



THE COALITION OF MASTER'S
SCHOLARS ON MATERIAL CULTURE

Author(s): Spencer, Tyler

Published by: The Coalition of Master's Scholars on Material Culture

URL: <https://cmsmc.org/publications/picturing-materiality>

Date Published: December 16, 2022

Citation: Spencer, Tyler. "Picturing Materiality: Timothy O'Sullivan, Geology, and the American Landscape" By: Tyler Spencer." *The Coalition of Master's Scholars on Material Culture*, December 16, 2022.

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Picturing Materiality: Timothy O'Sullivan, Geology, and the American Landscape

By: Tyler Spencer

Abstract: The survey photographs of Timothy O'Sullivan have long been associated with the canon of American photography and the material culture of the later nineteenth-century that precipitated artistic modernism. O'Sullivan's photographs are renowned for their rendering of the harsh desert landscapes of the American Southwest and the particular attention they pay to the geological features of the terrain. In the critical literature, debate about whether the photographs are to be seen as objects of artistic expression or scientific documentation has preoccupied the scholarship. Such a framing, however, distorts O'Sullivan's more complicated engagement with the materiality of the landscape conceived in evolutionary terms as a dynamic process that changes over time to which the photographic apparatus comes into material relation as a capture of light in duration. This article argues that O'Sullivan's interest in the materiality of the earth and in photography as a material process originates in an earlier nineteenth-century dialogue between geological science and American landscape painting. The article demonstrates how the visual culture of the American West is part of this relationship and how O'Sullivan's photography belongs to this wider interest in the material formation of the earth in nineteenth-century American culture. With this historical perspective in mind, the paper argues that O'Sullivan's photographs exhibit a proto-ecological awareness of the landscape as raw material and subject matter, as well as comment on the relation between photography and nature. More broadly, the article suggests that the problem of materiality, usually associated with twentieth-century art theory, has its origins in the scientific culture of the nineteenth-century, when the distinctions between scientific, utilitarian, and artistic objects were blurred.

Keywords: *landscape photography, Timothy O'Sullivan, American landscape painting*

Beaumont Newhall's *Photography, 1839-1937* exhibition at the Museum of Modern Art in 1937 firmly established interest in the survey photographs of Timothy O'Sullivan.¹ Presented as a "harbinger of modernism" in Newhall's show, O'Sullivan's photography for the Army Corps of Engineers was displayed with an eye to the formal properties of the image along the lines of the museum's narrative of "modern" art.² In the words of Robin Kelsey with respect to one of O'Sullivan's most iconic pictures, his photograph of Anasazi ruins at the Canyon de Chelly in northern Arizona (Figure 1), "the picture features stark geometric relations, radical value contrasts, instances of insistent planarity and graphic reduction, and other qualities in keeping with a modernist sensibility."³ Later criticism of O'Sullivan's pictures deemphasized their relation to artistic modernism and his role as a precursor to the later style; instead, it tended to focus on the context in which his images were produced and the nature of the government's interest in commissioning them.⁴ At a time when photographers were not seen as authors of their work – many of O'Sullivan's pre-survey pictures were disseminated under Matthew Brady's or Alexander Gardner's name, the photographic house to which he belonged – some critics have doubted whether O'Sullivan's images can be interpreted as the expression of anything more than the product of the professional demands placed on O'Sullivan by his employers.⁵ Adding to this dispute of interpretation is the fact that very little information is known about O'Sullivan, and it seems that he left behind no, or very little, written correspondence.⁶

What is known about his time on the expeditions is known second-hand from other members of the survey team, making it difficult to speculate on his experience of the Southwest or, indeed, on his thoughts regarding the nature of his photographic project. The analysis of O'Sullivan, therefore, has relied almost solely on the basis of the images he produced and the preferences of the survey leaders, Clarence King and Lt. George M. Wheeler. The influence of

King and Wheeler are often cited to explain why O'Sullivan chose to photograph what he did and how he did it. Wheeler's military interest in the topography of the Southwest – useful information for moving troops through the difficult, mostly desert terrain of the region – and King's interest in the geological features of the landscape have been examined in the literature on O'Sullivan. However, little attention has been paid to the artistic or intellectual culture preceding 1860. As a result, the pictures' relation to science has been reduced to the determining influence of the geologist Clarence King and his theory of catastrophism – the theory that the Earth was formed by a series of sudden, violent geological events in between periods of relative calm. Such a limited perspective ignores a long and complicated history of American intellectual interest in geological science and the dialogue that American landscape artists conducted with it. In this article I will show how the visual culture of the American West is part of this relationship and how O'Sullivan's photography belongs to this wider interest in the material formation of the earth in nineteenth-century American culture. The literature on O'Sullivan has already revealed this geological focus of his pictures; the aim of this article is to deepen the understanding of this aspect of O'Sullivan's photography by locating its origins further back in the history of the nineteenth-century.

