SCIENCE/FICTION:

HABITAT DIORAMAS, VISION, AND POSTWAR AMERICAN ART

By

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ABSTRACT OF THE DISSERTATION

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Science/Fiction analyzes shifting American relationships to nature in the contemporary period by considering various incarnations of habitat dioramas, the American Museum of Natural History's revolutionary display type that combines three-dimensional specimens with illusionistic backgrounds in niches behind glass. I examine how both the institution and fine artists have used this form to explore environmental issues since World War II by attending to materiality, histories of vision, and sociohistorical context. Through case studies on the Hall of North American Mammals, Robert Smithson, Mark Dion, and Alexis Rockman, I argue that the habitat diorama occupies a unique role in the American natural imaginary. It is a contested space used to build contradictory narratives about nature and its relationship to patriotic identity, institutional knowledge, and ecological politics.

Throughout the project, I focus on the use of glass to demonstrate the physical ways in which each maker constructs bodily relationships to the environment and how glass' symbolic associations with competing concepts of vision frame these interactions. Chapter one argues that the diorama's glass screen serves to unify distracted vision and promote disinterested, observational prowess as a patriotic responsibility. The following chapters then show how each artist changes the position of the glass screen to open the

diorama and create new natural history narratives. In chapter two, Smithson's mirror boxes challenge the museum's definition of self-contained and enduring nature while the Cold War frayed the American relationship to the environment. In chapter three, Dion creates inclusive spaces, performing an institutional critique that decenters vision in favor of phenomenological encounters with nature that promote wonder. In chapter four, Rockman's science fiction dioramas propose alternative universes marred by climate change, suggesting that vision may still mobilize productive action.

Ultimately, I trace a politicized conception of nature that simultaneously subverts and reifies institutional knowledge and the role of vision in constructing it. I establish that habitat dioramas and their reinterpretations reflect larger controversies about nature and vision throughout the twentieth century, considering not only the function of the display at the height of its popularity, but also the way it mediates American understanding of the natural world across time. Examining the habitat diorama as a discursive visual technology used across disciplines, I identify the broad significance of these objects to American art and show that these installations have served as vital tools in developing notions of self, science, and the environment.

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INTRODUCTION

The Museum "Full of Glass Cases"

In *The Catcher in the Rye,* protagonist Holden Caulfield reminisces about the dioramas in the American Museum of Natural History as he searches for his sister, Phoebe, who is purportedly visiting the institution on a field trip. He marvels:

> "Boy, that museum was full of glass cases […] The best thing, though, in that museum was that everything always stayed right where it was. Nobody'd move. You could go there a hundred thousand times, and that Eskimo would still be just finished catching those two fish, the birds would still be on their way south, the deers [*sic*] would still be drinking out of that water hole, with their pretty antlers and their pretty, skinny legs […] Nobody'd be different. The only thing that would be different is you."[1]

J.D. Salinger's character longs for the sense of stability the dioramas offer in a changing world. Forever suspended mid-moment, each installation is a refuge from time that offers the teenager a glimpse of the childhood innocence rapidly slipping through his fingers. Holden initially finds their stasis comforting, but his desire to return to the museum soon dissolves into disenchantment. He cannot confront his own changes in the face of such permanence, and he regretfully acknowledges that the exhibits are outside the laws of nature: "Certain things they should stay the way they are. You ought to be able to stick them in one of those big glass cases and just leave them alone. I know that's impossible, but it's too bad anyway."[2]

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[1] J.D. Salinger, *The Catcher in the Rye*, LB Books edition (Boston: Little, Brown and Company, 1991), 121.
[2] Ibid., 122.

Salinger, who grew up in New York City himself, was probably drawing on his own experiences of the museum when he wrote this scene. By the time he published the novel in 1951, a diorama culture had overtaken the museum as three-dimensional habitat groups proliferated through its halls. Perfected by the 1930s, the type contextualized specimens within their natural environments in self-contained, illusionistic spaces and it purported to truthfully present nature as it is found in the world without human mediation. Salinger's juxtaposition between the unnatural timelessness of the display and the forward motion of the rest of the creation highlights how the diorama's artifice has existed in tension with its illusionism. Even though the groups are presented as a faithful reconstruction of natural spaces, the habitat group must always be fiction, if only because they can never change. Indeed, the dioramas are an odd mixture of art and science, and as new generations of visitors encountered the diorama's static version of a pre-war nature, the gap between the museum's narrative of the world and the lived experience of it became too large for many to ignore.

Using these displays as a starting point, my project examines how the habitat diorama has been used in institutional and artistic contexts to navigate the changing relationship to the American environment since World War II. I address materiality, histories of vision, and sociohistorical contexts in case studies on the Hall of North American Mammals, Robert Smithson, Mark Dion, and Alexis Rockman to argue that the habitat diorama occupies a unique role in the American natural imaginary. It is a contested space used to build contradictory narratives about nature and its relationship to politics and institutional knowledge. However, adaptations of the diorama also expose controversies about vision. The persistent impulse to reconfigure the viewer's bodily

relationship to the display challenges the value of sight in knowledge-making practices across the twentieth century, revealing a significant link between changing ecological ideas and conceptions of sensory experience. As nature becomes increasingly defined by its anthropological entanglements, so too does visual art give way to embodied encounters. Examining the habitat diorama as a discursive visual technology used across disciplines, I identify the broad significance of these objects to American art and show that these installations have served as vital tools in developing notions of self, science, and the environment.

While natural history has served as a starting point for many artists—including Roxy Paine, Hiroshi Sugimoto, Walton Ford, and David Smith, to name a few—these artistic engagements address a variety of institutions, display types, and historical periods. By limiting my scope to the AMNH mammal groups and the American artists they inspired, I seek to illuminate how one type of display establishes its viewing relationships and how its visual language informs artworks that address ideas about the natural world. This targeted approach not only serves to make issues of subject matter more manageable, but also to facilitate a careful examination of the specificities of the diorama's exhibition practice. Indeed, the habitat groups are but one version of a kind of object derived from J.L.M. Daguerre's nineteenth century diorama, part of a family tree that includes the panorama, cyclorama, and the miniature group.[3] While all of these technologies have similar interests in illusionism, each employs different compositional strategies and evokes different viewer interactions that ultimately distinguish them from

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[3] On Daguerre and dioramas see Helmut and Alison Gernsheim, *L.J.M Daguerre: The History of the Diorama and the Daguerreotype*, 2nd rev. ed. (New York: Dover Publications, Inc., 1968); Stephen Pinson, *Speculating Daguerre: Art and Enterprise in the Work of L.J.M. Daguerre* (Chicago: University of Chicago Press, 2012).

one another. I use the terms diorama and habitat group interchangeably throughout this study, despite the fact that the former term encompasses a much broader range of objects than the latter, but in each case, I am referring to the displays originally known as habitat groups or habitat dioramas.[4]

I chose the groups at the AMNH for several important reasons. Many of the artists working on natural history mention the AMNH and its dioramas by name when discussing their work, offering documented connections to support the comparisons I am making.[5] Their comments, beyond creating these associations, also speak to the broad significance of the institution in American understandings of natural history in the twentieth century. To be sure, the AMNH is one of the most important natural history museums in the country. Long integrated into the New York City school curriculum and consistently attracting a large audience of visitors, the museum has become a touchstone for shared childhood experiences.[6] In this most famous of institutions, the habitat groups are both distinctive and incredibly popular. Not only is the developmental history of the habitat group is deeply linked to this particular institution, the golden age groups are also exemplary, and to this day are considered among the largest and best in the world.[7] In other words, the mammal dioramas here are typical, well-known, and specifically

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[4] Karen Wonders codified definitions, building off of Irene Cypher's 1942 dissertation. See Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History.* (Uppsala: Almqvist & Wiksell, 1993), 12-22; and Irene Cypher, "The Development of the Diorama in the Museums of the United States" (Ph.D. diss., New York University, 1942), 4.

[5] In the cases of Smithson, Dion, and Rockman, these connections are incredibly well-documented and will be addressed in subsequent chapters

[6] Stephen Asma, *Stuffed Animals and Pickled Heads: The Culture and Evolution of Natural History Museums* (Oxford: Oxford University Press, 2001), xiv.

[7] Stephen Christopher Quinn, *Windows on Nature: The Great Habitat Dioramas of the American Museum of Natural History* (New York: Abrams, 2006), 10.

mentioned by the artists themselves as a characteristic part of the American natural history display tradition.

On this last point, scholarship agrees. Previous studies have established the habitat group's unique position within American institutions of science and identified the catalysts behind their development, offering ways to think of the groups within a broader history of display and beyond their function as scientific illustrations.[8] From this work, we know that habitat dioramas are an almost exclusively American phenomenon until the mid-twentieth century, developing in reaction to the nation's environmental and social contexts and responding to new ideas about conservation, education, and the role of museums.[9] They worked to promote socially normative behaviors and enacted new visual relationships between spectators and displays.[10]

Focusing on this sub-set of objects targets the human conception of and relationship to nature, allowing me to track the continuities and changes across time and read them within the idiosyncracies of their historical moment. Robert Smithson, Mark Dion, and Alexis Rockman are all critically recognized for their ecological interests and institutional success and therefore offer important case studies for understanding this

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[8] These studies follow out of Donna Haraway's analysis of the social and cultural implications of the Akeley Hall of African Mammals. Donna Haraway, "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-36," in *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989), 26–58.

[9] Wonders, *Habitat Dioramas,* 9-11; and Karen A. Rader and Victoria E. M. Cain, *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century.* (Chicago: University of Chicago Press, 2014), 51-54.

[10] Alison Griffiths, *Wondrous Difference: Cinema, Anthropology, and Turn-of-the-Century Visual Culture* (New York: Columbia University Press, 2002), 4; Victoria E. M. Cain, "'The Direct Medium of the Vision': Visual Education, Virtual Witnessing and the Prehistoric Past at the American Museum of Natural History, 1890-1923," *Journal of Visual Culture* 9, no. 3 (2010): 284–303.

dynamic.[11] Literature has explored the institutional critiques performed by these artists, and recently, each has been considered in Princeton Art Museum's broad analysis of changing notions of the American environment.[12] However, the discursive role of the habitat dioramas has yet to be acknowledged in twentieth-century reconfigurations of ecological meaning. Similarly, while histories of the dioramas discuss their artistry and basis in socially-contingent knowledge, these studies often overlook the specificity of the habitat diorama as a material object whose continuous presence in natural history museums mean differently across time. My study brings these discourses together, combining object-based analysis with archival material and scholarly histories of vision to establish the heuristic role natural history dioramas play in the twentieth-century American understanding of the natural world.

As part of the formal emphasis of this study, I focus on glass as a material that has the ability to create inclusive or exclusive environments that model relationships to nature. I show how its symbolic associations with competing concepts of vision frame interactions between viewers and displays throughout the project, illuminating the ways in which diorama builders and artists used glass to construct physical engagements with natural objects. Chapter one argues that the diorama's glass screen serves to unify distracted vision and promote disinterested, observational prowess as a patriotic responsibility. Drawing from Isobel Armstrong's argument that glass's symbolic properties shaped its consumption in the Victorian period and engaging with Jonathan Crary's analysis of changing nineteenth century conceptions of vision, I demonstrate how

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[11] While anthropological dioramas also exist at the AMNH, these exhibits have different forms, narratives, and politics. They require different theoretical bracketing, and have catalyzed different artistic responses, so sustained consideration of these groups deserve their own analysis in a different project.

[12] Alan C. Braddock and Karl Kusserow, ed., *Nature's Nation: American Art and Environment* (New Haven: Yale University Press, 2018).

glass performs important narrative and conceptual functions in the viewer's engagements with the habitat groups. Additionally, I consider how the 1942 opening of the incomplete Hall of North American Mammals intersected with American landscape painting traditions and fostered metaphorical meanings for nature, making environment stand for nation in an ostensibly scientific context and codifying American identity during World War II.

The distance between the viewer and the specimen, physically mediated by the display's materiality, proposes an environmental condition that artists have since protested. The following chapters investigate these moments of rupture between current and past nature concepts, showing how artists have altered the position of the glass screen to open the diorama and create new ecological narratives. In these examples, the application, manipulation, and reinvention of glass surfaces becomes a cypher for twentieth century conceptions of vision, which increasingly figure it as the most important sense in modernity. Chapter two explores this change in the work of Robert Smithson, who pointed to the AMNH as the museum of his childhood while critiquing its selective natural narratives. I read Smithson's late 1960's mirror works as active reinterpretations of AMNH dioramas that neutralize the glass panel's divisive function and reunite the natural object with the physical world. In using mirrors, Smithson's art emphasizes the temporal and interactive aspects of nature while revealing it to be literally and figuratively full of human constructions. I return these works to their 1960's context to argue that Smithson's counternarrative of a cyclical, entropic nature was born from cultural anxieties surrounding nuclear proliferation and the Space Race. Foregrounding

nature's fragility, Smithson's art participated in a larger Atomic Age reassessment of environment, time, and history.

I follow this artistic revisionist impulse in successive chapters on Mark Dion and Alexis Rockman, illuminating how each uses the diorama form to present his own narrative about ecology in the contemporary period. Dion is said to call attention to scientific knowledge as a human construction rather than an essential truth, but my third chapter expands this reading by attending to the ways in which he consistently opens up the closed space of the diorama to bring the viewer back into contact with a wondrous and sometimes unsettling natural world. I suggest that Dion's inclusive environments perform an institutional critique that decenters vision in favor of phenomenological encounters with nature, alternatively promoting wonder and intellectual independence over faith in institutions, and destabilizing the notion of objective scientific practice.

By contrast, Rockman grapples with the state of contemporary environmentalism by applying diorama conventions to imaginary, two-dimensional spaces. After producing two decades of work that undermined the authority of scientific institutions by pointing to the weakness of its organizational practices, the artist began creating paintings that instead rely on the visual vocabulary of the diorama to invigorate climate science. Rockman began using diorama conventions in support of scientific practices in a Post-9/11 moment of conspiracy theories and skepticism that pressed on the purpose and value of critique. I argue that Rockman's solution to climate change denial enacts Bruno Latour's suggestion for productive discourse by focusing on what Latour calls "matters of concern" as opposed to "matters of fact."[13] Rockman's vacillation between trust and

[13] Bruno Latour, "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30, no. 2 (Winter 2004): 245.

doubt participates in a larger cultural conversation that both dismisses and demands scientific authority, but his work suggests that vision may still provide a method of knowing that can generate productive change. I posit that Rockman revisits the terms of observational learning that the dioramas originally hoped to instill in its publics, once again framing the natural world as certain and intelligible through visual study.

Ultimately, I trace an increasingly politicized and ambivalent view of nature that both subverts and reifies institutional knowledge. Recognizing the broad significance of the habitat diorama to American art in the twentieth century, my research is the first to explore how this interdisciplinary visual technology mediates environmental understanding across time. I establish the dynamic role these displays have served in building ecological narratives. Grappling with changing configurations of the environment and the ways in which Americans have conceived of these ideas through artworks, my project illuminates the discursive connections between institutions and individuals as they reinscribe ecological conventions to reflect the contemporary moment and provides special insight into the complicated state of vision and institutional critique in twentieth-century America.

CHAPTER ONE

Allied Vision: The Hall of North American Mammals and American Patriotism, 1942-1945

In the heart of New York City, an Alaskan Brown Bear stares intently at a salmon on the ground. He has startled off the original owner, a disappointed otter who slinks away behind him. He may be too focused on the fish to notice our approach, but his compatriot watches us warily, towering above the scene on hind legs, protecting the tasty morsel from further poaching. Behind them, purple, snowcapped mountains reach toward the sky, filled with pastel clouds tinged pink as the golden sunlight permeates the scene. This is a moment of tension in which it is unclear if the bear will defend its meal or flee. Frozen in time, we await the bear's decision, but it does not come, because he is no longer flesh and blood but clay and fur—a skin affixed to a sculpted armature, naturalistically posed in a curved niche with an illusionistic backdrop and locked behind glass (figure 1.1).

This diorama is one of 43 in the Hall of North American Mammals at the American Museum of Natural History, where habitat groups have constituted the institution's scientific displays since the beginning of the twentieth century. Their integrity and magical artistry continues to charm visitors today, but their sense of timelessness has increasingly figured the displays as antiquated representations of a natural world that never was. In growing recognition of the habitat diorama's cultural dimensions, various scholars have sought to explain their institutional status and ideological programs by unearthing the curatorial intentions and sociological implications

of such display.[1] Yet the three-dimensionality of the habitat groups—their materiality and inclusion of once-living specimens—is distinctive, and it offers an alternative way to understand the subject-object relationship beyond curatorial intention. This is especially true because the habitat groups did not develop spontaneously, but were instead the result of gradual changes made over half a century. More than just moving the installations toward holistic illusionism, these changes affected the compositions of the displays and created a range of viewing relationships between the spectator and the exhibits. Such adaptations are themselves bracketed by shifting historical conditions and curatorial conversations within the larger changeover to diorama display culture that must nuance any consideration of how the habitat groups acted on their publics.

Recognizing the different physical relationships to these displays permits us to observe a progression of ideas about education, vision, knowledge, and nature that emerge alongside the development of the type and enables us to ground the meaning and function of the midcentury displays in historical perspective. Rather than treating the mature type as effecting the same kinds of relationships as the early ones, I want to rethink these displays as historical actors in conceptions of nature, nation, and self at the height of their illusionism and consider how they met historically specific sets of ideological needs at this time. Each iteration represents a solution to a series of

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[1] The most important of these include Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History.* (Uppsala: Almqvist & Wiksell, 1993); Alison Griffiths, *Wondrous Difference: Cinema, Anthropology, and Turn-of-the-Century Visual Culture* (New York: Columbia University Press, 2002); Karen A. Rader and Victoria E. M. Cain, *Life on Display: Revolutionizing U.S Museums of Science and Natural History in the Twentieth Century.* (Chicago: University of Chicago Press, 2014); and Donna Haraway, "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-36," in *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989), 26–58. For histories of the AMNH see Geoffrey Hellman, *Bankers, Bones and Beetles: The First Century of the American Museum of Natural History* (New York: The Natural History Press, 1968); and Joseph Wallace, *A Gathering of Wonders: Behind the Scenes at the American Museum of Natural History* (New York: St. Martin's Press, 2000).

institutional problems, yet none is quite as successful as the fully illusionistic type codified in the 1930s, which are still considered amongst the best in the world and continue to attract rapt audiences.[2] While these golden age groups were built on longstanding museum policies in education and display, their visual effect and experience are in fact very different from the dioramas installed in 1902 and should be treated as such.

For these reasons, this chapter analyzes the installations' materiality to explore their mechanisms for cultivating spectatorial relationships. I closely attend to the compositional changes to the diorama type in an effort to show how the dioramas came to define nature as fixed, pure, and separate from humanity, focusing on the way that the new architectural form, and especially its glass front, worked to build distance between the viewer and the display. Excavating the cultural meanings of glass and the ways they informed the diorama experience, I suggest that the panel helped teach the viewer to prioritize vision and to trust the dioramas as valid spaces for creating knowledge. I then put this lesson into proper historical context to illuminate how ideas of visual mastery and stewardship collided with American wartime values in the dioramas in the Hall of North American Mammals, which opened to the public in 1942. I demonstrate the close connections between Romantic painting and the diorama backgrounds to argue that the diorama's conceptions of vision, knowledge, and nature were supplemented with nationalistic ideas about American stewardship and strength that reinforced a perception of domestic nature as plentiful and enduring. As a result, a midcentury definition of nature emerges that distinguishes the natural from the human, casting the American

[2] Former senior project manager for exhibitions at the AMNH, Stephen Quinn, called the institution "the Louvre of diorama art." Stephen Christopher Quinn, *Windows on Nature: The Great Habitat Dioramas of the American Museum of Natural History* (New York: Abrams, 2006), 12.

environment as perfect, distant, and unchangeable even after the effects of expansionism—most notably its detrimental impacts on ecosystems and animal populations—had already proven this narrative false.

Popular histories of the dioramas tell us that the display type lost its importance as nature photography and film ascended in the post-war period, but attending to the scopic culture of the diorama shows us that this is very likely not the case.[3] Instead, if we view the diorama front as an actor in disciplining attention—as a literal lens that places nature in focus—we come to see how the display's object presence works to model mastery of an inexhaustible nature at the close of modernism's visual regime.

Development of the Diorama

The midcentury habitat dioramas at the American Museum of Natural History are the culmination of over five decades of change in the exhibition philosophies and practices of major public museums in America. Growing from individual preserved specimens to groupings of related species in naturalistic habitats, the diorama type developed as a response to a series of social needs that materialized around the turn of the century. In tracing the development of the type alongside the historical contexts established in previous scholarship, I show how the mature habitat group type functioned to discipline the body, instructing viewers to pursue the picturesque and to engage with nature in a detached and visual capacity. Each display conceptualizes a subject-object relationship between the viewer and the specimen that offers a sense of mastery over the

[3] Ibid., 10.

environment, but the move toward complete illusionism slowly built a narrative of a boundless and untouched nature separate from human influence or interaction.

Formally speaking, the dioramas were illusionistic adaptations of early artistic taxidermy, moving from individual specimens in sculptural settings to life-sized installations. This was a departure from nineteenth century natural history conventions, which, in favor of an objective intellectualism, rejected the haphazard collection of the most beautiful, rare, and intriguing specimens seen in early modern curiosity cabinets.[4] The rationalizing impulses of the Enlightenment manifested themselves in exhibitions of discrete specimens arranged in neutral poses and placed in grids or rows to convey relationships and variations. In keeping with new systematic approaches to the natural world, these installations sought to illustrate the rational order of a universe created by god.[5] Taxidermists sometimes combined specimens with small bits of the environment such as sticks and faux flowers to lend their exhibits a sense of liveliness.[6] For the most part, however, painted backgrounds and settings were considered sensational elements that distracted from learning.[7]

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[4]Steven Conn, *Museums and American Intellectual Life, 1876-1926* (Chicago: The University of Chicago Press, 1998), 25. Introductions to Early Modern display practices can be found in Paula Findlen, *Posessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy* (Berkeley: University of California Press, 1994); and O.R. Impey and Arthur MacGregor, eds., *The Origins of Museums: The Cabinet of Curiosities in Sixteenth and Seventeenth-Century Europe* (Oxford: Clarendon Press, 1985), among others.

[5] Conn, *Museums and American Intellectual Life*, 37-43. For useful discussions of Enlightenment displays and their museological ideologies see Lorraine Daston and Katharine Park, *Wonders and the Order of Nature, 1150-1750* (New York: Zone Books, 1998), 329-64; and Eilean Hooper-Greenhill, *Museums and the Shaping of Knowledge* (London: Routledge, 1992), 188-90. On Victorian display and collection practices see Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display* (Baltimore: The Johns Hopkins University Press, 1999).

[6] Naturalistic bird displays included these techniques more frequently than others. Wonders, *Habitat Dioramas,* 24-27. For more complete histories of taxidermy see Jane Eastoe, *The Art of Taxidermy* (London: Pavillion Books, 2012); and Rachel Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park, Pa: Penn State University Press, 2012).

[7] Wonders, *Habitat Dioramas,* 118.

There were some exceptions to this kind of display culture. Both biological systematics and aesthetics were at stake in Charles Willson Peale's Museum, for example, where specimens were placed in painted cases and arranged according to Linnaean taxonomy.[8] *The Artist in His Museum* offers an impression of Peale's highly-regulated display system, or at least, his idealized version of it (figure 1.2). The showroom is composed of four neat rows of shadowboxes placed in an even grid. Built into the walls underneath a band of gold-framed portraits, the cases line the two visible walls of the space entirely, stretching from the entryway on the left side of the painting to the back right corner of the room, hidden from view by Peale's body. Blue backgrounds with hints of puffy white clouds suggest a generic out-of-doors environment. Some cases contain branch-like wooden perches, but the birds in each case maintain traditionally neutral poses that, while offering moderate appearance of liveliness, continued to predominantly display birds in profile with wings closed to the body, permitting viewers to observe similarities and differences in coloring, body shape, and size to full advantage.[9] Implementing the orderliness of nature in his museum, Peale's displays conveyed the self-evident rationality of the natural world.

Peale's pecuniary interests explain his inclusion of painted backgrounds and rare creatures, but the underlying principle and regimented presentation of his museum is

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[8] David R. Brigham, "'Ask the Beasts, and They Shall Teach Thee': The Human Lessons of Charles Willson Peale's Natural History Displays," *The Huntington Library Quarterly* 59, no. 2/3 (1996): 197-198. Further information on Peale's museum and his displays can be found in Charles Coleman Sellers, *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art* (New York: The Barra Foundation, 1980); William T. Alderson, ed., *Mermaids, Mummies, and Mastodons: The Emergence of the American Museum* (Washington, D.C.: American Association of Museums, 1992); and Edward P. Alexander, *Museum Masters: Their Museums and Their Influence* (Nashville: American Association for State and Local History, 1983), 43-77.

[9] Part of this rigidity is related the preservation practices of skins at this point in history. Harsh chemicals and delays in shipments of carcasses often led to poor emulations of animals rather than naturalistic forms. See Rachel Poliquin, *The Breathless Zoo,* 61-66.

nevertheless consistent with collections abroad. In both the New and Old World examples, rigid matrices conveyed a sense of order and control. Serial placement on shelves or in shadow boxes transformed the viewer into a surveyor of nature's diversity, showing them a series of natural modifications from one specimen to the next in submission to their panoptic gaze.[10]

Little had changed in the way of display standards by the time the AMNH was founded in 1869. As museums reoriented their missions toward public education in the 1880s, however, new taxidermy practices and increased demands for naturalistic display shifted the exhibition cultures of the institution.[11] Innovative group installations began to propose a natural world built on ecological relationships, even as they were exhibited alongside older taxonomic types. Originally relegated to trade shows and expositions throughout the 1860s, new taxidermy schools like Ward's Natural Science Establishment and professional organizations like the Society of American Taxidermists helped preparators standardize techniques and lobby for the legitimacy of their craft.[12] It took twenty years for natural history museums to take these installations seriously. The Smithsonian only debuted the first large-scale group in 1887, which featured four bison

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[10]See, for example, the creation of the South Kensington Museum in London. Yanni, *Nature's Museums,* 114-15.

[11] For more on taxidermy in natural history and its relationship to contemporary museological display see Stephen Asma, *Stuffed Animals and Pickled Heads: The Culture and Evolution of Natural History Museums* (Oxford: Oxford University Press, 2001), 3–46.

[12] Wonders, *Habitat* Dioramas, 110-119. Large-scale theatrical mounts did appear in the museum before this moment, but they were rare. The AMNH owned and exhibited Jules Verreaux's *Lion Attacking a Dromedary,* but the group was dogged with critiques of its overt theatricality. The museum stopped displaying the piece after moving to its permanent location on Central Park West in 1877. See Griffiths, *Wondrous Difference,* 27-28. Further discussions of Ward's Natural Science Establishment can be found in Sally Gregory Kohlstedt, "Henry A. Ward: The Merchant Naturalist and American Museum Development," *Journal of the Society for the Bibliography of Natural History* 9, no. 4 (1980): 647–61; Mary Anne Andrei, "Nature's Mirror: How the Taxidermists of Ward's Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species" (Ph.D. diss., University of Minnesota, 1996).

collected and mounted by their in-house taxidermist William T. Hornaday (figure 1.3).[13] The life-like specimens naturalistically posed amongst three-dimensional plant life quickly persuaded other curators of the groups' educational potential. The Smithsonian's installation made a deep impression on AMNH president Morris K. Jessup, for example, who immediately decided that his museum should embrace the artistic liveliness of this new "group method," and the museum resolved to develop more innovative exhibition practices.[14] The groups were immediately seen as paradigm shifting for institutional display, distinguishing the new museum from the old. The curator of mammals, J.A. Allen, said as much when he declared that these innovations would "break away from the too long time-honored and traditional method of arranging in long, monotonous rows, stiffly and otherwise inartistically, mounted effigies of animals."[15]

Toward these ends, these first groups departed from traditional standards of representation and offered a sense of animal behaviors and life cycles by focusing on individual species and their environments. The AMNH Bison group installed in 1889 shows how the New York institution borrowed from the Smithsonian for such displays (figure 1.4).[16] Like Hornaday's group, this installation contains multiple examples of the same species that span multiple ages and both sexes. Shown to be resting, grazing, nuzzling, and gazing on a grassy platform, the creatures appear more natural than they did in the neutral positions that were standard to Victorian taxidermological practice. This group and the ones that would follow maintained the cuboidal vitrine that pervaded

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[13] The group can now be found in the Montana Agricultural Center in Fort Benton, Montana—without its protective glass case. Hanna Rose Shell, "Last of the Wild Buffalo," *Smithsonian Magazine*, February 2000.

[14] Wonders, *Habitat Dioramas,* 123.

[15] *Annual Report of the Trustees for the Year 1887-8* (New York: American Museum of Natural History, 1888): 13.

[16] Wonders, *Habitat Dioramas,* 123.

nineteenth century displays, permitting the viewer to circumambulate the group and view it from all four sides. From every position, one could see through the display, showing the room, other exhibits, and even other visitors. While visitors could not touch the specimens, the semi-transparent container revealed their shared indoor location. Patrons who got close enough would see their own reflection in the glare of the glass. The glass cases could make the viewer part of the exhibit, allowing them to think of themselves as occupying the same room as the animal. As a result, while the bison was *of* nature, it was not *in* nature, and the viewer could still think of the specimens as removed from an alternate location, perhaps even as part of their own urban environment if they so decided.

The AMNH's interest in these kinds of installations was probably related to their developing programs in education and public outreach, a response to the popularity of the New Museum Idea in that decade and the one that would follow. The AMNH was initially founded to increase the city's international profile during the wave of museum building that followed the Civil War.[17] However, it reoriented its primary mission to education within ten years, establishing an education department dedicated to this purpose in 1880.[18] In doing so, the AMNH participated in the philosophical reconceptualization of the museum usually attributed to Smithsonian director George Brown Goode that called for a new audience and institutional function. For Goode, this

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[17] "The First Annual Report of the American Museum of Natural History," Annual Report (New York: American Museum of Natural History, January 1870), 6. For more on Post-bellum museum building see Conn, *Museums and American Intellectual Life*, 43-44 and Alan Wallach, *Exhibiting Contradiction: Essays on the Art Museum in the United States* (Amherst: University of Massachusetts Press, 1998), 22-25.

[18] George H. Sherwood, "History of the Museum's Nature Education in the Public Schools and Colleges," in *Free Nature Education by the American Museum of Natural History in Public Schools and Colleges: History and Status of Museum Instruction and Its Extension to the Schools of Greater New York and Vicinity*, ed. George H. Sherwood (New York: The American Museum of Natural History, 1925), 7.

meant that museums should exhibit ideas, not just objects, in service of the general public rather than specialists or gentleman scholars because it was the public who would benefit most from the knowledge museums could offer. [19]

Groups like the bison, with such sensational scale and seemingly-magical naturalism, were seen as important tools for securing a diverse and attentive audience whose interest was already engaged elsewhere. The museum considered itself in competition with less reputable urban diversions that targeted the growing immigrant and working class populations in the city, and so it used the dioramas to redirect working-class attention toward loftier ends.[20] They succeeded, but in emulating aspects of American spectacle culture, the dioramas threatened to relegate the museum to mere entertainment. Like cycloramas, circuses, and other traveling curios, dioramas offered a novel way for people to engage with the wonders of the world, and though they were executed under the guidance of scientists, their spectacular appearance created a slippery continuity between the high educational goals of the institution and the popular spectatorship cultivated by P.T. Barnum and the Worlds Fairs in the nineteenth century.[21] The two realms had more in common than the institution perhaps wanted to remember;

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[19] Rader and Cain, *Life on Display*, 10-19. For more on the New Museum Idea see Hugh H. Genoways and Mary Anne Andrei, eds., "The New Museum," in *Museum Origins: Readings in Early Museum History and Philosophy* (Walnut Creek, CA: Left Coast Press, 2008), 97–152. The origins of the New Museum Idea have been variously attributed to different individuals across time, including Charles Wilson Peale. See Charles Coleman Sellers, "Peale's Museum and 'The New Museum Idea,'" *Proceedings of the American Philosophical Society* 124, no. 1 (February 29, 1980): 25–34. Osborn traced it back to Francis Bacon. See Henry Fairfield Osborn, "Nature in the Schools: Inspiration, Visual Instruction, Observation, Learning," in *Free Nature Education by the American Museum of Natural History in Public Schools and Colleges: History and Status of Museum Instruction and Its Extension to the Schools of Greater New York and Vicinity*, ed. George H. Sherwood (New York: The American Museum of Natural History, 1925), 5.

[20] Alison Griffiths, *Wondrous Difference*, 6. This was, of course, true of most public education institutions at this moment. See, for example, Roy Rosenzweig and Elizabeth Blackmar, "A Public Menagerie and Two Private Museums," in *The Park and the People: A History of Central Park* (Ithaca: Cornell University Press, 1992), 340–69. For more on museums as spaces for cultivating behavior see Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (New York: Routledge, 1995); and Carol Duncan and Alan Wallach, "The Universal Survey Museum," *Art History* 3, no. 4 (December 1980): 448–69.

[21] Griffiths, *Wondrous Difference*, 44.

part of the AMNH's early collection was acquired from Barnum, muddying the distinction between spectacle and education from the very beginning.[22] Each collection ultimately had different exhibition styles, information standards, and educational aims, but they both evoked an emotional response that some perceived as anti-scientific.[23]

Indeed, there were limits to how far museums could go to appeal to the imagination, and in spite of the new institutional interest in habitat groups, the displays remained uncommon until after the turn of the century. The move toward contemporary habitat groups happened in fits and starts and illusionism developed with a relative caution that shows the persistence of nineteenth century approaches to display. Painted backgrounds, while exciting, were decidedly unacceptable at the beginning. They were considered to be unserious and too closely associated with spectacle and humbug. By consequence, while such paintings appeared behind taxidermy groups in expositions and fairs as early as 1889, they would not make their way into natural history museums until 1902.[24]

Frank Chapman's Cobb's Island group at the AMNH was one of these first groups (figure 1.5). Featuring several different species of birds engaging in activities ranging from flying to walking, to resting, and to eating, the installation mixes a three-dimensional foreground made of real sand, shells, and plants with a painted backdrop that begins to add spatial illusionism to the display. The artists matched up the openings in the grass in the foreground with those illustrated in the background to create a transition from

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[22] Wonders, *Habitat Dioramas,* 107.

[23] Ibid., 118. Victoria Cain has shown that this tension persisted well into the 1930s at the AMNH. See Victoria Cain, "The Art of Authority: Exhibits, Exhibit-Makers, and the Contest for Scientific Status in the American Museum of Natural History, 1920–1940," *Science in Context* 24, no. 2 (2011): 215–38.

[24] Earliest examples include Kansas State Exhibit at the Chicago Columbian Exhibition in 1893 and Carl Akeley's Muskrat Group from 1889. See Wonders, *Habitat Dioramas,* 134-135.

real space to fictive space that muddied the distinction between the two zones. While the background arguably made the exhibit more naturalistic than its ancestors, it remains limited by the architecture of the rectangular case, a carryover of older display practices. The two side walls and ceiling have been whitewashed, preventing the viewer from seeing the animals without their environmental context or from seeing other parts of the museum or other visitors. Limiting the view focuses attention on the environmental harmony of the species in its habitat, while continuing to disrupt full immersion in the scene by calling attention to the "tie-in," or the join between the painting and the sculpture. Additionally, the exterior light source casts unnatural shadows against the sky and undecorated walls of the exhibit, further calling attention to its status as painting.

The painted backgrounds in Chapman's groups served the curator's conservationist message and perhaps help explain why backdrops became acceptable components of the display.[25] His first groups were set in threatened areas, and so the connection between specimen and habitat helped demonstrate the need to preserve these areas from destruction. His idea worked; Chapman's groups are partially credited with the creation of the first bird preserve in the United States in 1903.[26]

Other participants in the early conservation movement in the United States were also involved with the creation of dioramas or closely associated with the museum. William T. Hornaday, the preparator of the Smithsonian first group, envisioned a similar purpose for his work. He hoped it could rouse preservation practices after his own experiences with the disappearing American Bison had revealed the growing threat of

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[25] Rader and Cain, *Life on Display,* 44.
[26] Stephen Quinn, *Windows on Nature,* 17.

extinction on the once seemingly boundless frontier.[27] As tools for conservation, the dioramas could at once keep examples of animals for posterity and perhaps nurture a love of nature that would encourage Americans to join nascent environmental movements. Ironically, natural history dioramas were thus perceived as one of the most important ways naturalists could save threatened animals.[28] Mounting specimens behind glass would preserve them for future generations when wild examples could no longer be observed, even if doing so contributed to their disappearance.

Chapman's display proved to be the first in what would become the Hall of North American birds, which opened in 1909 as the first complete hall of taxidermy groups in the country. The hall presented a series of new problems that began to codify a template for diorama design that would impact all future installations. Like the Cobb's Island group, the rest of the installations were executed in rectangular cases that projected into the gallery and depended on ambient light (figure 1.6). There was no consistent architectural footprint to the displays in the hall, and so the size of each case was instead determined by whatever space was available. Each combined three-dimensional foregrounds with panoramic background paintings and encouraged frontal engagements by limiting the view to one side.[29]

And yet the groups had yet to achieve full illusionism. In addition to the issues described previously, glare caused such a problem that some of the last groups added to the hall attempted to compensate for the issue with mildly curved backgrounds and

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[27] Wonders, *Habitat Dioramas,* 120-121. For more on Hornaday see Gregory J. Dehler, *The Most Defiant Devil: William Temple Hornaday and His Controversial Crusade to Save American Wildlife* (Charlottesville: University of Virginia Press, 2013).

[28] Rader and Cain, *Life on Display,* 73-74.

[29] Victoria Cain has linked this presentation to stereograph slides. See Victoria Cain, "Nature Under Glass: Popular Science, Professional Illusion and the Transformation of American Natural History Museums, 1870-1940" (Ph.D Diss.: Columbia University, 2007), 206.

smaller viewing windows. The museum eventually added internal lighting systems to counteract the effects of daylight, but with fully vertical panels, visitors still saw themselves literally reflected in the glass fronts of the exhibits, unable to remove themselves from their institutional setting.[30] These innovations indicate the museums growing interest in naturalism, but as museum director Albert Parr pointed out, illusionism was not the main point for those preparators: "[I]t now seems quite evident that the creators of the earliest displays worked in the spirit of representational artists and not as practitioners of the arts of illusion. […] complete visual deception was not their aim."[31] He instead categorized them as "three dimensional illustrations," whose haphazard dimensions and unapologetic painterliness revealed a disjunction between foreground and background that undermined any claims of naturalistic intent.[32] Indeed, the paintings did little to disguise their own constructedness or the cases in which they were situated. Simple rectangular proportions, inconsistent environments, and highly visible signatures all indicated an artistic prerogative, one that considered these paintings independent works of art rather than a supportive element in a conceptual whole.

