



George Inness, *The Lackawanna Valley*, 1856, oil on canvas 33 7/8" x 50 1/4"
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Art, Science, and Ecological Inquiry: The Case of 19th-Century American Landscape Painting

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Introduction

One of the consequences of the professionalization of disciplines over the past century has been the almost complete isolation of the arts from the sciences. By contrast, the research currently in progress at Nine Mile Run seeks to build bridges between these now remote islands of inquiry. A basic premise of the Nine Mile Run Greenway Project is that the study of both natural and social systems requires a more integrated approach than the logic of specialization and sub-specialization allows. We are therefore interested in what can be learned by returning to earlier methods of inquiry that flourished before the hardening of disciplinary boundaries.

This paper will turn its attention to one historical case of cross-fertilization between the visual arts and the natural sciences: American landscape painting of the mid-nineteenth century. This case is especially important to us because it coincides with the beginnings of ecological consciousness in the U.S. and because it is implicated in the struggle between the competing demands of "nature" and development.

Landscape painting was practiced in this country from its founding, but it did not become widely popular until the 1820s and 1830s when artists such as Thomas Cole—originator of the so-called "Hudson River School"—pioneered a "national" style of landscape painting that depicted distinctively American scenery allied with almost microscopically close observation of nature. Cole and his kindred spirits treated natural scenery reverentially, as God's own creation, and accordingly they placed great stress on sketching from and in nature. By the 1850s, the painter Asher B. Durand, Cole's successor as leader of the Hudson River group, rejected the whole idea of conventional art instruction and recommended instead "the STUDIO of Nature."¹ This attitude toward

¹Asher B. Durand, "Letters on Landscape Painting," *Crayon* 1 (January 1855), 2.

²William H. Truettner and Alan Wallach, eds., *Thomas Cole: Landscape into History* (New Haven: Yale University Press, 1994), 29-31.

the natural landscape was part of a larger phenomenon that recent scholars have dubbed "landscape tourism."² Landscape tourism became more popular as the virgin [i.e., pre-European contact] landscape³ increasingly disappeared: the subjugation of Native American populations, the development of the railroad, and the ever-expanding frontier of new settlement and development made "nature" less remote, safer and easier to reach and enjoy for both artists and tourists. The reverence for nature, therefore, cannot be disentangled from the very forces that were encroaching upon nature and destroying it.

We will examine the work of mid-century American landscape painters in three different ways—each of these relevant to our inquiry.

The artist as scientific observer

Through much of the nineteenth century, artists were included in scientific expeditions exploring the North American continent. They were considered critical to the task of scientific documentation; they drew and painted little-known landscapes and the flora and fauna (and sometimes native inhabitants) within them. As Barbara Novak has written, "the artist [on such expeditions] was explorer, scientist, educator, frontiersman, and minister."⁴ Perhaps the most astonishing example is the work of the Swiss artist Karl Bodmer, part of the scientific expedition through the Northwest in the 1830s led by the German Prince Maximilian, who was himself a student of the great scientist Alexander von Humboldt. Bodmer's watercolor drawings record with exceptional clarity and freshness the particular beauty of people, plants, animals, and geological formations along the upper Missouri River.⁵

Artists played an important role in such enterprises because they were in effect the instruments of empirical observation. Careful visual observation underlay the natural classification systems developed and refined since the eighteenth century; since visual artists were trained to observe and record their observations, their work merged with scientific inquiry.