In the late eighteenth and early nineteenth centuries, natural history and the science of geology fused together two of the most important aspects of American culture of the time – naturalistic inquiry and religious devotion. Advances in natural science were brought to bear on questions previously reserved for religious texts such as the age of the Earth, the formation of the land and seas, and the origin of the laws of nature. In the first decades of the nineteenth century, scientific discoveries about the natural world were thought to compliment dominant American religious thought. Nature, as God's creation, was viewed as a natural text through which the

believer came to a better understanding of the ways and purposes of God, his benevolence, and the perfection of his Creation. In the words of an American geology textbook of 1840:

A minute examination of the works of creation as they now exist, describes the infinite perfection of its Author, when they were brought into existence; and geology proves Him to have been unchangeably the same, through the vast periods of past duration, which that science shows to have elapsed since the original formation of our earth. [...] Geology furnishes many peculiar truths of the benevolence of the Deity.⁷

Art, as a representation of nature, played a role in the dissemination of the discoveries of natural history. William Dunlap's 1834 *History of the Rise and Progress of the Arts of Design in the United States* acknowledges the cooperative relationship between science and the arts at the time: "Science and literature become the allies of the fine arts, and in the ages to come, even more than in the present, art will be the friend [...] of reason, the propagator of truth, and the support of religion."⁸ Indeed, knowledge of the natural sciences is strengthened by the "incalculable advantage of the arts of design to convey those images which words cannot present to the mind."⁹ Art as an aide to scientific endeavor brought with it its own mythology of creation that fused well with the geological study of the origins of the earth. In this vein, the critic Barbara Novak has called geology the "grand myth" of the nineteenth century. In her words, "Nature's truths, as revealed by art, could be further validated by the disclosures of science, which revealed God's purposes and aided the reading of His natural text."¹⁰ The Creator, as the "first" and greatest artist, was never far from the minds of American landscape artists or, as Hitchcock's geology textbook indicated, from the thoughts of American scientists.¹¹

Charles Lyell's *Principles of Geology* (1830) popularized the theory of the gradual evolution of the Earth's surface over a long period of time – a theory known as uniformitarianism.¹² Lyell's book accustomed American artists and intellectuals to skepticism of the Biblical account of creation and the dating of the earth to 6,000 years. It also formalized a

method of analysis and visual observation that was already taking shape in the culture. Nineteenth-century historical consciousness had already grown accustomed to the idea of the impermanence of things and the volatility of the natural world. As Emerson summarized in his essay "Circles," "There are no fixtures in nature. The universe is fluid and volatile. Permanence is but a word of degrees."¹³ The transitory state of nature produced a cyclical sense of time in the thought of Emerson and the culture more broadly, heightening sensitivity of the temporal existence of things and the history of the earth. Indeed, the earth, like everything that belonged to it, was conceived as part of a vast process of birth, decomposition, and rebirth that linked the new with the old. In Emerson's words, "The new continents are built out of the ruins of an old planet; the new races fed out of the decomposition of the foregoing."¹⁴ In the same way that human culture evolved through the incorporation and succession of previous cultures, the Earth's evolution as well as its present state could be understood in similar terms. To the educated observer, the Earth's history could be read like a book if one knew how to decipher the natural "text." This attention to the temporal sequence of natural forms – to their growth and disappearance over time – through direct observation was emphasized by the subtitle of Lyell's book, "An Attempt to Explain the Former Changes of the Earth's Surface by Reference to Causes Now in Operation." Thus, if wielded properly, the powers of scientific observation yielded knowledge of not only the present object observed, but also knowledge of the process that brought it about. The forces shaping the past were also at work in the present; therefore, knowing how to decipher the present, one could come to the knowledge of the past.

Paradoxically, this did not discourage religious sentiment among American artists, but instead broadened the scope of religious feeling for the landscape. Moving away from a literal interpretation of the Genesis narrative, American religious feeling was directed towards the

native landscape and its natural, uncultivated splendor. The American wilderness was seen as a Proto-Edenic landscape, in which the American observer or foreign traveler could glimpse the perfection of God's creation prior to the intrusion of culture and the fall of man. The paintings and writings of Thomas Cole best articulated this belief. Cole's "Essay on American Scenery" contrasted the wilderness of America to the cultivated landscapes of the European Old World.¹⁵ For Cole the primitive, untampered state of the United States indexed the purest state of nature, as if capturing the moment of creation. In this way, the natural landscape itself, rather than the ruins of human civilizations or the memory of historic deeds, evoked an acute sense of time and origin. In another essay, "Sicilian Scenery and Antiquities," Cole invoked geology as a means of access to a time far more distant than human memory, a time which his paintings sought to evoke: "From the silence of Homer on the subject, it is supposed that in this remote age the fires of the mountain were unknown; but geologists have proof that they have a far more ancient date."¹⁶ In Cole's case, geology served his interest in the archaic aspects of the landscape that existed prior to the interference or, indeed, existence of man.