Other examples from this period show that "three dimensional illustration" predominated at the museum. While Chapman's bird hall encouraged the museum to install even more ambitious groups, these examples show that no coherent formula yet existed for such displays. Rather, a more haphazard approach to illusionism can be observed across contemporaneous installations, demonstrating that the yet-to-be codified display program introduced a range of fluid relationships between the viewer and the

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[30] J.A. Allen, "The Habitat Groups of North American Birds in the American Museum of Natural History," *The Auk* 26, no. 2 (1909): 174.
[31] Albert E. Parr, "Dimensions, Backgrounds, and Uses of Habitat Groups," *Curator* 4, no. 3 (1961): 199.
[32] Parr, "Dimensions, Backgrounds, and Uses of Habitat Groups," 201- 202.

specimen within the museum. Indeed, not all early combinations of taxidermy and painting were as fully integrated as the Chapman groups. A 1907 photograph of the Wapiti Elk group shows five elk of both sexes and several different ages posed on a square platform amongst boulders, tree stumps, and other natural foliage (figure 1.7). A moderately-sized landscape painting sits approximately three to five feet behind the group. Placed in a thick wood frame with a curtain at its base to conceal its hardware, the painting invites the viewer to imagine a natural setting around the elk. The illusion would be intensified if one stood at an ideal observation point, but the installation does not obligate the spectator to occupy this position, nor does it reward them for their compliance. A velvet rope encircles both the group and the painting, denoting the exhibition space as separate from that of the visitor, but the boundary is permeable; it dissuades interaction but does not prevent it entirely. Instead, the open air arrangement between the painting and the sculpture permits the viewer to move around the group much in the same way that rectangular vitrines once did. Additionally, the view fails to contextualize the display beyond the museum space. Encountering the group head on leaves the room's architecture and Victorian-style cases immediately visible. While the painting suggests an outdoor scene, the installation ultimately prevents complete immersion and permits the viewer to invent their own environment, for good or ill.

Sometime in the next four years, the group was reinstalled in a new configuration that authorized different viewer interactions. The change further illuminates how the museum experimented with illusionism and how subtle shifts in the installation alter the relationship between the observer and the specimen. A 1911 photograph shows that curators removed the rope and skyed the background painting, making the specimen

more accessible to various viewing points and other senses (figure 1.8). The young girl in the foreground of this image stands with her shins against the platform as she rests her book bag on its edge. In this version of the display, the space shared by the viewer and the specimens offer an immediacy that other groups lack. There is continuity between the viewer and the specimen, intensified by the ability to lean into the group's space and even touch the elk, if desired. But while the children surround the platform, their gazes are elevated to the painting in the background, as indicated by the pointed outstretched finger of a girl in a dark hat standing at the left side of the image. Their sight lines bypass the animals entirely, and show that viewers contemplated the two aspects of the display separate from one another and not as an illusionistic totality. This display does not attempt to recreate the outdoors, but rather treats the painting as a supplemental component. The dissonance between foreground and background seen in the Chapman groups is more pronounced in the Elk installations, figuring the specimen as the center of institutional examination and its environment as a secondary concern. The arrangement splits the two realms, showing a concept of nature that still seeks to fragment, order, and systematize in order to understand.

These examples show that background paintings and groups were treated as separate entities by the institution itself, available for arrangement and rearrangement as necessary.[33] This would change as curators began replacing such older displays with permanent installations in purpose-built halls. The groups that followed were wildly popular with both the public and museum donors, attracting major donations that permitted the expansion and installation of new buildings and exhibitions and fillings

[33] This is still true to the way the institution displays the early exhibits today. Louis Agassiz Fuertes' flamingo colony background painting currently hangs on the wall in the AMNH. The foreground has long been disassembled.

gaps in the operating budget when city funds were limited during the Great Depression. Custom made by an in-house team of preparators, these new halls capitalized on the monies dedicated to exhibitions and the rapidly advancing taxidermy practices to create better quality specimens and more naturalistic scenes.[34] Their innovations, combined with newly codified guidelines for exhibition at the AMNH, were implemented across the new halls, beginning with the South Asiatic Hall, which opened in 1930, and progressing in the Akeley Hall of African Mammals and the Hall of North American Mammals through the 30s and early 40s.

The Golden Age Begins

It is in these dioramas that we first observe a mature habitat group type and the ascension of the museological visual culture most commonly associated with the diorama. In these groups a new illusionism and spectatorial relationship emerges that redefines the significance of the specimen and its relevance to the viewer's body. The new dioramas for the Asian mammal halls and the Hall of Africa took the same basic form, which can be seen in the Gorilla diorama (figure 1.9). One of the first to be completed for Akeley's memorial hall and one of the most famous, the group features five gorilla specimens, who enact a scene of confrontation. A male encroaches on the territory of a large silverback seated in the middle ground. He rears to beat his chest in warning as one juvenile, a second young gorilla, and its mother warily watch the intruder from the side. Surrounded by lush vegetation and framed by curving branches and vines, the scene unfolds on a slope in the foreground that recedes into the painted panorama of

[34] Rader and Cain, *Life on Display,* 81-82.

misty mountains. The illusion is nearly perfect as a result of the new display methods implemented in this hall and its contemporaries. The diorama is composed of a fully curved, half-dome space that stretches past the frame of the viewing window and conceals the internal architecture of the case. The construction heightens illusionism by mirroring both the curve of the earth and of the binocular visual field. The glass front has been tilted to minimize glare and reflections, removing the image of the self from the encounter. When combined with its naturalistic painting, the new form expanded the space of the display, enhancing the life-like qualities of the taxidermy groups by unifying the foreground and background into a continuous, illusionistic vista.

The earliest of the fully illusionistic dioramas were executed for the Asian halls. However, as these exhibits contained both large-scale half-dome niches and free-standing vitrines, they lay somewhere between early and mature installation guidelines and offered mixed interactions between the viewers and specimens. Immersion happened alongside more mobile explorations as visitors oscillated between illusionistic alcoves and background-less taxidermy groups in four-sided glass cases. As discussed in earlier examples, this kind of flexible approach to illusionism was fairly common throughout the museum, and it provided a similar variety of interactions, ranging from an increased sense of interactivity to a more complete illusionistic removal.

Carl Akeley's African Hall, by contrast, was to be entirely constituted by alcove groups, inaugurating a consistently distant bodily experience that favored a sense of mastery through its new compositional formula. Begun around the same time as the Asian halls, the African Hall was far more dedicated to holistic naturalism, presenting every group in an oversized illusionistic niche that created a series of windows, as

opposed to discrete boxes. Indeed, Akeley explicitly wanted to provide an experience akin to looking "out through open windows into an Africa out of doors," thinking of the dioramas as "a peephole into the jungle."[35] His vision worked against the cell-like division of the space originally implemented in Chapman's bird hall, instead revealing a new approach to the diorama based on an architectural conceit that distinguishes these newer groups from their ancestors.

Akeley's metaphorical description of the groups as windows and peepholes speaks to the key role architecture played in this new display formation. Where earlier versions allowed the viewer to share space with the specimen, making it conceptually admissible to the realm of culture, the later dioramas seal off mammals within their own environments and distinguish the viewer as categorically separate and different from the group. In this way, the large-scale niche groups function differently than discrete taxidermy groups or miniatures, combining formal elements and man-made materials into visually unified programs, which construct the innovative viewing relationships experienced in golden age dioramas.

The golden age groups create a sense of an artificial interior space separate from the naturalized outdoors of the display, emphasizing the viewer's essential difference from the natural world. The opposition is a fallacy—of course, the exhibits were as man-made as the museum's other architectural elements. Nevertheless, verisimilitude tautologically assures viewers of truthfulness and further suppresses the installation's constructed nature. Illusionism here is not just a value, it is a vehicle for disguising the

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[35] Carl Akeley quoted in Griffiths, *Wondrous Difference,* 43.

highly structured nature of the experience, and it permits the case to reinforce the literal division it created between the two spaces.

The groups also coerce limited interactions from their viewers by confining the view to one side of the display. Flush with the walls of the gallery, the new installations are more frontal than previous iterations. The continuity between foreground and background encouraged visitors to stand in ideal positions to resolve the illusion inside the alcove, forcing the groups to function pictorially and work against the very three-dimensionality that made them distinctive. The rectangular opening of the case front, viewed at a distance, pushes the installation toward painting through conventions of representation. Photographs of the dioramas made for documentation, press, and educational purposes support this perception. Almost unfailingly, they show the displays from vantage points that reveal the illusion at its apex, matching the orientation of the photograph to that of the habitat group and omitting only the architecture of the vitrine. Rejecting the perspectival advantages of three-dimensionality (namely the ability to view the object from a variety of angles), the new arrangements instead limit the spectator to a narrow set of engagements by soliciting a desire to create harmonious and pleasing views. The new configuration thus proscribes a set of engagements that encourage a removed and fixed bodily position rather than immediacy or movement.

Altogether this form encouraged a new distance between the viewer and the natural specimen. The first habitat groups encouraged more flexible interactions, often permitting the subject and object to share physical space or revealing the artificial context of the encounter. Specimens that were separated by vitrines were still part of the museum space, allowing visitors to see the architecture of the room, other exhibits, and even other

patrons through the case as they moved around it. The golden age groups removed this possibility and fixed the viewer in place. Despite the hope to stir preservationist instincts, the displays encourage intellectual distance and objectification of the natural. The viewer is unable to intervene in diorama's narrative and is instead encouraged to accept the scenario as pristine and definitively separate.

Glass and Vision

The transition between inside and outside, from the space of nature to the space of culture, occurs in the glass front of the diorama, which marks each side of the panel as fundamentally different from one another. This is a literal transition, dividing the space of the room between the spectator and the specimen, but it is also a conceptual one, signified in a material that itself has been transformed from the sand of the earth into the modern surface *par excellence*. Glass mediates this encounter in ways that must inform how we understand the interaction between the viewer and diorama. The screen is both a filter and a frame that foregrounds and focuses vision while stimulating desire and physically repelling the body. Its metaphorical meanings and historical understandings further strengthen the relationship of removal and mastery that I argue emerged from the golden age dioramas.

Glass introduces cultural complexities into the diorama's framing that can be brought to bear on the interactions and relationships generated by such division. Isobel Armstrong has shown that glass offers fundamental metaphors for vision and experience that have altered the ways people understand perception. She argues that the upsurge of glass use and its consumption in the nineteenth century fundamentally altered the

landscape of the world in which people lived, even shaping the terms of Victorian modernity.[36] As innovations in nineteenth century mass-production infused the market with glass, Victorians increasingly found themselves in a social condition where all interactions were negotiated by translucent surfaces. Consequentially, glass's symbolic meanings brokered conceptual models of sensory experience in general. Glass not only revealed that the world was always mediated, it also offered frameworks for understanding the nature and meaning of such mediation. Tracing the metaphorical language of glass across nineteenth century texts, Armstrong shows that glass's multifarious qualities and dual status as both a medium and a barrier dramatically informed the ways people understood and explained social, scientific, and political phenomena at this time.[37] Glass became an essential metaphor for describing modern existence.

Nineteenth century notions about the properties of glass continue to set parameters for meaning in the mid-century habitat groups, even though Armstrong strikes a difference between nineteenth century glass culture and its twentieth century phase. Victorian concepts are more instructive here, even if attitudes about glass's purity and restraint—attitudes that she identifies as the twentieth century innovation in glass culture—are present in engagements with the diorama.[38] Instead, the ideas about glass and mediation that Armstrong characterizes as distinctly Victorian not only persist in the visual encounter of the diorama, I argue that they actively structure the spectatorial

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[36] Isobel Armstrong, *Victorian Glassworlds : Glass Culture and the Imagination 1830-1880* (Oxford: Oxford University Press, 2008), 27.

[37] Ibid., 40-45.

[38] Armstrong distinguishes these two types of glass culture in response to Walter Benjamin, pushing back against his idea that its 20th century connotations as the pure, cold surface of modernity was always its defining quality. Armstrong, *Victorian Glassworlds*, 27, 40.

experience by bringing socially significant meanings to the encounter and forcing viewers to literally perceive the natural world through this symbolically burdened screen.

First, glass's duality as surface and conduit, which Armstrong identifies as its defining contribution to modern interactions, creates a tension between the viewer and the specimens in ways that support the bodily relationship to nature I have identified above. "Glass is an antithetical material," she writes, pointing to its simultaneous function as barrier and medium.[39] In its transparency, it is an inherent contradiction. Such "visible invisibility," simultaneously effaces and insists on materiality and thus works in between states of consciousness.[40] In the diorama panel, semi-permeability renders display contents visually accessible while forbidding other physical engagements. Like the shop windows on which they are modeled, the habitat groups stimulate desire that must remain unfulfilled.[41] Large glazed fronts position the spectator as a customer with the natural world available for their consumption, heightening interest by frustrating immediate possession. Lush fur, abrasive tree bark, and silky flowers invite movement into the exhibit and elicit the desire to touch through a surfeit of haptic detail, but the glass refuses such interaction. A newly-cleaned diorama front may appear entirely invisible, but it will assert its presence for the viewer who peers too closely, chiding the overly-curious with a firm rap on the head.[42] The glass offers only the illusion of access. Even the ability to see oneself reflected in the panel alongside the specimen has been

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[39] Ibid., 37.

[40] Ibid., 38.

[41] Victoria Cain, "'Attraction, Attention, Desire': Consumer Culture as Pedagogical Paradigm in Museums in the United States, 1900-1930," *Pedagogica Historica* 48, no. 5 (2012): 745–69.

[42] I have, on numerous occasions, observed both adults and children crash against the glass as they attempt to take a closer look.

denied by its new, sloped position. Instead, its primary function is to foreclose any kind of bodily participation.[43]

Glass's cultural significations also infuse the encounter with metaphors that inform how one is to understand the group, especially as the functionality of the vitrine had changed over time. Originally implemented to protect brittle specimens from the outside world (and the public from toxic preservatives), glass is entirely unnecessary in the golden age displays.[44] Cases undeniably perform important upkeep functions, mitigating the accumulation of dust and preventing disturbances, but the continued construction of open taxidermy groups such as the Akeley elephants shows that cases were not a requirement but a choice. In one sense, glass as metaphorical air made solid helps facilitate the sense of hermetic stillness that is a key characteristic of the habitat groups. As the dioramas are intended to appear as a frozen moment of time, glazing can be read as a literal freezing of the group performed by the crystalline structure. It acts as the membrane between the exhibit and the outside world that halts change and fixes the group, trapping light, heat, and scent within its rigid molecules.

But a more important metaphor derives from glass's associations with sight, which establish the diorama as place for special looking. Under these terms, the panel becomes a metaphorical lens that works to focus vision and affirm the scientific value of the habitat group. Glass has long served as the helpmate of sight, and is perhaps even

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[43] Brita Brenna notes this same prohibitive function in her discussion of cases in Norway's Bergen Museum. For Brenna, the cases contribute to the integrity of the taxonomic arrangement of the nineteenth century natural history museums, permitting the public to receive the display as a cohesive text rather than a linear gathering of specimens. Brita Brenna, "The Frames of Specimens: Glass Cases in Bergen Museum Around 1900," in *Animals on Display: The Creaturely in Museums, Zoos, and Natural History*, ed. Liv Emma Thorsen, Karen A. Rader, and Adam Dodd (University Park, Pennsylvania: The Pennsylvania State University Press, 2013), 51–54.

[44] Robert McCracken Peck, "Preserving Nature for Study and Display," in *Stuffing Birds, Pressing Plants, Shaping Knowledge: Natural History in North America, 1730-1860*, ed. Sue Ann Prince (Philadelphia: The American Philosophical Society, 2003), 13-14.

synonymous with it. Forged into lenses and employed in optical toys, glass compensates for insufficient vision by magnifying, focusing, and even pausing the moment for longer contemplation. By the end of the nineteenth century, it had become the substrate of visual experience.[45] Nowhere is this more true than in scientific realms where the tools of experimentation and intellectual progress were primarily formed from vitreous material. Scientific innovation had depended on glass since the 17th century, if not earlier. Comprising slides, containers and the aforementioned lenses, it pervaded the laboratory and underpinned the scopic technologies that verify natural knowledge.[46] In this way, glass is a medium for scientific practice, creating an additional tie to authoritative forms of inquiry as the diorama worked to establish itself as a valid method for generating knowledge.

To be sure, the dioramas were a manifestation of a turn-of-the-century preoccupation with vision that persisted into the 1930s at the American Museum. Vision was accepted to be the primary method for learning and self-improvement. This position was primarily supported by museum president Henry Fairfield Osborn, who from 1908 to 1933 greatly expanded the institution's facilities, programs, and collections and became one of the most influential figures in the museum's history. As education became the institution's sacred duty, the dioramas emerged as a method for delivering information by securing attentive looking. Osborn was a follower of the New Museum Idea, but his conceptions as to how education would be best accomplished, however, were intensely

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[45] Armstrong, *Victorian Glassworlds,* 26-27.

[46] Albert Van Helden, "The Birth of the Modern Scientific Instrument, 1550-1700," in *The Uses of Science in the Age of Newton*, ed. John G. Burke (Berkeley: University of California Press, 1983), 49–84.

focused on visual practices.[47] A prominent vertebrate paleontologist and professor at Columbia, Osborn's training in comparative anatomy taught him that knowledge was attained through sustained visual contact with the natural world, a nineteenth century practice that is often referred to as "naked-eye science."[48] Osborn's allegiance to this learning strategy went beyond the typical visual fixation of other scientists trained in that period. He also believed that contemporary vision was under-stimulated, which left minds underdeveloped and feeble. If the museum provided individuals with opportunities to hone visual acuity, Osborn reasoned that the museum could actively sharpen their mental capacities and eugenically improve the populace. By consequence, he spent his presidency preoccupied with implementing "visual education" at the museum, fostering the growth of habitat groups and other visually sensational exhibits in an effort to combat American degeneration.[49]

Through their associations with vision, education, and betterment, the habitat groups should be considered a part of a turn-of-the-century visual regime that sought to discipline attention. Allison Griffiths has begun this work by arguing that the dioramas worked against nineteenth century viewing practices to construct a new kind of spectator at the turn of the century, "one trained in the viewing protocols of a rapidly changing urban culture that privileged new forms of seeing."[50] She suggests that Victorian visual culture encouraged a *flâneur*'s gaze, one that surveyed the world with a disinterested and

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[47] Osborn, "Nature in the Schools," 5.

[48] Conn, *Museums and American Intellectual Life*, 33.

[49] Multiple scholars have addressed this issue. See Victoria E. M. Cain, "'The Direct Medium of the Vision': Visual Education, Virtual Witnessing and the Prehistoric Past at the American Museum of Natural History, 1890–1923," *Journal of Visual Culture* 9, no. 284 (2010): 284–303; Ronald Rainger, "Representing Nature." In *An Agenda for Antiquity: Henry Fairfield Osborn and Vertebrate Paleontology at the American Museum of Natural History, 1890-1935* (Tuscaloosa: The University of Alabama Press, 1991), 152-183.

[50] Griffiths, *Wondrous Difference, 4*.

unsettled eye. By snatching moments of intense looking from a viewer's optical stream, the dioramas harnessed this distracted vision and tamed it in keeping with an emerging visual practice characterized by intense looking.[51]

The distinction she strikes between surveying glances and the new, focused looking complements Jonathan Crary's reading of nineteenth century perceptual practices, which were in flux around an emerging system of optical models that began to address of the limits of vision. Realizations that visual perception could fail to produce a unified optical experience undermined a longstanding reliance on the eyes as the most reliable of senses, and it generated immense anxiety and created a pressing desire to discipline attention and foster concentration.[52] As seen in Osborn's obsessions with visual acuity, and as suggested by my reading of these installations, the dioramas prioritized visuality over other types of perception, pointing to a fixation on vision that existed within the larger social preoccupations Crary describes. Habitat groups are implicated in these debates not only because they are in continuity with other scopic technologies associated with these changes, but also because they were understood to counteract unfocused object encounters by stimulating contemplation and deep engagement. Where nineteenth century cabinets with their myriad specimens were accused of encouraging museum-goers to engage in sustained distraction, dioramas supposedly did the opposite, soliciting close looking that could not exist in the regular urban environment.[53]

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[51] Ibid., 40.

[52] Johnathan Crary, *Suspensions of Perception: Attention, Spectacle and Modern Culture* (Cambridge, MA: The MIT Press, 1999), 12-15.

[53] On distraction, see Griffiths, *Wondrous Difference,* 13-14. On attention, see Henry Fairfield Osborn, *Creative Education in School, College, University and Museum* (New York: Charles Scribner's Sons, 1927), 62-69; and Cain, "'The Direct Medium of the Vision,'" 288-89.

It is telling that Crary locates this crisis in the 1880s and 90s—the same period in which habitat groups find institutional footholds—and it helps contextualize the groups as responses to problems in concentration and changing understandings of vision.[54] If vision was increasingly understood as fragmented, as impossible to synthesize into a holistic perceptual moment, dioramas were a refusal of this disintegrative visual field, standing against the feeble-mindedness and degeneracy associated with distraction to cultivate a more intelligent and decorous populace. Between the rhetoric of naturalism and the formal construction of the displays, the groups progressively insisted on the perceptual unity of the group and used the formal components of the display to both perform and signal this cohesion.

Glass and its associations with amplified vision, I suggest, make it the critical interlocuter in this process. It serves as the metaphorical lens that focuses attention, showing that the display contains something to be looked *at*, then claiming that this visual engagement is purer and more profitable than nature in situ because of its ability to suspend time. Treating the glass front in this way crystallizes the institutional narratives about scientific veracity and visual acuity circulated by the museum, in turn suggesting that diorama glass acts to focus scientific attention. Glass's associations with vision and its applications in scientific cultures, then, fundamentally contribute to the narratives of intellectual clarity and visual mastery proposed by the displays, further working to concentrate attention while enforcing literal intellectual distance.

Griffiths similarly reads the dioramas as introducing distance between the viewer and the specimen, but for her, it results from the cinematic conditions of the

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[54] Crary, *Suspensions of Perception,* 5.

anthropological groups and their affinities with universal expositions, world's fairs, and—eventually—ethnographic film. Because of these connections, she positions the spectator as employing a type of proto-cinematic gaze, one consistent with Laura Mulvey's assessment of cinema spectatorship, to explain how these kinds of displays perpetuate an uneven relationship between the viewer and the object.[55] In pointing to their naturalism, implied narratives, and theatrical conditions of viewing, Griffiths draws a line from the museum to cinematic culture that expands upon colonialist readings of the AMNH that have been pursued in sociologically-oriented studies.[56] Mieke Bal, for example has also discussed the anthropological halls as presently enacting a primitivizing rhetoric over non-western peoples through the ways that these displays remove their cultures from the present and associate them with nature, summarizing these displays as, "a product of colonialism in a *post*colonial era."[57] Similarly, and most famously, Donna Haraway has shown how the African hall was born from and intertwined with anxieties about white masculinity, in turn establishing the western male viewer as superior to the colonial, feminized subject.[58]

Griffiths' "proto-cinematic gaze" helps to delineate and define the power imbalance identified in each of these studies, and while it exists in the mammal groups and even generates a similar subject-object relationship, it has slightly different implications, especially in relation to native species. Where Griffiths, Bal, and Haraway perceive this relationship mostly in terms of the ways it serve a concept of the Western

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[55] Griffiths, *Wondrous Difference,* 38. Laura Mulvey, "Visual Pleasure and Narrative Cinema," *Screen* 16, no. 3 (1975): 6–18.
[56] Griffiths, *Wondrous Difference,* 43.
[57] Mieke Bal, "Telling, Showing, Showing Off," *Critical Inquiry* 18, no. 3 (1992): 558.
[58] Haraway, Teddy Bear Patriarchy," 30.

self in relation to a primitive other, I think the mammal groups, in their aversion to human presence and intense illusionism, instead reinforce attitudes of mastery over the natural world more broadly. To be sure, with the mammal groups the viewer becomes "a privileged spectator, as opposed to the passive object of a scrutinizing gaze," as Griffiths claims for the anthropological displays.[59] And yet it is not just an effect of lighting or the sense of action simulated by the animal poses, as the comparison to cinema may suggest. As opposed to its kinship with other kinds of cinematic modalities, which is the focus of Griffith's argument, I believe it is the diorama's material, three-dimensional form, and its glass panel in particular, that performs this work. As Armstrong observes, "[T]he function of the panel as barrier and medium never works as smooth interchange but always points up mismatched relations. The hiatus of the window dramatizes the uneven relation of subject and object."[60] The glass panel is responsible for the disparity between the seer and the seen. In calling this relationship cinematic, therefore, I think Griffiths is responding to the way that the panel centers visual experience without recognizing it. She successfully identifies the power dynamics such visuality engenders, but as I have described, this centering is not just a result of the philosophical drives behind museum exhibition, but also a formal configuration that emphatically insists upon vision's ability to accurately understand the world. Illuminating these mechanics shows both the role that materiality plays in establishing this paradigm and also how larger cultural ideas about glass introduced complex social narratives into these displays beyond their subject matter.

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[59] Griffiths, *Wondrous Difference,* 11.

[60] Armstrong, *Victorian Glassworlds,* 33.

Ultimately, the multivalent implications of glass clarify how the diorama panel organizes the spectatorial relationship to the installation. The glass front emphasizes the visual priorities of the institution and the moment and identifies the habitat group as a site for special looking and a source of scientific knowledge. Its meanings as medium, barrier, fixative, and lens combine with the diorama's illusionism to create a concept of nature as elsewhere, perfect, unchangeable, and definitively non-human. The glass separates nature from culture, giving the literal arrangement a metaphorical dimension that transforms the viewer into a cool observer who masters the world through their gaze, and it suggests that this relationship is built into the organic presentation of the natural world rather than constructed through its diorama iteration.

By 1947, the museum fully abandoned systematics. Parr in his new presidential capacity declared that this new way forward would insist on nature's interconnectivity, but as dioramas now constituted most of the exhibitions in the institution, old narratives of nature's definitive distinction had merely been dressed in new clothes.[61] Surely, nature was interconnected, but only with itself—humans were still conspicuously missing from this narrative and kept out by the glass panels themselves.

Romantic Landscape in the Hall of North American Mammals

As Bal and Haraway's sociological analyses of the AMNH show, any discussion of the materiality of the groups is incomplete without a consideration of their subject matter and the sociopolitical contexts that enframe them. To be sure, the original

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[61] Steven Conn, *Do Museums Still Need Objects?* (Philadelphia: University of Pennsylvania Press, 2010), 142. Conn argues that the museum's decision to end systematic exhibition began with Parr, but as there was little that was taxonomically sound about the diorama installations, I would suggest that it began much earlier.

motivations for installing dioramas were increasingly modified by new historical concerns that would dictate new meanings for the mid-century groups. The Hall of North American Mammals encapsulates these issues better than any of the halls that preceded it. When it opened in April of 1942, only 10 of 29 planned dioramas were complete. Another 5 were in progress. All 15 were visible to the public.[62] It did not debut as a perfect series of vignettes, but was instead finished in stages over the course of three decades. Originally unveiled not six months after the US joined World War II, the hall's debut doubtlessly presented a welcome diversion for the New York public. Nevertheless, by opening early, the hall speaks to a series of wartime ideological needs that remain visible in the displays themselves.

The hall's wartime context transformed its dioramas into paragons of American virtue. Its representations of landscape in the conventions of American landscape painting thus combined with the diorama's distancing format to support narratives of enduring and plentiful nature in line with the nationalistic needs of the period. Such a relationship created an understanding of the natural world as inexhaustible and unaffected by man and culture, even as the effects of westward expansion were already being felt in the United States. The diorama's narrative was therefore limited to a glorification of American nature, but in ways that were determined by its historical moment.

Donna Haraway's observations about the habitat groups are still fundamentally important in the Hall of North American Mammals; displays of nuclear family groups composed of major hunting prizes advocate for masculine superiority while communicating heteronormative social mores much in the same fashion as in the African

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[62] Harold E. Anthony, "A Grand Tour of North America," *Natural History* 49, no. 4 (April 1942): 190-191.

Hall. Indeed, hunting clubs and their individual members also financed dioramas for the North American hall, even enjoying the privilege of shooting trophy animals for the displays.[63] However North American nature as a subject bears historical peculiarities that differently inflect the meanings of these displays, especially in relation to their wartime context. In the Hall of North American Mammals, where nature is conflated with nation, the bodily relationship to the display also begins to teach lessons about national identity at a time when the country is invested in distinguishing itself from European fascism.

Reading the hall in the context of landscape traditions that visualize American exceptionalism through representations of the environment, I argue that these depictions of North American nature helped codify a timeless view of nature as part of program to consolidate national identity at the beginning of a global crisis. The dignified poses of the specimens set against important ecological sites evoked the majesty of homeland, tying the American spirit to ideas of wilderness and dignified conflict. Considering these objects within their significant historical moment shows how the dioramas visually presented American values as a scientific reality, situating the American war effort as just and North American nature as a prize worth defending, and by extension casting the natural world as enduring and ever-bountiful to meet the ideological needs of the moment.

Formally, the dioramas bear obvious connections to Romantic painting, each depending on a picturesque sublime that evokes the majesty of American nature. The Mountain Lion diorama, for example, features an expansive view of the Grand Canyon that contains many of the hallmarks of landscape that coalesced in the Hudson River

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[63] Cain, “The Art of Authority," 222-223.

School and continued in the works of the so-called Rocky Mountain School (figure 1.10). Framed by the walls of a canyon ledge, the male puma gazes into the gorge, which expands into the depths of the picture plane. The composition takes the eye on an arc through the grouping of peaks in the left middle ground and into the right, moving toward a horizon punctuated by distant mountains. The atmospheric effects reveal the scene's sprawl and the picturesque grandeur of the location. In the Alaskan Bear diorama, we see similar treatments of the Aghileen Pinnacles, a monument in the direct center of the composition. The peaks mirror the contour of the bear in the immediate foreground and pull the viewer's attention straight back into the painting, where the vertical shift also calls attention to the height of the standing male. One contemporary diorama artist describes the mountains as, "mythical and surreal, like a glorious apparition of Valhalla behind the bears."[64] Surrounded by billowing clouds of mist, the image performs conventions of Luminist mountain landscapes, where peaks emerge from blankets of cloud cover in early light.

These Romantic backgrounds reinforced the surveying gaze implicated in the diorama's architectural framework, promoting distance and mastery through a definitive separation between the viewer and the installation. Picturesque cohesion emerges when the viewer occupies the ideal position in relationship to the group, once again showing that the display's composition works to encourage bodily conformity. The three-dimensional display functions pictorially when one stands in the direct center of the group some three to five feet away from the glass panel. Specimens in the foreground are arranged for optimal aesthetic value here. Not only do the elegant poses communicate the

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[64] Quinn, *Windows on Nature*, 91.

impressive contours, antlers, and musculature of selected animals, they also work in concert with the backgrounds to create a harmonious composition. Occupying the desired position in front of the Dall Sheep group, for example, mountains alternate with the horns of the animals posed in the foreground (figure 1.11). The gentle arc created by their heads frames Mt. McKinley as it rises in the background, the culmination of a zigzagging pathway back into the picture plane.

Scholars have noted the relationship between the dioramas and nineteenth century painting, particularly in the brushwork, detail, and deep panoramic views that evoke the sublime in both cases, but these observations generally stop short of addressing the full functionality and impact of such emulation. For Wonders, the affinity between the two modes of representation speaks to shared interests in spectacle and similar conservationist appeals that position them as part of the same natural discourse. She argues that both types of objects served to generate preservationist instincts by appealing to national pride, using the idea of a characteristic American nature to solicit support for protected areas of wilderness.[65] Wonders never calls this type of painting Romantic, however. Rader and Cain acknowledge the label, but for them it demonstrates the constructed ideas of the natural world that the museum employs in its displays. However, they further point out that the conservative style appealed to the tastes of museum donors and made the displays "appropriately patriotic," and their observation offers an important avenue for further investigation.[66] Showing the depth of the connection between the diorama backdrops and Romantic painting, I demonstrate the essential role patriotism plays in the function of the Hall of North American Mammals. In addition to conveying a masterful relationship to

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[65] Wonders, *Habitat Dioramas,* 182-186.
[66] Rader and Cain, *Life on Display,* 69.

nature, the habitat groups thus further cultivate patriotism as part of their social education program.

The museum recognized the romanticism of its displays, though maybe not in the cohesive stylistic fashion identified here. Museum officials were aware of the sense of distance the style created between the viewer and the diorama: "In these illustrations of our own romantic leanings, we have found a preference for the remote in space, in time, and in human kinship, while museums elsewhere often make quite demonstrative efforts to relate the exhibits as closely as possible to the time, place, and personal life of the visitor."[67] Confronted with the choice to make the environments relevant to the viewer's contemporary urban experience or to set the groups in remote spatial and temporal locations, the museum deliberately chose the latter, and depended on an appropriately Romantic visual language to do so.

Arguably all dioramas from this period employ similar framing, serpentine compositions, glowing light, and deep views that show atmospheric effects and spatial illusions to advantage. Across the institution, the large scale of the installations and the horizontal orientations continue to put the displays in continuity with nineteenth century landscape conventions.[68] But while similar formal concerns are expressed in the other major diorama halls, the landscapes in the Hall of North American Mammals predominantly depict iconic environmental landmarks through representational practices that have been used to create and uphold ideas about American exceptionalism. The settings are geographically persuasive, but they were selected for their ideological resonances and not just for biological accuracy. In the locations chosen for these

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[67] Albert E. Parr, "Realism and Romanticism in Museum Exhibits," *Curator* 6, no. 2 (1963): 180.

[68] This is especially true of William R. Leigh's backgrounds for the Hall of Africa. See Wonders, *Habitat Dioramas*, 187.

backgrounds, longstanding frontier narratives about American landscape, preservation, and identity make their way into the exhibition.

The American West is the primary setting for the dioramas in the Hall of North American Mammals. Of the first 18 groups, 15 depicted sites west of Colorado, and of these, 11 were set in the United States (figure 1.12). Disproportionately favoring national parks and celebrated natural landmarks, the hall makes the frontier stand for the entire continent. On one level, such favoritism can be partially explained by the museum's relationship to Teddy Roosevelt, whose family ties to the founding and funding of the AMNH made him an important figure in the history of the museum. As Roosevelt signed many of these lands into national protection over the course of his presidency, the backgrounds show the museum's material affiliations with conservationist practices.[69] On another level, the iconic status of these monuments may also serve to expound the specificity of the depicted locations, assuring the viewer of the diorama's truthfulness. Named locations with recognizable features likely made the spaces seem more real.

However, many of the chosen vantage points are famous views, depicted in celebrated photographs and paintings long before the backgrounds themselves were created. Though each panorama was constructed from on-site studies and thus grounded in an artist's direct experience of the land, they are clearly in dialogue with popular representations, showing that images have worked as interlocutors to determine the how and why behind each diorama's scenery. Thomas Moran's version of the American west, in particular, is written all over this hall. His work deeply informs the sites and views chosen for several of the most distinctive backgrounds, transposing ideological readings

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[69] Roosevelt Sr. was a museum founder. Quinn, *Windows on Nature*, 15-16.

into the AMNH and investing the hall with the myths and functions of American Romanticism, not just its formal preoccupations.

Diorama background selections were motivated by aesthetic and symbolic concerns and not merely biological necessities. The Mountain Lion group described earlier makes this clear. There was no scientific reason to choose to depict the Grand Canyon as the animal's habitat. Instead, the view primarily acts as a way to teach viewers about America's awesome splendor. Albert Parr, director of the museum from 1942-1959 admitted that such a setting, "is no longer part of the ecological niche of the species that are the primary subjects of the exhibit and may, indeed, have nothing at all to do with conditions of life in the foreground." Phrased another way, situating this scene on the North Rim is an arbitrary decision. He continues:

> "It is true, of course, that the Grand Canyon […] is located within the wide domain of the American mountain lion. But the Canyon itself is unique and can in no sense what-so-ever be described as a typical feature of lion country. Nor can it be said that the existence of the lion is naturally dependent upon the presence of the Canyon. The exhibit tells at least two almost unrelated stories, and tells them both very well."[70]

A comparison between the Mountain Lion diorama and *The Chasm of the Colorado*, an 1873 Moran painting of the same site, begins to reveal this second story (figure 1.13). Initially, the pictures appear to have only moderate commonalities: oversized canvases, warm and ruddy palettes, aesthetic internal framing devices, and the application of atmospheric perspective can be seen in both pictures. Where the diorama employs more consistent lighting and emphasizes the harmonious horizon line, however, Moran's painting is more theatrical, situating the viewer deeper inside the canyon and using weather effects and contrasting light to emphasize the canyon's labyrinthine peaks

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[70] Ibid., 205 and 209.

and valleys. Despite these differences, both *The Chasm of the Colorado* and the diorama background are executed from very similar vantage points and ultimately make for very similar paintings. The rock formation depicted in the center of the habitat group can be found in the center of Moran's painting, as well, making the horizon line that extends along the right side of the painting the same one shown in the mountain lion group. Removing the middle ground from Moran's version makes the compositions virtually identical, showing the diorama to be merely a closer view of the same scene.

It is not surprising that Moran's imagery of the Grand Canyon informed its representation in the AMNH as his paintings of the site were among his most successful and best circulated. *The Chasm of the Colorado* was widely known, even if it was not as highly regarded as some of his earlier work. Moran exhibited the painting at the Corcoran Gallery in 1874, and Congress purchased it a month later. Despite its lackluster reception, the image circulated through the country in press reproductions and likely helped generate a market for Grand Canyon pictures.[71] The artist capitalized on this interest, painting hundreds of versions of the canyon between 1901 and 1926 and selling many of them to railroad companies who displayed the images across the country in an effort to stimulate travel on newly-completed western lines.[72] Additionally, Moran's paintings made their way into guidebooks and other promotional materials, contributing to the relentless image-making campaigns that fueled the canyon's mythic status.[73]

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[71] Joni Kinsey, *Thomas Moran and the Surveying of the American West* (Washington, D.C.: Smithsonian Institution Press, 1992), 11-115.

[72] Nancy K. Anderson, "'The Kiss of Enterprise': The Western Landscape as Symbol and Resource," in *The West as America: Reinterpreting Images of the Frontier, 1820-1920* (Washington: Smithsonian Institution Press, 1991), 253-255.

[73] Kinsey, *Thomas Moran*, 68-78. For more on the way Moran's images circulated in chromolithograph collections and popular press, see Joni Kinsey, *Thomas Moran's West: Chromolithography, High Art, and Popular Taste* (Lawrence: University Press of Kansas, 2006).

