to its Paradisiacal state by the sole agency of mechanics; and that he had himself discovered the means of bringing about this very desirable consummation. His whole mental atmosphere was thronged with spectral enginery—wheel within wheel—plans of hugest mechanism—Brobdingnagian steam engines—Niagaras of water power—wind mills with 'sailbroad arms,' like those of Satan in chaos—by whose application every valley was to be exalted, and every hill made low—old forests seized by their shaggy tops and uprooted—old morasses drained—the tropics made cool—the eternal ices melted around the poles—the ocean itself covered with artificial islands—blossoming gardens of the Blessed, rocking gently on the bosom of the deep."[20] That Whittier had an ironic view of Etzler's visions (as did most of his contemporaries) is evident from his references to *Gulliver's Travels* and to the coming of the Messiah, who also would flatten the mountains, exalt every valley, and usher in a golden age.

Etzler's is an extreme case of a utopian narrative that describes future perfection based on the control of new technologies. Such true utopias shade off into the speculative designs of real estate agents, town planners, stockbrokers, and promoters of new inventions, all of whom traffic in visions of transformation. The foundation story proper is distinct from the utopian narrative in that it purports to describe changes that have already taken place rather than to project possibilities, and also in that these changes are gradual even if they break decisively with the past. The foundation narrative describes an evolutionary process in which new technologies increase the wealth and abundance available to the average person. It describes what seem to be actual recent events, and it is widely accepted by most members of the middle class as a factual representation.

A speech by Daniel Webster illustrates this evolutionary view embedded within the foundation narrative. One of the most famous orators of the nineteenth century, Webster was invited to speak to the Society for the Diffusion of Useful Knowledge in Boston in 1836, three years after Etzler's

book appeared. Rather than paint fanciful visions of what might be done using the force of the sun and wind, Webster based his argument on the known productive power of the steam engine. He observed: "There has been in the course of half a century an unprecedented augmentation of general wealth. Even within a shorter period, and under the actual observation of most of us . . . vastly increased comforts have come to be enjoyed by the industrious classes." It seemed self-evident that "the present exceeds the past, in regard to the shelter, food, clothing, and fuel enjoyed by laboring families."[21] He then asked what were the causes of this progress, and concluded: "The successful application of science to art increases the productive power and agency of the human race. It multiplies laborers without multiplying consumers, and the world is precisely as much benefited as if Providence had provided for our use millions of men, like ourselves in external appearance, who would work and labor and toil, and who yet required for their own subsistence neither shelter, nor food, nor clothing."[22] For Webster, "this mighty agency, this automatic labor whose ability cannot be limited nor bounded" produced general prosperity. Etzler had imagined sudden transformation; Webster described a more gradual development. His narrative is the characteristic American story: change is rapid but piecemeal, ameliorative, and beneficial to all.

Like Webster, the influential newspaper editor Horace Greeley argued that mechanization was the root cause of progress and of the dispersal of wealth: "In our discoveries in science, by our applications of these discoveries to practical art, by the enormous increase of mechanical power consequent upon mechanical invention, industry and skill, we have made them a common possession of the people; and given to Society at large—to almost the meanest member of it—the enjoyments, the luxury, the elegance, which in former times were the exclusive privilege of kings and nobles."[23] Webster and Greeley articulated the master narrative of technological amelioration, in which the second creation emerges seamlessly out of the first.

In contrast, the narrative of technological nostalgia rewrites the second-creation story after its central tools or machines have become obsolete or outmoded. The nostalgic narrative is about an irrecoverable and static yesterday, not a dynamic present. For example, once Americans adopted automobiles and trucks, they rewrote the foundation story of railroading

in nostalgic terms, just as they had reconceived the steamboat as an idyllic representation of the past after the railroad superseded it. A technology once celebrated as the source of American prosperity is now described as quaint. A mill that once called a town into being is now a restaurant and a reminder of the simpler life of the past. A canal, once an artery of commerce that caused a city to grow, is now a tourist attraction. A steam railroad is maintained by buffs and made available to the public on holidays. When new, each technology represented a sudden increase in power. In retrospect, each is diminished. Indeed, they eventually seem to be almost "natural." The axe, the saddle, the rifle, and metal tools were products of centuries of development, but in nostalgic stories they are often decontextualized and thereby naturalized. Thus, nostalgic stories do not reply to counter-narratives; they simply restate the major elements of a second-creation story, emphasizing the automatic unfolding of inevitable events.

The foundation narrative appears to be a transparent description of events, but it is not. Technologies are elements of the dialogue about how the world is structured. This dialogue takes the form of stories people tell one another to make sense of the transformations that accompany the adoption of a new tool or machine. They may be foundation narratives that seem to explain the origins of the present; they may be counter-narratives that dispute that story. They may project utopian visions of ease and abundance; they may focus on a way of life that is fading into the past. (In other stories, especially during the twentieth century, apocalyptic machines run amok; that subject requires another book.[24]) People seldom understand machines as purely abstract things in themselves. For Americans settling a new continent, technologies became central to stories explaining how they had developed their New World. By the 1830s, when Tocqueville took his tour, mechanical progress had, paradoxically, become an unalterable part of nature.

Let us now return to Whittier's refusal to protest the industrial use of Pawtucket Falls. As a sophisticated writer aware of the several narratives that might be employed to explain how Lowell's factories had come into existence, Whittier does more than simply present a series of facts. He dramatizes his version of the facts by contrasting it with Wordsworth's response to industrialization. Whittier recognizes that one might see the construction of dams as an aesthetic loss, and even evokes the possibility

that white men have desecrated the lands of Native Americans, but he does so to highlight the practical advantages of the mills, to invite us to see them as masons and engineers do rather than as tourists do, and to accept nature's manifest intention that the Merrimack become a "cheerful, hard-working Yankee river." Whittier's narrative is defined by the evocation of counter-narratives, and it gains meaning through what it opposes. Thus, the narrative of second creation did not emerge separately from the counter-narrative. Rather, competing interpretations emerged in an interdependent process. If second-creation stories organized events into a description of the inevitable and benign assimilation of nature, counter-narratives marshaled the same facts into accounts of destruction and loss. During his journey through the United States, Tocqueville heard examples of both.