Cole's *Expulsion from the Garden of Eden* (1828) depicts an agonistic landscape divided in the middle, separating the idyllic right side of the canvas with the volcanic left side to which the figures of Adam and Eve have been banished (Figure 2). Cole's representation of the biblical narrative proceeds not from the point of view of a human observer, but rather presents a mythical view of nature as a whole – the perfection of God's creation in the natural landscape as well as the state of nature inhabited by man. In his description of the California landscape of the Sierra Nevada, Clarence King poses this dichotomy in his own way. According to King, the Sierra Nevada contains "two leading ideas," first, "the titanic power, the awful stress, which has rent this solid table-land of granite in twain," and, second, "the magical faculty displayed by

vegetation in redeeming the aspect of wreck and masking a vast geological tragedy behind the draperies of fresh and living green.”¹⁷ With King’s description in mind, Cole’s *Expulsion* could be seen in a similar way. The painting not only represented the separation between the garden of Eden and the state of nature after the fall, but also what lies beneath the growth of vegetative nature – its architecture or substructure, as King indicates. The left and right side of the canvas then relate to each other in a cyclical, temporal way. The volcanic left side of the picture is in the process of becoming the idyllic scene on the left, just as the landscape on the left could at some point in the future return to the primordial state on the right.

Cole was not the only artist who took an interest in geology.¹⁸ His student Frederic Church was an avid reader of natural history and corresponded, along with many other American artists, with the German naturalist Alexander von Humboldt, whose *Personal Narrative* (1814), a travel account of his scientific explorations of South and Central America, was well known in the United States and, for many, served as a guide for naturalistic endeavor.¹⁹ Church himself was inspired by Humboldt to undertake two expeditions in South America in which he traveled to many locations that the German naturalist described and illustrated in his books. Humboldt’s *Cosmos* (1845) was an attempt to give a holistic physical description of the universe. Referencing the Greek meaning, the work’s title sought to prove the underlying “harmony” of nature and the mutual connection of its parts. As Humboldt wrote in his preface to the book, “I ever desired to discern physical phenomena in their widest mutual connection, and to comprehend Nature as a whole, animated and moved by inward forces.”²⁰ Humboldt conceived the work, in his own words, as a “portrait of nature,” synthesizing the accuracy of scientific observation with the evocative power to convey the sense of order unifying nature. The second volume of *Cosmos* contains a series of reflections on landscape painting and its relation to the

study of nature. Humboldt compares the task of the painter and the geologist, whose job it is to represent the diversity of natural forms in naturalistic detail and to organize this diversity into a coherent whole that reveals the ordering principle underlying creation. At its best, landscape painting expresses the “*true image* of the varied forms of nature.”²¹ In order to capture this Platonic “true image” of unity acting behind nature’s cacophony, Humboldt advises the painter to execute colored sketches drawn directly from nature while in the landscape and to supplement these with separate detailed sketches of isolated parts of the natural scenery – trees, foliage, flowers, and rocks. Humboldt optimistically looked to the future of landscape painting in the Western hemisphere as the depths of these continents would be further explored and examined by Western artists and observers:

Are we not justified in hoping that landscape painting will flourish with a new and hitherto unknown brilliancy when artists of merit shall more frequently pass the narrow limits of the Mediterranean, and when they shall be enabled, far in the interior of continents, in the humid mountain valleys of the tropical world, to seize, with genuine freshness of a pure and youthful spirit, on the true image of the varied forms of nature?²²

The connection Humboldt makes between landscape painting and Western exploration would be an essential element of its later development by American artists.

Church’s *Heart of the Andes* (1859), the epitome of grand-style American landscape painting, is also the epitome of Humboldt’s ideas (Figure 3). The exoticism of the painting coupled with Church’s attention to descriptive, naturalistic detail at such a large scale made *Heart of the Andes* one of the most widely publicized pictures of the time. The picture synthesized distinct, individualized parts of the landscape that can be seen in detail with a cohesive, expressive effect of the whole. Church offered the cosmos in a single picture, including a variety of climate, terrain, geological elements, and formative features like the waterfall that cut through and shaped the land. The painting has a panoramic effect, a kind of viewership

advocated by Humboldt, that engulfs the viewer in the presence of the scene depicted, encouraging the spectator to isolate details of the landscape to closely examine them and then place them in relation to the rest of the painting – a spectatorial position that Barbara Novak has linked to early cinema.²³

In the same year as Church's picture, a Ruskin-inspired American art journal, *The Crayon*, echoed Humboldt, arguing for an essential congruence between landscape painting and geology. The journal claimed the landscape painter deciphered the land with scientific eyes, aiming to produce "a symmetrical and harmonious combination ... from a chaotic mass."²⁴ When observing nature, the thoughts of the artist, like those of the geologist, "revert to those old times, when fauna and flora existed supreme, since breath had not yet given life to man."²⁵ Likewise, the artist, like the geologist, "meets with immense fissures and volcanoes, and he asks himself whence did they originate and by what conclusion were they produced?" To the artist, therefore, "properly belongs the study of geology, as he more thoroughly than any other can imitate what nature has produced."²⁶ This mutual affinity of artistic and scientific perception coupled with the landscape painter's ability to render an accurate imitation was a widely held opinion around the mid-century, especially among artists and critics.