The Chasm of the Colorado was a pendant piece to the artist's earlier and more famous work, *The Grand Canyon of the Yellowstone* from 1872 (figure 1.14). Like the former, this work's impact can be traced in a diorama backdrop—in this case, that of the Grizzly Bear group, which takes the long view down the river toward the lower falls. Here too, Moran's work and the diorama backdrop share similar compositions (figure 1.15). The foreground of the diorama, featuring a grey-brown foreground ledge and framed by a reedy Jeffrey Pine, mimics the foreground of Moran's painting. Both place the waterfall toward the left side of the image and emphasize the mass of the slope on the right. The two works were actually executed from different sides of the canyon, accounting for slightly different topographical details, but even at its alternate location, the museum still references Moran's viewpoint and perhaps even originally intended to reproduce it. The museum's backdrop captures the view from Artist's Point, named because it was thought to be the place Moran painted his famous pictures.[74] It had been confused for the site of Moran's paintings when it was documented as such in the park guidebook beginning in 1890. Hand-colored postcards of the canyon by park photographer Frank J. Haynes perpetuated the error. The guidebook rectified the mistake in 1910, but the difference between the real lookout, eponymously named Moran Point, and Artist Point remained uncertain, even to park officials who only amended the official park maps in 1938.[75] Ironically, Moran Point can be seen on the right side of the museum panorama.

Whether or not curators explicitly intended to recreate Moran's view, it is impossible to separate the painter and his images from the park and its canyon. Moran

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[74] Joni Kinsey *Thomas Moran,* 54.

[75] Lee H. Whittlesey, "A Brief Look at Moran Point and Artist Point and Their Association with Thomas Moran and William Henry Jackson." Yellowstone Science 14(4) (Fall 2006): 8.

served as the illustrator for the 1871 Hayden Geological Survey that helped convince congress to vote Yellowstone into a nationally protected area. His images of the region were among the first, and they successfully communicated the overwhelming majesty of a site that was still mysterious to the American public.[76] Moran's massive painting debuted only weeks after Grant made Yellowstone the first national park, and it helped codify American notions about this newly federated landscape. *The Grand Canyon of the Yellowstone,* like the later *The Chasm of the Colorado,* was rapidly purchased by the government, but it is the early work that made the deepest impression on the public. Exhibited to much acclaim, it was reproduced in the popular press as the revelatory and inspirational view of Yellowstone, showing the site's awesome splendor and rich natural resources.[77]

Further references to the western landscape tradition in paintings and photographs exist in the hall, showing the shared approach to the American vista in the dioramas and in visual culture. Carl Rungius, the noted game painter whose subjects Frederic Remington considered to be of the "Old America," painted the background of the Moose Group (figure 1.16).[78] Backgrounds like that of the Wapiti Elk, the Osborn Caribou, the Grant Caribou, and the Alaskan Brown Bear bring together varying components of water, mountains, and plains in the fashion of Bierstadt paintings, deploying similar weather and lighting effects and tightly controlled brushwork (figure 1.17). And while the Yosemite

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[76] Joni Kinsey, "Thomas Moran's Surveys of Yellowstone and the Grand Canyon: The Coalition of Art, Business, and Government," in *Splendors of the American West: Thomas Moran's Art of the Grand Canyon and Yellowstone: Paintings, Watercolors, Drawings, and Photographs from the Thomas Gilcrease Institute of American History and Art* (Birmingham: Birmingham Museum of Art, 1990), 29-39.

[77] Kinsey, *Thomas Moran,* 58-67.

[78] Alexander Nemerov, "'Doing the "Old America"': The Image of the American West, 1880-1920," in *The West as America: Reinterpreting Images of the Frontier, 1820-1920* (Washington: Smithsonian Institution Press, 1991), 287.

site depicted in the Wolf diorama was completed after the period under consideration here, its striking relationship to both Carleton Watkins' photographs of the park (figures 1.18 & 1.19) and Thomas Hill's paintings of the same location (figure 1.20) shows a continued investment in the tropes of nineteenth century landscape throughout the hall's history.[79]

The influence of Moran and his contemporaries in the Hall of North American Mammals is a testament to how fundamentally such imagery shaped American understanding of the parks, but in drawing from this visual culture for its diorama backgrounds, the museum becomes a conduit for the rhetoric of nation and nature that first marked these places as worthy of federal protection and preservation. It is generally accepted that the North American wilderness played an important role in the construction of American national identity. As many have argued, landscape has always been a generative site for the investigation of America's exceptionalism, both in terms of its terrain and the character of its peoples, and it has deeply impacted the ways that we have understood national identity throughout the country's history.[80] The same nation-building function has also been identified in representations of landscape in the United States, arguably best articulated in analyses of Manifest Destiny that have discussed how frontier

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[79] Joel Snyder, "Territorial Photography," in *Landscape and Power*, ed. W.J.T. Mitchell, 2nd ed. (Chicago: The University of Chicago Press, 2002), 185-189. Alison Griffiths also sees Church's influence in an earlier example, the 1913 *Orizaba Group.* The similarities are far less secure than in the examples I discuss here, but her observation suggests that the museum's fidelity to Romantic painting emerged fairly early. See Griffiths, *Wondrous Difference,* 32. Karen Wonders has stated that the Mule Deer Group is also a reference to Moran by depicting the Mount of the Holy Cross in Colorado, but since it is not the site of the current group, it is unclear if she is referring to an early iteration or not. See Karen Wonders, "The Illusory Art of Background Painting in Habitat Dioramas," *Curator* 33, no. 2 (1990): 109.

[80] This scholarship is vast. Examples include Barbara Novak, *Nature and Culture: American Landscape Painting 1825-1875*, revised edition (Oxford: Oxford University Press, 1995); Perry Miller, *Nature's Nation.* Cambridge: Belknap Press of Harvard University Press, 1967; Henry Nash Smith, *Virgin Land: The American West as Symbol and Myth.* Cambridge: Harvard University Press, 1950; and Leo Marx, "The American Revolution and the American Landscape," in *The Pilot and the Passenger: Essays on Literature, Technology, and Culture in the United States* (New York: Oxford University Press, 1988), 315–36, among many others.

images depicted the West as a place of tractable abundance and beauty, which helped to justify and encourage American expansion.[81] The works of Moran and his peers communicated the sublime splendor of the region and helped construct this vision of the wilderness, codifying its value as a resource and a foundation for national pride and character.

Depictions of the parks are a subset of this kind of imagery, a heightened application of naturalist and nationalist rhetoric that transformed these locations into microcosms of American nature and symbols of virtue. To be sure, by the time the AMNH commissioned the two Grand Canyon paintings and those of the other national park locations seen in the hall, the meanings of the national parks had already been socially constructed in surveys and long disseminated in the popular press.[82] Both canyons, for example, were tied up with heritage discourses that treated the formations as equal to, if not better than, Europe's cultural history. The natural wonders were God's own artwork, blessings that revealed the nation's favor. They were the opposite of urban industrialist spaces and stood for the beautiful essence of American character.[83]

Similarly, the narratives of uplift that cast the dioramas as places for pure, natural encounters were also heard in relation to the ecological wonders to be found in the parks. Like the museum, the Grand Canyon had its own conventions for viewing, as described

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[81] Much scholarship has proceeded from Frederick Jackson Turner's "Frontier Thesis," but the best art historical example might be the 1991 Smithsonian exhibition, *The West as America*, and its accompanying catalogue. See William H. Truettner, *The West as America: Reinterpreting Images of the Frontier* (Washington: Smithsonian Institution Press, 1991).

[82] Gareth John, "Image/Text/Geography: Yellowstone and the Spatial Rhetoric of Landscape," in *Observation Points: The Visual Poetics of National Parks* (Minneapolis: University of Minnesota Press, 2012), 146. Kinsey, *Thomas Moran,* 62.

[83] Mark Neumann, "Critical Vehicles Crash the Scene: Spectacular Nature and Popular Spectacle at the Grand Canyon," in *Observation Points: The Visual Poetics of National Parks*, ed. Thomas Patin (Minneapolis: University of Minnesota Press, 2012), 85-87; and Andrew Wilton and Tim Barringer, *American Sublime: Landscape Painting in the United States, 1820-1880* (Princeton: Princeton University Press, 2003).

in travel narratives and tourism books. It was said to demand proper decorum, requiring tourists to sublimate bad behavior and submit in contemplative awe to the site in front of them.[84] Brought into the museum as an institutional display, then, the site doubly insists on its reverential status. Conventions of touristic reverence that encourage wonder and discipline overlap with those of the diorama, casting the display as a place where viewers may further discipline their emotions and gain a true understanding of the fabric of American nature.

For this reason, even beyond stylistic similarities, the backgrounds in the Hall of North American Mammals are fraught. Nowhere else in the museum does the visitor encounter such highly recognizable landmarks, sites that were already steeped in cultural symbolism long before the viewer saw its diorama iteration. Preferentially showing national park sites like the Grand Canyon, Mt. McKinley, Devil's Tower, Yellowstone, and Yosemite, the museum makes a powerful statement about the kinds of landscapes that count as "natural." These choices position the most visually striking vistas from pre-industrial pleasure grounds as characteristic examples of American nature, in turn positioning these sites—and these kinds of views—as quintessentially American. Defining the country by its spectacular topographical attractions, the dioramas invoke narratives about the role of landscape in the formation of the nation's identity.

W.J.T. Mitchell writes that landscape images are a "representation of something that is already a representation in its own right," and while others have since nuanced this position, the backgrounds in the Hall of North American Mammals are a surprisingly

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[84] Ibid., 87.

literal iteration of his claim.[85] Drawing from a body of frontier images, the paintings in the hall are by no means a series of incidental views, but visions that are instead located in the cultural imaginary as a typology of nature created by the explorers and artists who popularized these sites. The dioramas thus perpetuate a received visual language for the American frontier, allowing these discourses to converge in the Hall of the North American mammals in ways they do not in other halls.

Altogether, such affinities imbue these dioramas with significant nationalistic implications. Notions of majesty, abundance, stewardship, and the sublime traced within understandings of landscape and landscape painting in the United States emerge in the compositions and narratives of the North American dioramas and claim an archetypal American identity. It is at once a land, a behavior, and an aesthetic of beauty and rationality. It is defined by strong families and a cooperative spirit, by its dignified battles, noble bodies, and sound minds. Not only does nature stand for nation, then, the Hall of North American Mammals also explains what, exactly, this national identity entails. As a result, these displays come to identify what are regarded to be the unique characteristics of homeland and American identity, becoming part of a narrative of bounteous plenty and entitlement that simultaneously drove westward expansion, colonization, and the national parks movement in the preceding century and reaffirming these ideas at midcentury.

Vision and Wartime Productivity

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[85] W.J.T. Mitchell, "Imperial Landscape," in *Landscape and Power*, 2nd ed. (Chicago: University of Chicago Press, 2002), 14.

The nationalistic underpinnings of the hall are entirely in keeping with an American natural history tradition that used the landscape as a way to distinguish the republic from European monarchies. In the Early Republic foundations of the discipline, naturalists directed their observations of the world toward narratives that insisted on the distinctiveness of the American identity. This manifested as a desire to document the peculiarities of American nature, as opposed to European studies that favored overarching natural laws to justify systems of authority and dominion.[86] Cataloguing the new nation was itself an act of territorial incorporation, braiding natural history and nationalism together from the beginning. It is therefore unsurprising that such a practice would continue into the twentieth century, especially in the interwar period and into the Second World War, when institutions across the country turned their activities toward wartime productivity.

Indeed, the nationalistic messages in the Hall of North American Mammals were actively embraced by the institution and regarded as an important wartime contribution. The dioramas continued to model and cultivate good citizenship practices in accordance with long-standing museum values, but they also justified conflict and rationalized victory. Their educational potential was viewed as an important tool in the fight against fascism. During the war, the museum positioned its educational activities as a way to foster the kind of beliefs and behaviors that would counteract the spread of Nazi ideology plaguing the European continent. In particular, museum reports identified the freedom of individual thought, achieved through education in natural history, as a countermeasure against totalitarian rigidity. Before the war had even reached the American shores,

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[86] Joyce Elizabeth Chaplin, "Nature and Nation: Natural History in Context," in *Stuffing Birds, Pressing Plants, Shaping Knowledge: Natural History in North America, 1730-1860*, ed. Sue Ann Prince (Philadelphia: The American Philosophical Society, 2003), 76.

museum President Trubee Davidson claimed, "The struggle of the democracies against the dictatorships is not only a fight for freedom to live, a fight to satisfy physical and emotional hunger, but it is just as importantly at present, and even more importantly for the future, a fight for the freedom to think."[87] Three years later, Acting President A. Perry Osborn would highlight the AMNH's role in this process: "During the war, [the museum's] main purpose must be to furnish education and recreation to hundreds of thousands of visitors, and maintain the great cultural traditions and the dissemination of truth upon which American democracy is based."[88] Osborn suggests that the AMNH was uniquely positioned to sustain the nation in its battle against Axis powers because it trades in natural truths, strengthening the foundations of American greatness by spreading knowledge and, by consequence, propagating American values. Director Albert Parr reiterated this sentiment in the same report, writing: "The education of young and old to an understanding and appreciation of the contents of the civilization for which we are fighting, and of which our museum is both a part and an exponent, is more important today than ever before."[89]

Parr further implies that the AMNH could only perform such a function because of its relationship to nature on the North American continent. In the 1944 annual report, the director describes at length how the institution adapted to the conditions of American culture and history to develop "its own truly American personality." He explains that the institution responded to the country's racial diversity—its defining contact with

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[87] Trubee Davidson quoted in Albert E. Parr, "Times and the Museum," in *Seventy-Sixth Annual Report for the Year 1944*, Annual Report (New York: American Museum of Natural History, 1945): 23.
[88] A. Perry Osborn, "Seventy-Fifth Annual Report of the President," in *Seventy-Fifth Annual Report for the Year* 1943, Annual Report (New York: The American Museum of Natural History, 1944): 2-3.
[89] Albert E. Parr, "The Year's Work" in *Seventy-Fifth Annual Report for the Year* 1943, Annual Report (New York: The American Museum of Natural History, 1944): 5.

indigenous peoples and the continuous influx of immigrant populations—as well as the vast "virgin forests" that blanketed the landscape, in turn becoming remarkably different from its European counterparts.[90] We can recognize these narratives as woefully incomplete, but Parr nevertheless reveals a deep awareness of the ways environmental conditions informed national identity and continued to inform the AMNH's utility. For Parr, the country's entanglement with nature, present from its very inception, created "a distinctive and truly American character in which we may find the original source of the strength that has carried [the museum] forward."[91] He reinforces this connection between nature, American identity, and the success of the museum, proclaiming: "The vigor of a scientific and educational institution depends upon the extent to which it aligns itself with national traditions and seeks its intellectual nourishment in the experiences of the nation it serves."[92] Parr implies that returning to these values would renew the vitality of the museum—and the republic—at this challenging moment in history, creating slippage between the two spaces and framing the museum as the ideal place for advancing American principles.

As the premier wartime exhibit, the Hall of North American Mammals would have been expected to perform these nationalistic functions, and indeed, the museum recognized the hall's value as both an entertaining distraction from current events and as a visual metonym for the country more broadly. Parr states, "By the opening of the new Hall of North American Mammals, the Museum gave to the public a most timely opportunity to receive an inspiring impression not only of the animals of our land, but

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[90] Parr, "Times and the Museum," 10.
[91] Ibid., 9 & 14.
[92] Ibid., 9.

also of the rich and varied beauty of the country we must defend."[93] Explicitly describing the dioramas' potential to galvanize nationalistic sentiment, Parr reifies the interpretive meanings of landscape discussed previously. The habitat groups were expected to reinvigorate the men and women at arms and at home. The groups reassured the public that the battle was worth fighting and that it would be won, if only because of the unique strength Americans derived from their natural environment, one so clearly self evident in the exhibition.

Even after the war had ended, the museum continued to write its impact into the Hall of North American Mammals, showing the conscious connection the institution made between the displays and their historical moment. The Wolf Diorama's aurora borealis background is said to depict the sky at 3:00 am on December 7, 1941 (figure 1.21).[94] Choosing the day of the Pearl Harbor attacks for the setting of this group firmly tied the events of war with the creation of these dioramas.

While this patriotic function was more or less subtext in the AMNH, other countries used their dioramas to more explicitly nationalistic ends during the war. The Heimat dioramas at the *Naturhistorisches Museum* in Bern, Switzerland were constructed at the beginning of the conflict as a way of cultivating appropriate deference for homeland. The Heimat groups were smaller and more intimate than the AMNH groups, and they often featured native Swiss species in domestic environments such as drainpipes, backyards, and barns (figure 1.22). Rather than showing the fighting spirit of the American West—and by extension, American character in general—the domestic

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[93] Albert E. Parr, "The Year's Work," in *Seventy-Fourth Annual Report for the Year 1942*, Annual Report (New York: The American Museum of Natural History, 1943): 5.
[94] Quinn, *Windows on Nature,* 112.

charm of the Heimat groups made an argument for wartime abstention.[95] The delicate Swiss ecosystem, so closely tied to the activities of the home, needed protecting from harm. The groups suggest that by staying neutral, the country actively preserves these environments, permitting life in all of its definitions to flourish. Despite this different message, both sets of dioramas capitalize on the historical moment to present relevant narratives about homeland that encourage patriotic feelings and justify foreign policy.

Not just an interpretive conclusion, then, not a mere consequence of depicting landscape that has always borne symbolic dimensions in American culture, the habitat groups in the Hall of North American Mammals were deeply entangled in WWII conceptions of national identity and worked to cultivate these identities as a critical dimension of wartime morale. The installations and activities of the hall serve as visual rationalizations for wartime victory, investing in mythical notions of American consanguinity with the land, and they convey these messages through their formal preoccupations. The background paintings and architectural spaces sealed with glass fronts valorize a relationship to nature, and North American nature in particular, as fortifying the spirit through an objective mastering gaze. Nature here is profitable in its timeless wonder, both for the minds and bodies of the American citizen who understands their own rugged strength by turning a close eye to the wilderness.

The dioramas were so well suited to this mission because of the ways they centered vision, which was itself entangled with wartime functions. Used as a tool for enhancing wartime readiness, glass took on additional metaphorical meanings that linked it with nationalistic functions. The panel that is lens, conduit, and barrier is now also

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[95] Stefan Hertwig, "Tour of the Dioramas," Seeing Through? The Materiality of Dioramas (gallery talk, Naturhistorisches Museum, Bern, Switzerland December 1, 2016).

charged as a site of refined visual practices that can facilitate the nation's continued prosperity.

A series of advertisements by Bausch & Lomb illustrates the elision between glass, vision, and victory at this time, showing that glass continued to invoke visual acuity while taking on new wartime implications. One example from 1943 features a photograph of a strong young man with a square jaw and tidy haircut, who looks up at the chunk of faceted glass he holds above his head (figure 1.23). A spotlight positioned outside of the frame makes the circular lump gleam and throws the angles of the man's face into dramatic relief. An all-American boy with an All-American name, Pete Miller inspects the optical glass. His faint smile indicates that he is satisfied by what he sees, reassured that it will reliably serve the servicemen abroad in the cameras and scopes that enhance their visual fields. "'This is an 'Optical' War,'" the caption declares, and so vision is twice implicated—first in Pete's upturned gaze, and second in the intended use of the glass. In both meanings, keen eyesight, attenuated through glass, is positioned as the key to victory.

The same message is conveyed in an earlier example where a pilot sits in a fighter jet, the close cropping revealing only his head and shoulders as framed by the cockpit's opening (figure 1.24). His helmet is secured, suggesting he may be flying or about to ascend. His frontal gaze, directed toward the upper right of the photo, is mediated through a pair of aviator sunglasses. The caption tells us that, "American War Birds Have Keen Eyes," simultaneously showing and telling how lenses serve wartime functions in their mediation of vision. Yet another features a bespeckled plant worker in a long overcoat who examines munitions parts (figure 1.25). "'Eyes Right' Has Never Meant So

Much to America," the ad exclaims, emphasizing the grave responsibility this worker bears in his role as inspector. It further states, "Every job in Production for Victory calls for top visual efficiency," pointing to the role glass plays in all types of wartime productivity.

Bausch & Lomb placed these full-page spreads from at least 1942 to 1944, and each associated glass with vision while emphasizing its critical role in securing American victory.[96] They explained that glass had domestic and scientific functions, in lenses that could transform those with poor eyesight into productive factory workers as well as in instruments that enhanced military vision and documentary practices. They argued that the use of glass on both fronts actively prepared the nation for success. Obviously, as a manufacturer of these instruments, Bausch & Lomb was materially invested in narratives that cast their products as critical tools, but their propaganda makes clear that visual efficiency was understood to also be a type of wartime productivity.

In these advertisements, glass's symbolic meaning defines its patriotic necessity, much in the way that it marks the diorama as a place for specialized looking practices. Moreover, these ads targeted the readers of natural history and science magazines, appearing in *Nature Magazine* and the AMNH's own *Natural History*, which circulated to members as part of their annual subscription.[97] Read by those who frequented the museum most often, such messages reinforced the ones found in the Hall of North American Mammals, where vision was positioned as a force for education and where glass helped discipline viewers into attentive observers. Together, they positioned visual prowess as an American virtue against fascist rhetorics.

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[96] For bracketing examples, see *Nature Magazine*, May 1942 and *Natural History: The Magazine of the American Museum of Natural History*, November 1944.
[97] Ibid.

These ads amplify the association between glass, vision, and patriotism at this moment in history. They show that the nineteenth century associations between optics, attention, and knowledge were still applied to mid-century issues and within consciously nationalistic frameworks. Combining these narratives of vision and national identity, it becomes clear that in the Hall of North American Mammals, vision is not just an intellectual imperative, but also a patriotic responsibility. Here victory is cultivated through strong visual practices that converged in the diorama displays through the glass front, focusing viewer attention, but also clarifying the ways that the landscape itself promised the endurance of American values.

The groups imply that part of the American strength of character, derived from the natural heartiness of the American environment, lay in the visual prowess of the viewers who come to understand the inherent strength of the nation by turning their focused attention to the installation. The associations between glass and vision figure the dioramas as sites where optical mastery permits one to understand their inherent power as the stewards of such a place, making the displays conducive to patriotic conceptions of the American self, establishing nature as an enduring and holistic other, and indicating the important role vision was expected to fulfill at modernism's close.

Conclusion

The architectural arrangement of the golden age dioramas codified both a vocabulary for institutional display and nature that insisted on the spectator's essential difference from the natural world. In moving toward illusionism, the recessed niches, panoramic paintings, and glass fronts work together to separate the human from the

animal and insist on the integrity of the visual experience. The tilted glass panel especially, in permitting visual contact while rejecting physical interaction, underpins the encounter with cultural metaphors about visual clarity, intensity, and purity that prioritize vision and suggest it operates at its height in the diorama. In this way it could serve the patriotic narratives in the Hall of North American Mammals, themselves built on connections to Romantic visual culture that emphasized the rugged splendor of both the American environment and personality.

Because these groups were directed to these nationalistic functions, their version of nature similarly needed to reflect its integrity and bounty, even if this version was an idealistic fantasy of an ecological environment already in crisis. Narratives of conservation turned to narratives of defense in a historical context that required an appropriately singular nature worthy of the fight. However, the idea of an endless natural world would once again be challenged by the conditions of the postwar period, and as such, this message did not resonate for long. The children who visited these displays at the beginning of the contemporary period increasingly understood the shortcomings of the habitat groups, particularly in the implied separation between the human and the natural, and ultimately, the artists of this generation would work to repudiate this idea by making the displays their own.

CHAPTER TWO

Reflecting on Natural History: Robert Smithson and Cold War Entropy

In his essay "A Museum of Knowledge in the Vicinity of Art," Robert Smithson declared, "There is nothing 'natural' about the Museum of Natural History. 'Nature' is simply another 18th- and 19th-century fiction."[1] Provocative in its wholesale rejection of the concept of "the natural," Smithson's statement is nevertheless unsurprising, as his practice regularly challenged institutions and questioned the notion of historical progress. Working against traditional conceptions of time, nature, and vision, Smithson's art emphasized the continuity between human beings and the environment and called attention to institutional subjectivity.

And yet the artist clearly engaged with many aspects of natural history display in his art even as he worked to break from these outdated epistemologies. In the late 1960s, Smithson played with combinations of glass and specimens from the natural world, creating objects like *Mirror and Crushed Shells*, which balances three three-foot-square mirrors against the walls and floor of the gallery to frame a pile of shells in a corner (figure 2.1). These mirror works were often installed in such box-like configurations, striking immediate formal and conceptual parallels to the dioramas in the American Museum of Natural History. The institution was an important touchstone in Smithson's life and art. His ambivalence toward the AMMH shaped his position on the natural as a historically specific concept and deeply affected his practice, but the resonances between

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[1] Robert Smithson, "A Museum of Language in the Vicinity of Art (1968)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 85.

the mirror works and the dioramas show how Smithson repeatedly returned to natural history display as he pursued new narratives about contemporary nature to address questions about knowledge and time.

The AMNH has long been considered a key source for the artist, but I believe his interest in dioramas extends beyond subject matter or the link between a site and its artifact, as previous scholarship has suggested. In this chapter, I underscore the visual and conceptual affinities between the dioramas and Smithson's glass works, focusing on *Mirror with Crushed Shells,* to clarify how he reinterpreted the diorama and the kinds of knowledge it communicates. In an attempt to broaden our understanding of his oeuvre, this chapter leans into the referential capacities of Smithson's objects and treats his art as part of its historical moment, which until recently has been a somewhat controversial proposition. Smithson worked against traditional modes of thought in his prolific writings. His approach has been compared to those of Derrida and Barthes based on his Post-structuralist understandings of knowledge as contingent, as merely a series of systems produced by human beings and not an infallible universal truth.[2] As such, scholars generally avoid historicizing Smithson's work in order to respect the theoretical complexity of his artistic practice.[3] However, such privileging of the artist's voice also seems to prompt a commensurate decentering of the visual. Caroline Jones, for example, touches on this problem as a weakness of Smithson literature: "Accomplished as art history is in minimizing the effects of verbal discourse in establishing visual priorities,

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[2] Jessica Prinz, *Art Discourse/Discourse in Art* (New Brunswick, NJ: Rutgers University Press, 1991), 83.

[3] Caroline Jones has also identified this problem, and it may be related to the way in which Smithson's writing has been addressed by scholars in a variety of disciplines as the distinctive element of his artistic practice. See Caroline Jones, *Machine in the Studio: Constructing the Postwar American Artist* (Chicago: University of Chicago Press, 1997), 313. For more on Smithson's writing and his relationship to post-modernity see Craig Owens, "Earthwords," *October* 10 (Autumn 1979): 120–30; and Gary Shapiro, *Earthwards: Robert Smithson and Art After Babel* (Berkeley: University of California Press, 1995).

the discipline has found it difficult to argue coherently for Smithson's importance on purely formal grounds."[4] Jones suggests that part of the problem of assessing Smithson's formal choices derives from his industrial manufacture process, one that is seemingly without aesthetic values, but despite Jones' assessment, it is possible to glean meaning from these choices (or at the very least, his final approval) without attributing them to some kind of authorial genius. [5]

We may recuperate the formal dimension of Smithson's sculpture if we think of the artist's approach to history as a response to historical problems rather than its own self-sufficient paradigm that must bound the interpretive and theoretical parameters of his art. Smithson did not live or work in a vacuum. Though he pressed against ingrained systems of thought, his installations continued to engage with longstanding traditions, both visual and theoretical, and it operated within a moment of social upheaval and ideological change. Indeed, as Jennifer Roberts suggests, a complete assessment of Smithson's work is not possible without considering both the artist's philosophical conceptions and his immediate historical context.[6]

It is irresponsible to suggest that Smithson somehow escaped his cultural environments or its problems and priorities. Furthermore, the constructed nature of human knowledge aside, it is somewhat foolish to suggest that Smithson is outside of historical analysis as we create historical scholarship.[7] By recognizing the continuity between Smithson's practice and his temporal moment, fascinating connections to

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[4] Jones, *Machine in the Studio,* 313.
[5] Ibid., 328.
[6] Jennifer L. Roberts, *Mirror Travels: Robert Smithson and History* (New Haven: Yale University Press, 2004), 4-8.
[7] Ibid., 141 n.5.

broader changes in American culture can emerge. For example, Smithson was conspicuously silent about racial inequality, war, and political unrest. Restoring the artist to his 1960s context marks his insistent removal from historical time as a significant response to cultural turmoil. To be sure, the artist's desire to collapse time and upend systems and hierarchies of knowledge is itself a symptom of his era, and to treat it otherwise ignores his necessary location in time.[8] Even if Smithson's writing eludes a straightforward historicization, the work itself requires a more careful consideration of its referential capacities. Smithson cannot escape the larger history of nature or its representation even as he tries to alter the contemporary perception of it.

Scholars like Anne Reynolds and Jennifer Roberts have revealed important dimensions of Smithson's work by acknowledging the artist's historical imbrication, particularly in regards to politics.[9] These studies reveal there is more to be said about the relationship between the artist and his period. Approaching his art from this angle requires a slightly different methodological emphasis than the ones found in the existing literature, which is primarily text-based and permits the artist's words to continue to have a hold on the scholarship in ways that foreclose other readings.[10] In this analysis, his authorial voice provides crucial guidance on subject matter and helps to draw reasonable

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[8] I am thinking here, specifically, of arguments like Bal and Bryson's about framing as a contingent historical process that reveals our own vested interest in certain questions and problems at any given time. Mieke Bal and Norman Bryson, "Semiotics and Art History," *The Art Bulletin* 73, no. 2 (1991): 175.

[9] Ann Reynolds, *Robert Smithson: Learning from New Jersey and Elsewhere* (Cambridge: The MIT Press, 2003). Roberts, in particular, addresses both the resistance to—and the need for—historicization of Smithson's work. See Roberts, *Mirror Travels,* 1-10.

[10] Biographies on Smithson tend to frame his life through his work, and never vice versa, leaning heavily on Smithson's autobiographical comments in interviews and writings. See, for example Eugenie Tsai, "Robert Smithson: Plotting a Line from Passaic, New Jersey, to Amarillo, Texas," in *Robert Smithson*, ed. Eugenie Tsai and Cornelia Butler (Berkeley: University of California Press, 2004), 11–31. This is not unexpected. As Thomas Crow has noted, it is nearly impossible to avoid quoting Smithson when writing about him due to the surfeit of primary source material. Thomas Crow, "Cosmic Exile: Prophetic Turns in the Life and Art of Robert Smithson," in *Robert Smithson*, ed. Eugenie Tsai and Cornelia Butler (Berkeley: University of California Press, 2004), 35.

conclusions about his beliefs and his feelings toward institutions and current events. Nevertheless, I treat his papers as vested communications designed for public consumption.[11] I consider his archive to be informative, but by no means definitive, and instead privilege form and social context, permitting some interpretive flexibility to how his sculpture can be read.

The emphasis on materiality and its related social resonances should explain the omission of some major projects from this chapter. In the early 70s, Smithson's formal and philosophical aesthetics shifted dramatically. There are conceptual connections between the early and late sculpture, especially regarding nature and institutions, but later works were more interested in issues like environment and monumentality. While I briefly consider how *Spiral Jetty* reflects Smithson's historically-specific perspective on landscape, for the most part, major earthworks like *Spiral Jetty* or *Broken Circle* are so formally and conceptually different from his work in the late 60s that they are outside the parameters of this study. Therefore, I primarily focus on the smaller, indoor sculptures whose compositional similarities to AMNH displays necessitate further exploration.

My analysis shows that the materiality of these displays perform essential signifying functions that are coextensive with rather than secondary to Smithson's conceptual concerns, further grounding him in his historical moment and illuminating the full significance of his understanding of entropy in the late 1960s. In doing so, I show not only how Smithson engaged with the components of diorama display culture, but also how he applied these conventions to actively redefine our physical and intellectual relationship to nature in the Post-war period. Ultimately, I connect Smithson's artistic

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[11] One must be mindful that Smithson regularly published his writing in widely-read art journals, and after his death, Nancy Holt took an active role in supervising and publishing from his archive. See Jones, *The Machine in the Studio*, xvi.

project to Cold War advancements and nuclear concerns. I contend that the simultaneous progression of nuclear proliferation and space exploration in the 1960s generated a tension between the extreme past and the extreme future that informed Smithson's conceptions of entropy and circular time. Reimagining AMNH dioramas, Smithson used glass to construct more immediate interactions between the viewer and natural objects and produce an experiential and temporal engagement with the world consistent with his understanding of thermodynamics and his assessment of contemporary politics. Placed in continuity with an important American tradition of display, his work thus illuminates new avenues for thinking about how the Cold War reframed American ideas about nature, moving them from the perfect, separate, and enduring version seen in the wartime groups to a transient and fragile ecosystem of which humans have an equal part.

Smithson's Counternarrative

The AMNH figures greatly in discussions of Smithson's sculpture, in large part because of his well-documented attachment to the institution.[12] It was the museum he visited most frequently with his father, and it nurtured a youthful passion for natural history.[13] Scholarship consistently points to Smithson's childhood aspirations to become a naturalist, echoing the artist's interview for the *Archives of American Art* and the short biography prefacing Smithson's collected writings, which describes a boyhood spent drawing dinosaurs, collecting animals, and displaying specimens in the family's Clifton,

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[12] In Smithson literature, see Jones, *Machine in the Studio*, 281-282; and Tsai, "Robert Smithson: Plotting a Line from Passaic, New Jersey, to Amarillo, Texas," 11, among others. This extends into diorama literature as well. See, for example Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History*. (Uppsala: Almqvist & Wiksell, 1993), 226-227.

[13] Paul Cummings, "Interview with Robert Smithson for the Archives of American Art/ Smithsonian Institution (1972)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 279.

New Jersey basement.[14] Smithson often articulated the museum's significance in his life. He characterized it as "much more interesting" than fine art museums: "[I]t was just the whole spectacle, the whole thing—the dinosaurs made a tremendous impression on me. I think this initial impact is still in my psyche."[15] He engaged with the AMNH beyond his childhood, referencing the museum in his writing and interviews, collecting official photographs and pamphlets, and including footage of the institution in the *Spiral Jetty* film.[16] His essays often treat the AMNH as being synonymous with natural history itself, identifying specific AMNH displays but never directly referencing any other natural history museum.[17] The AMNH fundamentally framed his engagement with natural history, making it location-specific, and bounded by the institution's visual culture.

While these connections help explain Smithson's subject matter, his ties to the museum can also illuminate the artist's preconceptions about how display functions, in turn showing how the adaptations of such displays shift viewing relationships and social definitions of nature. Comparing these mirrored boxes to the AMNH dioramas, it is clear that museum's impact was more than an intellectual one, as there is a typological similarity in the structure of the displays themselves that creates a dialogue between the two types of installations. Working against the AMNH dioramas, Smithson's sculpture

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[14] Jack D. Flam, "Biographical Note," in *Robert Smithson, the Collected Writings,* xxvi; and Cummings, "Interview with Robert Smithson," 279.

[15] Robert Smithson quoted in Cummings, "Interview with Robert Smithson," 279.

[16] Examples include: Robert Smithson, "The Domain of the Great Bear (1966)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 26-32; Robert Smithson, "A Museum of Language in the Vicinity of Art," 85-86; Robert Smithson, "Can Man Survive? (1969)" in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 367-368. Robert Smithson, "Interstellar Flit," n.d. Robert Smithson and Nancy Holt papers, 1905-1987, bulk 1952-1987. Archives of American Art, Smithsonian Institution (hereafter Robert Smithson Papers, AAA). Reel 3834, frame 643-647.

[17] Smithson, "A Museum of Language in the Vicinity of Art," 85.

can be read more literally as a counter-definition for the natural that expands the viewer's understanding of what constitutes nature and how one interacts with it.

Mirror with Crushed Shells is strikingly similar to the habitat dioramas in concept, structure, and material. Revisiting the Mountain Lion group in the Hall of North American Mammals discussed in the previous chapter, for example, we see that both present a specimen collected from nature, reconstituted by human artistry, and displayed in a box-like arrangement. Both specimens also point to a collection site outside of the gallery, and each creates a relationship between the viewer and the object framed by a background image and mediated through glass. Beyond Smithson's verbal gestures toward the AMNH, these formal congruities evoke the dioramas.

The timeline of diorama installations at the AMNH and the displays' shared conceptual underpinnings further support a comparison. Both the Hall of African Mammals and the Hall of North American Mammals, which opened in 1936 and 1942 respectively, were in progress through the 1940s when Smithson first visited the institution as a child. These were significant additions, constituting some of the most impressive and important examples of dioramas in the world.[18] Smithson estimates he was about seven when he first visited the AMNH.[19] From about 1945 onward, then, he watched these halls become the immersive crown jewels of the institution, fortifying a visual culture of nature predicated on illusionistic naturalism, sculpture, and glass.

Perhaps the most compelling link between the dioramas and Smithson's work lies in Smithson's idea of the Non-site, which, as Ann Reynolds has argued, is closely related to the logic of the habitat group. Smithson conceived of the Non-site as a "three

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[18] Stephen Christopher Quinn, *Windows on Nature: The Great Habitat Dioramas of the American Museum of Natural History* (New York: Abrams, 2006), 18-19.
[19] Cummings, "Interview with Robert Smithson," 279.

dimensional metaphor" for a place—a secondary installation of materials from the outside world that both refers to and represents the specific location from which such material is gathered without necessarily resembling that location.[20] Through associated maps, text, or photographs, both the habitat group and the Non-site serve as an index, pointing to each specimen's place of origin. The back-and-forth intellectual operation one performs when confronted with each display suggests that Smithson was exploring the inherent relationship between objects and their sources. Reynolds astutely proposes that Smithson brought these AMNH "habits of viewing," this oscillation of consciousness between site and exhibit, into his work.[21]

Reynolds briefly notes the formal similarity between the Smithson's late-sixties works and the dioramas, particularly the use of boxes as a framing device, but she is concerned with their metonymic resemblances and not their aesthetic ones.[22] If we read the connection between Smithson's sculpture and the AMNH more literally, however, as an example of artistic intervention in the diorama's narrative of a separate and perfect natural world, the artwork bears meaning beyond the Nonsite by presenting an alternative display that reunites the human and the natural as part of the same spectrum of objects. As previously argued, the diorama's combination of naturalistically posed specimens with sprawling background vistas created an illusionistic *mise-en-scène* that kept the human and the natural separate from one another through a divisive panel of glass. Dioramas like the Mountain Lion group emphasized the viewer's essential difference from the environment and their mastery over it, defining nature as a wild elsewhere

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[20] Robert Smithson, "A Provisional Theory of Non-sites (1968)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 364.
[21] Ann Reynolds, "Reproducing Nature: The Museum of Natural History as Nonsite," *October* 45 (1988): 115.
[22] Ibid., 115-116.

beyond human intervention. By altering the arrangement of the components of the habitat group, Smithson revisits and remakes these narratives.

Compared with habitat dioramas like the Mountain Lion group, *Mirror with Crushed Shells* looks revisionist, and I believe it should be thought of as such. The diorama seduces through texture, color, and illusionistic space, but it lures the viewer into its depths only to refuse access. The panel of glass halts one's approach, shielding the specimens from touch and keeping the viewer separate from the scene; it holds the content in suspended animation. Smithson, by contrast, refashions the basic diorama structure of container, object, and backdrop into an intimate and immediate viewing experience where the natural object is open to human interaction and subject to the passage of time.