The same could be said of landscape painting with no explicit scientific purpose. Cole and other artists walked the landscape extensively and studied it minutely on site. They were interested in both macro and micro processes—the geological forces that shaped the landscape and the botanical diversity that flourished within it. Landscape painters kept books on geology and botany in their libraries and sometimes even corresponded with leading scientists of the day. (Cole, for example, helped procure a collection of fossils for the eminent scientist Benjamin Silliman;⁶ while Cole's most celebrated pupil, Frederick Church, was an avid enthusiast of Humboldt.⁷) Typically, Hudson River School artists painted a detailed foreground to showcase local flora and often represented views with striking geological features to suggest the processes of change. Their work amounted to a kind of scientific expedition of the landscapes they visited. One critic in 1859 went so far as to declare that the landscape painter "is a geologist. *Continually meeting with different strata, the query naturally arises, why this diversity? He meets with immense fissures and volcanoes, and he asks himself whence did they originate and by what convulsions were they produced? To him, therefore, belongs the study of geology, as he more thoroughly than any other can imitate what nature has produced.*"⁸

³We know from recent scholarship that Native Americans did not leave the landscape untouched but actively altered it, through controlled burning of forests, agriculture, etc.

⁴Barbara Novak, *Nature and Culture: American Landscape and Painting 1825-1875*, rev. ed. (New York: Oxford University Press, 1995), 137.

⁵William H. Goetzman, *Karl Bodmer's America* (Lincoln: University of Nebraska Press, 1984).

⁶Novak, 57.

⁷Kevin J. Avery, *Church's Great Picture: The Heart of the Andes* (New York: Metropolitan Museum of Art, 1993).

⁸"Relation between Geology and Landscape Painting," *Crayon* 6 (August 1859), 256.

This notion that artists had a special closeness to nature, by virtue of their ability to recreate nature's own creations, was commonplace in the mid-19th century. Landscape painters were trained not only to observe the landscape but to convey its feel, to suggest the experience of being in it. Scientific observation in the modern sense suggests detachment, an emotional distance from the object under investigation; landscape painters following Cole were interested instead in collapsing distinctions between observation and emotion. Thus the changing moods of the landscape, in different atmospheric conditions and times of the year, were equally if not more important than its topographical facts.

The artist as ecologist

These reflections prompt us to wonder whether the work of landscape painters led them (or their audience) to an ecological understanding of the landscapes they studied. Amy Myers has argued that much of nineteenth-century scientific illustration was essentially anti-ecological, focused instead on the classification of "specimens" isolated from context or habitat. Yet she identifies an important "subcurrent" running from the work of William Bartram in the 1810s to the illustrations of Audubon in the 1840s, which employed landscape to suggest the organic unity of living things.⁹ Recently ecologist William Graf has argued more strongly that landscape painters created an ecological view of nature. Painters such as Bodmer and George Catlin, Graf writes, tacitly brought a "systems" perspective to the study of nature, especially of rivers. Instead of breaking down riparian environments into isolated components, these painters "depicted western rivers as complex, interactive mosaics of physical landscapes and biological communities with human significance."¹⁰

Water was indeed a crucial element in most landscape painting of the period (Cole in a famous essay declared water to be that element "without which every landscape is defective"¹¹). Flowing water introduced narrative complexity (movement, time, change) but also suggested the natural interaction of geology, biology, and meteorology. This was commonplace not only in America but in perhaps the most venerable of landscape painting traditions, that of China, in which for centuries artists have been depicting water draining from mist-wrapped mountains into lakes or river basins that sustain variegated riparian ecologies. The impulse to show complex natural processes as an organic unity seems so deeply ingrained in the notion of landscape painting that it is hard to see how painters could avoid depicting rivers as "complex, interactive" systems. Certainly rivers were of endless fascination to nineteenth-century Americans, and some artists even published portfolios of views exploring certain rivers from their source to their mouth.¹²

Perhaps the most ambitious attempt by any American artist to represent a "complex, interactive" ecological system was the work of Frederick Church, particularly his celebrated painting *Heart of the Andes* (1859). Church was specifically inspired by Humboldt's book *Cosmos* (1849) and by his belief in nature as "a unity in diversity of phenomena; a harmony, blending together all created things, however dissimilar in form and attributes."¹³ That belief led Humboldt to explore the equator in South America, where the global range of biodiversity—from polar ice cap to tropical rainforest—could be surveyed in one single region. Following in Humboldt's footsteps, Church made his own expedition



Frederick E. Church, *The Heart of the Andes*, The Metropolitan Museum of Art, Bequest of Margaret E. Dows, 1909 (09.95). © 1979 by the Metropolitan Museum of Art

⁹Amy R. W. Myers, "Imposing Order on the Wilderness: Natural History Illustration and Landscape Portrayal," in Edward J. Nygren, *Views and Visions: American Landscapes Before 1830* (Washington, D.C.: Corcoran Gallery, 1986), 121.