A number of art critics insisted on the importance of scientific accuracy as a criterion for a successful work of art. In his 1864 *The Art-Idea*, James Jackson Jarves argued that art served a cognitive function, and that both art and science were ways of "unfolding ... the laws of being."²⁷ Art, as a mode of knowledge, was inferior to science because the latter dispenses with the material rudiments of art and discloses "its knowledge direct to the mind itself."²⁸ According to Jarves, art attains its highest state only when the sensuous representations of the artist are "found to be impregnated with, and expressive of, the truths of science."²⁹ The artist should

therefore seek to “exhibit a scientific correctness in every particular.”³⁰ In addition to Church, Jarves noted Albert Bierstadt’s fidelity to nature and the appeal of his work as an object of scientific scrutiny. Bierstadt’s paintings, made after his return from Frederick W. Lander’s 1859 survey of the Wyoming and Oregon Territories, were some of the first pictures of the Rocky Mountains widely disseminated in the East, and, in the eyes of many critics, offered realistic depictions of the foreign territory in the naturalistic mode (Figure 4). In response to *The Rocky Mountains, Lander’s Peak* (1863) Jarves wrote, “The botanist and the geologist can find work in his rocks and vegetation. He seizes upon natural phenomenon with naturalistic eyes.”³¹ Bierstadt’s pictures, however, did not only attract the attention of scientists; they were also a popular attraction, offering a kind of visual tourism, complete with representations of idealized Native American life.³²

H. T. Tuckerman, another critic, echoes Jarves’s concern for scientific detail. Analyzing the monumental canvases of Church, Tuckerman commented on the manner in which his paintings capture the “minute peculiarities of sky, atmosphere, trees, rocks, rivers and herbage,” which demonstrate “proof of the scientific interest of such landscapes.”³³ In Church’s *Cotopaxi* (1862), Tuckerman praised the harmony established between the “authentic minutiae” of the picture and its “general effect,” the result of which was “absolutely and scientifically true to the facts of nature and the requirements of art.”³⁴ (Figure 5) Indeed, as in Humboldt’s ideal, Tuckerman recognizes “the manner and method of nature in her volcanic aspects.”³⁵ The volcanic shaping of the landscape, visually indexing the past of the Earth, and the powerful water feature in the center of the work emphasized not only Church’s interest in the accuracies of naturalistic detail, but also his concern for rendering the turbulent forces underlying nature – the forces that shaped and were still shaping the Earth in the present.

The grand style of Bierstadt and Church, though widely popular, came to be criticized by more traditional art critics like Jarves, who cautioned against the tendency to reduce art to grand effect, usually for commercial gain. Jarves criticized the paintings for “viewing nature rarely in other than external and picturesque aspects,” which foreclosed the contemplation of “poetry or ideas.”³⁶ The painting’s “materialism” led Jarves to equate the landscape artists with financial speculators. Of Church, Bierstadt, and other landscape artists like them, Jarves condescendingly wrote:

Partaking of the enterprise of commerce, it sends its sons to Brazil, to the Amazon, to the Andes, beyond the Rocky Mountains; it orders them in pursuit of icebergs off frozen Labrador; it pauses at no difficulties, distance, expense, or hardship in its search of the new and striking. The speculating blood infuses itself into art. Within proper limits, the zest of gain is healthful; but if pushed to excess, it will reduce art to the level of trade.³⁷

At the same time, despite the fidelity to nature proclaimed by the art critics, the Western works of Bierstadt and Church failed to satisfy the demands of the geologist Clarence King. In his *Mountaineering in the Sierra Nevada* (1872), Clarence King voiced his criticism of Bierstadt, citing the artist’s exaggeration of natural features in the landscape and the divide between Bierstadt’s representation and his own personal experience in the West. In King’s words:

It’s all Bierstadt and Bierstadt and Bierstadt nowadays! What has he done but twist and askew and distort and discolor and belittle and beprety this whole doggoned country! Why, his mountains are too high and too slim; they’d blow over in one of our fall winds. I’ve herded colts two summers in Yosemite and honest now, when I stood right up in front of his picture, I didn’t know it. He hasn’t what Old Ruskin calls for!³⁸

King graduated from the newly created Yale Sheffield Scientific School in 1862, where he encountered many prominent scientists including Louis Agassiz, whose lectures he attended at Harvard. In addition to his scientific interests, he was also a member of the Ruskin-inspired Society for Truth in Art in New York City.³⁹ In 1864, King joined the Whitney California survey

where he met the photographer Carleton Watkins – the possible origin of King’s interest in photography and its application to geological study.