Exploiting a different kind of illusionism, *Mirror with Crushed Shells* solicits a different kind of viewer engagement. The mirrors create a false niche that holds both real and reflected shells, and they reflect a moving background akin to the habitat group's painted one. Like the diorama, the collected specimens become both object and image, creating the appearance of a holistic pile of shells recessed into the wall and framed by a background scene. Transforming the diorama's transparent glass front into opaque and reflective mirror, Smithson projects contemporary bodies and environments into the space of the object, grounding the artwork in the gallery's artificial location and reasserting the temporality of the observational experience.

The materiality of the corner pieces contributes to this narrative inversion by emphasizing the immediacy of the observational experience. Though Smithson seems to prioritize the conceptual dimension of these works over their visual effect, the latter shifts

with each iteration, highlighting the important role each specimen plays. In a letter to Andy Warhol regarding *Mirror with Crushed Shells*, Smithson explains that the work is original, but it can be restored by replacing a panel if it breaks or by supplementing the shells with new samples collected from the original site on Sanibel Island.[23] While this claim minimizes the artist's hand, his chosen specimens have unique forms that center their material presence. Smithson applied the same principles of construction to the corner pieces he produced between 1968-69, but he altered the samples inside of them. The earliest example, *Red Sandstone Corner Piece* (figure 2.2)*,* features craggy chunks of rust-colored rock from Sandy Hook Quarry in New Jersey, which emphasizes its connection with the earth. *Nonsite Petrified Coral with Mirrors* (figure 2.3)*,* like *Mirror with Crushed Shells,* contains shells from Sanibel Island, but in this case their fossilized nature accentuates the solidity of the sample as it rests in a cohesive mass in the heart of the work. *Corner Mirror with Coral* (figure 2.4)*,* on the other hand, is oddly delicate.[24] Spread in a flat wedge on the floor panel, the specimen is refracted into a small disk that is dwarfed by the larger mirrors, its soft pink hue calling attention to its lacy fragility. Across these works, the repetition of the corner box form around the changing specimens puts pressure on its aesthetic form, highlighting the difference each choice makes in the overall effect of the work. The impact of each sample varies with its material characteristics, encouraging meditation on its physical qualities and drawing attention to the importance of form.

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[23] Robert Smithson to Andy Warhol, July 29, 1969, Robert Smithson Papers, AAA, roll 3833, frame 23.

[24] This MoMA promised gift is probably the same work described by Robert Hobbs as featuring "pink lace coral from Summerland Key, Florida," the two sources offer different dates for the work—1969 and 1971, respectively. See Robert Hobbs, *Robert Smithson: Sculpture* (Ithaca: Cornell University Press, 1981), 130.

The instability of these installations underscores their impermanence; only the shells hold the unsecured mirrors in place, their weight pressing the panels against the walls. This precarious balance suggests the whole sculpture could tumble apart at any given moment, unlike its diorama counterpart, which stands frozen in perpetuity. Smithson further invites touch and courts an intimacy with the object through scale. The box limits the encounter to a singular observer, and the piled shells imply manipulation, emphasizing their materiality, and showing the potential for further handling. In each of these corner pieces, Smithson inverts the diorama's principles: opening what is closed; personalizing what is vast; and embracing the madeness of the museum display. Reintroducing the potential for contact between the viewer and the specimen, Smithson asserts that the natural is temporal, interactive, and intimately tied to human experience.

Critical Precursors

A similar impulse exists in earlier examples of Smithson's work that more explicitly engage with natural history, and they provide a precedent for the mirror boxes that illuminates a broader interest in reworking institutional display practices. Between his early Christian images and the first mature geometric sculptures of the mid-sixties, Smithson explored natural history tropes in an exhibition called *Assemblages* at the Richard Castellane Gallery. Both Richard Hobbs and Eugenie Tsai discuss these works as a resurrection of the naturalist interests from Smithson's childhood, but these objects also show how Smithson's played with scientific display, authority, and didacticism.[25] They reveal that the artist had previously investigated the form and meaning of scientific

[25] Hobbs, *Robert Smithson: Sculpture,* 12; and Tsai. "Robert Smithson: Plotting a Line from Passaic, New Jersey, to Amarillo, Texas," 13.

illustration and used its conventions to reconnect the viewer to primal feelings about nature.

Little has been written about these lost images, but as evidence of an artistic interest natural history display and containment, these works suggest that Smithson had serious artistic aspirations to interrogate the ways scientific conventions structured social ideas about nature. In a contemporary photograph, we see artist casually leaning on a large canvas just to his side (figure 2.5). This painting, measuring possibly four to four and a half feet tall, features a diagrammatic image of a poisonous snake's head with stenciled block letters labeling the more dangerous parts of the specimen: duct of poison sac, fang, poison sac, tongue. [26] Bold, expressionist strokes delineate the snake's head from a brushy, color field background. Its head fills the canvas, emphasizing the gaping maw at the center, and a cut view typical of textbooks and museum plaques reveals the poison sac hidden in the roof of the animal's mouth. A few other works are visible in the picture, including an oversized painting illustrated in the Hobbs catalogue raisonné (figure 2.6).[27] Even larger than the snake image, this painting depicts a labyrinthine termite mound, its dark tunnels set off against the thick brushstrokes representing earth and punctuated by the white bodies of its inhabitants. Like the other image, this painting is labeled in dark stenciled letters that give the work its name: *Termite Colony.*

One other work from this show can be found in the Hobbs publication, though the catalogue discusses neither. These pieces can also be seen in the first photograph on a small round table or stool in front of Smithson's right leg. The sculpture is composed of

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[26] No measurements exist, but this is an estimate based on Smithson's known 6' 3" height. See figure 1 in Roberts, *Mirror Travels*.

[27] Hobbs, *Robert Smithson: Sculpture*, 162.

two free-standing mason jars containing "biological specimens" (figure 2.7).[28] Each bears a rectangular label on the front of the jars identifying the contents as "Acutiffrons papillae, UX-93, Arborea dipuss" and "Protolotos Terebellidae, UX-92, Simythus gouldii," respectively. Both are signed "R. Smithson 62" at the bottom. The species names are inventions derived from real terms. Acutiffrons, for example, is a misspelling of the second part of the binomial nomenclature for several species, including a type of dragonfly and a type of zooplankton, while papillae is the plural form of fleshy nipple-like protuberances most commonly associated with the bumps on mammal tongues.[29] His fake species names betray the fictive specimens inside. In a short *Village Voice* article on the show, Smithson explained, "I take an artificial specimen (like a fake sponge) instead of an actual specimen and engage in artificial alchemy."[30] It is a gesture more closely associated with contemporary art practices: Smithson combines the visual trappings of objective scientific knowledge with imaginary specimens in order to elevate them to the status of serious object while simultaneously devaluing the process that has legitimized them.

The article identifies several other lost works: *Rare Receptacle for Chewing Gum; Embryo chart of hog, calf, rabbit, and man;* and other examples of *Artificial Specimens.* Several others are visible in the surviving photographs: two horizontal rows of mason jar specimens of equal size placed one on top of the other, a large rectangular canvas with "blue chemical" stenciled in dark letters on a light field in the upper third of the work

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[28] Ibid., 234.

[29] See, for example, "Euterpina Acutifrons," Zooplankton Guide, Scripps Institution of Oceanography, accessed June 15, 2017, https://scripps.ucsd.edu/zooplanktonguide/species/euterpina-acutifrons; and *Merriam-Webster, s.v.* "papilla," accessed June 15, 2017, https://www.merriam-webster.com/dictionary/papilla.

[30] Fred W. McDarrah, "Harmless Horror," *Village Voice*, November 1, 1962, 17.

above six rows of dark curlicues on a medium field, and a smaller rectangular work with a row of chemical jars lining the bottom and the words *Ammonium Hydroxide* stenciled on the dark, brushy color field above it. Another lost work from this show apparently featured a disassembled "stuffed pigeon" pasted to a board.

Based on Smithson's remarks in the *Village Voice* article and the timing of the show in respect to his other exhibitions, Caroline Jones connects these works to Smithson's Christian works. She takes Smithson at his word when he says, "I'm trying to achieve a sublime nausea by using the debris of science and making it superstitious. Religion is getting so rational that I moved into science because it seems to be the only thing left that's superstitious."[31] While I agree that Smithson's comments expose a kind of continuity with his religious work, I think this clear interest in didactic natural history also establishes a different precedent. For Jones, this combination of science and superstition sets the stage for Smithson's life-long negotiations between the technological sublime and desublimation, but here I also read a purposeful artistic attempt to undermine authoritative scientific display and to remind the viewer of nature's less palatable complexities. The *Village Voice* article begins by describing the show's theme as "harmless horror," which suggests that the fear or disgust solicited by the images is ultimately innocuous. In certain ways, Smithson has intellectualized the base fear of nature and poison, but there remains something menacing about his expressionist diagrams and mysterious specimens. Smithson claims to expose the superstition of scientific practice, and in doing so, he has opened up that rarefied field for critique, and would continue to do so through his work in the sixties.

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[31] Smithson quoted in Ibid.

I think these concerns about display and institutional knowledge persisted into the mirror boxes, which are so formally similar to the habitat groups, a continuation of the artist's more literal explorations of institutional display seen amongst these objects. Smithson spoke briefly about the *Assemblages* work in his interview for the Archives of American art, describing the pickle jar specimens and the chemicals as part of a nebulous, "interim period," but he remarked, "I guess there was a tug of war going on between the organic and the crystalline." When the interviewer suggests that the crystalline won, Smithson responded, "Yes—well, actually I think they kind of met—a kind of dialectic occurred later on, so both areas were resolved."[32] Smithson's gesture toward resolution bears consideration here. Reading the mirror boxes as a place where the organic and the crystalline meet, if not always literally, then metaphorically, the corner pieces continue to rewrite AMNH display and expand on these earlier investigations.

Reconstructing Natural Law through Entropy

In reversing the characteristics of dioramas, *Mirror with Crushed Shells* functions as a corrective object that proposes an alternative understanding of the natural world, one that remediates the artificial distance between human beings and the environment and views people as coextensive with the ebb and flow of natural systems. Smithson's critical attitude toward the AMNH and toward the concept of nature partially explains this revisionist gesture. Shaped by his understanding of physics, Smithson's critiques illuminate the stark contrast between the artist's idea of natural systems and the museum's as a justification for his intervention.

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[32] Cummings "Interview with Robert Smithson," 289-290.

Smithson characterized museums in general as places of stagnant ideology, associating them with establishment values and deriding their content as "voids," but he anchored his dissatisfaction with the AMNH in its representation practices in particular, which are notably undone in the corner pieces.[33] Anticipating Donna Haraway's analysis of the Hall of African Mammals, he critiqued the socially-constructed aspect of AMNH displays, focusing on the uncertainty artistic interpretation brought to scientific communication.[34] He dismissed the AMNH dinosaur paintings as fantasy, for example, because they depict conditions that cannot be experienced and thus cannot be known.[35] He especially disapproved of the museum's correlation of naturalism with certitude. In a 1961 booklet about the Hayden Planetarium, Smithson underlined passages describing the truth-value of its astronomical paintings and the sophistication required to combine scientific detail with artistic skill. He wrote in the margins, "note the repeated use of 'realistic,'" calling attention to the inherent tension between invention and reality in representation and marking his discontentment with the artworks' authoritative status.[36] For Smithson, the museum created science fiction that passed as fact, and he took issue with the designation of these images as truthful substitutes for experience.

By calling nature a fiction, however, Smithson not only undermines the truthfulness of naturalism, but also the very concept of nature itself. Rejecting the assumption that nature is a self-evident subject, the artist believed the natural world to be

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[33] "Visiting a museum is a matter of going from void to void." Robert Smithson, "Some Void Thoughts on Museums (1967)," *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 41.

[34] See Donna Haraway, "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, 1908-1936" in *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989), 26-58.

[35] Smithson, "A Museum of Language in the Vicinity of Art," 85-86.

[36] Robert Smithson, notes in "Hayden Planetarium" pamphlet, Robert Smithson Papers, AAA. Reel 3836, frame 899.

a recent social invention, a Romantic carryover that is historically-specific and therefore mutable.[37] Nature's "fictitiousness" derived from eighteenth and nineteenth century narratives of its isolation and perfection, so he argued that nature and culture must be reunited to create a more coherent version of reality. He disparaged the idea that nature is defined by a lack of human intervention and accused the division between people and the environment of creating a false platonic ideal.[38] Elevating urban landscape and emphasizing the continuity between tools, technology, and the organic materials from which these things are made, Smithson promoted a version of nature undifferentiated from culture across time and space. The extreme future and the extreme past, the man-made and the organic, were categories to be muddied and collapsed in acknowledgement of entropy's chokehold over existence.

Smithson's idea of entropy, which underpinned most of his practice, was idiosyncratic and apocalyptically oriented. This focus on its systemic implications helps explain why he would have considered any division between the human and the natural to be erroneous. According to the Second Law of Thermodynamics, entropy measures the level of energy unavailable for work in a closed system. It must always increase as the system moves toward equilibrium, a moment where discrepancies in energy are balanced, preventing further energy transfer. This is an irreversible process, but Smithson interpreted equilibrium as a place where time collapsed in on itself to become both the past and the future, a cycle that would return the universe to prehistoric origins before

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[37] Smithson, "A Museum of Language in the Vicinity of Art," 84. Based on his argument, Smithson was likely responding to concepts from Alexander von Humboldt and Edmund Burke. For a copy of Burke held in Smithson's library, see Edmund Burke, *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful*, ed. J.T. Boulton (Notre Dame: University of Notre Dame Press, 1968).

[38] Robert Smithson, "Frederick Law Olmstead and the Dialectical Landscape (1973)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 165.

time and history.[39] His understanding of entropy derived from crystallography and history, and he melded its scientific roots with the anti-gestalt position of Anton Ehrenzweig, whose Freudian understandings of vision greatly influenced Smithson's thinking.[40] The artist's fascination with Ehrenzweig centered on the latter's idea of "dedifferentiation," defined as "the dynamic process by which the ego scatters and represses surface imagery."[41] Ehrenzweig was referring to the opposite mental acts of containment and scattering, correlated with the activity of building complex perceptions and the unconscious scanning that disperses these perceptions into their composite parts. Smithson interpreted this scattering vision as consistent with the dissolution processes of entropy, and used the terms interchangeably.[42] "Dedifferentiation," for him, became the process by which all things become the same.

Some scholars have read Smithson's fundamental belief in entropy as ultimately hopeful, a longing for a time when the universe will be in balance, but the scientific ramifications of equilibrium and the artist's own language for it complicates this notion. Jennifer Roberts perceives Smithson's interest in physics as an extension of his earnest religiosity of the 50s and early 60s, and when he identifies his first Nonsite in the New

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[39] Smithson's definition of entropy is often taken at face value, and because of its roots in physics, it is often understood as equivalent to its use in thermodynamics. Smithson's definition, while clearly elucidated in "Entropy and the New Monuments," is more of a pastiche of definitions in both the hard and soft sciences. See, for example: Yve-Alain Bois and Rosalind Krauss, "A User's Guide to Entropy," *October* 78 (Autumn 1996): 57; and Interview with Gregoire Müller, "'…The Earth, Subject to Cataclysms, is a Cruel Master' (1971)," in *Robert Smithson: The Collected Writings*, 256-257.

[40] Jones, *Machine in the Studio,* 325.

[41] Anton Ehrenzweig, *The Hidden Order of Art* (Berkeley: University of California Press, 1967), 19. *The Hidden Order of Art* was one of his most prized books, heavily cited in his writing and recommended—even loaned—to his peers with regularity. Jones, *Machine in the Studio,* 273.

[42] Robert Smithson, "A Sedimentation of the Mind: Earth Projects (1968)," in *Robert Smithson: The Complete* Writings, 110; and Eva Schmidt, ed. "Four Conversations Between Dennis Wheeler and Robert Smithson (1969-1970)" *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 199.

Jersey Pine Barrens as a place "in a state of equilibrium," he notes its "tranquility."[43] Indeed, as entropy deals with energy in systems, Smithson likely perceived his investment in the idea as being without value judgments and instead a simple understanding of the true natural process of the world.[44] Nevertheless, it is remains unclear if he ultimately viewed entropic equilibrium as a positive experience in and of itself. Systemic equilibrium, in the universal sense, could ultimately mean the heat death of the universe, which is an inherently fatalistic proposition where energy ceases to exist.[45] Smithson was at least passingly familiar with the concept of heat death and summarized his understanding in "Entropy and the New Monuments:" "In a rather roundabout way, many of the artists have provided a visible analog for the Second Law of Thermodynamics, which extrapolates the range of entropy by telling us energy is more easily lost than obtained, and that on the ultimate future the whole universe will burn out and be transformed into an all-encompassing sameness." Smithson describes the end of the universe and existence but suggests that it will be more welcomed than feared. He cites a recent Northeastern blackout as a premonition of this fatalistic future, but he mentions how euphorically the public reacted to the power loss, as if people will welcome an existence free from energy.[46] Smithson elides two different types of energy here, equating electricity with the capacity for work, as he comes to the conclusion that "energy-drain" will be celebrated, but this indicates a fundamental misunderstanding—or

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[43] Roberts, *Mirror Travels,* 50; and "Discussions with Heizer, Oppenheim, Smithson (1970)" in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 244.
[44] "Falseness, as an ultimate, is inextricably a part of entropy and this falseness is devoid of moral implications." Robert Smithson, "Entropy and the New Monuments (1966)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996),18.
[45] Crosbie Smith and M. Norton Wise, *Energy and Empire: A Biographical Study of Lord Kelvin* (Cambridge: Cambridge University Press, 1989), 498-502.
[46] Smithson, "Entropy and the New Monuments," 11.

at least some purposeful obtuseness—on his part.[47] Heat death would mean the end of heat, metabolism, and catabolism, among other things, not just the end of electricity. There will be no new beginnings. Nothing will grow, nothing will move, and the universe will remain in a state of perpetual stillness.[48]

An unfailing belief in entropy, then, seems quite pessimistic from a human perspective and it reads as a kind of apathy toward the fate of humanity. Indeed, Smithson has been categorized as famously a-political compared to his peers.[49] However, though Smithson's position often appears neutral, he persistently expresses a kind of nihilistic pessimism that rejects notions of progress and favors apocalypse. He mused, "why are so many artists now attracted to the dangerous world of politics? Perhaps, at the bottom, artists like everybody else yearn for that unbearable situation that politics lead to: the threat of pain, the horror of annihilation, that would end in calm and peace."[50] Smithson seems to imply that peace can only be achieved through cataclysmic destruction. His fatalism, evident both here and elsewhere, is more in line with the menacing undertones of entropy theory than political neutrality.

Heat death is a somewhat controversial consequence of the Second Law of Thermodynamics, but at the very least, the law guarantees that a system degrades over time.[51] This aspect emerges in Smithson's version of it, as well. He conceived of new construction as "ruins in reverse," describing how buildings "rise into ruin before they are

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[47] Ibid.

[48] Smith and Wise, *Energy and Empire,* 500.

[49] Lucy Lippard, for example, writes that Smithson was "too much of a pragmatist" to do so. See Lucy Lippard, "Breaking Cycles: The Politics of Prehistory," in *Robert Smithson: Sculpture*, ed. Robert Hobbs (Ithaca: Cornell University Press, 1981), 36.

[50] Robert Smithson in "The Artist and Politics: A Symposium," *ARTFORUM* 9, no. 1 (September 1970): 39.

[51] Heat death was controversial from its inception. See Smith and Wise, *Energy and Empire,* 501-502.

built," and projecting imminent entropic destruction onto the possibilities of change before they even occur.[52] Smithson is picking up on other writers' descriptions of entropy, particularly Vladimir Nabokov and Wylie Sypher, both of whom he quotes in "Entropy and the New Monuments." Nabokov's remark, "The future is but the obsolete in reverse," is similar to Sypher's assessment that, "Entropy is evolution in reverse," but where Nabokov seems to suggest that the future is made of utility and usefulness, both Sypher and Smithson emphasize degradation.[53] In any case, Smithson's names reversal as the hallmark of entropy and the future.

Smithson's choice of words reveals a sense of ominous dread. Even as he celebrates the contemporary moment where a select group of his peers monumentalize the "vapidity and dullness" of entropy at work, he conveys a sense of something already lost with his descriptions of emptiness and detachment. His focus on falseness, stillness, and voids additionally frame the future as a place of lack rather than prosperity, fullness, honesty, and sophistication. In sum, whether or not Smithson conceived of entropy as a force without values or judgments, he infuses his assessment of the future with a sense of futility and inevitable cataclysm.

In the face of the inevitabilities that we humans cannot escape for all our ingenuity, Smithson seems to suggest that there is no point separating people and society from our concept of nature as both are subject to entropic regression. In certain ways, futility pervades his assessment of human knowledge as well. Smithson rejected philosophical concepts of truth, derided activism, and foregrounded the inevitability of

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[52] Robert Smithson, "A Tour of the Monuments of Passaic, New Jersey (1967)" in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 72.
[53] Vladimir Nabokov quoted in Smithson, "Entropy and the New Monuments," 11; Wylie Sypher quoted in ibid., 15.

decay. If nature and culture will both degrade and vanish at the end of time, how are they different? Smithson implies skyscrapers are as natural as anthills and treats neither preferentially.

Despite his beliefs that nature and culture are coextensive, Smithson never sought to re-inscribe nature with the presence and marks of humanity as an environmentalist project. Instead, he accepted environmental change as the true state of nature, a consequence of the systemic energy loss that contributed to its ultimate dissolution. He reasoned, "People always thought that nature was self-sufficient, and that it was going to continue. Now nature itself is threatened [...] It might be quite natural that Lake Erie is filling up with green slime. It might just be another stage."[54] Smithson's dismissal of environmentalist urgency ultimately derives from his belief that the earth, subject to its own systems and rhythms, would return to a primeval state in its own time. Contemporary environmentalism was therefore misguided it its attempts to resist degradation. The philosophical differences between Smithson and the more ecologically-focused population are best illustrated by the conflict that emerged in 1969 when the artist attempted to construct *Island of Broken Glass* in Vancouver, Canada. Concerned that the project would disturb the local bird population, the community pushed back against the planned installation of the work. Smithson talked about the project and its problems extensively, and his condescending and dismissive tone suggests he was quite angry about the outcome. An unpublished critique of the dissent facing his cancelled project begins, "The Nazi's enlisted scientists to rationalize their "cause," now some of

[54] Robert Smithson quoted in "Interview with Paul Toner," April 4, 1970, Robert Smithson Papers, AAA, roll 3833, frame 1188.

the "militant preservationists" are distorting ecology to suit their end."[55] Comparing conservationists to fascists, Smithson very clearly paints environmental consciousness as at best rigidly ideological, and at worst inherently evil. He continues, "The island is not meant to save anything or anybody, but to reveal things as they are. The phony "salvation" put forth in so much ecological propaganda, has less to do with saving the land, then [*sic*] losing one's mind."[56] Here, Smithson articulates what he perceives to be his key difference from the protesters. Where the conservationists look for a cause to lose themselves in, Smithson sees himself cutting through illusions. There is no saving the land, only accepting it as it is and as it will be when the system degrades back to its state of origin. Smithson goes further, however, and suggests that not only can the environment not be "saved," humanity cannot be either.

Of Smithson, Lucy Lippard wrote, "[H]e was virtually the only important artist in his aesthetic generation to be vitally concerned with the fate of the earth and fully aware of the artist's political responsibility to it." While I agree that Smithson is thinking about this fate and his role in articulating it, Lippard seems to articulate some kind of desire for redemption on Smithson's part which may imply more ecological activism than the artist possessed. His concept of nature was more inclusive of humanity and its effects on the environment in the sense that people were not isolated from the ebb and flow of natural systems. However, he did not readmit humanity back into the picture of the natural system to caution us against environmental destruction—the environment was going to be destroyed regardless as the system progressively degraded. Smithson insisted that our understanding of natural systems was flawed and focused on the wrong problem.

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[55] Robert Smithson, untitled essay in Island of Broken Glass project file, 1970, Robert Smithson Papers, AAA, roll 3835, frame 1064.

[56] Ibid., frame 1065. Emphasis in original.

Environmental activism was futile. Consequently, Smithson was more neutral about the negative impact of human action on the world. It is fitting that he once referred to himself as "The Nero from New Jersey," implying that he is the one who fiddles while the new empire burns.[57]

In light of Smithson's suspicions toward nature, museums, progress, and truth, *Mirror with Crushed Shells* reads as a corrective object that competes with the Romantic relationship to nature codified in AMNH dioramas. If nature is part of a universal system and not an external category, it cannot be protected from processes of energy loss and degradation. Smithson eliminated the diorama's divisive glass panel and reunited it with the physical world. He removed the boundary between viewer and object and transformed the painted backdrop into a reflective surface that defined both the institution and the observer as the contemporary, and temporary, environment. Smithson's box balances the natural with the man-made, creating—literally—a mutually-supportive framework between these two conceptual poles without favoring either. As a result, the work exhibits Smithson's version of Post-war American nature where human constructions and experiences are as natural as trees in the ever-shifting flux between order and chaos.

"Reflections Reflecting Reflections"

Smithson's desire to critique the social concept of nature is most easily grasped in the corner pieces, but similar revisionist implications can be read in his habitual use of glass throughout the 60s. In all of these works, the material itself bears significant

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[57] Robert Smithson, letter to Nancy Holt, August 1, 1961, Robert Smithson Papers, AAA, roll 3832, frame 786.

metaphors of vision, travel, and transformation that facilitate Smithson's investigations into our relationship with the natural world. Mirrors have clear mythological properties for the artist, but glass itself carries metaphorical implications that deepen the relationship between his work and the AMNH dioramas. Considering the fundamental role that glass plays in structuring the viewer's relationship with the diorama, as discussed in the previous chapter, Smithson's deep interest in glass and mirrors proves to be an important way that Smithson reconfigures the viewer's relationship to the natural world, adapting one's physical engagement with the display and altering its representation of time.

Smithson used glass to restructure interactions between sites, objects, viewers, and installations. In some cases, the artist used glass as a container for geological specimens much like he did in the corner pieces. *Nonsite—Essen Soil and Mirrors*, for example, multiplies the corner piece form, counterbalancing twelve mirrors with a mound of red Essen soil to create a free-standing sculpture with four illusionistic views of a pile of dirt (figure 2.8). Sometimes, glass itself became the specimen, such as *Map of Broken Glass,* which was originally installed in a parking lot in Loveladies Island, New Jersey (figure 2.9). Despite its transparency, Smithson's emphasizes glass's physicality and fragility by breaking and piling shards into human-sized masses. The work is violent and physically repulsive, refusing touch by invoking glass's dangerous capacities. The original parking lot location has certain connections with broken beer bottles and human detritus, but the very idea of broken glass in nature often conjures this association. In fact, rumors quickly spread that Smithson's proposed *Island of Broken Glass* would be

composed of "American beer bottles," reinforcing the connection between shards of glass and reckless consumption and disregard for the environment.[58]

In other works, Smithson inverted the relationship between the glass and the object, disrupting both gallery spaces and natural spaces. *Dead Tree* (fig 2.10) makes the container the contained as panels of mirror peek out of the fallen trees' branches. *Dead Tree* is one of the few pieces in which Smithson uses clearly organic material in order to play with concepts of life and death, but his arrangement also upends conventions of natural history display. At first glance, the tree is an object that seems to bring life to the austere gallery space by bringing nature indoors. The tree rests on the floor and fills the room. The complex texture and dark color of its leaves and bark contrast against the white walls that frame it. One might imagine it smelled of earth and decomposing leaves. Yet the tree is clearly dead or at least in the process of dying. Long rectangular mirrors reiterate the horizontal orientation of the specimen, lending the work a sense of anthropomorphism like a body on the floor. Panels amongst its branches and in its exposed roots emphasize the life-giving parts of the tree severed from sun and soil, and they reflect the room and the viewer, reminding each visitor about their embodied presence in the gallery and refusing any sense that one might be anywhere else. By inverting the relationship between the vitrine and the natural object, *Dead Tree* reads as a kind of reverse diorama where the glass emphasizes the viewer's location in a museum and the specimen points to its own mortality.

Like *Dead Tree,* Smithson's mirror displacements aimed to intervene in preconceived specimen/container dynamics by exploiting mirror's conceptual

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[58] Robert Smithson, untitled essay in Island of Broken Glass project file, 1970, Robert Smithson Papers, AAA, roll 3835, frame 1064.

underpinnings. About the works in the *Cayuga Salt Mine Project*, a series of non-sites and a site-specific installation of mirrors, Smithson explained, "The material becomes the container. [...] In this case the container is amorphous, the mirror is the rigid thing. I'm using a mirror because the mirror in a sense is both the physical mirror and the reflection. The mirror is a concept and a fact, a departure from the other kind of contained-scattering idea."[59] He also foregrounds the ways in which mirrors introduce transience and subjectivity to a site, breaking up vision and disrupting expectations of consistency: "The mirror is a displacement, an abstraction reflecting the site in a very physical way: […] but I don't leave it there, I pick it up."[60]

Smithson's mirrors sometimes invoke travel and movement, as in the *Yucatan Mirror Displacements* where he photographed nine areas of the Yucatan jungle punctuated by square mirror panels, then arranged, narrated, and published his images alongside a pseudo-travel narrative in *Artforum* as *Incidents of Mirror Travel in the Yucatan* (figure 2.11). Smithson carefully masks the built environment by denying the presence of historical artifacts and people.[61] Instead he uses the mirrors to create contradictory and irrational images that collapse land, sea, and air, and he suggests that they offer a way to travel through time.[62] The photograph itself becomes yet another mirror that distorts and transports by freezing the fleeting images reflected in the mirror panels and enabling the reader to travel to the site of the displacement.

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[59] Robert Smithson quoted in William C. Lipke, "The Dialectics of Place: Some Reflections on Robert Smithson's Mirror Project," Robert Smithson Papers, AAA, roll 3834, frame 1317. This quotation also appears in William C. Lipke, ed. "Fragments of a Conversation (1969)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 190.

[60] Smithson quoted in William C Lipke, "The Dialectics of Place," roll 3834, frame 1314. Also quoted in the edited version, Lipke, "Fragments of a Conversation," 190.

[61] Reynolds, *Learning from New Jersey and Elsewhere*, 174.

[62] Robert Smithson, "Incidents of Mirror Travel in the Yucatan (1969)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 122.

Smithson evokes glass's fragility by juxtaposing it with more durable and traditionally 'natural' objects. He creates illusory spaces, displaces vision, and ruptures landscape—applications all consistent with the various meanings glass has carried throughout its long history. Glass and mirrors have significant cultural connections to magic across the globe, reflected in its role in fairy tales and folklore. They have transformative properties and are associated with the occult; they are tools for trickery and illusion.[63] It is perhaps worth remembering that photography, an important component of Smithson's practice, was itself the "mirror with a memory," transforming the world into its own mystical image on glass and mirrored surfaces.[64] Smithson understood that he accessed and perpetuated a long history of metaphors in choosing glass. His unpublished essay "An Infinity of Mirrors" begins with a list of important cultural mirrors such as Alice's looking glass, the Hall of Mirrors at Versailles, Heidegger's "blind mirror," and Jean Cocteau's mirror world in *Orpheus.* He reiterates some of mirror's most crucial metaphors, identifying them as tools that redirect, obscure, conceal, purify, and beautify, and concludes, "IT'S DONE WITH MIRRORS [*sic*].[65]

Clearly aware of its multifarious significations, Smithson used glass to communicate his conceptual preoccupations. He prized its relationship to crystal, linking the two through their molecular structure and refractive qualities.[66] In this way, mirror became a metaphor for time and a way to understand history. Jennifer Roberts argues that the enantiopmorphic properties of mirrors—their ability to produce reflections that

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[63] Isobel Armstrong, *Victorian Glassworlds : Glass Culture and the Imagination 1830-1880*. (Oxford University Press, 2008), 14-16.
[64] Oliver Wendell Holmes, "The Stereoscope and the Stereograph," in *Classic Essays on Photography*, ed. Alan Trachtenberg (New Haven, CT: Leete's Island Books, 1980): 74.
[65] Robert Smithson, "An Infinity of Mirrors," undated, Robert Smithson papers, AAA. Reel 3834, frame 92. Emphasis in original.
[66] Reynolds, *Learning From New Jersey and Elsewhere,* 81-82.

appear identical to the object but cannot overlap—provided Smithson with a model for the structure of time where the past and the future stretch out from both sides of a particular moment, transforming the present into a void between mirrored paths of history.[67] The artist read this reflective relationship as a kind of crystallization of time where it becomes concrete and subsequently can be transcended.[68] Roberts therefore identifies Smithson's mirrors as tools that fracture and split, neutralizing the present in favor of its continuity with the larger course of history.[69]

Smithson's mirrors also upend expectations about vision and sight. Smithson experimented with perception and its faults in order to reveal that vision, conditioned by expectations and contextual cues, is unreliable.[70] In works like *Enantiomorphic Chambers,* for example, Smithson used mirrors to create a visual blind spot. Thomas Crowe observed this same refusal of viewer expectations in *Leaning Mirror*, and he underscores the pun in "Nonsite" as a homophone of "nonsight" or "nothing to see."[71] This sense of deception and faulty illusionism found in Smithson's work probably extended to Smithson's view of the world in general. He mused, "Sometimes I think the whole universe is a Hall of mirrors—reflections reflecting reflections,"[72] implying that our perspectives on the world are always contingent, transitory, and distorted. If mirrors

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[67] One's left and right hands are classic examples. For a definition of enantiomorphs found in Smithson's library, see Max Jammer, *Concepts of Space: The History of Theories of Space in Physics*. (Cambridge: Harvard University Press, 1960), 131.

[68] Roberts, *Mirror Travels,* 40.

[69] Roberts, *Mirror Travels,* 47. Roberts also proposes that for Smithson this is a way of imagining a time when irreconcilable differences can find resolution. See *Mirror Travels,* 52.

[70] Reynolds, *Learning From New Jersey and Elsewhere,* 45, 75.

[71] Thomas Crow, "Cosmic Exile: Prophetic Turns in the Life and Art of Robert Smithson," 53. Crow credits Miwon Kwon with this observation.

[72] Robert Smithson, letter to "Lollie," undated, Robert Smithson papers, AAA, roll 3832, frame 750.

are the tools through which we literalize these problems, then they themselves also come to stand for them.

Smithson used both mirror and glass in a similar manner but never for the same purpose, suggesting that he used each to evoke certain metaphors or responses. In an interview with Dennis Wheeler, the artist cites the irregular molecular structure of glass as one of the reasons it is an attractive medium. He explains that its brittleness and difficulty "contributes to the experience of the piece."[73] Wheeler asks if the danger of glass works is intentional, and while Smithson professes that all art is mentally and physically dangerous, he identifies the difficulty of the medium as more attractive than its physical threat. Consciously or not, however, Smithson's decision to shatter and pile glass menaces the viewer, and it is this very danger that the public cited in Vancouver in 1969 when protesting his work.[74] Contrasted with Smithson's mirror usage in which the artist strictly employed whole panels, Smithson's approach to glass suggests he perceives its usage and meaning as fundamentally different from mirrors. Where the primary role of mirrors is to reflect, glass seems to seduce with its sheen and repel with its sharp edges.

This contrast between glass and mirrors is suggestive when considering Smithson's mirror boxes as counter-narratives for dioramas. Mirror, for Smithson, was a transformative material that altered objects, locations, and observers while creating contradictory viewing experiences. Altering, shifting, and breaking it, then, catalyzes an alchemical process where the specimen and the viewer are made something else entirely.

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[73] Robert Smithson quoted in "Interview transcript: Robert Smithson with Dennis Wheeler, 1969-1970," Robert Smithson papers, AAA, roll 3833, frame 1109. An edited version of this response appears in Flam, *Robert Smithson: The Collected Writings,"* 216.

[74] Smithson is pretty explicit about his disregard for the dangerous dimension his glass works possess: "Yeah, well in nature you can fall of a cliff, and you can drown in the water, and you can fall in a volcano, and you can do all these things. I mean like the fact that somebody will swim out there and impale themselves on that glass is like not my fault." Ibid.

If the artist's mirrors redirect vision, create illusions, and emphasize the continuity of time, putting them in context with a natural specimen creates a narrative of duplicity and artificiality laid bare, returning the object to a flow of time in which it is but a void. When Smithson exchanged the diorama's glass panel for a mirrored background, he altered the metaphorical properties of the glass case and, by consequence, the metaphorical properties of the specimen. The glass in *Mirror with Crushed Shells* instead becomes the way through which one sees their temporality, emphasizing continuities between the viewer, the object, and the shape of time. Literally showing the viewer's place and creating the illusion of a bountiful natural specimen, the mirrors heighten the awareness of both display and nature as cultural products, making the work other and more than the AMNH displays.

Atomic Age Ambivalence

It is worth asking why someone who chose to visit the AMNH so often could not abide its narrative of the natural world, but when considered in their late-sixties context, it becomes clear how the mirror boxes respond to the significant changes catalyzed by the nuclear age and the space race. On one hand, the academic understanding of history and time was changing with the popularity of Structuralist theory.[75] Equally important to this shift, however, is that our fundamental relationship to nature had changed. As Jennifer Roberts has established, Smithson's view of environmental progress was historically and site specific, tied to Post-war developments in industry and travel.[76] With the growth of

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[75] For Smithson's relationship to Structuralism and Post-Structuralism, see Craig Owens, "Photography *en abyme," October* 5 (Summer 1978): 73-88; and Reynolds, *Learning from New Jersey and Elsewhere,* xv-xvi.

[76] See Roberts, "Forgetting Passaic," in *Mirror Travels,* 60-82.

car culture, Smithson experienced the American landscape outside of the AMNH. He saw many of the museum's illustrated vistas firsthand, travelling the country with his family as a child after he chose the destinations and planned the trips.[77] As an adult, Smithson observed as his native New Jersey shifted through various stages of development and deterioration.[78] This concurrent explosion of growth and decay seemed to make thermodynamic sense and provided concrete proof of systemic tendencies to move toward disorder. By observing the conditions of his home state, Smithson saw entropy in action.

More than a response to topographic change, however, Smithson's investment in entropy can be perceived as a reaction to larger cultural crises brought on by the Cold War. It is significant that Smithson found himself preoccupied with the slippage between the extreme future and the extreme past in a time where both states seemed so close to realization that only chance would tip the scales in either direction. Few moments in American history so clearly manifest the collision between the promise of the technological future and the threat of returning to the barren past like the 1960s, where space exploration progressed alongside nuclear proliferation. These sociopolitical milestones fundamentally reoriented humanity's relationship to the natural world, and I suggest that this shift in cultural consciousness explains why Smithson believed in entropy so strongly and why he in turn sought to reinterpret the dioramas.