¹⁰William L. Graf, "Landscapes, Commodities, and Ecosystems: The Relationship between Policy and Science for American Rivers," in *Sustaining Our Water Resources*, 11-35.

¹¹Thomas Cole, "Essay on American Scenery" (1835), in John W. McCoubrey, ed., *American Art: Sources and Documents* (Englewood Cliffs, N.J.: Prentice-Hall, 1965), 103. For a survey of watery landscapes see John Wilmerding, *The Waters of America: 19th-Century American Paintings of Rivers, Streams, Lakes, and Waterfalls* (Historic New Orleans Collection, 1984).

¹²Nygren, *Views and Visions*, 49-54.

¹³Alexander von Humboldt, *Cosmos: a Sketch of a Physical Description of the Universe*, 5 vols. (London, 1849), I:24.



Asher B. Durand, *Progress*, The Warner Collection of Gulf States Paper Corp., Tuscaloosa, AL

through South America in the 1850s and from hundreds of painstaking studies created a composite panoramic image of the equatorial region—leading the viewer from a highly detailed tropical foreground through a temperate grassland to the snow-capped, cloud-swept Chimborazo peak (20,000 feet) in the distance. Not surprisingly, a spectacular river occupies the center of the picture, linking the distant snow to the tropical dampness and suggesting one great meteorological cycle of evaporation and precipitation that holds the diverse climates and their ecologies in delicate balance.

Humboldt himself was very interested in landscape painting, and his eloquent meditation on the subject in *Cosmos* was certainly an inspiration to Church. Humboldt actually called for landscape painters to move beyond the familiar scenery of Europe and explore the tropical world, because there, he declared, was "the true image of the varied forms of nature."¹⁴ He recognized that the art of landscape was not simply one of observation but of deep thought as well: "the combined result of a profound appreciation of nature and of [an] inward process of the mind."¹⁵ This description of the painter's process could apply equally well to his own process of ecological exploration.

The artist as developer

The preceding discussion seems to fly in the face of much of the recent scholarship on American landscape painting. That scholarship emphasizes the complicity of landscape painting in the dominant nineteenth-century ideology of national "progress" which justified not only the subjugation of native inhabitants but also the wholesale destruction of virgin forests, wetlands, and other longstanding ecologies of the continent. Cole was perhaps the only artist of the period who did not accept the gospel of progress and who openly lamented the onrush of development.¹⁶ Cole's successor Asher B. Durand, while extolling nature as the artist's true studio, painted a panoramic vision entitled *Progress* (1850), which optimistically charts the taming of the landscape by industry and transportation and relegates the foreground wilderness to the "primitive" (and therefore defunct) era of the Native American. The creation of a "national" landscape was part of the larger drive to claim the continent for the forces of "civilization"; in this view, landscape painting was an act of possession and domination, hardly an ecologically friendly embrace of the environment.¹⁷

Probably the most famous landscape image of technological progress in the nineteenth century is George Inness's *Lackawanna Valley* (c. 1855), a fresh green pastoral view of the river valley in Scranton, Pennsylvania dominated by the railroad roundhouse in the middleground (the railroad of course commissioned the painting). Rows of tree stumps in the foreground attest to the recent clearing of land, but the removal of the trees at the same time creates the pastoral view and allows the figure reclining in the foreground meadow to enjoy the sweep of the landscape. This is a vision in which nature, properly tamed and removed of inconvenient obstructions, can coexist with industrial development. Photographs taken from roughly the same spot during this period are not nearly so pastoral; they show several buildings in the foreground space that mar the meadow and block the fictional view Inness created.¹⁸

Within a few years, the rapid industrialization along the Lackawanna River in Scranton made Inness's view seem decidedly old-fashioned, as

¹⁴Ibid., 2: 452.