Humboldt speculated on the uses of photography for detailed studies of nature, although he doubted whether it was capable of rendering the effect of the landscape as a whole. Church had used photographs as models for several of his paintings, and Bierstadt had taken stereoscopic photographs while on Lander’s expedition—Bierstadt’s brothers were photographic printers in New Bedford, Massachusetts.⁴⁰ The first real attempts at landscape photography in the United States date from the mid-1850s but did not fully develop until after the Civil War.⁴¹ The reasons for this gradual development were primarily technical. Shooting outside, beyond the confines of the studio, the photographer lost the ability to control the light and his environment. Moreover, lots of equipment was required to make photographs, so it was difficult for the photographer to maneuver outdoors, especially in challenging terrain. It was not until the invention of the collodion wet-plate process around 1860 – which allowed many high-resolution prints to be made from a single negative – that landscape photography became more feasible and financially rewarding. American landscape photography evolved largely along the Pacific coast in surveys of California, although most of these photographers came from urban centers in the Northeast, like Watkins and O’Sullivan from New York, and would have been aware of landscape painting and recent scientific developments in the East. Intended for commercial distribution and popular appeal, the photographs of Watkins and Muybridge featured the spectacular sights of Yosemite commonly captured in an exaggerated, picturesque way (Figure 6). The vegetative California landscape stands in stark contrast to the harsh desert terrain of O’Sullivan’s Southwest. The Southwest landscape was less commonly pictured, but there were several artistic precursors to O’Sullivan who worked in that environment.

Prior to O'Sullivan's survey photographs, which were some of the first photographic images of the Southwest, artists on expeditions through the territory made lithographs, watercolors, and to a lesser extent oil paintings. Samuel Seymour produced a series of engravings as part of the 1819 Long Expedition along the Missouri River. During the 1846 Kearny Expedition to California through New Mexico and Arizona, John Mix Stanley completed lithographs of the desert terrain and instances of Native American rock art, which would later be a subject for O'Sullivan and Richard Kern in New Mexico. As part of the Simpson Survey of New Mexico in 1849, Kern made a great variety of watercolors and lithographs of rock formations, geological anomalies, and Anasazi ruins in Chaco Canyon and Arizona's Canyon de Chelly. His work captured and indexed many of the locations that O'Sullivan would photograph two decades later.⁴² Kern's images along with the pictures of Seymour, Stanley, and Heinrich Möllhausen bear a strong relation to William Gilpin's picturesque aesthetic elaborated in Europe throughout the eighteenth century, later heralded by John Ruskin. Gilpin's concept aimed for a romantic fusion of the sublime and the beautiful, usually in a landscape of harmonious repose. Gilpin's aesthetic was connected with the practice of scenic travel—a commonplace leisure activity on the European continent—which sought to celebrate the natural features and ruins of the English countryside by encouraging the spectator to perceive the landscape, even its commonplace elements, as a framed picture. Kern's images of the Southwest, especially those of Anasazi ruins, seem to render the desert landscape as a picturesque scene, transferring an interest in the romantic ruin to a concern for the geological aspects of the landscape (Figure 7).

By contrast, O'Sullivan's photography of the Southwest resisted such picturesque sentimentalism; however, it retained an interest in what appear to be sculpted elements of the landscape that emphasize the shaping of the land over time. Many of his pictures isolate specific

types of rock, photographing them in a direct, though often dramatic way. *Cleavage in Lava* (1871) features both a scientific interest in geological formation, but also a narrative investment in the drama of the landscape (Figure 8). The picture harkens back to the region's volcanic past and the rapid formation of the earth, as the once molten lava solidified into the present landscape. Such an aspect appealed to Clarence King who wrote, "The mild affirmations of the uniformitarians, that existing rate of change and indefinite time are ample to account for the past, are flatly and emphatically contradicted by *American facts*."⁴³ More than "American facts," O'Sullivan's photographs speak to the specificity of the Southwest; the "facts" the photographer decided to picture, particularly on the King survey, emphasized many of the darker or more sinister aspects of the landscape, in which there seems to be a discord between man and nature. *Witches Rock* (1869), in which a human figure is dwarfed by the size of a large rock formation, expresses unease about the landscape. In contrast to the extractive aims of the surveys, whose purpose was to generate useful information for mining and military interests, many of O'Sullivan's photographs reveal landscapes that appear indifferent to man and his actions.⁴⁴ In the words of Aaron Sachs, O'Sullivan produced "dark images of exhausted men confronting all sorts of dark, exhausted landscapes."⁴⁵ Recalling King's quote, O'Sullivan photographed the Southwest as a "vast geological tragedy" laid bare by the absence of vegetation.⁴⁶