Atomic threat dominated international political exchanges in the 1950s and 60s as the high-stakes consequences of Cold War conflict. Nuclear proliferation that began after the first Soviet nuclear test in 1949 escalated in the sixties as nations developed and

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[77] Jack D. Flam, ed. *Robert Smithson: The Collected Writings*, (Berkeley: University of California Press, 1996), xxvi.
[78] Ibid., xxi.

tested atomic weapons throughout the decade.[79] By this time, the early promise of a bright future generated through nuclear power and controlled by American forces had slipped into suspicion, pessimism, and fear.[80] The discovery of radiation poisoning and the launch of Sputnik brought concerns about fallout and death to a fever pitch that would remain high until after the Cuban Missile Crisis.[81]

Nuclear hysteria would transition more or less into a grudging acceptance of the conditions and potential consequences of the nuclear age by the end of the decade, but concerns still simmered under the surface.[82] Popular culture continued to explore nuclear threats through the end of the sixties and beyond, indicating a persistent preoccupation with the problem. Commercial films based around the concept of a nuclear arms race or destruction were numerous during this time, seemingly focused around a question of how well one could control these weapons.[83] The critical and commercial success of *Dr. Strangelove, or How I Learned to Stop Worrying and Love the Bomb,* for example, shows how fear of nuclear apocalypse and suspicion of government's attitudes toward nuclear

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[79] Dick van Lente, "Introduction: A Transnational History of Popular Images and Narratives of Nuclear Technologies in the First Two Postwar Decades," in *The Nuclear Age in Popular Media: A Transnational History, 1945-1965* (New York: Palgrave Macmillan, 2012), 11.

[80] For an introduction to early cultural responses to the Atomic Age see Gerald Wendt and Donald Porter Geddes, *The Atomic Age Opens* (Cleveland: World Publishing Company, 1945).

[81] Spencer R. Weart, *Nuclear Fear: A History of Images* (Cambridge: Harvard Univeristy Press, 1988), 258-267; and Toni A. Perrine, *Film and the Nuclear Age: Representing Cultural Anxiety* (New York: Garland Publishing, Inc., 1998), 9-12. It has been argued that American attitudes toward the atom were fairly consistent because of the unified, formulaic narratives published across the popular press at this time. See Scott A. Zeman, "'To See...things Dangerous to Come To': Life Magazine and the Atomic Age in the United States, 1945-1965," in *The Nuclear Age in Popular Media: A Transnational History, 1945-1965*, ed. Dick van Lente (New York: Palgrave Macmillan, 2012), 73.

[82] Weart, *Nuclear Fear,* 265.

[83] Perrine, *Film and the Nuclear Age,* 150. Perrine places the end of extreme cultural fear toward nuclear destruction around 1964, but van Lente names 1968 the end point after the Nuclear Nonproliferation treaty. See Perrine, *Film and the Nuclear* Age, 12; and van Lente, "Introduction," 15. Weart suggests such a dissipation resulted from a combination of optimism about the capabilities of these treaties to deter action, denial, and apathy in the face of helplessness. Weart, *Nuclear Fear,* 268.

responsibility remained apart of the social consciousness though these themes had all but disappeared from news publications by 1968.

Smithson grew up with these changing cultural perspectives, and was, at the very least, mindful of the social preoccupation with nuclear devastation. He once wrote Nancy Holt, "I've come to the conclusion that many are engaged in taking an inventory of a world that is quickly fading or waiting for The Bomb [*sic*] to go off," revealing his casual awareness of nuclear threat.[84] Smithson's capitalization of "The Bomb" suggests he is not speaking of explosives in general but one bomb specifically, synonymous with atomic weaponry. By the end of the sixties, Smithson's belief in the conditions of entropy was also consistent with the begrudging cultural acceptance of nuclear threat and its consequences. In both cases, there was resignation to the fact that one cannot control the fate of the world, resulting in a kind of apathy toward the danger. [85] Just as Americans had accepted nuclear devastation as just another traumatic certainty of life, Smithson accepted the inevitabilities of entropy on the natural world.

Though entropy is a natural phenomenon, Smithson's definition of entropic deterioration can also be read as active, even violent destruction, consistent with the concerns of his period. Described as a cycle that brings development back to ruin, Smithson's perception of entropy reads as an active force and not a passive natural imperative, especially in his work. Broken glass, boxes of slag, and piles of rock and dirt imply human involvement and evoke rubble, which itself is often brought about not only through decay, but through violence. This is especially pertinent in the 1960's where

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[84] Robert Smithson, letter to Nancy Holt, August 1, 1961, Robert Smithson Papers, AAA, reel 3832, frame 786.

[85] Weart, *Nuclear Fear,* 265.

images of and conversations about war permeated public discourse, indicating that the social concern over nuclear bombing may have crept into his work.

More significantly, however, Smithson's descriptions of entropic landscapes as deserted, rocky terrain filled with ruin evoke environments associated with atomic explosions. Eugenie Tsai spotlights one such description in an excerpt from a 1961 Smithson poem. The excerpt seemingly describes both the quarries of New Jersey and the character of his later sculpture, but it further highlights the blighted terrain Smithson associated with cataclysmic landscape:

On the dim landscape
On the desolate mountain
On the parched earth.
On the burnt desert.
On the dusty ground.
On the garbage dump.
On the dung heap.
On the blasted health.
On the empty plain.
This is our inheritance…
La Bas: Rocks falling on rocks
Stones falling on stones.
Sand falling on sand.
Dust falling on dust.[86]

Tsai directly connects Smithson's entropic landscape to his idea of an apocalyptic one, but his descriptions are also related to cultural understandings of an atomic landscape.[87] Destruction, rubble, the desert, and prehistory were all linked to nuclear explosions. A 1945 *Life Magazine* spread described Hiroshima as a "desert," and "a tortured mess of twisted steel," highlighting the warped and crumbled character of the

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[86] Robert Smithson, "To the Man of Ashes." Robert Smithson Papers, AAA. Roll 3834, frame 215.
[87] Tsai, "Robert Smithson: Plotting a Line from Passaic, New Jersey, to Amarillo, Texas," 15.

post-nuclear landscape.[88] This perception of the atomic wasteland as a barren field marred with wreckage entered the cultural consciousness and used by anti-nuclear protesters across the globe to warn against nuclear proliferation.[89] In these ways, Smithson's concept of the world shaped by the forces of entropy is strikingly similar to the cultural idea of the land subject to nuclear cataclysm.

In a world where the United States army threatened to bomb other countries "into the Stone Age," we can see how naturally we have come to associate pre-history with nuclear decimation. [90] The association is both figurative and literal, as the majority of American atomic experimentation occurred in Nevada and New Mexico, leading to a high circulation of photographs of mushroom clouds billowing up from the desert below and turning the dusty American west into a ubiquitous visual signifier for nuclear devastation. The association between the two is pervasive. In "Holy Landscape: Israel, Palestine, and the American Wilderness," W.J.T. Mitchell notes in passing how part of the Western Nevada desert of his childhood—the Yucca Flat—is, "ruined, irradiated soil," defined by its role in nuclear testing.[91] Mitchell's comment is not substantial but it speaks to how casually these identities were linked for him.

Mitchell also connects this desert with the prehistoric landscape in a turn that echoes Smithson's understanding of the entropic terrain. For Mitchell, this desert is a place of "deep time" where the fossil beds of long dead dinosaurs connect the past and

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[88] "What Ended the War," *Life Magazine,* September 17, 1945, 37.

[89] Weart, *Nuclear Fear,* 242.

[90] Curtis E. LeMay and MacKinlay Kantor, *Mission with LeMay: My Story* (Garden City, NY: Doubleday, 1965) 565. The World War II general also inspired the trigger-happy General Ripper in Dr. Strangelove, further suggesting a cultural resonance between atomic destruction and the prehistoric terrain in the 1960s. See Fred Kaplan, "Truth Stranger than 'Strangelove,'" *New York Times*, October 10, 2004, https://www.nytimes.com/2004/10/10/movies/truth-stranger-than-strangelove.html?_r=0.

[91] W.J.T. Mitchell, "Holy Landscape: Israel, Palestine, and the American Wilderness," in *Landscape and Power* (Chicago: University of Chicago Press, 2002), 268.

the present.[92] Smithson read this meaning into the desert as well. In *Spiral Jetty,* Smithson repeatedly connects the site to the prehistoric landscape, likening dinosaurs to dump trucks and juxtaposing fossils with shots of the dusty Utah road. Smithson associates both landscapes with death; the unrelenting sunlight, his heat exhaustion, and the red tinge of the Great Salt Lake reminded him of meat and blood.[93] In addition to these associations with organic decay, however, red light also evokes the iconic red flash of the atomic explosion, a dangerous and unnatural light and its own source of death. In his film, Smithson uses a red-orange filter for shots of the AMNH Hall of Late Dinosaurs, "transforming the lightbulbs into dying suns," and summoning cataclysm through his description: "The red filter dissolves the floor, ceiling, and walls into an infinite redness. Boundless desolation emerged from the cinematic emulsions" (figure 2.12).[94]

It is possible, then, to see how Smithson perceived the dioramas' narrative of nature as misleading in the atomic age. Under the threat of nuclear holocaust, nature is fragile and temporary, directly susceptible to human influence and subject to the same fate. Smithson may have taken this as tacit confirmation that entropy was working on our system. If entropy is the true law of the universe, as the artist maintained, then the dioramas willfully ignore this law by withholding the specimen from the ravages of time and constructing a fallacious image of eternal vitality. The dioramas then become mere illustrations of the "18th- and 19th- century fiction" he disparaged, privileging one picture

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[92] Ibid.

[93] Robert Smithson, "Spiral Jetty (1972)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 148.

[94] Ibid., 152.

of nature over others in a time of instability connected to human production, conflict, and violence.

If the prehistoric desert of the extreme past was affiliated with the nuclear desert of the present, both were further associated with the newly explored lunar surface of the extreme future. The pitted surface of the Yucca Flat detonation site visually echoes the moon's cratered landscape, suggesting violence and nurturing a sense of deep time (figures 2.13 & 2.14). Recounting his experiences for *Life Magazine,* one astronaut likened the dimpled moonscape to a battlefield, suggesting explosions and impact.[95] Another said*,* "The moon was void [...] I felt as if I were looking back in history."[96] Smithson subscribed to *Life,* and issues from this year remain in his Smithsonian archive. While we do not know if he read these stories, the astronaut's language and the connection he strikes between landscape and history is startlingly similar to Smithson's own. NASA recognized the affinity between the two landscapes and trained astronauts at the Nevada Test Site throughout the decade to give teams experience in a pseudo-lunar environment.[97] Substituting one desert for another, the arid spaces of the American west and the surface of the moon share conceptual space, permitting narratives of the past and the future to intersect on its rocky terrain.

Few have seriously considered the implications of the space race on Smithson's work beyond its connection to science fiction, but it serves as a historical pendant to nuclear proliferation in ways that illustrate the intimate connections between the past and

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[95] Bill Anders, "The Astronauts Write their Stories of the Flight," *Life Magazine*, Jan 17, 1969, 30.
[96] Jim Lovell, " The Astronauts Write their Stories of the Flight," *Life Magazine*, Jan 17, 1969, 28.
[97] H. J. Moore. "Nevada Test Site Craters used for Astronaut Training." *Journal of Research of the U.S. Geological Survey* 5.6 (1977): 719-33.

the future and how they bear on his philosophical concerns.[98] He called the landing "a very expensive non-site," casting the Apollo project as excessive and empty of real significance: "I was watching [the space shot] last night, and there was kind of a forced exuberance. There was this attempt to try to confer some meaning onto it, and to me its quite banal."[99] Smithson's dismissal belies his interest. Banal or not, Smithson watched the first moon landing, and his correspondences often evoked space travel or walking on the moon.[100] It became part of the way he understood all kinds of travel and entangled with his ideas about time.[101] In two separate places, Smithson noted how the *Mariner* satellite showed "Mars to have surfaces like mirrors," suggesting that he thought about space as part of crystallized time and a part of the larger entropic system.[102]

Though Smithson's thoughts on space travel are limited, it is possible to see how it expanded Smithson's perspective on the natural world, literally and philosophically. In Smithson's time, space exploration forced people to expand their idea of nature by admitting the larger universe to their conception of it. Though we long had a basic understanding of the universe, never before had everyday citizens been exposed to incessant conversations about space. One Nobel biologist quoted in a 1967 issue of *Life* sums up this new thinking about the expanded parameters of our environment: "In one

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[98] As an exception, Ann Reynolds discusses Smithson's interest in space travel in relation to his own, particularly to Mexico, and notes the visual similarities between his photographs and moon images. See Reynolds, *Learning from New Jersey and Elsewhere,* 163-185.

[99] Bruce Kurtz, ed. "Conversation with Robert Smithson (1972)," in *Robert Smithson: The Collected Writings*, ed. Jack D. Flam (Berkeley: University of California Press, 1996), 268.

[100] Day Planner, 1969, Robert Smithson papers, AAA, roll 3832, frame 534. One example includes a postcard from Mel Bochner to Smithson, July 13, 1967, Robert Smithson Papers, AAA. For more on postcards and space metaphors in Smithson's practice and correspondence see Reynolds, *Learning from New Jersey and Elsewhere,* 163-172, 279 f. 99.

[101] Reynolds, *Learning from New Jersey and Elsewhere,* 167.

[102] Robert Smithson, letter to "Lollie," Robert Smithson papers, AAA, roll 3832, frame 750. He also wrote this in the margin of *Three Works in Metal and Plastic,* 1964.

lifetime the parish has become the solar system"[103] In this way, it was much easier for Smithson to think about mankind and the world as but one part of something much bigger.

In addition to broadening the parameters of the natural system, space travel also reoriented our perceptions of the world and the environment by literally presenting humanity with a new point of view. Called the "overview effect," this shift in perspective underscores the interconnected nature of the globe, its fragility, and the relative importance of human problems in the grand scheme of the universe.[104] In Smithson's case, this modified viewpoint might account for why he found the contemporary understanding of nature to be so limited. The shift in perspective may have impacted the artist's understanding of the world as a system, as part of something more expansive that only resolves with the proper distance. Smithson first seriously considered aerial views in his plan for the Fort Worth Regional Airport, which he worked on in the second half of 1966 into 1967. The works were only intelligible from above, indicating a mindfulness toward the way one's removal from an environment can shift the visual comprehension of it. Indeed airplanes induce a mild form of the overview effect, but the timing of the project overlaps with other significant space views that reinforced the world's relationship to bigger universal systems.[105] The first picture of the earth from the moon was taken on August 23, 1966 and widely published shortly after, providing a significant new perspective to the world as Smithson worked on his ideas for the airport (figure

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[103] "The Solar System is our Parish" Life Magazine, March 24, 1967, 4.
[104] Frank White, *The Overview Effect: Space Exploration and Human Evolution*, 2nd ed. (Reston: American Institute of Aeronautics and Astronautics, Inc., 1998), 4-5.
[105] Ibid., 3.

2.15).[106] His own experience of the overview effect combined with his understanding of entropy may have reinforced an understanding of the relative insignificance of ecology and humanity. Perhaps this is why Smithson found possibilities of space exploration so absurd and pointless.[107] Perhaps Smithson saw an inherent irony in the urge to escape the confines of our planet while the whole universe was in the process of collapsing around us.

The Cold War that began during Smithson's boyhood would persist in the political background throughout his life and ultimately outlive him. Though Smithson's writings and interviews rarely mention either the space race or the nuclear bomb, it is reasonable to suspect that he kept himself more or less informed about news and politics through his subscriptions to *Life* and *Time* and the politics of his associates and friends.[108] Even without these connections, the general buzz surrounding these events would have been impossible to ignore. Smithson's noted love of science fiction, saturated with tales of nuclear holocaust, atomic mutation, and space travel, also kept him imagining the extremities of history and time altered by technological advancement run amok.[109]

Smithson's cultural moment continually reminded him that, one way or another, the environment of the future would likely resemble that of the past. He experienced a slippage between concepts of temporal extremes through overlapping descriptions of the atomic wasteland and the lunar surface, a duality reinforced by contradictory states of

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[106] See, for example, "How the Earth Looks from the Moon," *New York Times*, August 26, 1966; and "Lunar View of a Socked-In Earth," *Life*, September 9, 1966, 34B-34C.

[107] Robert Smithson, "Interstellar Flit," Robert Smithson papers, AAA, roll 3834, frames 643-647.

[108] Renewal note in day planner, 1969, Robert Smithson papers, AAA, roll 3832. Lippard, "Breaking Circles: The Politics of Prehistory," 36.

[109] Reynolds, *Learning from New Jersey and Elsewhere,* 80-82.

technological fear and optimism. As such, Smithson's vision of the future echoed his perception of the primordial in ways that would have encouraged him to think of these moments as rhymes of one another, confirming his hypothesis that entropy guarantees a return to a prehistoric state. These conceptions of the future environment are negotiated through empty landscapes that are markedly different from the image of perpetual plenty proposed by the dioramas. This disparity, therefore, could account for Smithson's desire to reframe spectator engagement with the habitat groups and natural history more broadly, reiterating the temporal conditions of reality by showing its cyclical and overlapping character.

Conclusion: "Corners of Hell"

After Smithson's death, Carl Andre wrote, "It is as if Bob took the rational, faustian dream of man ordering nature into a refound & progressive Eden & knowing its futility he sought instead to build some corners of Hell here and there [*sic*]."[110] If we read *Mirror with Crushed Shell* as a corner of "Hell," illuminating the futility of order and progress, it shows how Smithson undermines concepts of nature and time in favor of something more consistent with his understanding of entropy. Reinscribing museum display with gestures toward decay, he articulated the universal scale of nature beyond human constructions and subject to inevitable decline. Faced with the sense that Romantic nature had already passed and history was well on its way toward its impending, bleak future, Smithson saw the dioramas as inadequate representations of nature's entropic rule. Smithson instead reflects, splits, multiplies, and creates illusions,

[110] Carl Andre, "About Robert Smithson," (1975) Robert Smithson papers, AAA, roll 3834, frame 1219.

using his material to transform the diorama into a display that reveals its curation and its temporality. The work is open to touch, movement, and change, and as a result, he presents contemporary nature as coextensive with human activity and fundamentally subject to entropy and change.

In the context of nuclear threat and space exploration, Smithson's attitude toward time and the fate of the universe—his perception of the extreme past and extreme future as overlapping states in a cycle of decline—emerges as a rational response to the cultural rhetoric of his period, connecting his revisions to larger concerns about nature. As the American relationship to the environment became increasingly fragile, Smithson's critique capitalizes on a rupture in American narratives of plenty and perpetuity, not hoping to recover these qualities but to show their inevitable dissolution.

This reading contradicts the notion that Smithson's artistic explorations of environment in the sixties were solely based in nascent environmentalism.[111] His attitude toward activism instead suggests that the American concern over nature is not just about preservation, but the very utility of the concept of nature itself. In casting nature as a Romantic fiction, Smithson not only suggested that we constructed the category of nature but also that this category had become insufficient by this moment in time. Smithson seemed to think that instead of an independent entity separate from people, what we call nature is but a fragment of a system subject to greater rules and pressures than those we ascribe to our immediate environment. Faced with the sense that Romantic nature had

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[111] This is more typical for the framing of Smithson's work in introductory texts, but even Lucy Lippard concluded, after noting Smithson's conflicts with environmentalism, "[H]e was virtually the only important artist in his aesthetic generation to be vitally concerned with the fate of the earth and fully aware of the artist's political responsibility to it." See Lippard, "Breaking Circles: The Politics of Prehistory," 40.

already passed and history was well on its way toward its impending bleak future, Smithson saw the dioramas as inadequate representations of nature's entropic rule.

In certain ways, I have suggested a more modernist reading of Smithson's art by privileging the formal qualities of his works. However, I do find Smithson's position as a post-modernist suggestive in relation to broader cultural approaches to the natural world. If Smithson is indeed the first truly post-modern artist, as Craig Owens posits, then Smithson's critique of the AMNH dioramas may present the first truly Post-modern take on the new state of nature. Smithson's critique of the dioramas, then, becomes a clash between the remnants of modernist nature and the emerging paradigm of post-modern nature, illustrating the fundamental difference between these two conceptions of the world.

Yet even in his irreverence and apathy, Smithson fought to build new knowledge by replacing old narratives about the world. His work repeatedly corrected contrary views. Reinscribing museums and display structures with gestures toward entropy, he articulated the universal scale of nature unaffected by human events or structures of knowledge and subject to pressures of inevitable loss and decline. For Smithson, sooner or later, the universe would return to whence it came. Whether that fate is amongst the stars or the fossils remains to be seen.

CHAPTER THREE

The Greenhouse Affects: Mark Dion and the New Experiential Nature

Describing his first permanent public artwork, *Neukom Vivarium,* to Art21, Mark Dion starts his narrative almost as if he were recounting a fairy tale: "On the evening of February 8, 1996," he began, "a massive hemlock tree fell over a ravine in a small area of old growth about forty-five miles outside Seattle, in a protected watershed area."[1] Dion identifies the six-foot trunk as an ordinary protagonist from a secluded land poised to become extraordinary. It languished for a decade, slowly becoming a nurse-log that sustains other species, before Dion relocated the specimen to the Olympic Sculpture Park in downtown Seattle where it was placed inside a custom-built greenhouse with a tinted green roof and kept alive through meticulously controlled air and water systems (figure 3.1).[2] Here, the nurse log comprises the heart of his installation. It continues to decompose and give rise to new plant growth until it expends all of its resources, but away from the watershed, the tree unexpectedly has an audience. Today's visitor wanders through the vivarium to watch the log's natural spectacle. It rests on a raised platform of earth, whose container is decorated with white ceramic tiles featuring naturalistic illustrations of native Oregon species. These same tiles constitute the surface of the opposite wall of the structure, which also includes a sapphire blue honorific band bearing the names of influential naturalists chosen by Dion (figure 3.2).

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[1] "'Neukom Vivarium': Mark Dion," Art21, 2007, https://art21.org/read/mark-dion-neukom-vivarium/.

[2] Lisa Corrin, "Introduction," in *Field Guide to the Wildlife of Mark Dion's Seattle Vivarium, Olympic Sculpture Park* (Seattle: Seattle Art Museum, 2006), 2. For more on nurse logs see Mark E. Harmon, "The 'Other' Life of a Tree," in ibid., 8-9.

By relocating the nurse log, Dion disrupts the urban setting and transforms a natural process into a spectacle of rebirth. The work becomes a testament to the cyclical nature of energy and life as visitors return again and again to watch the installation grow and change as they themselves grow and change. Despite the verdant growth at the heart of the work, however, the greenhouse is a highly artificial structure, an unnatural technological system that Dion has compared to life support. Sustaining the log away from the watershed requires intensive amounts of work, and so, while he allows the visitor to delight in the shock of a misplaced piece of the natural world, he also cautions us about the fragility of ecosystems that cannot be easily replaced while illustrating how institutional infrastructure allows us to process objects into knowledge.[3]

Dion is known for calling attention to the concept of nature as a social construction, but his inventive approach to natural objects also suggests he is actively working to combat this cultural relationship. Typical of Dion's practice, *Neukom Vivarium* evokes natural history display to re-write the viewer's relationship with the natural world, but here he overwhelmingly does so through the form of the habitat diorama. Dion's appropriation of the diorama form signals yet another way in which artists have used the diorama to explore their contemporary social contexts, but it also points to a new understandings of the place of vision and the role of critique in the twentieth century.

This chapter considers how Dion uses the visual vocabulary of habitat dioramas as he explores the state of knowledge in the late-twentieth century. Like Smithson before him, Dion borrows from the AMNH habitat groups to point to the social construction of

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[3] "'Neukom Vivarium': Mark Dion."

scientific knowledge and the subjectivity of institutions, and his use of glass similarly signals how he conceives of the diorama space and his own natural narrative. But where Smithson reinscribes the diorama to assert the continuity between humans and the natural world, Dion conflates various types of historical natural history display to alter our physical and emotional relationship to the environment. The work foregrounds the deficiencies of our intellectual ordering strategies and their inevitable obsolescence in the face of nature's own laws and orders, speaking to a different problem than the one with which Smithson engaged.

While both artists assert the interconnectivity between humans and nature, Dion's revisionist dioramas relentlessly point to scientific hubris and institutional failure. Dion has increasingly shifted his practice toward the creation of interactive and immersive environments, undoing the hermetic dioramas and reengaging the body with full sensory experiences of the natural world. In doing so, I argue that Dion decenters vision, rendering it a tool of institutional knowledge. Instead, his work moves toward a personal and bodily experience of the natural world that posits individual immersion as a more legitimate source of information. Prioritizing the phenomenological experience of the object, Dion's inclusive environments that relocate glass or banish it altogether promote the embodied encounter as a superior method of knowing the world.

The Natural History Aesthetic

Dion has been working through questions about history, knowledge, and the sciences for almost 30 years, and he is widely regarded as one of the premiere

contemporary artists grappling with these subjects.[4] In all of his work, Dion appropriates institutional display strategies to disrupt typical patterns of thinking. He collects and arranges objects in suggestive combinations that allow his specimens to form unexpected juxtapositions or connections that subvert traditional narratives about the natural world. "I approach [natural science museums] to help me conceptualize problems in the representation of nature or, rather, to trace the development of the social construction of nature," Dion explains.[5]

Dion's work has been traditionally understood to operate on two levels, as described in all major catalogues of his work.[6] Most immediately, his interventions suggest an ecological world in crisis at the hands of human imposition and exploitation. His earliest works most clearly illustrate this dynamic through an explicit concern with contemporary ecological politics. In *Extinction Series: Black Rhino with Head* (1989) pine shipping crates are stacked and labeled with international destinations and images of Africa (figure 3.3). One open crate contains the taxidermied head of a black rhino, drawing attention to global culpability for disappearing species through hunting and smuggling. Other works like *Wheelbarrows of Progress,* produced with William Schefferine in 1990, display a clear interest in environmental activism by juxtaposing specimens with environmental statistics, but the series also critiques current preservation practices by isolating his protected species and environments in wheelbarrows. One such wheelbarrow, *Acid Precipitation,* is lined with a map of the Adirondacks under a bed of rocks and a pool of water containing a catfish (figure 3.4). A potted pine tree rests on a

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[4] Lisa Corrin, Miwon Kwon, and Norman Bryson, *Mark Dion* (London: Phaidon, 1997).

[5] Mark Dion, "Untitled (1999)," in *Institutional Critique*, ed. Alexander Alberro and Blake Stimson (Cambride: The MIT Press, 2009), 383.

[6] Miwon Kwon, "Miwon Kwon in Conversation with Mark Dion," in *Mark Dion* (Cambride: Phaidon, 1997), 9–16.

half log balanced across the wheelbarrow, which is inscribed with an illustration of the acid rain cycle and the declaration that, "Canadian scientists have identified over 48,000 lakes which will be incapable of supporting life by the turn of the century." Dion's "absurdly small reserve" is an insufficient substitute for the vast habitat that is threatened, and it therefore calls attention not only to the environmental issue, but also the inability of humanity's current preservation philosophy to compensate for these losses.[7]

Dion's oeuvre continues to raise awareness about our deteriorating environment, but his more mature works use these issues as entry points into larger discussions about how we produce knowledge from our experiences of the natural world. On this second level, Dion's work functions more deeply—and perhaps most potently—as institutional critique that interrogates our cultural understandings of nature and knowledge as it is mediated through museums and scientific practices. Indeed, Dion's most celebrated works combine various types of antiquated natural history displays to critique scientific institutions. Organized in bookshelves or cabinets, these free-wheeling assemblages of strange specimens have strong ties to the *wunderkammer,* or cabinet of curiosity, used in the sixteenth and seventeenth centuries as a space for wealthy men to display their collections of rare or precious natural objects.[8] However, his work also draws from later exhibition methods, including highly organized natural history cases from the Victorian period that displayed specimens according to emerging phylogenetic rules, and twentieth century habitat dioramas. Through pseudo-scientific exhibits, Dion provides the viewer with knowledge that is blatantly subject to the whims of the curator, and he forces us to

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[7] Ibid., 11.

[8] For Dion's relationship to the *wunderkammer,* see E Bruce Robertson, "Curiosity Cabinets, Museums, and Universities" in *Cabinet of Curiosities: Mark Dion and the University as Installation.* Colleen J. Sheehy, ed. (Minneapolis: University of Minnesota Press, 2006): 43-54.

recognize the ways in which scientific knowledge, in particular, is socially constructed and contingent.[9]

Dion came to institutional critique through a variety of sources in a wide range of disciplines starting with his art education at the School of Visual Arts and the Whitney Independent Study Program. What started as a concern for issues of truth-telling in film and documentary photography expanded to the scientific realm through the work of scholars like evolutionary biologist Stephen Jay Gould and historian Donna Haraway, whose approach to the social construction of science resonated with his own approach to art.[10] Combined with his interest in Marcel Broodthaer's museums and Robert Smithson's vocal critique of institutions, Dion began to arrive at his own version of institutional critique that has persisted throughout his career.[11]

Where Smithson's works relied on the formal qualities of habitat groups and the relationship between specimens and places of origin, as previously discussed in chapter two, Dion's work instead blends various historical methods of display to establish the deficiencies of scientific ordering practices. Dion most often evokes the *wunderkammer* in his installations, but the whimsical and subjective qualities of this display method tend to overshadow instances where he focuses on dioramas and the broader significance of this gesture in his practice. As in Smithson's work, it is these affinities between the artwork and the diorama that permit Dion to create new narratives about contemporary

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[9] Bruno Latour and Donna Haraway have discussed the social construction of scientific knowledge at length. See Bruno Latour and Steve Woolgar, *Laboratory Life: The Social Construction of Scientific Facts*. Beverly Hills: Sage Publications, 1979, and Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989).

[10] Kwon, "Miwon Kwon in Conversation with Mark Dion," 8-9.

[11] Lisa Corrin, "Mark Dion's Project: A Natural History of Wonder and a Wonderful History of Nature," in *Mark Dion* (London: Phaidon, 1997), 50.

nature in a gesture that refutes institutional narratives of control and mastery of the natural world.

Looking at a variety of typical works, it is possible to see how Dion draws from a mixture of these display types in varying degrees to confound notions of objectivity and order. In some cases, Dion prioritizes one type of display over the other, as seen in *Cabinet of Curiosities* for the Weisman Art Museum at the University of Minnesota where the artist mined the institutions vast collections to produce a series of nine cabinets for different realms of knowledge (figure 3.5). Each large bookshelf is dedicated to a different subject including the Cabinet of the Underworld, the Cabinet of the Sea, the Cabinet of Humankind, and the Cabinet of the Allegory of Vision, among others, and each contains a range of objects associated with the overarching theme. Dion's choice of container and title deliberately court comparison with the Renaissance curiosity cabinet, making this the primary frame of reference for the work. Though the organizational implications of the bookshelves also nod to nineteenth century displays that establish hierarchies and categories for objects and, by extension, the world, Dion's choice of unique and visually interesting things convey the sense that his cabinets hold special knowledge that reveals itself through sustained looking and unexpected juxtapositions. More importantly, however, it also insists that objects form the center of human inquiry and understanding, showing how their collection and arrangement actively shape the production of knowledge.

While he is best known for works like *Cabinet of Curiosities,* Dion uses various natural history aesthetics in his oeuvre. *Landfill* is an explicit reworking of the diorama form that replaces the pristine environments depicted in the AMNH habitat groups with

the repulsive landscape of the garbage dump (figure 3.6). Seagulls, rats, and one mangy dog face the viewer as they scour the pile of trash heaped on the right side of the installation for tasty morsels. On the left, an open brown barrel, filled with scrap metal and spewing yellow foam, suggests a highly toxic environment. Dion's intervention is clear. The work is saturated by human presence though no humans are depicted, acknowledging the human impact missing from the habitat groups. Here, Dion's mirrors the habitat group but does not fully replicate it, as his content is sufficient to make his point. The interior scene is comprised of the same basic elements of the diorama, combining taxidermy with real trash in the foreground and enclosing these elements with an illusionistic background, but the vignette rests in a shipping crate that protrudes into the viewer's space. This diorama does not aim to seduce, or fool its viewer's into imagining the glass front as a window. On the contrary, the viewer remains aware of the work as an independent object. Set on wheels, the box seems ready for transport at any moment, making the work seem like a temporary installation, a fleeting environment that may be discarded at any time. Nevertheless, there is nothing fantastical about Dion's scene, making it very different from his works that evoke the *wunderkammer*. The scene and landscape are invented, but the work reads as a reasonable *mise-en-scene* and not an eclectic mixture of disparate objects.

Neukom Vivarium **and the Remaking of the Diorama**

Unlike these previous examples, *Neukom Vivarium* blends the display types into a more complicated pastiche, demonstrating how his alteration of habitat diorama principles creates an alternative narrative of a mysterious natural world beyond the

boundaries of human control. As Dion's first permanent public artwork and the subject of his Art21 segment, *Neukom Vivarium* has become one of the most important artworks of Dion's career to date. A close analysis of this work reveals just how significant the habitat diorama is for Dion's critical approach. I argue that, while the installation continues to combine various natural history display methods, it is the artist's engagement with the habitat diorama that renders his commentary contemporary. Dion is not merely working within the conventions of the diorama; he is working against them to establish new bodily relationships to the natural world and processes of knowledge making. Because the installation forces the viewer into an interactive experience with the artwork, Dion blurs the subject-object relationship between the artwork and the viewer to work against the diorama's visual and educational paradigms—paradigms that continue into the present historical moment.

In important ways, the installation incorporates Early Modern and Victorian display practices. The entryway features a large metal cabinet filled with various scientific instruments and texts that create the sense that the exhibit is actually a scientific laboratory, and gesturing toward the idiosyncratic display methods found in *wunderkammern* (figure 3.7a & b). Pulling open the drawers reveals more instruments, copies of preparatory drawings, and a map of the watershed where the hemlock was found. The greenhouse itself also resonates with nineteenth century exhibition practices by acting as a giant vitrine encasing the nurse log, which stands alone on its raised dais as a piece of nature removed from its larger environment.

Nevertheless, the work's complicated interconnections with the structure and purpose of the habitat diorama suggest that the installation's affinities with these

twentieth century displays are the most significant. On its surface, the work immediately conjures connections with the dioramas in the AMNH Hall of North American Forests, where the trees themselves are the primary specimens of the habitat dioramas rather than mere backgrounds. Beyond this basic subject matter, however, *Neukom Vivarium* also resembles the habitat group formally. The life-sized tree set in a horizontal orientation on a platform against a wall is similar to the way that the dioramas typically orient and position their displays. The dais itself is so filled with plants that it looks like the three-dimensional foreground of the diorama. In both cases, the combination of specimens reflects the diversity and interconnectivity of habitats and each ask visitors to occupy ideal viewing positions as they observe the object from a designated viewing corridor alongside the display.

Dion's diorama-esqe formal choices are in part functional ones made to accommodate the excessive length of the tree and its agricultural needs, but the artist has shown in other work that *Neukom Vivarium* should be read as a type of diorama. Dion had two dioramas fabricated for his 2017 retrospective at the Institute of Contemporary Art Boston that depict permanent public installations unable to travel to the show. Here, Dion transforms his diorama interpretation into a literal diorama, strengthening the connections between *Neukom Vivarium* and the habitat diorama type (figure 3.8). The retrospective dioramas were displayed in a room with wallpaper, wainscoting, a rug, a chaise, and several display cabinets, evoking the domestic interior and heightening the sense that the dioramas could be windows on an outside world. Measuring approximately two feet by three feet, each rested at eye level, above the wainscoting, and recessed into the gallery wall. The left diorama depicted Dion's 2012 installation, *Den*,

on view in Norway, with the right diorama showing the southeast view of *Neukom Vivarium*'s interior. Both dioramas are smaller than life-size and neither includes objects from the original installations, making the works more like miniature models than textbook habitat dioramas, but they are clearly modeled after the AMNH habitat groups, particularly in the use of recessed niches, illusionist backgrounds, rectangular openings, and slanted glass panel fronts. Bringing the vivarium to the retrospective in this fashion emphasizes the importance of all types of natural history display in Dion's broader artistic practice, but it also shows the deep connections between *Neukom Vivarium* and the habitat diorama type.

These connections to the habitat diorama are especially significant in light of the ways in which the vivarium evokes narrative and in consideration of how glass structures viewer engagement in each display. As previously discussed, habitat dioramas tell stories with their settings, implied movement, and relationships between specimens.[12] This is especially true of those featuring mammals that hunt, threaten, and fight. While *Neukom Vivarium* is certainly less dramatic than the moose diorama or the gorilla diorama, the work tells its own story about the growth of environments and the regenerative capacities of natural objects. As the viewer literally watches the nurse log decompose, he or she is admitted to a narrative of cyclical nature. Dion nurtures this narrative aspect by identifying the date the hemlock tree fell and documenting its original location. In the guide booklet he produced for the installation, he describes a timeline of real and imagined events that tell the history of the hemlock before and after its transition to the

[12] Alison Griffiths, *Wondrous Difference: Cinema, Anthropology, and Turn-of-the-Century Visual Culture,* (New York: Columbia University Press, 2002), 40-43.

sculpture park.[13] It becomes a sort of biography that foregrounds this tree's unique specificity, treating it like a protagonist with its own perspective of the world rather than a receptive object for scrutiny and categorization. This is also similar to the diorama's treatment of specimens, which relates them to their collection site with maps and other texts, situating the display in a concrete natural environment and defining the parameters of that ecosystem.

Dion's preparatory drawings further these connections by offering a recommendation for how the viewer might engage with *Neukom Vivarium,* and his suggestions emulate the ways in which contemporary audiences consume habitat dioramas. One drawing features two figures silhouetted against the more carefully rendered tree in place on its dais (figure 3.9). An adult male figure casually observes the work with one hand in his pocket and the other holding the hand of his presumed daughter, who dangles a teddy bear from her own left hand. This image is visually similar to photographs of dioramas in the AMNH that show the internal lighting of the dioramas casting their rapt viewers into shadow (figure 3.10). While the low light conditions in AMNH mammal halls make such shadows a common appearance in the photographs of the displays, the pervasive sunlight within Dion's greenhouse makes such a scene almost impossible. Instead, this drawing illustrates a theatrical viewing experience traditionally associated with the diorama where distant looking is the method through which knowledge is acquired, and it connects the viewing of the installation to the viewing of the habitat group.

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[13] Mark Dion, "History and Timeline," in *Field Guide to the Wildlife of Mark Dion's Seattle Vivarium, Olympic Sculpture Park.* (Seattle: Seattle Art Museum, 2006): 4-7.