¹⁵Ibid., 2: 94-95.

¹⁶For Cole's ambivalence toward progress, see Truettner and Wallach, *Thomas Cole*, 72-77; and Cole's "Essay on American Scenery."

¹⁷For a wonderfully sensitive and nuanced account of landscape painting as nationalist, see Angela Miller, *Empire of the Eye: Landscape Representation and American Cultural Politics 1825-1875* (Ithaca: Cornell University Press, 1993).

¹⁸The standard sources on the painting are Nicolai Cikovsky, Jr., "George Inness and the Hudson River School: The Lackawanna Valley," *American Art Journal* 2 (Fall 1970): 36-57; and Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (New York, 1964).

the river became an industrial sewer and the surrounding landscape fed the needs of development. Interestingly, in the early 1990s, Inness's picture came back into ecological consciousness when it was used by a citizen's group, the Lackawanna River Corridor Association, organized to bring the river back to life. The group used the image to help argue for an industrial heritage site in the river corridor; for them the painting made the landscape of Scranton emblematic of a larger national history of transition from rural countryside to urban industry, and it inspired their efforts to make a new transition to a post-industrial landscape.¹⁹

The efforts of this citizen's group pose the question: what are we to make of such images as *Progress* and *Lackawanna Valley*? Do they negate the evidence of ecological insight that seems to permeate much landscape painting of the period? This is not a question that has been posed in recent literature, so my own answer must be somewhat provisional. I would suggest that the nationalist ideology of conquest, although inescapable, does not cancel the ecological perspective on nature offered in the pictures themselves. There is, I think, a profound duality in the nineteenth-century enterprise of landscape painting—an art form that generally accommodated itself to the prevailing norms of "progress" but at the same time offered viewers a kind of experiential merger with the organic unity of nature. The impulse to dominate nature, to impose the human will on nature, coexisted with the competing impulse to merge with nature, to become part of its interactive system. Ecological consciousness arises from the conjunction of these two impulses; the love of wilderness is fueled by the forces that are destroying wilderness and "civilizing" it. It was commonplace in the mid-nineteenth century to remark that the people who actually worked and struggled to survive in nature were heedless of its charms; the romantic impulse to merge with nature was therefore an urbane impulse, coming from within the very "civilization" that was clearing nature for profit.²⁰ Both impulses can be seen at work in the paintings; yet what we might call the "ecological impulse" offers us today a way of learning from the paintings, finding ways to understand and perhaps transform places that have been marred by the hand of civilization.

Conclusion

Despite the role of landscape painting in the possession and control of nature, we have identified a powerful cross-current of ecological inquiry built into the very enterprise of landscape painting. This cross-current of inquiry interacted in certain ways with scientific research, but it also broadened the scope of scientific inquiry and humanized it. The painter's inquiry involved:

1. Close, sustained observation of particular sites, from geology to botany;
2. An equal emphasis on the subjective experience of natural places, as dynamic, changing environments;
3. A faith in the interrelatedness of living things and natural systems, in other words, in the modern notion of ecology.

This list points to ways in which artistic and scientific inquiry can reciprocate and enrich one another as the two domains of creativity confront real environments shared by human and natural systems. Nine Mile Run is certainly such an environment, and the kind of integrated inquiry we have been discussing will be essential to cope with its particular challenges.

¹⁹Telephone conversation with Alex Camayd, former vice president of the Lackawanna River Corridor Association, August 13, 1997.

²⁰See Nygren, 56.