Yet, O'Sullivan's narrative investment in the landscape did not come at the expense of the actuality of the image. O'Sullivan's photographs foreground the presence of the photographer and the survey team in the landscape. The viewer is compelled to recognize the actions of the photographer who made the picture not simply to marvel at a spectacular view. Lauren LaFauci argues that O'Sullivan's pictures insist on "their own status as objects of representation," equating the activities of the survey with the act of photography itself.⁴⁷ As an

act of “surveying” and “containing” nature, O’Sullivan’s photographs document not only the shape of the land and the indications of its formation in the past, but also capture, perhaps in a scientific way, the means by which the knowledge and perception of the landscape is produced. O’Sullivan’s photograph of the opening of Canyon de Chelley illustrates the point (Figure 9). On the right side of the picture, the rock face appears as three monumental sculptures, while on the left, a great wall of rock, captured in exquisite detail, exposes the striations of the earth to the viewer’s eye. Every detail of the landscape was rendered in focus by O’Sullivan, which gives the scene a kind of legibility that refuses to mask descriptive detail for the sake of outlining sublime forms. The photograph also captures the effect that the light of the sun has on the landscape. The shadow cast on the wall and floor of the canyon emphasizes a primary feature of the landscape and indicates the passage of time, implicating the process of photography itself as a durational practice chemically tied to light – in this case, the sun. The inclusion of the photographic apparatus, directly or indirectly, in the picture serves to indicate a process of reciprocal interaction – the photographic image is shaped by but also shapes the landscape it documents. This, one might say, ‘ecological’ aspect of O’Sullivan’s survey photography is further attested to by the presence of the camera in several of his pictures (Figure 10). These images seem to meditate on the relationship between photography and nature, a relationship that O’Sullivan himself was initiating with his survey photography in the Southwest.

Although O’Sullivan made use of this new photographic technology, the genealogy of his images belong to a longer history. O’Sullivan’s photography must be understood in light of the mutual interface between American scientific culture and American artists in the first half of the nineteenth century, and because of this history O’Sullivan’s survey photography cannot be reduced to stylistic modernism or “scientific” documentary. The relation between art and science

at the time of O'Sullivan was more fluid than in the twentieth century when science and art were seen to be adversaries of each other. Criticism of the survey photographs should be careful not to obfuscate their creative combination in O'Sullivan's work while at the same time recognizing a certain indistinction between the two, characteristic of the time.

Endnotes

¹ Beaumont Newhall, *The History of Photography: From 1839 to the Present Day* (New York: Museum of Modern Art, 1949).

² Robin E. Kelsey, "Viewing the Archive: Timothy's O'Sullivan's Photographs for the Wheeler Survey, 1871-74," *The Art Bulletin* 85, no. 4 (2003): 702.

³ Kelsey 2003, 702.

⁴ See Rosalind Krauss, "Photography's Discursive Spaces: Landscape/View," *Art Journal* 42, no. 4 (1982): 311-319. For a more general, historical account of this debate see Joel Synder, "Aesthetics and Documentation: Remarks Concerning Critical Approaches to the Photographs of Timothy H. O'Sullivan," *Perspectives on Photography: Essays in Honor of Beaumont Newhall*, ed. Peter Walch and Thomas F. Barrow (Albuquerque: University of New Mexico Press, 1986), 125-50.

⁵ See, Krauss (1982) and Alan Trachtenberg, "Naming the View," *Reading American Photographs: Images as History, Mathew Brady to Walker Evans* (New York: Hill and Wang, 1990), 119-63.

⁶ O'Sullivan was interviewed about the King expedition in an article whose authorship has often been falsely attributed to O'Sullivan himself. See John Samson, "Photographs from the High Rockies," *Harper's New Monthly Magazine*, September 1869, 465-76.

⁷ Barbara Novak, *Nature and Culture: American Landscape and Painting, 1825-1875* (New York: Oxford University Press, 1980), 56.

⁸ William Dunlap, *History of the Rise and Progress of the Arts of Design in the United States, Vol. III* (New York: Benjamin Blom, Inc.), 1965, 202.

⁹ Dunlap 1965, 202.

¹⁰ Novak 1980, 47.

¹¹ An in-depth account of the relation between the natural sciences and American landscape painting is provided in Rebecca Bailey Bedell, *Anatomy of Nature: Geology & American Landscape Painting, 1825-1875* (Princeton, NJ: Princeton University Press, 2001).

¹² Charles Lyell. *Principles of Geology* (London: J. Murray, 1830).

¹³ Ralph Waldo Emerson, "Circles," *Essays and Lectures* (New York: Library of America, 1983), 403.