The kind of family encounter that Dion imagines here is deeply related to the recreational childhood education practices that dioramas helped create, and it makes Dion's educational intentions for *Neukom Vivarium* a significant connection between the installation and this particular mode of natural history display. The installation includes a mass produced field guide, a specimen key, and even a museum volunteer to greet the visitor and guide her through the exhibit. The experience is not merely aesthetic, as visitors making their way through the greenhouse generally learn something. It is clear from Dion's preparatory drawings that such educational intentions—or at least the auspices of them—were present from the beginning of the project. Another drawing for the project illustrates a man wearing a white lab coat and black-framed glasses next to a girl in a pink dress, knee-high socks, and Mary-Jane shoes (figure 3.11). The scientist assumes a stereotypical lecturing gesture with one hand behind his back and a finger in the air, modeling the vivarium space as one for teaching and learning. Dion's scientist builds on immediate contact with the natural specimen to impart knowledge, much in the way that AMNH officials intended the dioramas to function. The drawing is available to visitors in the greenhouse's alcove cabinet, providing a model for viewership that encourages educational engagement while the didactic material in the installation facilitates this learning process.

Dion takes for granted that his installation will be used for educational purposes and he provides information to achieve these ends. He presents the nurse log within a typical museological context, making natural principles of transience and change not just a poetic musing on the meaning of life, but a scientific truth. Yet the artist manages to communicate a vastly different narrative than the ones found in American habitat

dioramas because the vivarium's status as an art object permits the materiality of the display to take on metaphorical dimensions, and it renders the departures from traditions in natural history exhibition significant. Dion pointedly removes the characteristic glass panel that separates the viewer from the diorama scene and instead uses it to enclose both the viewer and the natural object in an intimate encounter. Loaded with symbolic potential, glass thus performs a crucial interpretive function that also facilitates a revolutionary engagement with the natural object.

As a material associated with sight and fairy tales, glass not only serves a functional role, it also denotes the vivarium as a mythical space of transmutation and visual clarity. Recalling its associations with magic and its important role in optical technologies, especially in scientific technologies like microscopes, the glass in *Neukom Vivarium* is both a focusing agent and a reference to folklore.[14] Dion likens the greenhouse to "a sort of Sleeping Beauty glass coffin," explicitly linking the structure to fairy tales.[15] He intends his simile to be grotesque, but like the princess who is awoken from a deathly slumber, so too is the hemlock resurrected. Indeed, a new hemlock sapling emerges from the trunk, starting the cycle anew. Dion's fairy tale reference links the glass greenhouse to narratives of magical rebirth. Imbued with symbolic potential, the vivarium can be read as a crystal baldachin that marks the special site of the encounter and actively transforms its contents into something new.

Beyond these associations with magic, the glass in *Neukom Vivarium* plays a critically important role in establishing the bodily relationship between the viewer and the specimen, upending both the diorama's traditional viewing relationship and its

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[14] Isobel Armstrong, *Victorian Glassworlds : Glass Culture and the Imagination 1830-1880* (Oxford University Press, 2008), 42-43.

[15] Mark Dion quoted in "'Neukom Vivarium': Mark Dion."

anthropocentric view of nature. The experience of viewing the habitat diorama is ultimately defined by exclusion and the tension its glass panel creates between desire and refusal. Like shop windows that stir consumer longing, the diorama stirs desires for acquisition and ownership of the object behind the glass.[16] Though the scene inside the group entices the viewer through its haptic detail, the panel halts our approach, shielding the specimens from touch and keeping the viewer separate from the scene, denying any kind of bodily engagement beyond visual contact. It gives the viewer the illusion of access while foreclosing the possibility of physical interactivity.

By contrast, the vivarium's glass exoskeleton literally opens the exhibit to the viewer, making him or her part of the display and enabling a multi-sensorial encounter with the natural object. *Neukom Vivarium* is an interactive artwork. The museum volunteers who monitor the installation will ask you questions, identify various plant species, and invite you to touch the spongy trunk of the decomposing log, something an observer of a diorama cannot do. One can hear Seattle traffic on the nearby busy intersection and smell the moisture and earth perfuming the greenhouse air. Visitors can open drawers and page through books or leaflets, requiring viewers to go beyond a passive reception of knowledge and physically gather it instead.

In this way, the relocation of the glass panel from between subject and object to around both creates an immersive environment for bodily engagement, and it ultimately changes the way the viewer understands the concept of nature. It is perhaps this change more than any other that makes Dion's critique the most potent. Unlike the habitat

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[16] Victoria Cain, "'Attraction, Attention, Desire': Consumer Culture as Pedagogical Paradigm in Museums in the United States, 1900-1930," *Pedagogica Historica* 48, no. 5 (2012): 745–69; and Stephen Greenblatt, "Resonance and Wonder," in *Exhibiting Cultures: The Poetics and Politics of Museum Display*, ed. Ivan Karp and Stephen D. Lavine (Washington: Smithsonian Institution Press, 1990), 49.

diorama, whose bountiful vignettes of a perfect and enduring natural world insist on nature's essential difference from human presence or construction, *Neukom Vivarium* claims that nature is an imperfect process that can be deeply affected or changed by human involvement or interference. Dion combats the diorama's stasis and insistence on an exclusive natural world with an inclusive, interactive space that insists on human engagement with its actively changing specimen. He pushes the boundary between what is human and what is natural, and instead forces his viewer to become a part of the natural spectacle.

While *Neukom Vivarium* emulates the conditions of display and viewership found in the habitat diorama, its effect on the viewer is profoundly different. Compared with these twentieth century displays, Dion's greenhouse reads as an alternative diorama that emphasizes different definitions of the natural and proposes new ways to engage with the natural world. The shifting of glass from between the viewer and the object to the external architecture inflects the material with symbolic meaning and changes the experience of nature from an isolated, anthropocentric position to one that recognizes its interactive and multisensory dimensions. Rendered a mystical, embodied engagement, the interaction with the nurse log upends the diorama's traditionally distant relationship between the viewer and the specimen, instead bringing him or her back into contact with its wondrous capacity and proposing a sharply different version of nature than the one found in the habitat diorama.

Decentering Vision

The kind of interactivity observed in *Neukom Vivarium* has become an important element of Dion's work in the last decade. By prioritizing these kinds of embodied experiences, Dion offers the individual encounter based on wondrous contact as an alternative to institutionalized knowledge. Ultimately, this insistence on the physical experience of nature and space decenters vision as the primary method of knowledge making and gathering. Coincident with his critique of institutional knowledge, such a decentering suggests that vision is the agent of the institution, therefore it too should be challenged as the primary avenue of knowledge making.

Dion's interest in full sensorial encounters is exemplified by his recent exploration of theater in the 2016 opera *Anatomy Theater*, for which Dion co-wrote the libretto and designed the set (figure 3.12).[17] Not only does the production engage the multi-sensorial participation of its viewers, the set itself shows important connections to diorama display that emphasize the crucial role these objects play in Dion's critique of institutional knowledge.

The opera begins with the execution of eighteenth-century murderess, Sarah Osborne. After being paraded through the hallways of the building and walked down the aisles of the theater to the stage, Obsorne confesses to the murder of her husband-turned-pimp and their two children, offering the tale of her lifelong physical and sexual abuse and subsequent self-medication as her explanation. Obsorne and her executioner stand stage left in front of a darkened curtain facing the audience who watches as she is hanged. Once she is declared dead, the caretaker of the operating theater, one Joshua Crouch, declares that the public exhibition is over and the private dissection of her corpse

[17] While the opera premiered in Los Angeles in 2016, I am specifically referring to the production mounted January 7-14, 2017 at BRIC in New York.

will soon commence for paying gentlemen spectators. Osborne is transported behind the curtain, which is revealed to be a scrim. While her naked body is arranged upon an angled dissection table, Crouch stands in front of the screen, selling the salacious procedure to potential customers. The anatomist and his assistant then begin the dissection, explaining to the audience that, per contemporary medical beliefs, the autopsy will reveal the corrupted organ that caused Osborne's murderous tendencies.[18] Removing her insides part by part while describing each organ and detailing the tools he uses, the anatomist ultimately fails to locate the source of Sarah Osborne's "evil." Despite his inability to locate the diseased organ, he nonetheless reassures the audience that the corruption must simply be located elsewhere. Rhetorically the men ask, "Where is evil? Is it in you?" winking to the audience who knows that, contrary to the outdated belief driving Osborne's dissection, there exists no straightforward physiological basis for moral deviancy, thus implicating the viewer who paid to watch this gruesome spectacle.

Dion's set is typical of his installation work, and at first glance, it appears more clearly based on curiosity cabinets. Three large, wooden cabinets sit center stage and frame the tombstone shaped dissection table (figure 3.13). The audience observes from left to right: a cabinet with skulls and anatomical illustrations; a cabinet demonstrating the variety of dissection tools; and a cabinet with mysterious specimens in jars of multicolored liquids set above the practical instruments of the procedure. On either side of the cabinets stand a skeleton for anatomical instruction and an L-shaped wooden table with shallow white bowls for dissected organs of interest.

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[18] Roy Porter, "Medical Science and Human Science in the Enlightenment," in *Inventing Human Science: Eighteenth-Century Domains*, ed. Christopher Fox, Roy Porter, and Robert Wokler (Berkeley: University of California Press, 1995), 53–87.

Like *Neukom Vivarium,* the individual parts of the set harken back to Early Modern display methods, but the theater space as a whole functions much like the AMNH habitat groups. As a flat, translucent panel that separates the audience from the set, the scrim can be likened to the glass front of the AMNH dioramas, enclosing the set that is recessed into the theater wall and filled with the three-dimensional *mise en scène*. It similarly mediates the viewer's experience, suggesting that the viewer is separate from the action. The scrim serves as a metaphor for an intellectual distance that is literally and figuratively illusory in the production. Sarah Osborne's corpse moves from in front of the scrim to behind it, but this separation—a removal that is both physical and emotional—is temporary. The staging sets up a sense of distance only to violate it repeatedly by permitting characters to transgress the boundary and engage the audience directly. In addition, the screen shifts through varying stages of opacity throughout the production, starting as a dark screen and at times acting as a thin veil or semi-transparent surface upon which historical images that include operating theaters and medical texts are projected. The audience thus treats the scrim as both surface and non-surface, instructing them to think of this barrier as contingent and penetrable.

At its heart, the opera is about the nature of evil, and while the characters spend the duration of the performance asserting that evil is elsewhere, a manifestation of physiological deviancy indifferent to circumstance or choices, the show uses its moments of audience engagement to propose an alternative explanation: that evil is not elsewhere but everywhere, only waiting for our actions to reveal its presence in us all. As in *Neukom Vivarium*, viewer engagement is crucial to the success of *Anatomy Theater*, and it likewise proposes an alternative understanding of the world when scientific knowledge

falls short. Institutional failure is especially clear in *Anatomy Theater* where, with the gift of historical distance, the contemporary audience knows that the eighteenth-century link between disease and morality are transparently false. Dion and Lang's anatomist is certain of his explanation for Osborne's deviancy. He knows before the procedure has started what he will find. But as the opera unfolds, Osborne's perfectly normal body invalidates the anatomist's authoritative position and undermines his moral superiority. Ignoring the evidence before him, the anatomist stands for an institution built on faulty knowledge and unwilling to accept contrary information.

Institutional knowledge and the abuses it enacts on disempowered bodies become the antagonists of the performance. Osborne's crime seems to justify the abjection of her body, exposed both on the outside and inside as her organs are lifted for the audience in a macabre ostension. Once her heart has been removed, however, Osborne's corpse begins to sing, identifying this organ as the one who loved her children and complicating the narrative of crime and punishment. The aria puts the viewer back into contact with the horror of the procedure by generating sympathy for the woman subjected to it. To be sure, the dissection is bloody, and the actress' incredible stillness blurs the viewer's certainty that the performance is merely play. If the corpse is still a person, contrary to the assertion that her crime makes her unworthy of dignity, the brutal treatment of her body by supposed men of science is unbearable.

Throughout the opera, high knowledge is made low by challenging the expertise of the scientists and the motives of the viewers. Crouch's lurid comments throughout the production suggest that our interest in Osborne's body is prurient, not scientific, and the pomposity of the anatomist and the brutality of the procedure propose that the entire

venture is barbaric and unnecessary. These narrative challenges to institutional authority are mirrored in the structure of the set, which one again opens a diorama for engagement and revision. The closed environment and its disinterested viewer position are compromised. The screen that serves to separate subject from object offers only an appearance of distance while the audience is brought in and held accountable for their complicity. The crossing of the scrim transforms the operation from a self-contained visual experience, provided to facilitate intellectual mastery, into a personal encounter that underscores the temporal, auditory, and emotional nature of the event. Opening the institutional model, Dion shows its faults and instead proposes radical empathy and self-reflection contrary to the ways that science has processed deviant bodies. The scrim therefore functions much like the glass greenhouse in *Neukom Vivarium*, and it similarly points to the ways in which Dion used the habitat diorama as a model for the making and unmaking of institutional narratives.

The valorization of viewer participation and physical immediacy appears in other recent works, suggesting that Dion perceives this kind of engagement as the remedy for institutional hubris and other relevant social ills. *Library for the Birds of New York* (also installed in 2017 as *Library for the Birds of Massachusetts* and in 2018 as *Library for the Birds of London*) presents the viewer with the opportunity to experience living specimens in a life-sized birdcage (figure 3.14). The cylindrical, black metal cage built from panels of solid mesh stands over eleven feet tall and occupies the entire room. It houses 22 birds, a mix of finches and canaries, and a white oak trunk with thin, reinforced boughs that support an eclectic mix of books, images, and hunting paraphernalia (figure 3.15). Viewers may choose to enter the work through a rectangular portal and walk amongst the

birds, which chirp and sing throughout the day. Once inside, viewers become part of the exhibit, observable through the cage by outside spectators.

Dion's intentions for the work are clearly articulated in the show's press release. The tree at the center of the installation references various intellectual "trees" used throughout history to visualize knowledge, such as evolutionary trees, the tree of life, or the tree of knowledge. Reinforced with metal plates and screws, the trunk is obviously dead and constructed, acting as a metaphor for irrelevant human knowledge. The library is similarly unproductive. Despite being built from diverse ecological, philosophical, and practical texts, it remains useless to the birds that cannot read and instead possess an array of biological skills that provide them with inherent knowledge of the natural world. As a consequence, the work not only posits that the birds possess a knowledge beyond human constructs, it disrupts traditional notions that mankind constitutes the apex of all natural hierarchies.[19] The birds literally defecate on the human knowledge presented in their library and sometimes upon the visitors that enter their cage.[20] Both are therefore relegated to a secondary position, humbled by the birds and their innate capabilities.

Crossing the boundary that separates the inside of the cage from the outside, the viewer shares intimate space with the living creatures and becomes part of the display for a multi-sensorial experience. The birdsong is especially prominent and unpredictable as the birds flit from branch to branch in a near constant flurry of movement and sound. As a result, the viewer is encouraged to abandon the systemic knowledge of birds he or she

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[19] Press Release, "Mark Dion: The Library for the Birds of New York and Other Marvels," Tanya Bonakdar Gallery, 2016, http://www.tanyabonakdargallery.com/exhibitions/mark-dion-the-library-for-the-birds-of-new-york-and-other-marvels.

[20] This happened to a woman inside the work when I visited the installation in Boston. "That bird shit on me!" she exclaimed, none too pleased by the turn of events. "I guess its good luck," she grumbled before asking to exit the cage.

brings to the work and instead delight in the natural movement and music of the animals, potentially learning something beyond externally enforced scientific information. Though the work is most clearly informed by zoo enclosures, the encounter Dion creates reveals his understanding of institutional display, and a comparison with the diorama is instructive. Dion's birdcage is the categorical opposite of the habitat group, and it remedies the problems he identifies in historical dioramas. Contrary to the diorama, Dion's encounter is dynamic, unpredictable, and openly constructed within its permeable enclosure where visitors become both subject and object. The viewer's understanding of birds, perhaps dictated by the kinds of texts Dion includes in his installation, is challenged and changed by this encounter.

Anatomy Theater and *Library for the Birds of New York* appear to function primarily as opportunities to cultivate alternative knowledge, an approach seen in other recent works. *Memory Box* also appeared in both the retrospective and the 2016 show at the Tonya Bonakdar Gallery, and it too proposes a physical encounter with the world that generates new and highly personal knowledges (figure 3.16). The work is composed of a wooden shed, measuring nine and a half feet tall and covered in vertical strips of roofing paper. Inside the shed, opposite the doorway, viewers encounter shelves full of diverse and tightly organized containers, such as cigar boxes, film canisters, old fashioned tins, and even small suitcases (figure 3.17). Contrary to museum etiquette, spectators are invited to enter the shed and sort through the packages to reveal the objects hidden inside. The contents range from the quotidian to the extraordinary, including rusty bolts, vials of preserved plants and small creatures, trading cards, and a bird's nest (figure 3.18). Rather than presenting a work to be understood from a distant visual position, participants

physically gather knowledge in this work, moving and selecting boxes in pursuit of hidden treasures according to each person's idiosyncratic criteria. Some boxes are dirty, some are fragile. Some are cool to the touch while others are gritty or textured. They are of varying and unpredictable weights. Many are musty and smell of mothballs. The tactile experiences of each box are just as important as the final revelation of what is inside; led astray by the sensory data the box provides, viewers may be surprised or disappointed by the contents. The process thus asks us to recognize the emotional expectations curiosity generates and to delight in the process of knowledge making.

In both *Memory Box* and *Library for the Birds of New York*, the knowledge viewers obtain is personal—potentially related to individual memories of zoos, attics, or garages—but it is also social, partially generated through mutual discovery. Visitors share the spaces and their experiences with other museum-goers, revealing content to strangers or peering over one another's shoulders to observe particularly interesting objects and moments. Constructing knowledge together, participants admit each other to a common understanding of the work framed by their interactions with the objects and with one another.

Both of these works have very little in common with the form of the habitat diorama, but they reveal Dion's increased preoccupation with experience. Read in conjunction with works like *Neukom Vivarium* and *Anatomy Theater,* which are more formally consistent with the AMNH dioramas, each highlights the departure from the restrictive and static diorama environment, directly opening up didactic institutional spaces to reveal fissures and providing personal and physical engagements with natural objects.

Toward Wonder

Kathrinne Duffy has described *Memory Box* as a place for re-enchantment, noting that Dion's recent work is often preoccupied with "the loss of wondrous things," especially in the form of nature and wilderness.[21] Expanding this notion, I suggest that Dion's work is just as much about the idea of wonder as a valid intellectual strategy as it is about the innate quality of objects and places themselves. In all of the works discussed in this chapter, the movement toward individual experience and engagement not only provide wondrous experiences, they also point to wonder and the independent experience as more reliable methods for uncovering truth.

Dion's engagement with wonder deserves further consideration, as it seems to operate as a distinctive component of his institutional critique, serving to put viewers back in touch with emotions that the institution is perceived to have abandoned. Wonder, in this instance, functions as both a noun and a verb with multiple resonances. On one hand, it is both a marvelous object and a feeling. As an emotion, literature scholar Phillip Fisher defines wonder as "a sudden experience of an extraordinary object that produces delight."[22] As an object, wonder refers to the marvelous, idiosyncratic thing worthy of extended attention. But wonder as a verb is also a question, a prompting toward

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[21] Kathrinne Duffy, "Memory Box," in *Mark Dion: Misadventures of a 21st-Century Naturalist* (New Haven: Yale University Press, 2017), 182.

[22] Philip Fisher, *Wonder, the Rainbow, and the Aesthetics of Rare Experiences* (Cambridge: Harvard University Press, 1998), 55. The multi-dimensional meanings of "wonder" are further excavated in Sophia Vasalou, *Wonder: A Grammar* (Albany: State University of New York Press, 2015). For wonder in museums see Stephen Greenblatt, "Resonance and Wonder," 49–53.

exploration. Regarded as the spark of curiosity, wonder in this sense is a confrontation with the insensible that creates the desire to understand.[23]

Dion's interest in the *wunderkammer* type goes beyond the object status of the marvel, engaging wonder's multifaceted meanings. If the emotion of wonder is predicated on experiential contact, as in Fisher's definition, the imperative to embodied engagement in Dion's work is also an imperative to wonder. Emphasizing both the unique quality of objects and the emotional experiences they engender, the art posits the lost value of the wondrous experience. I suggest that Dion is equally as concerned with the recovery of wonder as a valid learning strategy as he is with the revitalization of an alternative mode of natural history display; he seeks to recuperate wonder's place in epistemology. As Lorraine Daston and Katharine Park have explained, wonder once served an esteemed role in the creation of natural knowledge, but has since gone out of fashion. Tracing the history of wonder and wonders as an ontological practice, Daston and Park demonstrate how interest in the marvelous went beyond defining the object of scientific study and instead shaped the actual processes of acquiring and making knowledge in the Medieval and Early Modern periods. For the authors, wonder's role in the creation of knowledge has clear historical boundaries, and its primacy virtually vanishes by the Enlightenment.[24] Increasingly aligned with superstition and perceived as a vulgar, undisciplined emotion, wonder became an indulgence, a subjective distraction in the quest for disinterested objectivity.[25] Wonder thus constituted enlightenment's

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[23] Vasalou, *Wonder: A Grammar,* 168-194.

[24] Lorraine Daston and Katharine Park, *Wonders and the Order of Nature, 1150-1750* (New York: Zone Books, 1998), 14–15.

[25] Ibid., 18-19.

categorical opposite and was rejected by an erudite culture measured in discipline and averages.

Our contemporary scientific practices have inherited Enlightenment techniques and values, arguably abandoning wonder, but in some ways, wonder has persisted beyond the boundaries Daston and Park identify. Recall that the habitat dioramas, for example, were partially developed under the premise that the wondrous encounter could stimulate the desire to learn about nature and to protect it, suggesting that wonder and institutional knowledge are not mutually exclusive. Also to the contrary, Stephen Jay Gould has argued that scientific inquiry and wonder are mutually constitutive, feeding into one another and driving a deeper pursuit of each.[26] Daston and Park disagree that wonder is ever really at the heart of contemporary scientific inquiry, however. The authors concede that wonder persists in contemporary society, but it remains fundamentally incompatible with the terms of scientific inquiry. "One may enter a scientific career through wonder," they write, "but one cannot persist in wonder, at least not in public before one's peers."[27] Preoccupied by the special, the unique, the outlier, wonder is beyond the parameters of studies that seek to identify limits, rules, and regularities. With this in mind, Dion's appeal to wonder is therefore a counter-institutional act, and specifically an anti-scientific one. It gestures to a time before Enlightenment science where these special objects constituted the very center of intellectual exploration, and it challenges the validity of our current frame of natural inquiry.

Daston and Park view the marvelous as boundary-setting objects, demarcating the differences between the natural and unnatural and between the quotidian and the

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[26] Stephen Jay Gould, *Bully for Brontosaurus: Reflections in Natural History* (New York: Norton, 1991), 508.

[27] Daston and Park, *Wonders and the Order of Nature,* 367.

extraordinary. Wonders therefore provide opportunities to shift definitions and expand knowledge. An encounter with these objects, they argue, was also an encounter with liminal places of knowledge and an imperative "to challenge the assumptions that ruled ordinary life."[28] Dion intends his installations to function in a similar fashion, using wonder to push back on the boundaries of institutional knowledge with a series of contradictions and outliers that stretch and refute the boundaries disciplines place around knowledge. Both as an object and as a sensation, his work therefore disrupts the regulated space of the institution and its systems of knowledge, becoming a legitimate schema for learning once again. Combined with the subject matter of his works that underscore the ways in which Enlightenment institutions have failed, wonder is not only an alternative method of inquiry but also a potentially more valid one.

Dion's insistence on wondrous experience as the primary qualifier for true knowledge resonates with philosopher Thomas Nagel's argument against physicalism in his 1974 essay "What is it Like to be a Bat?" Nagel famously argues that in organisms with consciousness, the experience of being that organism is only knowable if one can experience the world the way that organism does. Because conscious experience is subjective, Nagel posits that while we may *imagine* what it would be like for us to be a bat, for example, we cannot *know* what it is to be a bat.[29] The "subjective character of experience" in turn identifies experience itself as the necessary foundation for complete understanding of consciousness.[30] Nagel's thought experiment is meant to challenge the physicalist reduction of the mind-body problem, but his claim about subjective

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[28] Ibid., 20.
[29] Thomas Nagel, "What Is It Like to Be a Bat?" *The Philosophical Review* 83, no. 4 (October 1974): 437–40.
[30] Ibid., 436.

consciousness is nevertheless provocatively echoed in the press release for Dion's "Library for the Birds of New York and Other Marvels."[31] The release asserts that, "birds possess knowledge outside of the human experience, rendering them fundamentally unknowable to man."[32] To paraphrase Nagel, then, Dion suggests we cannot know what it is like to be a bird. Beyond Nagel, however, the imperative toward first person experience in Dion's work also seems to argue that, without experiencing the world ourselves, we may not even know what it is truly like to be a human being.

In this sense, the importance Dion attributes to experience is essentially phenomenological and entirely of its historical moment. These tendencies should be related to the artist's dislocation of institutional authority and legitimacy, specifically the secondary position of science in relationship to the primacy of experience. Privileging individual contact with objects and environments, Dion's art practice seems to echo certain threads of early phenomenology that insist on the absolute fundament of embodied experiences. Defined by Maurice Merleau-Ponty as "a philosophy for which the world is always 'already there' before reflection begins—as an indelible presence; and all its efforts are concentrated upon re-achieving a direct and primitive contact with the world, and endowing that contact with a philosophical status,"[33] phenomenology reads as the philosophical prelude to Dion's installations, which also seek to provide direct experiences of the world to renew one's engagement with nature.

In providing environments as a critical gesture, Dion's underscores the subjective experience that precedes scientific truth and therefore both intervenes in and diminishes

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[31] Ibid., 435.

[32] "Mark Dion: The Library for the Birds of New York and Other Marvels."

[33] Maurice Merleau-Ponty, "What Is Phenomenology?," in *The Essential Writings of Merleau-Ponty*, trans. Alden L. Fisher (New York: Harcourt, Brace & World, 1969), 27.

scientific authority. Merleau-Ponty similarly critiqued the objectivity of scientific practices, writing, "Scientific points of view, according to which my existence is a moment of the world's, are always both naïve and at the same time dishonest because they take for granted, without explicitly mentioning it, the other point of view, namely that of consciousness, through which from the outset a world forms itself round me and begins to exist for me."[34] If the world only exists in one's experience of it, science's failure, then, is its inability to accommodate the idiosyncratic qualia each person experiences in their own personal perceptions. He explains:

> "All my knowledge of the world, even my scientific knowledge, is gained from my own particular point of view, or from some experience of the world without which the symbols of science would be meaningless. The whole universe of science is built upon the world as directly experienced, and if we want to subject science itself to rigorous scrutiny and arrive at a precise assessment of its meaning and scope, we must begin by reawakening the basic experience of the world of which science is a second-order expression."[35]

By this assessment, science's validity must be measured through direct experience of worldly phenomena and not the other way around. This approach emphasizes the subjective component of all data, commensurately devaluing science's purported ability to strip these experiences of their inherent subjectivity, rendering first-hand contact as equally valid, if not more so, than scientific laws, which may only be considered rigorous if they take this experiential pre-requisite into account.

Merleau-Ponty's position is extremely relevant for Dion's work, and especially pieces like *Neukom Vivarium* where the direct and multisensory contact with the specimen generates a new understanding of nature's cycles and its fragility. Only physical confrontation with the nurse log can provide the visceral comprehension of the

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[34] Ibid., 29.
[35] Ibid.

natural object, asserting the intellectual validity, if not primacy, of experience. I do not draw these comparisons to suggest that Dion is strictly adhering to Merleau-Ponty's phenomenology or to any explicit phenomenological theory, but rather to show how Dion's artistic emphasis on experience and his critique of science as a second-order system are phenomenological, a consequence of a mid-century reorientation toward embodied consciousness that phenomenology catalyzed in the 1960s. Indeed, Dion's installations are not the only artwork to privilege experience, but a part of a larger "experiential turn," as Dorothea von Hantelmann recently characterized it, which emphasizes contemporary art's dedication to the effect on the viewer rather than its descriptive powers.[36] Dion's historical connection to phenomenology is not as a reader, then, but as a social and cultural inheritor of phenomenology's frame of reference, one that brackets his understanding of both nature and knowledge. Dion's ecological interests are bound up with his understanding of the world as processed through conscious experience, which permits him to suggest that our activity in the world can be changed by altering our perceptive experience of it.

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[36] In an attempt to historically situate this transition, Hantlemann suggests that post-war Western prosperity is responsible for this development. She argues that the artistic interest in experiences developed in response to new economic imperatives to choose and develop one's personal taste, themselves a consequence of new capitalist notions of self and the validity of individual preference. This mid-century mark is significant for a variety of authors considering embodiment in art practice. Before Hantlemann, Rosalind Krauss identified the roots of this shift in Minimalism's engagement with perception and embodied experience—or as Michael Fried famously characterized it, the movement's theatricality. For Caroline Jones, investigations of alternative sensory experiences in art are part of 1960s counter-culture and must be read against Greenbergian formalism, which she categorizes as symptomatic of Modernist fixations on vision. Likewise, Miwon Kwon has also argued for a phenomenological paradigm at the origins of site-specificity in the 1960's. See Dorothea von Hantelmann, "The Experiential Turn," in *On Performativity*, ed. Elizabeth Carpenter, vol. Vol. 1, Living Collections Catalogue (Minneapolis: Walker Art Center, 2014), http://walkerart.org/collections/publications/performativity/experiential-turn/; Rosalind Krauss, "The Cultural Logic of the Late Capitalist Museum," *October* 54 (Fall 1990): 7; Michael Fried, "Art and Objecthood," *ARTFORUM* 5, no. 10 (1967): 15; Caroline Jones, "The Mediated Sensorium," in *Sensorium: Embodied Experience, Technology, and Contemporary Art* (Cambridge: The MIT Press, 2006), 7–12; Miwon Kwon, *One Place After Another: Site-Specific Art and Locational Identity*, MIT Press paperback edition (Cambridge: MIT Press, 2004), 11–31.

Unlike Smithson's art, which refused an idea of nature separate from humanity to break down notions of progress and timelessness, Dion's work still recognizes some form of a Romantic nature. His experience-based installations suggest that, even if nature is a cultural construct, there is something of the world that exists before human consciousness processes it that is greater and more reliable than our secondary notions. This recognition of nature allows him to address the question of ecological sustainability at the heart of our contemporary environmental conversation. While he categorizes humans as part of nature, his work also insists that we are uniquely positioned to either destroy or balance the ecosystem if we change how we engage with it, not just physically but intellectually. By creating the initial interaction between the natural world and the viewer, he shapes the definitions that emerge from that contact. Using the sense of reality that results from phenomenological contact with nature's wonder, Dion's art can be read as an attempt to reframe the future of the natural world by taking control of how we conceptualize it in the present, making these understandings personal and upholding these subjective engagements against failed institutional narratives.

The phenomenological aspect of Dion's work is not unique in contemporary art practice, but taken in conjunction with the artist's interest in institutions and authority, it further reveals his movement away from institutional vision, not just institutional knowledge. By reconfiguring the diorama, Dion does not just revise an institutional model for teaching and knowing, he also shifts away from vision as the primary mode of gathering information. As I have argued, the experience of the AMNH dioramas and their intended function in sharpening visual acuity tie the habitat groups to a broader conception of vision as the primary tool for understanding the world. Dion's experience-

based, bodily approach to knowledge making, by contrast, emerges against the diorama's preoccupation with vision, not only suggesting that vision provides but a limited understanding the world and one's place in it, but that vision itself is the sense most closely associated with institutional knowledge, perhaps even the root of its failings. Dion's imperative to wonder through bodily experience in works like *Anatomy Theater, Library for the Birds of New York,* and *Memory Box* thus subverts a hierarchy of senses that has favored vision since the medieval period.[37] In this way, Dion's engagement with the diorama is especially significant because it reveals a contemporary association between vision and institutions that is combatted through phenomenological experiences. Dion's institutional critique does not just become one of narratives or authority, but also one of vision itself, closely associated with a more modern understanding of empiricism and epistemology.

For this reason, Dion's play with the glass fronts of the habitat groups can be read further as a subversion of institutional vision. Made secondary and inclusive—a container for experiences rather than a frame for certainty and fact—Dion's glass reveals his holistic approach to the senses and the phenomenological approach to the world and its meanings. It characterizes Dion's preoccupation with wondrous experience as a rejection of the institutional diorama and leverages the phenomenological dimension of his art works against the diorama's insistence on visual knowledge.

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[37] Jeffrey Hamburger, "Speculations on Speculation: Vision and Perception in the Theory and Practice of Mystical Devotion," in *Deutsche Mystik Im Abendländischen Zusammenhang: Neu Erschlossene Texte, Neue Methodische Ansätze, Neue Theoretische Konzepte; Kolloquium, Kloster Fischingen 1998*, ed. Walter Haug and Wolfram Schneider-Lastin (Tübingen: Niemeyer, 2000), 353–408; Thomas Frangenberg, "*Auditus Visu Prestantior*: Comparisons of Hearing and Vision in Charles de Bouvelles's *Liber de Sensibu*s," in *Second Sense: Studies in Hearing and Musical Judgment from Antiquity to the Seventeenth Century* (London: Warburg Institute, 1991), 82, 89.

Paradoxes

As demonstrated with *Neukom Vivarium*, *Anatomy Theater*, and *The Library for the Birds*, much of Dion's recent work has been preoccupied with promoting alternative knowledge making processes, but this emphasis bears on the legitimacy of science in general. In valorizing the independent experience as the arbiter of knowledge, Dion's art not only challenges the institution as the center of truth, but also positions his own observations as more honest and therefore more valid. While this may not be Dion's intention, it nevertheless emerges as a problematic consequence of his commentary since his work appears to correct faulty narratives.[38] The juxtaposition between the truthful artwork and the deceptive institution is misleading if only because Dion's new narratives are no more unmediated than those of the museums he critiques.

Dion's interventions are rarely analyzed through the same critical lens he turns to museums and disciplines of science, but this is likely a consequence of the sense of transparency in his work. As expected, Dion is generally very clear about his own curatorial practices, both in interviews and in the work itself, since they form the foundations of his critique of institutional objectivity. Fabrication and construction are often openly visible in his installations. Recalling the large metal struts on the trunk in *Library for the Birds of New York*, for example, we see how branches are artificially grafted to the tree. The constructed tree references its own built nature, much like other works that demonstrate the arbitrary categorization of objects through their literal organization in bookshelves or a staircase, as seen in *Cabinet of Curiosity.* These processes of organization made visible are at the heart of his project, but while these

[38] Recently, Dion has been more cognizant of this issue and the anti-scientific impression of his work. See Alan C. Braddock and Karl Kusserow, "Interview with Mark Dion" in *Nature's Nation: American Art and Environment* (New Haven: Yale University Press, 2018), 192.

curatorial decisions are obvious, Dion's narratives about nature and knowledge—especially regarding inherent marvelousness of the natural world constrained by human activity—are somehow less subject to scrutiny as subjective claims.

Not all construction is immediately visible in each work, however, and in some cases it is deliberately concealed by less conspicuous additions that mask the artistic cultivation of Dion's environments. *Neukom Vivarium* is especially different in its execution than its conception. The plants surrounding the nurse log were transplanted into the soil after the first fauna died. Similarly, new insects were introduced when the population dipped.[39] These points are not advertised to visitors or scholars, which protects the illusion of the nurse log as a viable natural habitat. Furthermore, though the artwork suggests a more inclusive bodily experience, the vivarium is a notoriously difficult space to access. The greenhouse requires an attendant, which places a heavy demand on the Seattle Art Museum's limited volunteer staffing. More often than not, the greenhouse is closed.[40] As a result, the viewer engages with the display from the outside looking in, much in the fashion of a typical diorama rather than as part of the display.

Admittedly, these issues of illusionism have only a minor impact on the legitimacy of Dion's larger project, but these small disjunctions illuminate the larger risk of privileging Dion's environmental and experiential narrative over any other. Positioning Dion as an authoritative storyteller seems to suggest that he as an artist has special insights through his subjectivity and it threatens to validate all of his choices as more correct than the institutional ones that came before him. For this reason, it is

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[39] The first round of plants was also artificially introduced. Lauren Mellon, Interview with Lauren Mellon, (Director of Museum Services and Chief Registrar, Seattle Art Museum), interview with author, personal interview, Seattle, June 23, 2016.

[40] The museum is actively trying to staff the vivarium to keep it open more regularly. Ibid.

important to note the ways in which Dion's work does not just critique the authoritative role of the sciences and the museum but also recapitulates these power structures. Where many institutional critiques since the 1980s present opportunities for underrepresented populations to assert agency in spaces that have traditionally excluded or suppressed their experiences, Dion engages with a field of inquiry where he shares the positions of power enjoyed by the naturalists who shaped the discipline.[41]

Lisa Corrin suggests that's Dion's passion for the museum and his noted love of things separates his work from colonialist critiques of museums performed by contemporary artists like Fred Wilson in that he chooses instead to focus on the extraordinary quality of objects. She argues that this is not a denial of the ways in which colonialism informed the collection and study of the natural world, but instead an emphasis on how the visual experience of the object can surmount the very categorizations they are meant to illustrate.[42] To be sure, Dion's work is predicated on the material presence of things and their fundamental significance in creating knowledge, but the colonialist backgrounds of natural history displays cannot and should not be separated from their visuality. The most exotic were collected on expeditions either related to colonial expansion or dependent on the labor and expertise of the indigenous populations, and objects were often taken from colonial territories without permission or adequate compensation.[43] Furthermore, as many scholars have argued, the natural history

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[41] I'm thinking here of artists like Coco Fusco, James Luna, and especially Fred Wilson who have all used their racial identities to disrupt institutional spaces and create more robust and inclusive historical narratives. See Lisa Corrin ed., *Mining the Museum: An Installation by Fred Wilson* (New York: The New Press, 1994).

[42] Corrin, "Mark Dion's Project," 52.

[43] See, for example, Jessica Ratcliff, "The East India Company, the Company's Museum, and the Political Economy of Natural History in the Early Nineteenth Century," *Isis* 107, no. 3 (2016): 495–517. This

museum itself is a model for imperial rule and the mastery of colonial territories. For example, Carla Yanni has demonstrated that the very architecture of the universalist natural history museum buttressed the impression of imperial power and control in nineteenth century Britain, illustrating the broad reach of the crown and rationalizing its position.[44] Similarly, Camille Limoges has argued that the Muséum d'Histoire Naturelle in Paris consciously emulated France's colonial mission, connecting its collection of specimens to the cause of "civilizing" these regions.[45] Both the presence and arrangement of objects in the museum are thus intimately tied to systems of imbalance and subjugation that enabled their transport to sovereign capitals in the nineteenth century and earlier.

To Dion's credit, the colonial dimensions of the Enlightenment are not his primary concern; his installations focus more on the way that displays curate knowledge rather than they ways by which these objects were collected. Nevertheless, by reenacting the institution's methods of collection and display, his work remains problematically entwined with the colonialist expansions and excursions that underpin the collections he critiques. Miwon Kwon raised this issue in a 1991 interview with Dion during his preparation for *On Tropical Nature,* a four-week expedition to Venezuela that resulted in the installation of various specimens and tools collected and used over the course of the trip. She implies that Dion, by taking on the role of the mythic naturalist, was enacting a "masculinist fantasy" rather than critically engaging with the colonial roots of the archetype. When she revisits this exchange in a later interview, Dion asserts that taking

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dynamic persisted into the twentieth century. See Joseph Wallace, *A Gathering of Wonders: Behind the Scenes at the American Museum of Natural History* (New York: St. Martin's Press, 2000), 227–28.

[44] Carla Yanni, *Nature's Museums: Victorian Science and the Architecture of Display* (Baltimore: The Johns Hopkins University Press, 1999), 114–15.

[45] Camille Limoges, "The Development of the Muséum d'Histoire Naturelle of Paris, C. 1800-1914," in *The Organization of Science and Technology in France, 1808-1914*, ed. Robert Fox and George Weisz, trans. Kina Buchanan (Cambridge: Cambridge University Press, 1980), 236–37.

on the hero-naturalist mantle was "perhaps the most efficient way to be critical." He continues:

> "Distanced critique is a useful but boring tool. I like the idea of throwing myself into the fray. My role [...] was to become a magnet for critical questioning. I wasn't too interested in indicting people who lived more than a hundred years ago for being bad colonialists. [...] It was important to me to distinguish between someone who ran a slave plantation and someone who spent years of their lives in extremely dangerous and tedious conditions in pursuit of knowledge. They may both be colonialists but these are hugely different endeavors."[46]

Dion's unabashed love of objects and museums and his own deep respect for the naturalists he emulates blurs the line between critique and homage, and it is debatable whether or not Dion has himself become the "magnet for critical questioning" he imagines here. On one hand, Dion often engages with the public while donning the uniform and role of the naturalist and collector, allowing information to be shared in conversation with audiences who can challenge and question his motivations and methods.[47] Additionally, Dion's multilayered performance of collection and display has been interpreted as a way to read subjectivity on processes of colonial fieldwork, which were entirely predicated on the discovery of the Other in relation to the self.[48] This is especially the case in instances where Dion mines Western locations like Central Park or the banks of the Thames for archeological material, turning tools of colonial inquiry against the spaces of the colonizers.[49]

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[46] Kwon, "Miwon Kwon in Conversation with Mark Dion," 20.

[47] Corrin, "Mark Dion's Project," 63.

[48] Ruth Erickson, *Mark Dion: Misadventures of a 21st-Century Naturalist.* (New Haven: Yale University Press, 2017), 27.

[49] These works include: *Tate Thames Dig,* London, 1999, and *Rescue Archaeology: A Project for the Museum of Modern Art*, New York, 2004. For more on his archeological practice see Flora Vilches, "The Art of Archaeology: Mark Dion and His Dig Projects," *Journal of Social Archaeology* 7, no. 2 (June 2007): 199–223.

However, while these points show that the artist is thinking about these complex histories of violence and power imbalance, Dion's embodiment of the gentleman naturalist is precarious because it reasserts the racial and gender inequalities that historically permitted only certain individuals to explore, collect, and quantify, often at the expense of others.[50] Furthermore, Dion's performance of expertise does not invalidate colonialist collection practices or power structures but rather relocates them to a contemporary authoritative body, perhaps even functioning successfully only because of his racial and gender identities. The narratives he produces from the objects he chooses may be different but they ultimately partake in the same set of behaviors that emerged around an industry of exploitation in the name of inquiry.

Dion's critique derives from his choice of specimens and their inventive display methods, not necessarily from a shift in how these specimens are gathered; he is more deeply interested in the subjectivity of the authoritative scientist than the methods of collecting that underpin his or her conclusions. Therefore, while he employs these methods to produce new narratives and reveal these subjectivities, the work is less preoccupied with the troublesome histories that facilitated the refinement of these methods. In cases where his work does reference these difficult histories, the critique is often very subtle or performed from a position of intellectual distance that betrays its continued bearing on collection and knowledge making practices. For instance, Dion's *Hate Archive* from *The Travels of William Bartram Reconsidered* literally seals away uncomfortable evidence of contemporary racism. Dion collected racist kitsch objects he

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[50] This is especially true for works where he models the practices after explorers like William Beebe or William Bartram. See, Colleen J. Sheehy, "A Walrus Head in the Art Museum: Mark Dion Digs into the University of Minnesota," in *Cabinet of Curiosities: Mark Dion and the University as Installation*, ed. Colleen J. Sheehy (Minneapolis: University of Minnesota Press, 2006), 7.

encountered over the course of the project throughout the American south, shipping them back home in brown paper parcels stamped with the phrase "Hate Archive—Do Not Open." While the work acknowledges continued histories of racism in the United States, the project fails as a documentary process because the viewer cannot recognize the racial stereotypes within each package, leaving the viewer disengaged from the difficulty of each object and distancing them from the present moment. The impulse to remove racist thought from circulation is positive, but it prevents viewers from confronting tangible examples of discrimination and inequality. Further, without grasping the magnitude of the problem or the kind of stereotypes that continue to exist in American culture, the viewer is left with the sense that racism is unspeakable and unknowable, but more perniciously, that it can be contained and overcome merely by boxing it away.

My observations here are not meant to establish Dion's institutional critique as invalid or unnecessary, but rather to point out the ways in which Dion's own narrative is fallible. Though his work is praised for its exposure of scientific subjectivity, Dion seems to validate its methodologies while turning them to different ends. Dion's emphasis on the power of individual experience more broadly threatens to reassert hegemonic structures that stretch beyond the bounds of the museum, and for this reason, Dion's relationship to critique is more complicated and complicit than previously articulated in contemporary scholarship.

Conclusion

Returning to the *Neukom Vivarium* diorama in Dion's 2017 retrospective, a puzzle emerges that sheds light on both Dion's approach to the habitat diorama form and his

own relationship to knowledge and contemporary critique. As previously discussed, the work literalizes the connection between the installation and the habitat group, firmly bringing the two displays together as part of the same educational strategy, but it also reduces the complex space of the vivarium to a handful of elements, limits viewer engagement, and reifies a narrative.

Dion has always maintained that the human understanding of nature is a cultural construct built from mutable human processes of knowing. Seeking to create a more expansive and wondrous conception of the natural world, Dion's work engages with our cultural symbols to intervene in received notions about the environment. In his previous work, Dion has interpreted the diorama form in order to open narratives and expand his critique of institutional knowledge into one that implicates contemporary practices. Dion's use of glass in *Neukom Vivarium* is especially indicative of how he chooses to adapt the viewer's relationship to nature and institutions. Removing the glass barrier permits continuity between the viewer and the natural world and promotes the multisensorial encounter, establishing the importance of full bodily encounters by demonstrating the broad range of knowledge it provides outside of the traditionally visual practice of natural history. By consequence, it works against the diorama's narratives of both nature and vision. As Dion's oeuvre has moved further in the direction of phenomenological encounters, his work has also put increasing amounts of pressure on scientists and the sciences as locations of valid knowledge. Instead, the artwork promotes the truthfulness of embodied experiences over limited institutionalized vision, appealing to wonder as a more robust knowledge-generating alternative and encouraging the individual to derive truth from experience rather than received knowledge.

The retrospective diorama, by contrast, is everything his vivarium is not, essentially undoing his efforts against institutional education strategies and instead becoming the didactic purveyor of received knowledge he argues against. The retrospective context is especially instructive in this case. If retrospectives tend to codify narratives about artistic careers and contributions, this diorama performs a similar function, working to constrain the viewer's understanding of the Seattle installation and its place in Dion's career. Transformed into the diorama, the work is an *interpretation* of the vivarium and not a sufficient substitute, reducing the original to its ecological dimension as a piece of nature brought into the realm of culture and sustained only by extreme technological measures. The viewer no longer participates in a multisensorial encounter, but instead occupies an ideal viewing position, separate from the installation. In diorama form, the vivarium is both objectified *and* institutionalized, transformed into something totally artificial but also into a tool for producing official knowledge. If experience is a significant facet of *Neukom Vivarium,* then experience itself is further institutionalized, declared universal and valid.

Ultimately, the retrospective diorama defines its natural history precedents as limited, fixed, and didactic in ways that refuse negotiation or challenge, but it also shows a troubling dimension to Dion's alternative narratives of knowledge. Dion acknowledges the potential shortcomings of art that valorizes subjectivity, admitting that, "[I]t may lead to a kind of dilettantism. And that may be a fair criticism. But for me, the dilettante is a much more interesting character historically than the expert. Some of the greatest contributions in art and science have come from dilettantes rather than professionals."[51]

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[51] Kwon, "Miwon Kwon in Conversation with Mark Dion," 29.

In drawing attention to the achievements of the dilettante Dion valorizes their ability to see the field more clearly than their institutional counterparts, but read in conjunction with his oeuvre, this may also be interpreted as an ideal position, one less subject to bias and more able to create true knowledge grounded in real experiences. This is inherently dangerous, because it can undermine any sense of contemporary social narrative by ascribing a universal truth value to what may be an idiosyncratic experience.

Dion's narrative remains partial and incomplete. This in itself is not a failing unless we imbue his work with a special ability to understand the world better than his predecessors. Unfortunately, this is often the case, and it leaves us with a particularly difficult problem: Dion's critique is valid—and important—but it serves only to weaken institutional logic, not to improve or expand it. His work calls attention to a flawed culture of authoritative knowledge, but he proposes no alternative solutions other than the power of one's own experiences. Dion's commercial success suggests that his approach to institutional knowledge, especially scientific knowledge, resonates with our contemporary preoccupations with critique itself. Nevertheless, the risk is that the critique can be mistaken for progress rather than a tool for assessment.

On its surface, Dion's inverted vitrine is an ecological gesture that reveals how we've failed our environment, but it ultimately speaks to the ever-widening fracture in how we understand knowledge to be made and to be validated in moment where all systems of knowledge are considered contingent. Under this premise, Dion suggests that nature can only be understood through immersive contact and phenomenological experience, and he offers this process as a means toward better appreciation of and care for ecological integrity. But by relegating vision to a secondary, or at the very least a de-

centralized, position Dion also reflects the changing attitudes toward vision as the most legitimate method for gathering knowledge. If we think of institutional didacticism as historically tied to self-evident visual proof, as in the habitat dioramas, the joy in Dion's project then becomes the democratization of knowledge *making* and not merely its accessibility. Meant to open a limited cultural approach to a fixed and timeless nature, instead we find ourselves unable to conceptualize the natural at all beyond the tips of our own noses. Dion's faith in the redemptive power of experience may only serve to fracture our understanding of the natural world even further.

CHAPTER FOUR

The Activist's Dilemma: Alexis Rockman and the Artistic Ambivalence of Climate Change

In October 2018, the United Nations Intergovernmental Panel on Climate Change released a report that estimated global warming has already raised the planet's temperature by 1 degree Celsius above pre-industrial conditions and will likely increase to 1.5 degrees Celsius between 2030 and 2052. At this threshold, the world would experience greater extremes in heat, increases in heavy precipitation and drought, higher sea levels, more threatened ecosystems, and greater stresses to agriculture. If the temperature continues to progress even a half of a degree above the 1.5 degree mark, losses to landmass and changes in species habitats would be much more substantial, as would impacts to human health and global economies.[1]

For many, the report revealed how shockingly little time remained to avoid environmental catastrophe, yet building policy around climate science continues to prove a tricky enterprise.[2] Even though global warming has been noted for decades, skepticism has impeded climate-conscious laws and behaviors, especially in the United States where

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[1] Valérie Masson-Delmotte et al., "Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty: Summary for Policymakers" (Geneva: United Nations Intergovernmental Panel on Climate Change, 2018), 9-11.

[2] Carol Davenport, "Major Climate Report Describes a Strong Risk of Crisis as Early as 2040," *New York Times*, October 7, 2018, accessed Jan 18, 2019. https://www.nytimes.com/2018/10/07/climate/ipcc-climate-report-2040.html.

the Trump administration is actively in the process of withdrawing from the landmark Paris Climate Agreement.[3] Such a refusal to acknowledge the existence of global warming, let alone its impacts, has long been related to a suspicion of scientific motivations and a belief that the issue lacks consensus. [4] For contemporary painter Alexis Rockman, however, climate change is not only happening, it has already placed us on a path from which we cannot depart. Throughout the course of his 30-year career, the artist has depicted various human impacts on the environment in large-scale, hyperrealistic paintings he refers to as "natural history psychedelia." Combining methods of scientific illustration with fictional subject matter, his work has been compared to Rachel Carson's 1962 anti-pesticide book *Silent Spring* as a type of fine art activism that makes environmental threats visceral and real for a public who may or may not understand the dark implications of data and technological advancement.[5]

Climate change has become the central issue of his artistic practice, but his approach to scientific knowledge has not always been supportive. Rockman originally used the visual language of natural history to critique the ways that science and its ordering practices have damaged nature. However, he has come to use the conventions of the diorama as a legitimizing structure for his imaginary futures. The subtle changeover in his art occurred in the same historical moment as Bruno Latour's turn-of-the-century re-evaluation of critique, which recognized that the tools of deconstruction have fueled

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[3] Valerie Volcovici, "U.S. Submits Formal Notice of Withdrawal from Paris Climate Pact," *Reuters*, August 4, 2017, accessed Jan 18, 2019. https://www.reuters.com/article/us-un-climate-usa-paris-idUSKBN1AK2FM.
[4] See Naomi Oreskes and Erik M. Conway, "The Denial of Global Warming," in *Merchants of Doubt : How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (New York: Bloomsbury Press, 2010), 169–215.
[5] Joanna Marsh, "Alexis Rockman: A Fable for Tomorrow," in *Alexis Rockman: A Fable for Tomorrow* (London: D Giles Limited, 2010), 16.

anti-science rhetoric. I argue that in this convergence we can read Rockman's artistic realignment with the functionality of scientific knowledge as part of a larger cultural conversation working through the role of critique and scientific epistemology in contemporary society. Abandoning his former preoccupation with the faults of scientists and their systems, Rockman instead embraces some version of scientific empiricism in the face of climate issues. Transforming the dioramas into paintings and treating its conventions as legitimate narrative building devices, his panoramas suggest that vision may still provide a method of knowing that can generate productive change. I posit that Rockman revisits the terms of critical looking that the dioramas originally hoped to instill in its publics, once again framing nature as certain and intelligible through visual study. Compared to peers like Mark Dion, Rockman's insistence on painting reclaims the fruits of visual practice and recuperates its value for productive social discourse.

Diorama as Critique

Rockman's early work functions much in the same vein as other institutional critiques of the 1990s, engaging with the subject matter and display formats of the AMNH as a way to challenge the museum's authoritative narratives of the natural world. His images push against the highly regulated and organized version of nature presented in the museum, disrupting notions of its rationality, regularity, and controllability and instead unsettles the viewer with acidic color palettes and graphic or absurd subject matter, which reintroduces them to nature's inherent strangeness. This interest emerges early in his natural history works such as *Balance of Terror,* a still life that places a flowering cactus next to an apple (figure 4.1). The scene is bisected, revealing a beetle

excavating the inside of the fruit and the plant's roots snaking across the ground below. The thin wash of the oil makes the paint run in fine drips along the contours of the apple, and its radioactive yellow glow clashes with the dull, sickly green of the ground. Together, these elements repel the viewer, conveying a poisonousness that enhances the disgust of finding an insect hidden inside of one's food. Through its cutaway view, the painting implies the glass panel that is so fundamental to the enhanced visual practices in the AMNH displays, but rather than showing the contents of the apple to think about its structural integrity, here it allows one to observe corruption and degradation, which are also natural systems.

The painting's cut view and panel size are a result of Rockman's conscious engagement with natural history illustration and the AMNH more specifically, a connection most clearly shown in his 1990 painting *Forest Floor* (figure 4.2). The work employs both of these compositional strategies, but it also appropriates a forestry hall diorama wholesale, showing that these methods were learned from the museum's displays (figure 4.3). The choice to use the AMNH was based in the artist's deep familiarity with the institution. His mother worked there with the famed anthropologist Margaret Mead, and so he spent a great deal of time in the museum throughout his childhood. The dioramas and their striking narratives were especially impactful, conveying dazzling but limited ideas about the natural world. Rockman explains, "Those dioramas presented lush, idealized versions of specific sites, without humans. I remember looking at the mountain gorilla diorama…Today it's all deforested farmland. The

diorama has become a time capsule."[6] It is in such institutional didactic materials, ones that "deny the human impact of nature," that Rockman finds his motivation. "[F]irst I'm sad, then I'm angry […] that gets me up in the morning to make my work."[7] Because of its artistry and its shortcomings, the habitat groups thus offered a primary illustration model for investigating issues of ecological integrity and time when the artist turned to natural history in his painting, but Rockman also acknowledges the ways it shaped his visual practices, saying, "It influenced how I saw the world."[8] He describes its formulaic compositions, its distinct usages of fore-, middle-, and backgrounds, and its omnipotent ability to visualize and naturalize multiple viewpoints as key aspects of its site-specific theatricality.[9]

Rockman also engages with famous eighteenth and nineteenth century natural history illustrations as he works against the ordering practices of the sciences, reinterpreting a nineteenth-century entomology illustration in *Object of Desire* (figures 4.4 & 4.5), William Heath's *Monster Soup* in *Drop of Water* (figures 4.6 &4.7), and Ernst Haeckel's tree of life in *Phylum* (figures 4.8 & 4.9). These early works use historical illustrations to ruminate on the subject matter, revisiting these iconic pictures in a fine arts context that thinks about them as representational strategies with potential meanings beyond didacticism. As he begins to reinterpret the models, altering the contents of the displays rather than recreating them in paint, Rockman's work instead points to their

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[6] Alexis Rockman quoted in *Alexis Rockman*, ed. Dorothy Spears, (New York: The Monacelli Press, 2003), 64.
[7] Rockman quoted in Dana Friis-Hansen, "Reflections and Refractions," in *Alexis Rockman: The Great Lakes Cycle* (Grand Rapids, MI: The Grand Rapids Art Museum, 2018), 55.
[8] Dan Tranberg, "In the Studio: Alexis Rockman with Dan Tranberg," *Art in America* 98, no. 11 (2010): 88.
[9] Ibid.

shortcomings. Rather quickly, the diorama becomes a model for institutional narratives and a method for investigating subjective concepts of nature and its meanings.

The artist applies the elements of the habitat group to explore the ways that scientific organizational practices exist in tension with more bizarre and unappealing dimensions of the natural world. In works like *Evolution,* Rockman borrows the diorama's compositional devices to construct his own accounts of nature, undermining the display's claim to truthfulness and reality in the process (figure 4.10). The work shows a range of creatures assembled among a pool of water in an apocalyptic landscape, but it is impossible to determine where or when of the painting. Its animals are both living and extinct as well as real and fictional. Its setting is both prehistoric and futuristic, with a smoking volcano in the distance and a metal-plated tree felled in the foreground. The work is organized by a concrete retaining wall that curves through the middle ground, separating the foreground from the background. The wall suggests that the two parts of the painting are different, but fails to justify this separation. Animals traverse it in all four directions. Even the water flows into the pool from the lake behind. Instead, it serves to mimic the curve of the diorama wall and highlights the space where the "tie-in" traditionally occurs. This compositional addition joins the cut view, large scale, and horizontal orientation seen in the first example to evoke the diorama, capitalizing on the disconnection between foreground and background resulting from the diorama's duality as painting and sculpture.

By translating the three-dimensional group into a two-dimensional painting, Rockman emphasizes the diorama's pictorialist ambitions, showing it to be just another kind of image subject to the same kinds of artistic constructions. This simultaneously

mitigates the authoritative realism of the habitat group form while promoting the validity of Rockman's own painted fantasy worlds. Eight feet tall and twenty-four feet long, *Evolution* is roughly the same size as the case front for the Moose Group in the Hall of North American Mammals, and it presents a similar kind of visual immersion by recreating the viewer's relational position to the diorama. To take in the whole image, one must stand at a distance a few feet in front of the painting. Small, finely drawn details like the microorganisms in the water or insects and flower blossoms invite closer inspection, but unlike the diorama, the flat painting cannot even pretend to offer the chance to step into the display. The viewer must always stand outside of the illustration, which emphatically refuses spatial cohabitation.

Rockman's volcanic panorama is also consistent with habitat group conventions as a large-scale, naturalistically rendered vista. Though he has described the background as a placeholder for a slice of time rather than a space, its direct reference to Frederic Edwin Church foregrounds the museum's selective curation via the Romantic roots of diorama painting.[10] Rockman draws a connection between the two types of representations by appropriating the volcano from *Cotopaxi* (1862), casting the background of the habitat group as just another kind of landscape painting burdened with the same kinds of interests and problems (figure 4.11). Doing so highlights the artistic prerogative of the museum over its sense of objectivity. On one hand, because of *Cotopaxi's* connection to the Civil War, *Evolution* might similarly be read as a cypher for human strife at the end of the century, here leveraged against environmental impact rather

[10] Ibid., 88-89.

than political fragmentation and bloodshed.[11] However, it also serves to anchor natural history painting in a field of artistic conventions, making obvious the diorama painting's relationship to Romanticism and further insisting on the habitat group's role as representation rather than reality.

By shifting the medium, Rockman takes advantage of the painting's surface as an inherent transition point between reality and illusion and in turn points to the glass panel's liminality. The bisected view of the scene identifies the picture plane as the glass panel of the diorama, suggesting that the two spaces perform similar functions as a membrane between the contemporary moment and the space of the picture or the alcove. Such treatment emphasizes that the diorama and the painting actively build worlds behind their boundary lines rather than import them from the outside world. Dividing both spaces from that of the viewer, the picture plane doubles down on the distance created by the original glass front, paradoxically working against the painting's illusionism to put it in contact with the traditional elements of diorama display and ultimately flagging both types of illustrations as hovering somewhere between fact and fiction without fully committing to either.

Collapsing time, place, and reality in exacting, hyperrealistic detail, the work oscillates between fantasy and reality. The diorama conventions play into this tension by identifying the painting as didactic only to repeatedly show itself to be void of any kind of knowledge. Rockman supplements *Evolution* with a diagrammatic key that names the creatures in the painting, a labeling practice often used at the AMNH to identify species while protecting the illusionistic integrity of the diorama. He lists 214 species ranging

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[11] Prudence Roberts, "Rockman's *Evolution* and the 'Great Picture,'" in *Alexis Rockman: Second Nature* (Normal, IL: University Galleries of Illinois State University, 1995), 55.

from an amoeba to a plesiosaur. His imaginary creatures include a "proto-chestburster" from *Alien* and a "'Dragonslayer' dragon." Incorporating the guide strengthens the ties to institutional display while unequivocally showing the painting's impossibility. He explains, "I love the tension between the authority and credibility when one note describes something sober and predictable and then the next offers something unexpected, inappropriate, or even explosive."[12] Together, such compositional elements condition the viewer to expect information, but the mixture of real and fictional species with the manmade and the natural frustrates this expectation, offering no narrative but its own incomprehensibility as a fictitious nowhere. It is simultaneously real and false, working against the authoritative format of the diorama by investing it with signs of authorship and contingency.

In Rockman's art, the museum is an extension of reductive human organizational practices that have sought to domesticate and subjugate the natural world, serving as just another institutional force that imposes artificial order to suit its own needs. Noting the ways his paintings confound traditional scientific ordering practices, evolutionary biologist and renowned popular science writer Stephen Jay Gould praises Rockman's art for pressing on the rigidity of these boundaries and categories. The paintings remind Gould that scientific objectivity is still susceptible to social prejudices because its rules are human and not *de facto* laws of nature unto themselves.[13] Gould calls attention to passages where insects are larger than mammals, pitcher plants consume birds, and rodents mate with insects in inversions of accepted ideas about organismal size, predation

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[12] Rockman quoted in Friis-Hansen, "Reflections and Refractions," 52.
[13] Stephen Jay Gould, "The Face and Guts of Nature," in *Alexis Rockman*, ed. Dorothy Spears (New York: The Monacelli Press, 2003), 17.

patterns, and species integrity that, while strange or disturbing, are all theoretically possible even if they contradict our notions of the way nature should be. Other works, like *Phylum,* which copies the structure of Haeckel's tree of life without replicating its hierarchical arrangement, and *Evolution,* with its lack of diagrammatic progression or cohesion, literally convolute the organizational tropes of scientific illustration and infuse the images with indications of human intervention.[14] Showing scientific laws as fluid and violable and focusing on mutations and decay to defamiliarize the viewer from sanitized views of messy organic processes, the paintings expose science as but a modest, human effort to understand nature's sublime strangeness.

For Gould, such iconoclasm can shake us out of intellectual laziness that begins to assume rather than enquire, but Rockman's critique is leveled at more than science's conceptual impositions because it further indicts the very real ways that humans have altered the fabric of nature in the name of curiosity or carelessness.[15] Paintings in the *Biosphere* series (1992-94) once again blend science fiction and science fact to imagine a futuristic enclave of bioengineered creatures in outer space, but here experimentation is shown as an abusive corruption of nature. The cycle "responded to the idea that Earth was so overpopulated and toxic that habitats not impacted by humans needed to be jettisoned into space for their own long-term survival."[16] Across the series, Rockman interprets such survival as a horrific sequence of stop-gap measures where animals are supplemented with mechanized parts in artificial environments, a final effort to either

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[14] Stephen Jay Gould, "Boundaries and Categories," in *Alexis Rockman: Second Nature*, ed. Douglas Blau (Normal, IL: University Galleries of Illinois State University, 1995), 30-31, 39.
[15] Gould, "Boundaries and Categories," 29.
[16] Alexis Rockman quoted in *Alexis Rockman*, 108.

improve or maintain what may be the last examples of such terrestrial specimens. In *Biosphere: The Ocean*, a shark becomes its saw-bearing cousin through the literal chainsaw attached to its nose (figure 4.12). Its digestive system is opened with dangling tubes and a clear plate exposes the red and blue wires attached to its brain. The creature swims in a metal and glass vitrine amongst various tropical fish and extinct orthocone squid with coral growing from a geometric metal reef. Some version of the animals have been preserved, but at a terrible cost.

Clusters of galaxies, asteroids, and planets are visible in the background of every painting, often through the triangular lattice of a geodesic dome, suggesting that each scene takes place in the same floating spacecraft, an ark for a different time. Human transgression against the natural world is implicated in every artificial detail and painful surgical change, but it is especially intense in *Biosphere: Laboratory* (figure 4.13). The image features composite animals sewn together and kept in cages around the perimeter of a room. In its center, a glass tube contains a double-headed calf suspended in mysterious blue liquid and entwined with thin black eels. At first glance, the work is an absurd compendium of fiction, too bizarre and horrifying to be real; such an impression is seemingly sustained by the appearance of a space ship from the 1971 film *Silent Running* gliding out of the left side of the composition.[17] However, this work, like *Evolution* before it, marries imagination with reality; Rockman draws from several real-life experiments to populate his lab, recuperating histories of vicious physical harms inflicted

[17] Barry Blinderman, "Who's Minding the Laboratory?," in *Alexis Rockman: Second Nature*, ed. Douglas Blau (Normal, IL: University Galleries of Illinois State University, 1995), 9.

on subjects, both human and animal, in the name of scientific progress.[18] Even outside of this particular work, the open digestive systems and glass plates perforating animal skin recalls Pavlov's extensive surgical modifications of his animal specimens, whose digestive systems were opened and left exposed in order to be monitored.[19]

Gould found this work to be "too pedantic," but its clear rebuke of extreme human intervention is present in many of Rockman's other paintings, showing that the artist was consistently critical of human intervention, both purposeful and otherwise.[20] Scenes from the *Guyana* series are often filled with trash that suffocates exotic animals, as in *The Beach: Demarara River Delta* where the exquisitely-rendered, luminous surfaces of sea turtles, fish, and even a large fly in the extreme foreground are juxtaposed with matte rubber tires, splotches of oil and various other pieces of human detritus (figure 4.14). Similarly, the *Concrete Jungle* series highlights the species that successfully live and die in sites of concentrated urban pollution like the rats, cockroaches, pigeons and the mangy dog that hide amongst the trashcan and drainage pipe at the center of *Concrete Jungle III* (figure 4.15).

While these works address the ways human trash has altered the environment, others still consider the strange world scientific modifications have created or are in the process of creating. *The Farm* offers a particularly pointed critique of genetic engineering, which here turns agricultural resources into grotesque mutants in a bid for hyper-efficiency (figure 4.16). Relying on the progressive diagram tradition rather than refuting it, Rockman presents three common farm animals at three different moments of

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[18] Ibid.
[19] For a summary of these modifications see Daniel P. Todes, "Pavlov's Physiology Factory," *Isis* 88, no. 2 (June 1997): 220-26.
[20] Gould "Boundaries and Categories,"43.

genetic change. The viewer observes a steer, a boar, and a rooster as they drift from their wild origins in the left background to their current domesticated appearance in the middle ground and culminate in imaginary future forms in the right foreground.

These future creatures are monstrous to behold: a squared cow with extra teats for increased milk production, an especially fat pig with extra organs for human harvest, and a rooster with two extra wings and no feathers for ease of consumption. Joining the pig on our side of the fence are square watermelons, triangular tomatoes and a naked mouse with an ear growing out of its back, fellow casualties of the human desire to maximize agricultural productivity. Vignettes of a DNA molecule, cellular mitosis, industrial agriculture, and a fruit fly punctuate the surface of the painting like stickers on the front of the picture plane and underscore the relationship between the mutant animals and the high-tech developments in genetic engineering. Yet Rockman is also careful to show these mutants as within the realm of present possibilities and in keeping with patterns of human evolutionary pressures. Both the blue ribbon on the right of the panel, which references dog breeding with its image of the odd Chinese Crested dog, and the parakeets sitting on the fence testify to the ways that humans have long shaped animal appearances through selective breeding. Additionally, the rectangular watermelons and ear-bearing mouse are already part of the altered present, seen in Japanese markets since the late 1970s and created in a Boston lab in 1997, respectively.[21]

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[21] "Melonen Nun Im Quadrat," *Arbeiter Zeitung*, August 21, 1978, http://www.arbeiter-zeitung.at/cgi-bin/archiv/flash.pl?year=1978&month=8&day=21&page=5&html=1; Kristin Hugo, "Remember the Lab Mouse with a Human Ear on its Back? The Scientist Accused of 'Playing God' Explains His Work," Newsweek, September 16, 2017, https://www.newsweek.com/tissue-surgeon-ear-mouse-human-organs-transplant-cell-phones-666082.

The over-regulated nature of this farmstead is reinforced by the crisp, hyper-naturalistic painting style and the highly geometric composition. The work is structured around the strong parallel lines in the horizon, barbed wire fence, and modified cow, the regular verticals created by the fence posts, and the diagonals of the precisely organized soybean field, which expands across the painting and shoots back into the picture plane toward perfectly symmetrical hedgerows. The field simultaneously recalls idealized Regionalist farm imagery and addresses the rapid development of 20th century industrial agriculture when soybeans flooded the market to become both an important meat and dairy substitute as well as the primary source of American livestock feed.[22]

Commissioned by Creative Time and exhibited on a billboard in Manhattan, Rockman's painting was a highly visible and publicly accessible warning against biotechnological modification.[23] Yet the future Rockman extrapolates from the present is slightly disingenuous, as the genetic engineering in which he grounds his narrative is not really genetic engineering at all. Square watermelons are not mutants but rather inedible, decorative items forced into shape by restrictive boxes that inhibit their growth.[24] Similarly, the Vacanti mouse's "ear" was created by injecting cartilage cells around an ear-shaped scaffold, not grown by altering the mouse's DNA.[25] Nevertheless, by linking these examples to symbols of the genetic age, the painting communicates the visual horror of GMOs and rejects human modification of the world around us, scientific or

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[22] Marsh, *Alexis Rockman,* 21. For a history of the soybean in 20th century American farming see Matthew D. Roth, "Magic Bean: The Quests That Brought Soy into American Farming, Diet and Culture," PhD Diss., (Rutgers University, 2013).
[23] Marsh, *Alexis Rockman,* 21.
[24] "Square Fruit: Odd-Shaped Melons Herald Japan Summer," CTV News, July 4 2015, accessed April 4, 2019, https://www.ctvnews.ca/lifestyle/square-fruit-odd-shaped-melons-herald-japan-summer-1.2453720.
[25] Hugo, "Remember the Lab Mouse with a Human Ear on its Back?"

otherwise. Science is placed in scare quotes, cast as a Frankenstein for the contemporary moment whose experimentation is an abusive and corrupting force that has pushed nature to repulsive extremes.

In each of these works, Rockman humbles the viewer and rejects human mastery over the environment by infusing his images of plant and animal life with evidence of human malfeasance. People are rarely present, but always implicated. As a result, Rockman's concept of nature is on a spectrum with human beings, but they remain opposing forces because of the overdetermined role humans have played in shaping the environment. To be sure, his art locates people very much within the natural system. The direct impact humans have upon the ecosystems he paints testify to this continuity. However, as a field that is so fundamentally shaped and shifted by our actions, nature is depicted as a substrate for human activity, which destroys and perverts everything it touches in its quest for control.

Images that invert this power dynamic reinforce the sense that natural cycles are somehow separate from human ones, perhaps even mutually exclusive. In these works, nature breaks free from culture to overtake or remediate human intrusion, and they ultimately ascribe to the natural world a more powerful and enduring ability to adapt and overcome over the long arc of time. *Future Evolution,* executed with paleontologist Peter Ward, imagines the kinds of bizarre adaptations an exhausted landscape would require of its survivors. Assuming that rapid geological change favors species with short gestation periods and large reproductive outputs, Ward and Rockman envision a time when rodents and weeds develop the requisite tools for survival—and *Homo sapiens* does not.[26] A

[26] Peter Ward, *Future Evolution* (New York: Henry Holt and Company, 2001).

naked rooster and rabbit scurry across a desert on their overdeveloped legs in *Neozoic Era* (figure 4.17). Enormous dandelions, the only visible plant life, anchor themselves into the sand with thick roots. The cutaway view shows how they corkscrew through layers of sediment into the impacted trash below, showing both the geological timescale of these changes and the human presence that has been forgotten below it all. Only these fantasy creatures survive such inhospitable climates, reclaiming the blighted terrain we have left behind and persisting long after the disappearance of human beings who could not adapt to the environment we created.

Rockman conveys this kind of endurance on both the micro and macro scale, attributing a definitive resilience to nature that people lack and continuing to pit the two realms against one another. Works like *The Ecotourist*, which offers a self-portrait of the artist decomposing on the floor of the rainforest, colonize the colonizer in a reversal of fortune that sees the human become a substrate for natural processes rather than vice versa (figure 4.18). Plants and animals triumph over the ecological intruder and remind the viewer that we are subject to the same rules of death and decay as every other organic object; nature will reclaim all bodies at the end of their lifecycle.

The Ecotourist intentionally recapitulates the AMNH habitat groups as part of the *Diorama* series, depending on its size, choice of media, and composition to reinforce the association. Like earlier examples that engage with the display type, this version continues to emulate the scale of the installation and the bodily encounter it engenders. In this series, however, Rockman takes likeness one step further by combining pre-existing foreground elements with a painted background to create a three-dimensional tableau. The artist uses functional, everyday objects like clothing, a wedding ring, and an empty

pack of Camel cigarettes as well as specialty accessories like synthetic hair and a taxidermy eyeball to make the similarities between his work and the habitat group more explicit than ever before. Rockman completes his reinterpretation by setting the work in resin, which acts as a glass-like interface that simultaneously demarcates the space of the sculpture from the space of the viewer and literalizes the diorama's sense of frozen time by rendering the interior solid and impenetrable, inaccessible to no other sense but vision. The human subject at the heart of the installation offers empathetic identification, but the resin pictorializes the scene and maintains the viewer's fundamental exclusion from the display. His version of the diorama rewrites the space as a series of middle measures between reality and image, truth and fiction, and human and non-human, blurring the boundaries established in the original groups and rendering such distinctions not only insufficient, but also irrelevant.

Like the other works discussed thus far, *The Ecotourist* pares down the habitat group to a series of essential elements only to present them in a way that heightens the diorama's status as representation. Compressed into an image, this work and the other more traditional two-dimensional paintings draw attention to the pictorial qualities of their source material and call its truthfulness into question. Rockman capitalizes on this dissonance across all of these examples, injecting the museum type with his own conceptions of nature's strangeness and the harm we have inflicted upon it, and in this way, he engages in a comparative exercise that emphasizes the gaps in the museum's narratives of the world. His depictions of nature's vulnerability and its strength, his artistic focus on the human impact on the environment and its ability to endure, in turn critiques the museum for choosing not to engage with these dimensions of nature's

condition. Continuing to feature nature's most absurd or repellant forms and its mutability, Rockman shows the natural world to be more powerful and terrifying than the anodyne picturesque presented in the museum's mammal halls and undermines the museum as the source of authoritative knowledge.

Diorama as Legitimization

Appropriating institutional display can also work to legitimize outsider narratives, however, promoting them to the illusion of transparent knowledge by taking on the auspices of authoritative truth. Where Rockman's earlier paintings use this continuity to render all authoritative narratives insensible fiction, his turn-of-the-twentieth-century art instead begins to engage with these visual cues as a way to enhance the persuasiveness of his apocalyptic imaginaries. Rockman historicizes a melodramatic future, putting it in contact with the conditions of the present by grounding them in the display tactics of the museum. In doing so, he suggests that visual knowledge making practices can still generate social consensus by permitting us to understand a scale of time and reality beyond our inherently limited experiences, perhaps even mobilizing productive responses. Recognizing that one's immediate encounter with the contemporary environment can be insufficient for comprehending change, Rockman's appeal to vision permits him to bring into being a conditional world that can only be imagined through visual means.

As the paintings increasingly focus on climate change rather than institutional abuses, they come to identify scientific progress as performing essential work while the world teeters on the precipice of ecological catastrophe. These images accordingly rely

on institutional visual language to lend reality to the apocalyptic conditions that await. By using display conventions for legitimization purposes, Rockman grants scientific narratives and thinking a level of validity they did not receive in his early engagement with the subject matter. The skepticism that dominated his previous artistic production instead diffuses into tacit support in an effort to convey the consequences of unregulated environmental consumption.

Rockman begins to consider this more plausible near future in the *American Icons* paintings, for which he consulted climate scientists and engineers to construct a persuasive post-apocalyptic vision of the world.[27] Each work depicts an architectural landmark in the United States abandoned by humans and taken over by various flora and fauna. The masterwork from this series, *Manifest Destiny,* imagines Brooklyn flooded with water in an immersive dreamscape eight feet tall and twenty-four feet long (figure 4.19). The distinctive pillars of the Brooklyn Bridge stand on the right side of the work, but they are covered with plant life and in the process of crumbling into the sea. The high water line, rising three-quarters of the way up the panel, situates the viewer beneath the ocean's surface with a cutaway view that permits them to observe both the ruins of the drowned borough and the lost tunnels and seafaring vessels buried beneath it. Orange-red light emanates across the sky in streaks and suffuses the water with an eerie glow as if it were tinged with blood. It is the metaphorical dawn of a new era. Anxiety-inducing in its saturated colors and hyperrealistic details, the painting shows the wreckage of one of humanity's most prized habitats swallowed by the ocean to become a playground for animals better adapted to survive.