¹⁴ Emerson 1983, 403.

¹⁵ Thomas Cole, "Essay on American Scenery," cited in Novak 1980, 56.

¹⁶ Thomas Cole, "Sicilian Scenery and Antiquities," cited in Novak, 1980.

¹⁷ Alan Trachtenberg, *Reading American Photographs: Images as History, Mathew Brady to Walker Evans* (New York: Hill and Wang, 1990), 141.

¹⁸ See Barbara Novak for an account of the correspondence between early American landscape painters and prominent scientists in *Nature and Culture*, 47-77.

¹⁹ Alexander von Humboldt, *Personal Narrative* (New York: Penguin, 1995). For an in-depth account of Humboldt's relation to American science and Western exploration see William H. Goetzmann, *Exploration and Empire: The Explorer and the Scientist in the Writing of the American West* (New York: Knopf, 1966).

²⁰ Alexander von Humboldt, *Cosmos* (New York: Everyman's Library, 2018), 639.

²¹ Alexander von Humboldt, *Cosmos, vol. 2* (New York: Harper & Brothers, 1860), 93.

²² Humboldt, *Cosmos, vol. 2*, 93.

²³ For another account of the importance of “detail” in Church’s painting see Jennifer Raab, *Frederic Church: The Art and Science of Detail* (New Haven: Yale University Press, 2015).

²⁴ “Relation Between Geology and Landscape Painting,” *The Crayon* 6, no. 8 (Aug., 1859): 255.

²⁵ “Relation Between Geology and Landscape Painting,” 255.

²⁶ “Relation Between Geology and Landscape Painting,” 256.

²⁷ James Jackson Jarves, *The Art-Idea* (Cambridge, MA: The Belknap Press of Harvard University Press, 1960), 40.

²⁸ Jarves 1960, 40.

²⁹ Jarves 1960, 40.

³⁰ Jarves 1960, 40.

³¹ Jarves 1960, 194.

³² For an account of grand-style American landscape painting and the narrative of westward expansion see Albert Biome, *The Magisterial Gaze: Manifest Destiny and American Landscape Painting, 1830-1865* (Washington DC: Smithsonian Institution Press, 1991).

³³ Novak 1980, 50.

³⁴ Novak 1980, 50.

³⁵ Novak 1980, 50.

³⁶ Jarves 1960, 194-5.

³⁷ Jarves 1960, 194-5.

³⁸ Clarence King cited in Hans Huth, *Nature and the American: Three Centuries of Changing Attitudes* (Lincoln: University of Nebraska Press, 1990), 141. See also Clarence King, *Mountaineering in the Sierra Nevada* (Lincoln: University of Nebraska Press, 1997).

³⁹ For an account of the impact of Ruskin’s ideas on Clarence King, see Roger B. Stein, *John Ruskin and Aesthetic Thought in America, 1840-1900* (Cambridge, MA: Harvard University Press, 1967).

⁴⁰ Novak 1980, 46.

⁴¹ A fairly comprehensive account of the origins and development of American landscape photography is given in Weston J. Naef, *Era of Exploration: The Rise of Landscape Photography in the American West, 1860-1885* (Albright-Knox Art Gallery: Distributed by New York Graphic Society, 1975).

⁴² For an account of Richard Kern see David J. Weber, *Richard H. Kern: Expeditionary Artist in the Far Southwest, 1848-1853* (Albuquerque: University of New Mexico Press, 1985).

⁴³ King cited in Toby Jurovics, *Framing the West: The Survey Photographs of Timothy O’Sullivan* (New Haven: Yale University Press, 2010), 18.

⁴⁴ Similarly, Robert Adams points to the “silence” rendered in O’Sullivan’s photographs. See Robert Adams, “Towards a Proper Silence: Nineteenth-Photographs of the American Landscape,” *Aperture* no. 98 (1985): 4-15.

⁴⁵ Aaron Sachs, *The Humboldt Current: Nineteenth-Century Exploration and the Roots of American Environmentalism* (New York: Viking, 2006), 219.

⁴⁶ Trachtenberg 1990, 141.

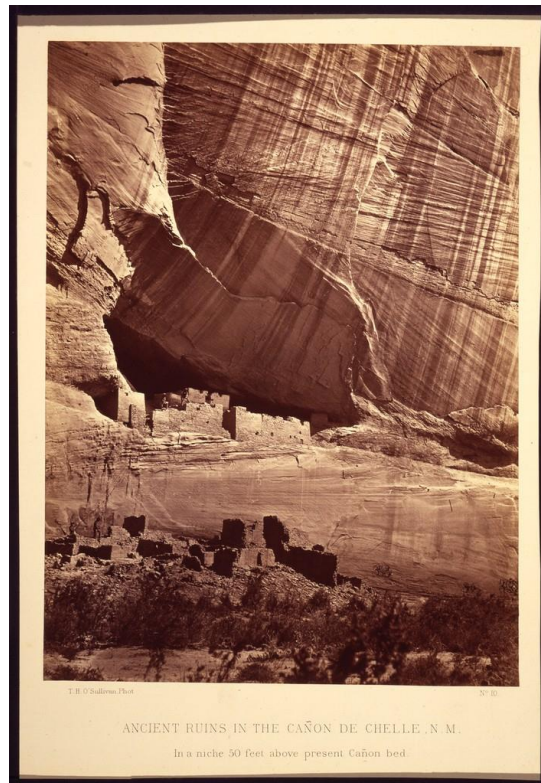
⁴⁷ Lauren E. LaFauci, “A Divided Portrait: Versions of Wilderness in Timothy O’Sullivan’s Survey Photography,” *Interdisciplinary Literary Studies* 7, no. 1 (2005): 80.

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Figures



L. B. O'Quinn Photo

57° E.

ANCIENT RUINS IN THE CAÑON DE CHELLE, N. M.

In a niche 50 feet above present Cañon bed

Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

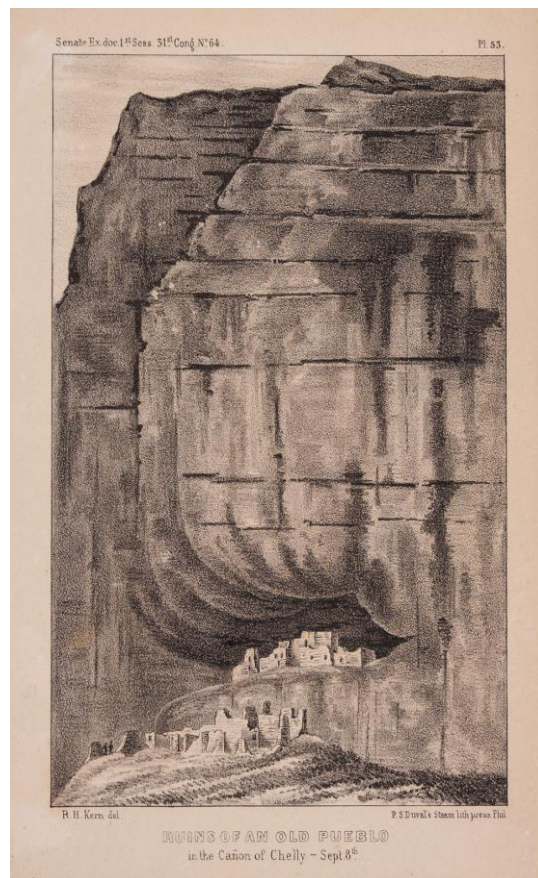


Figure 7



Figure 8



Figure 9



Figure 10

Image Captions

Figure 1 – Timothy O’Sullivan, *Ancient Ruins in the Canon de Chelle*, 1873, albumen print, 27.5 x 20.3 cm. George Eastman House, Rochester NY. Image courtesy of Artstor.

Figure 2 – Thomas Cole, *Expulsion from the Garden of Eden*, 1828, oil on canvas, 39.75 x 54.5 in. Museum of Fine Arts, Boston. Image courtesy of Artstor.

Figure 3 – Frederic Church, *Heart of the Andes*, 1859, oil on canvas, 66.15 x 119.25 in. Metropolitan Museum of Art, New York. Image courtesy of Artstor.

Figure 4 – Albert Bierstadt, *The Rocky Mountains, Lander Peak*, 1863, oil on canvas, 73.5 x 120.75 in. Metropolitan Museum of Art, New York. Image courtesy of Artstor.

Figure 5 – Frederic Church, *Cotopaxi*, 1862, oil on canvas, 48 x 85 in. Detroit Institute of Arts, Detroit MI. Image courtesy of Artstor.

Figure 6 – Carleton Watkins, *Yosemite Valley*, 1866. The J. Paul Getty Museum, Los Angeles. Image courtesy of Artstor.

Figure 7 – Richard H. Kern, *Ruins of an Old Pueblo in the Cañon of Chelley—Sept. 8th, 1852*, 1852, Lithograph. Amon Carter Museum, Fort Worth, TX. Image courtesy of Amon Carter Museum.

Figure 8 – Timothy O’Sullivan, *Cleavage in Lava, Meadow Creek Canon, NV*, 1871, albumen print, 20.3 x 28.2 cm. George Eastman House, Rochester NY. Image courtesy of Artstor.

Figure 9 – Timothy O’Sullivan, *Cañon de Chelle*, 1873, albumen print. Image courtesy of Artstor.

Figure 10 – Timothy O’Sullivan, *Trachyte Columns, Trinity Mountains, NV*, 1867, albumen print. George Eastman House, Rochester NY. Image courtesy of Artstor.