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[27] Maurice Berger, "Last Exit to Brooklyn," in *Alexis Rockman: Manifest Destiny* (New York: Brooklyn Museum, 2004), 8.

The title *Manifest Destiny* inflects the painting with a dual meaning and offers the work its moralizing dimension. Most immediately, it points to the nineteenth century social imperative to colonize the continent and expand the nation from ocean to ocean. By depicting the wreckage of the city, Rockman emphasizes the exploitative environmental practices that accompanied westward expansion and suggests that the natural resources it uncovered are finite and rapidly approaching their exhaustion point.[28] The cohabitation of tropical and Northeastern species in the painting indicate warmer waters, pointing to the human cause of such destruction: climate change. The dissonance between the hollowed urban center and the titular concept of perpetual American plenty thus identifies the image as a "sober admonition to a nation unwilling to face the consequences of its own insatiable hunger for technological progress and economic gain."[29] Additionally, in an ironic twist, the historically human drivers of Manifest Destiny are absent, but the new life that accompanies the flood points to a different colonization and a second meaning. While the decimated infrastructure suggests that an exodus or extinction of people occurred long before, manifold birds, mammals, and fish have claimed Brooklyn in their wake. These animals represent a new wave of settlers with their own divine right to a land that human beings neglected and destroyed. In this way, the painting both cautions the viewer that our rapacity is turning the environment against us, and further proposes that the non-human side of nature might better deserve the space.

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[28] Berger, "Last Exit to Brooklyn," 11. See also Peter Brownlee, "Manifest Destiny/ Manifest Responsibility: Environmentalism and the Art of the American Landscape," in *Manifest Destiny/ Manifest Responsibility: Environmentalism and the Art of the American Landscape* (Chicago: Terra Foundation for American Art, 2008), 27.
[29] Berger, "Last Exit to Brooklyn," 11.

Manifest Destiny is convincing as a cohesive and immersive visual experience, but part of the painting's authority derives from its associations with scientific research, ultimately revealing a more constructive relationship between Rockman's art and institutional knowledge than ever before. The painting's cataclysmic conditions are extrapolated from scientific data in collaboration with a variety of specialists that include ecologists, archaeologists, and biologists. Drawing from this information as well as images from textbooks and science journals, Rockman creates what Maurice Berger has referred to as "the most accurate rendering possible of a troubled future."[30] Naturally, such a claim is problematic for all the very reasons that Rockman himself has outlined in his earlier artworks, but it has not stopped discussions of scientific accuracy from overwhelming conversations about this work, possibly because the artist has called it and other contemporary images "relatively neutral" based on their relationship to scientific expertise.[31] Discussions of his meticulous research practices, references to his friendships with famous scientists like Stephen Jay Gould and Neil deGrasse Tyson, and the glowing essays about his work written by prominent biologists lend further approval to Rockman's paintings and offer credibility by locating the work within a cross-disciplinary network of authoritative knowledge. [32]

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[30] Ibid., 8.
[31] Rockman quoted in "Alexis Rockman: Our True Nature," Greenpeace, May 6, 2004, http://www.greenpeace.org/international/en/news/features/alexis-rockman-our-true-natur/.
[32] See for example, Friis-Hansen, "Reflections and Refractions," 49, 55-59; Gould, "Boundaries and Categories"; David Quammen, "Rockman's Global Visions: The World and the Eye," in *Alexis Rockman* (New York: Monacelli Press, Inc., 2003), 230–38; Thomas Lovejoy, "From Chameleons in the Curtains to Manifest Destiny," in *Alexis Rockman: A Fable for Tomorrow* (London: D Giles Limited, 2010), 151.

For these reasons, the recognizable didactic framework within *Manifest Destiny* reinforces the factual appeal of the work. Though Rockman began *Manifest Destiny* around the same time as *Future Evolution,* it grounds his interpretation of apocalypse in more familiar signs of destruction and change. The hyperrealistic painting technique combined with the recognizable species and institutional composition offer a sense of naturalism that conjures truthfulness, one that is then reinforced by accounts of the artist's pursuit of scientific accuracy. Rather than undermining the authority of scientific disciplines with an impossible, tongue-in-cheek representation of an alternative world, the habitat group form here signals the honesty of the project and works to authenticate its conclusions. Framing the panorama as an extension of respectable knowledge making practices, institutional conventions in turn transform the image from hysterical fever dream to certain premonition, marking the painting and those that would follow as clear-sighted inevitabilities despite remaining fundamentally artistic endeavors. Such compositional fraternity heightens the emotional and intellectual impact of the work, convincing the audience that this version of the future is real in order to demand change.

Even in other turn-of-the-twentieth-century works where Rockman rejects the compositional frame of the habitat group, we can observe a rare concern with the present and the plausible that helps elucidate how and why Rockman's environmental preoccupations shift his institutional allegiances. The *Weather Drawings* series, for example, also expresses the urgency of climate issues, but its unusual focus on contemporary natural disasters conveys the immediacy of new meteorological extremes through an appropriately different visual language. Depicting landslides, tornados, and dust storms, among other severe weather events, these large-scale paper works show the

force and unpredictability of current weather conditions through loosely-handled oil and gesso.

The visible facture of the liquid pigment in *Red Hurricane,* for example, is starkly different from the tightly-controlled brushwork of his older paintings, and the work similarly abandons the intellectually distancing conventions of institutional language (figure 4.20). The billowing, ultraviolet storm clouds border on the abstract, dominating the composition as they swirl above a dwarfed horizon line. Such a Turner-esque approach to atmosphere has a more organic, volatile quality, despite the intensity of the color palette, that lends a sense of foreboding to the storm. It overwhelms the painting and the viewer as it looms above the landscape, leaving one in fear of the damage it may inflict. [33]

Without the diorama components to call attention to the picture plane as a visual intermediary, the viewer has direct access to the image, but his subject does not require this compositional device to become valid. In its framing and contemporaneity, this work and the others in the series operate more like painterly interpretations of press photographs than habitat groups, bypassing the intellectual quantification of the scene to instead offer an immediate and emotional engagement with the contemporary sublime. The increased frequency of such storms makes the topic much more familiar to the viewer, who only needs to see these images as symptoms and not outcomes. The featured weather patterns are those exacerbated by pollution and aridification, and therefore each image draws attention to the abnormality of such wild shifts in temperature and its

[33] It is worth noting that J.M.W. Turner's expressive uses of color and metaphorical approaches to weather have also been discussed as signifiers for disaster, decay, and death. See Eric Shanes, *Turner's Human Landscape* (London: Heinemann, 1990), 100-122.

potentially devastating effects. Showing the power of weather and its dangerous ability to consume and destroy, the paintings point to the ways that climate is turning against terrestrial life. They rely on style to communicate the urgency of these weather issues and our helplessness if they continue to worsen, not needing the diorama framework to validate these common sightings.

In other large-scale works like *South,* Rockman brings the energy of the gesso technique to depictions of Antarctica, the continent most threatened by global temperature changes thus far (figure 4.21). This work returns to habitat group conventions, marrying an interest in contemporary climate with didactic materials in a way that historicizes the catastrophic changes to the ice caps and places the scene within a larger trajectory of time. *South*'s continuous landscape stretches across seven enormous sheets of paper and is in keeping with Rockman's earlier artistic interests in a panoramic views of nature, but the gestural brushwork and the segmented installation of the piece are unusual elements that point to the artist's concern with making environmental issues more accessible, meaningful, and pressing. Hints of wildlife are scattered across the scene, including shrimp in the lower registers of the first two segments, a group of penguins in the center of the third, and a seal eating a penguin in the bottom right of the last, but unlike previous paintings, the landscape dominates the work. Peaks of white and blue glaciers pierce through the navy waters. Their groupings on the left and right frame the composition and leave the center comparatively open to reveal swirling atmospheric effects at odds with the relatively calm sea below.

As in the *Weather Drawings, South* features a higher degree of abstraction than is typical for Rockman's work, which invests it with emotional urgency. Associated with

the subjective hand of a painter, the facture of the painting communicates the personal and physical interaction between the artist and the surface that would have been inconsistent with the institutional naturalism he previously emulated. In this work, however, the runny, translucent quality of the wax combined with abstract washes of color implies a kind of *plein air* painting that speaks to the artist as witness. Indeed, as the work is based on sketches from Rockman's Antarctic travels in 2007, it operates like a travelogue of a location that testifies to the artist's direct experience of the landscape.[34] Formally, the loosely-handled pigment enhances the textures of the ice and lends monumentality, but it is also creates a liquid effect across the work that charges it with energy. Colors are mixed on the paper in agitated strokes of paint that work against the crisp water line, reading as shifting light effects and bringing movement to the image. Nevertheless, this sense of a dazzling visual encounter captured from a moment in time is corrupted by the niggling feeling that these frozen mountains are melting into the ocean around them. Rivulets of paint pour down the sides of the icebergs almost as if condensation from the stormy skies has accumulated and dripped along the exterior of the ice shelf (figure 4.22). In this way, while the medium suggests that these are personal observations, it also becomes a literal indicator of a rapidly disappearing environment, playing somewhere between observation and interpretation.

The alchemical transformation of style into subject matter combined with Rockman's return to the vocabulary of the habitat group in this work turns abstraction into data that may be quantified, rationalized, and extrapolated from, promoting the anxieties of the subject to the status of documentable fact rather than mere feeling. Once

[34] Denise Markonish, ed. *Badlands: New Horizons in Landscape* (Cambridge: The MIT Press, 2008), 66-68.

again, the cross-sectional perspective that has come to signify the glass front of the diorama and which opens both the surface and oceanic terrain for observation implies an official version of the southern continent. It provides a sense of omnipotence that is further reinforced by the gaps between each sheet, which read much like the iron bars that separate the glass panels in the AMNH mammal groups. Bringing an institutional bracket to his interpretation of the site permits Rockman to similarly institutionalize the subject, harnessing its subjectivities within an official narrative frame as a method of validation. Nevertheless, the inverse is also true; in pairing the intellectual distance of the diorama with the human implications of Expressionist textures, the work makes one's emotional response part of the academic engagement with the subject. It therefore functions to engage both the head and the heart of the viewer to inflect an understanding of Antarctica with anxiety, turmoil, and the precarity of the moment. It is simultaneously an argument for factuality and for viewer investment.

In each of these examples, cohesive credibility is more important than the outrageous humor of his past work, and so the paintings invert old artistic strategies to instead double down on the trustworthiness of natural history display. Rockman minimizes the points of rupture found in earlier images, such as mutations or blatant references to science fiction, repressing the kinds of obvious inconsistencies that signaled institutional omissions, imperfections, and even failures. Through a novel focus on the present and the real rather than the possible yet improbable, the works are more literal and less metaphorical, meant to be taken at face value rather than cultivate critical evaluation skills. Siding with the scientists who predict catastrophe over the pundits who claim climate science is motivated by subjective ideology, the paintings aim to convince

viewers of impending ecological disaster. As art that is meant to persuade, institutional language offers a means to intensify the work's credibility and reify the emotional turmoil of confronting a difficult future.

Beyond Critique

Following early works that addressed science as a particularly invasive kind of human exploitation, such allegiances to scientific though seem inimical to Rockman's initial project. Recognizing this disjunction, I want to call attention to the ways the artist's changing relationship to institutional critique coincides with a broader re-evaluation of the function of criticism at the dawn of the twenty-first century. Doing so positions Rockman's work as a response to a crisis in social consensus, one whose unapologetically visual epistemologies propose a way forward in what has become the "post-truth" era.[35]

Manifest Destiny is not only significant because of its size and subject, but also because its production straddles a temporal milestone that is itself punctuated by apocalyptic discourse. Rockman took seven years to complete the painting, beginning work around the time of the particularly intense El Niño event of 1997-98 and the commensurate spike in cultural debate regarding global warming.[36] Swiftly followed by "Y2K" hysteria, the millennium seemed less a technological frontier and more a

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[35] "Post-Truth" has begun to receive scholarly consideration. See, for example, Lee McIntyre, *Post-Truth*. Cambridge: The MIT Press, 2018.

[36] "A Conversation with Brett Littman," in *Alexis Rockman: The Weight of Air* (Waltham, MA: The Rose Art Museum, 2008), 113. For Rockman's global warming context see Marsh, "Alexis Rockman," 50-51. For a history of global warming see Spencer R. Weart, *The Discovery of Global Warming: Revised and Expanded Edition* (Cambridge: Harvard University Press, 2008).

countdown to the end of the world, and when the twin towers collapsed in a horrific cloud of ash less than two years later, for many that promise was fulfilled. Apocalypse violently returned to the cultural consciousness, its epicenter located within a mile of Rockman's Tribeca studio.[37] The painting debuted at the Brooklyn Museum in 2004 to a Post-9/11 world in which urban ruin had a recent and traumatic precedent, lending it a different kind of emotional resonance for the New York public. For Maurice Berger, this context unlocks the meaning of *Manifest Destiny* and magnifies its impact. He suggests that Rockman's artistic ruminations on disaster and decay in in this work are related to way the terrorist attacks ruptured narratives of American superiority and strength. Exposing vulnerabilities and infusing the culture with a visual language for urban destruction, the symbolic assault on and collapse of the World Trade Center brought an abrupt end to ideas of global dominance predicated on the promises of technological advancement and capitalist progress.[38] While these issues certainly intensified the impact of *Manifest Destiny* when it was exhibited in 2004, 9/11 had other important consequences, particularly for the ways Americans perceived authority, information, and truth. The development of mainstream conspiracy theories to explain the attacks and other national discussions about evidence and authority that surrounded the country's subsequent engagement in the Iraq War opened up new pathways for cultural skepticism and disbelief that tested traditional sources of information and knowledge.

Amongst these topics, climate change developed into a subject with its own burden of proof, one that demanded due diligence lest anyone be taken in. While certainly not a new concept by this moment in time, "global warming" became an

[37] Berger, "Last Exit to Brooklyn," 12.
[38] Ibid., 12-14.

increasingly hot-button issue as politicians debated the credibility of scientific discourse in an effort to determine whether or not we should build policy around these claims. Many continue to believe that environmental catastrophe is hyperbole.[39] For these reasons, Rockman's decision to paint a climate-altered future based on scientific sources is a political act, making works like *Manifest Destiny* and *South* intrinsically argumentative in nature. Reversing course to defer to scientific knowledge rather than to critique its methods, the paintings categorically reject the social skepticism impeding environmental progress and align themselves with the epistemologies that support a climate conscious position. These works accept that some things can be known and that science can provide this knowledge, building on these insights to persuade and mobilize action rather than contribute to a culture of doubt that had proven itself counterproductive to environmentalist behaviors.

It is in climate denial that Bruno Latour also realized the problems of critique culture and questioned its viability in the new century. Disturbed by the ways his deconstructionist approach to the production of scientific fact may have contributed to the crisis in scientific confidence, Latour begins to consider how a relentless focus on the sociological dimension of knowledge production, its subjective and arbitrary elements, put the onus on the wrong part of the epistemological process.[40] Instead of building more

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[39] Megan Brenan and Lydia Saad, "Global Warming Concern Steady Despite Some Partisan Shifts," Poll (Gallup, March 28, 2018), https://news.gallup.com/poll/231530/global-warming-concern-steady-despite-partisan-shifts.aspx?g_source=link_newsv9&g_campaign=item_231386&g_medium=copy.

[40] Bruno Latour, "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30, no. 2 (Winter 2004): 227. He is of course referring to works like *Laboratory Life*, which analyzed the social functions of the scientific lab as placing limiting conditions on what facts can be produced, often arbitrary ones related to

durable knowledge, critique became about debunking information and denigrating the gullible, making all knowledge suspect and unreliable. "The mistake we made, the mistake I made," he concedes, "was to believe that there was no efficient way to criticize matters of fact except by moving away from them and directing one's attention toward the conditions that made them possible."[41] He wonders:

> "Should we apologize for having been wrong all along? Or should we rather bring the sword of criticism to criticism itself and do a bit of soul-searching here: what were we really after when we were so intent on showing the social construction of scientific facts? Nothing guarantees, after all, that we should be right all the time. There is no sure ground even for criticism. Isn't this what criticism intended to say: that there is no sure ground anywhere? But what does it mean when this lack of sure ground is taken away from us by the worst possible fellows as an argument against the things we cherish?"[42]

Enumerating the ways that critique has enabled ideologically-driven skepticism, Latour encourages a re-evaluation of critical practices in an effort to move past this debunking impulse and instead engage in work that "adds reality" rather than detracts from it.[43] In order to achieve this, he proposes that we reorient discourse around "matters of concern" rather than "matters of fact" because the latter are not rich enough to account for the interconnected complexities of any set of experiences, problems, or ideas.[44]

Whether or not one finds Latour's suggestion helpful, it is worth nothing that he composed his Stanford lecture in nearly the same moment that Rockman painted *Manifest Destiny*, and both point to a set of cultural conditions that prompted a re-evaluation of the role of certainty and critique across disciplines. Likewise, both men are working through

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very human tendencies and errors. Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton: Princeton University Press, 1986).
[41] Latour, "Why Has Critique Run out of Steam?" 231. Emphasis in original.
[42] Ibid., 227.
[43] Ibid., 237.
[44] Ibid., 245.

the consequences of their own institutional skepticism in the face of impending ecological disaster, each presenting ways to reconsider the role and durability of ecological narratives and methods of knowing to overcome political paralysis. In many ways, the response Rockman mounts in his paintings agrees with Latour's. Because *Manifest Destiny* is invested in the overarching reality of climate change, it is less concerned with the sociological problems of scientific knowledge production or complete factual accuracy, even if parts of the work have been represented in this way. Even though Rockman consulted specialists to create the painting, it remains speculative; it is impossible to know the exact physical state of the continually-developing Brooklyn before it floods, the height of the waters, or if it would even be abandoned. But this is beside the point. In this image, the whole is greater than the sum of its parts and more pressing than an atomized analysis of individual bits of data. The climate is changing in perilous ways, even if it does not reach this exact state. The overall effect, its gripping and ominous depiction of a genuinely possible future, is more important than whether or not the specifics are accurate.

In its most literal sense, Rockman is also adding reality to the subject by giving the viewer a way to comprehend the full meaning of the shifting climate and its implications for the longevity of human life on this planet. *Manifest Destiny* supplements numbers and data with a different kind of descriptive language and in turn materializes a group of conditions that are difficult to constellate. Painting is crucial to this process. Its intimacy, visceral connection to the painter, and its ability to both capture and suggest transience permit Rockman to organize information in a way that appeals to a sensory apparatus predisposed to an intellectual mapping of relationships and significances. As a

visual technology, the paintings also insist that vision is a reliable method of knowing. Valorizing painting's imaginative capacities and the productivity of visual encounters, Rockman's traditional medium returns to the educational principles of diorama culture, relying on vision as the primary site of knowledge making. Though he applies these principles to different narratives, the work proposes that the way through the institutional problems is perhaps not to undermine the institution, but to work within its own syntax to expand it, using painting as the interchange between discourses.

Rockman's most recent set of panoramic paintings, watercolors, and field drawings, collectively called *The Great Lakes Cycle,* show how the artist relies on painting's imaginative capacities to cohere his sources into legible and relevant histories rather than future projections. Reintroducing components of the hallucinogenic naturalism that characterized his early painting, this latest group of climate works once again combines hyperrealistic elements into surreal tableaux. However, the panoramas in this series are closely aligned with his more recent images that use the diorama format to support narratives of scientific accuracy. The cycle functions as its own institutional narrative with real didactic qualities, working not to refute the credibility of other authoritative accounts but to multiply the viewer's understanding of the history of the region and its environmental changes over time. Unapologetically appealing to the efficacy of the diorama by recapitulating its visual learning processes, the series suggests that the original institutional displays do offer ways to know the natural world and their appeal to vision can still be leveraged for constructive social wisdom.

These works, more so than his previous paintings, trace progressive historical narratives, unraveling the development and exploitation of the area by connecting them to

various environmental outcomes. Rather than focusing on the imaginary future, Rockman consolidates vast references to painting, popular culture, and scientific studies and reframes them into metaphorical images that also convey factual information about the ecosystems themselves. Each painting generally moves from prehistoric or Early Republic conditions on the left of each panel to more recent developments of the right, emphasizing the temporality of environmental change throughout the series. Such organization is typified by *Cascade*, the earliest completed in the cycle, which helped set the template for the four works that would follow (figure 4.23). Three caribou tread through the waters on the left as diverse fish swim away from their footfalls. Behind them, an ice shelf rises on the shore, nearly to the top of the painting. The landscape transitions to forest as the image moves right. Birds in flight form a line in the sky while insects do the same just above the water, continuing to push the viewer's gaze to the right side of the panel where logging, fishing, and other commercial activities abruptly level the landscape under the peach glow of the sun.

The painting simultaneously shows the changes from the ice age to the industrial age, the increasing dominance of humans, and the progression of seafaring technology during this time, but it assembles these concerns into a continuous narrative that has clear origins and outcomes. Unlike *Evolution*'s non-progressive organization, *Cascade* is sequential and the entire composition insists on the temporal movement within the painting. The narratives proceeds across the work in the same way the animals themselves do, transitioning in a diagrammatic fashion to facilitate internal meaning. Rockman once again applies the cut view that has become so central to his practice to reveal similar progressions below the surface of the water. Along the floor of the lake,

Paleolithic tools and terra cotta pots give way to an iron freighter in inverse correlation to the disappearing biodiversity shown at the left of the panel, their archeological residues marking the passing time like geological strata.

The institutional device continues to formally suggest the coincidence of the picture plane with the glass panel, however, its precise iteration here is unique in Rockman's oeuvre. The era of commerce is literally divided from the era of subsistence by the fishing net, whose visual line is picked up by the edge of the deforested shore and extended into the smoke plume that unfurls on the horizon. Like the invisible glass front of the diorama (or in this case, the painting), the net gives the developed side of the image its own screen, which is reinforced by the diagonal cant of the cutaway view following the line of buoys. Two visual networks collide on this plane. At the net's seam, space becomes confused and the viewing window is seemingly both perpendicular to the lake's surface and parallel with it, exposing the depth of the water while sitting flat on top of it. The disjuncture points up the discrepancy between the two sides of the work, almost as if two different dioramas merge along the fishing line. Formal qualities reinforce the changeover. Cool colors give way to warm colors, and wildlife does not stretch past the net's dividing line. Where the composition is predominantly horizontal on the left side of the work, the floating logs and the industrial vessel on the right instead echo the net and recede into the picture plane. Placing the image of industry askew from symbiosis, the field is literally at odds with the ordering system that came before.

Pioneers and *Spheres of Influence* situate the viewer deeper under water, and while they do not mimic the complexity of the *Cascade*, each maintains the same kind of diagrammatic organization. *Pioneers* similarly places the glacier at the left, using a

mastodon skull to reinforce its prehistoric temporality (figure 4.24). The right facing tusks of the fossil and the horizontal position of the various fish swimming around it drive the viewer through the composition toward the sunken freighter, where the water shifts color to a warm, toxic yellow. In the foreground, the points of an anchor mirror those of the tusks. Its chain sweeps upward toward the boat that dropped it, in parallel with a trail of invasive species, which suggests that it too was projected from the vessel above. *Spheres of Influence*, by contrast, limits its story to modern history, and though time is not entirely shown in linear progression here, it remains a critical organizational element (figure 4.25). A native canoe, a nineteenth-century warship, and two twentieth-century freighters glide in sequence along the horizon. The color shifts in the weather and water also encourage the viewer to read the panel from left to right, developing from the more anodyne hues of gentle sunlight breaking through dark storm clouds to a fiery impasto above the commercial vessels. The water, again exposed with a cutaway view, similarly changes from clear blue to a liquid green to indicate the arrival of invasive algae. The multidirectionality of the animals and the sunken airplane work against this underpinning structure, but it adds a sense of chaos to the picture, creating anxiety around the changing wildlife for the spectator.

Watershed is the only work to extrapolate a future at the end of the painting's internal timeline, but it too presents a linear progression to these events (figure 4.26). The image begins with an idyllic river environment and stretches to a metropolitan ravine turned green with the chemical runoff shown pouring from two pipes in the middleground. Like *The Farm,* it uses mutations to emphasize the alignment between technology and toxicity, further associating it with urban development as indicated by the

high-rise buildings in the background on this side of the image. Recycling these agricultural references reintroduces questions about scientific morality in this series, initially appearing to challenge the experimentation practices like this imagery does in *The Farm*. However, the science fiction elements in these works have been perceived, for the first time, more as artistic allegories rather than reality-breaking components or challenges to institutional authority. The monster whose tentacles curl out from the pit at the bottom center of *Forces of Change* (figure 4.27)—the "E. coli Kraken" in the midst of destroying the water dredger—is not taken as a literal creature but a metaphorical one, for example.[45]

This shift from a literal reading to a more metaphorical one is likely related to the ways *The Great Lakes Cycle* integrates specific references across the different panels in its quest to more fully understand our present conditions. As with *Manifest Destiny*, the suite's relationship to scientific research buttresses scholarly narratives of authority and success. Curator Dana Friis-Hansen praises Rockman's "careful interlacing of compositional approaches with stylistic languages, pictorial practices, and the vocabularies of science," emphasizing the "scientific information it carries," and his rigorous consultation with specialists of the Great Lakes ecosystem.[46] The works are indeed meticulously researched, built up from hundreds of sources, but Friis-Hansen's comments indicate that the painting's alignment with authoritative knowledge supersedes any imaginative organization they might contain, perhaps because they are mostly limited

[45] "The Great Lakes Cycle: Paintings," in *Alexis Rockman: The Great Lakes Cycle,* ed., Dana Friis-Hansen (Grand Rapids: Grand Rapids Art Museum): 82.
[46] Friis-Hansen, "Reflections and Refractions," 45, 49.

to a view of the present. It points to the different kind of didacticism at the heart of these works and to a different reception for the knowledge they might contain.

The diorama conventions here continue to insist on the veracity of the information contained in the paintings, again like *Manifest Destiny,* designating the spaces as ordered by an objective external principle that signals reliable content. In the case of *The Great Lakes Cycle,* however, the effect is multiplied by seeing the works together. When they are assembled, the exhibition becomes its own diorama hall, which reinforces the sense of authoritative display. Each panel is the same size and of the same orientation, featuring similar color palettes and above-and-below viewpoints that further unite the works. Their physical uniformity and the implication of the glass front parallels the organization of the AMNH diorama halls, which unites different sites into one gallery of windows, and it brings the two exhibitions into closer proximity, helping to support the believability of Rockman's paintings.

Because each panel works in concert with the others, a holistic historical narrative emerges regarding human-driven ecological destruction, and it subsumes the individual panels without undermining the necessary linearity of the timescale. Seen together, it becomes obvious that the lakes are the monolithic platforms that unite the works rather than descriptive scenery pieces. Their constancy across the series grounds each painting, formally anchoring the different timelines that coalesce around them. Jonathan Crary made early note of the way that the painter integrates multiple timelines in his works, but never before have these temporalities come together in Rockman's art in the progressive

fashion seen here.[47] In this group of paintings, the flux of time around the lake transforms the bodies of water into protagonists, as the series title implies, but without the kind of spatial exactitude one might expect from a group of works primarily about these bodies of water. With five works in the cycle, there is a painting for every lake in the series, but no panel is dedicated to any one individual lake. Their real-world arrangements do not dictate the organization of Rockman's references; they do not determine how each incident correlates to another. Rather, the specificity of each event is applied toward greater thematic issues, arranged in tableaux to create meaningful relationships between the bits of information and consolidate the narratives.

Rockman mounts a pseudo-historical argument by gathering such threads, applying factual details toward a broader thesis that uses the conventions of institutional display to mark its status as an intellectual project. The pictorial integration of the various timelines points to the image as a contrivance—especially in *Cascade* and *Spheres of Influence* where species seem almost pasted on the surface of the work even though the environment has illusionistic depth—but the diorama form mitigates this discomfort by framing the work as part of a didactic narrative. It lends an air of authority and rationality to a series of ideas that cannot exist together in the real world. His art historical references work in a similar fashion, offering a context for the kind of story he tells. Calling the series a cycle gestures to the biological interconnectedness of life in this region, much in the way of the water or carbon cycle, but it also heralds back to precedents in painting like Peter Paul Rubens' Marie de Medici cycle in the Louvre or, perhaps more fittingly, Thomas Cole's *The Course of Empire*. Rockman's work has been

[47]Johnathan Crary, "Alexis Rockman: Between Carnival and Catastrophe," in *Alexis Rockman*, ed. Dorothy Spears, (New York: The Monacelli Press, 2003), 11.

compared to *The Course of Empire* before, usually in regards to nature's remediation of the post-human cultural space as shown in Cole's *Desolation* and in the anxieties about consumption and overdevelopment seen in *The Course of Empire* more broadly.[48] In *The Great Lakes Cycle*, however, the temporal narrative that takes place both within and across the panels strikes a new level of kinship with Cole's series. Beyond an investigation of a post-civilization condition, Rockman collapses Cole's entire timeline into each individual panel and similarly emphasizes the *process* of ecological change and not just its outcomes.

The connections to Cole help center Rockman's historical interests for the series. Beyond a general kinship with Cole's subject and narrative structure, other explicit references to the nineteenth century landscape tradition in the series (such as Cole's 1856 depiction of the Horseshoe Falls in *Forces of Change* or Frances Anne Hopkins' 1869 *Canoes in a Fog* in *Spheres of Influence*) demonstrate the artist's continued awareness of the connections between landscape painting and the diorama backgrounds.[49] Consciously applied to the historical aims in this series, however, these references also point to the broader history of American landscape painting in which the artist's own work functions, emphasizing its ability as representation to act as an interlocuter for complex environmental ideas and further leaning into the painting's role as visual discourse.

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[48] See, for example, Marsh, "Alexis Rockman: A Fable for Tomorrow," 51; "A Conversation with Brett Littman," 113; Berger, "Last Exit to Brooklyn," 10; especially Kevin J. Avery, "Panoramas of the Post-Apocalypse: Rockman's Tryptych, American Landscape, and Landscape Theater," in *Alexis Rockman: A Fable for Tomorrow* (London: D Giles Limited, 2010), 132.

[49] "The Great Lakes Cycle: Paintings," 75, 83; For more on the use of Romantic landscape in Rockman's practice see Avery, "Panoramas of the Post-Apocalypse," 125-143.

Rockman's paintings thus make the act of interpretation into an institutional narrative of its own, showing how an overarching historical viewpoint can be assembled from a network of observations, data, and even other historical narratives. Stitching individual specimens, moments, and sources into a legible composition, the artist consciously uses the diorama's visual precedents to contextualize disparate pieces of information and naturalize their greater social relevance. The conceit of the diorama fundamentally enables the integration of the vast array of information Rockman assembles in the series. It provides a rationalizing structure for what could more reasonably be called a group of disparate anecdotes, and it further certifies the factuality of the presented material. But it is only through painting that the threads cohere to become an independent, viable story. Through painting, the artist forces discrete phenomena to coexist in one real-world location, namely the panel itself. In this constructive act, Rockman shows how his medium bears the special ability not only to image the impossible but also to create relationships between mutually exclusive states of being.

The panoramas insist on their visuality over other kinds of sensory engagement by limiting haptic effects and calling attention to their two-dimensional state, and so the medium that binds Rockman's facts together also makes sight the primary method of knowledge acquisition in *The Great Lakes Cycle*. The assumption that one can access scientific information about the lakes and their history through this visual encounter emphasizes the productivity of observational learning, much in the way that the original

habitat groups once proposed.[50] Not only, then, does the use of diorama conventions elevate the credibility of both the institutional and artistic narratives, it also centers observational practices for gleaning valid knowledge. Using the diorama to support his research rather than to critique the institution mutually reinforces the validity of both types of displays and appeals to vision itself as a productive method for generating knowledge.

Phrased another way, Rockman takes his facts and arranges them into concerns, into gatherings held together by painting's pictorial abilities. The diorama's preexisting visual schema permits his timelines, themes, and data to be gathered into a legible and manageable whole, but painting holds them there. The artist thus demonstrates how the medium's visual orientation can perform a myriad of cognitive functions—gathering, relating, emphasizing, and contextualizing information—that are unique to its sensory method. Rockman's version of visual knowledge-making may be a more active process, but it is a visual process all the same. In this way, *The Great Lakes Cycle* argues that a curated visual experience can construct intellectually sound and socially-significant realities, making tangible the interrelationships that are difficult to envision outside of painting's world-building capacities.

Reading this idea back on Rockman's former institutional skepticism, it suggests that the artist has conceded some points to the authoritative display practices he once sought to overturn. Applying new ideas to the diorama model and linking them with other historical narratives, *The Great Lakes Cycle* builds on the museum's methods rather than

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[50] Victoria E. M. Cain, "'The Direct Medium of the Vision': Visual Education, Virtual Witnessing and the Prehistoric Past at the American Museum of Natural History, 1890–1923," *Journal of Visual Culture* 9, no. 284 (2010): 284–303.

invalidates them. It abandons a need for perfect factual integrity and suggests that, in this moment, productive critique may require more of an expansion of the worldview than a rejection of all kinds of authorities.

Conclusion

Looking back to Mark Dion's appeal to wonder as an alternative to institutional knowledge, we can see just how differently Rockman's painted dioramas have come to view the role of critique in relationship to contemporary ecological issues. The artists are friends and sometimes collaborators, but their primary methods for reorganizing diorama display point to contrasting conceptions of effective viewer engagement and the place of natural history in the present.[51] Though both men have produced work that exposes the faults of scientific authority and practices, Rockman's evolving relationship to expertise and the blatantly political orientation of his recent work recuperates the habitat group's knowledge making status in ways that Dion does not.

Both artists began their engagements with natural history to point to information outside the bounds of the museum and to interrupt one's blind faith in institutional narratives. For Rockman, this meant confusing the contents of the diorama to undermine its views of a perfect natural world separate from the activities of human beings. Transforming the alcoves into paintings and infusing the displays with the repulsive and the fantastical, his early works appropriated museum visual language to reveal its status as representation and disagree with the kinds of artificial ordering schemes scientists

[51] Tranberg, "In the Studio," 92. For a co-produced project see Mark Dion and Alexis Rockman, eds., *Concrete Jungle: A Pop Media Investigation of Death and Survival in Urban Ecosystems* (New York: Juno Books, 1996).

impose on other species. These paintings were also skeptical of the benefits of technological advancement and suspicious of its intent, showing scientific experimentation to be just another way that humans have attempted to control and pervert nature. Dion's installations performed a similar operation, opening the closed space of the institutional display to permit different kinds of physical engagements and yield different kinds of insight based in personal experience. While his work is more focused on the process of knowledge acquisition as a way to highlight its inherently subjective character, both artists appropriated methods of natural history display to critique scientific authority.

When Rockman's painting began to focus more intently on climate change, the artist began to use institutional visual language as a way to build consensus, positioning his works as authentic interpretations of specialized information. These paintings applied diorama conventions to heighten the sense of truthfulness offered by their hyperrealistic imagery rather than to highlight the subjective character of museum narratives. Rejecting the skeptical practices that contribute to climate change denial, these works instead aligned themselves with scientific expertise as way to convince the viewer of their imminent reality. I have argued that this shift occurred alongside other re-evaluations of critique in the Post 9/11 moment, especially in relation to Bruno Latour's assessment of widespread cultural skepticism at this time, and I think that Rockman's work is in harmony with Latour's solution for creating productive discourse. Paintings like *Manifest Destiny* and *The Great Lakes Cycle* move past a fixation with individual facts toward larger networks of associated ideas that all point in the same direction. Dion's installations, by contrast, are generally less concerned with the political exigencies of climate than with the institutional gatekeeping that generates factual hierarchies, and so

they continue to foreground the contingency of truth and privilege experience over expertise in measuring validity. If his interest in wondrous experience empowers the individual to find beauty in phenomenological encounters with nature, to generate curiosity through embodied contact, Rockman's is more historically and pictorially oriented, yielding overarching narratives about cause and effect and the passage of time in human interactions with the environment.

Rockman is also interested with the way that scientific knowledge is made, not just the information it communicates, but rather than appeal to a different kind of epistemological process, as Dion has done, his recent painting proposes that traditional observational practices can still yield productive discourse, that it can be modified and reoriented toward a shared understanding of the facts of the natural world. It is perhaps because Rockman is still invested in the idea of narrative that he can approach the diorama in this fashion. Exploiting the inherent visuality of painting, Rockman leans in to the medium's ability to bring together temporalities and spaces in ways that are impossible in installation work, and he strings individual encounters into legible histories.

Noting the departures between the two practices, it seems that Dion's fixation on the power of things and one's direct engagement with objects still participates in the kind of critical culture that Rockman's recent work has mostly abandoned. This is not to say that the latter's solution will prove to be better than the former's in the long run, but instead to note that Rockman's investment in the diorama form may be more in tune with an emergent discussion that seeks a new way forward. In their different preoccupations, the two artists have ultimately diverged in their approaches to the AMNH, taking

alternative positions on the institution through their distinct uses of the habitat group format.

Both have mixed feelings about whether or not their art will change anything, or if we are past the point of no return.[52] But there seems something optimistic in Rockman's choice to historicize the present as if it were a display in some future museum for some future people. With a renewed interest in the visual as a reliable mechanism for transmitting information and not just one whose artifice reveals more artifice, Rockman's paintings suggest that, even if all images are distortions to one degree or another, they are still built from measurable and—more importantly—actionable realities.

[52] Tranberg, "In the Studio," 91; and Miwon Kwon, "Miwon Kwon in Conversation with Mark Dion," in *Mark Dion* (Cambride: Phaidon, 1997), 33.

CONCLUSION:

Seeing Through, Drawing on, Writing Over

In 2018, the Field Museum of Natural History in Chicago began renovations on the Native North American Hall, an exhibition that has remained mostly untouched since the 1950s. The initiative seeks to modernize the displays and the narratives they tell in collaboration with native scholars and communities, not only to better represent the rich diversity of native cultures and their contributions to Chicago, but also to recognize the dynamic histories that have been excluded from the hall since its inception.[1] Like the habitat groups in the AMNH, the anthropological exhibits also offer a sense of timelessness, but here, the intersections between the politics of display and the politics of racial representation have created a different kind of power disparity, one that has reified racial differences among people and historically been used to justify subjugation.[2]

The Field developed this initiative partially in response to its exhibit *Drawing on Tradition*, which consisted of a series of interventions in the Native North American Hall by Kanza artist Chris Pappan. From October 2016 until January 2019, Pappan transformed the old installations by supplementing them with his contemporary ledger drawings, his take on a nineteenth century Plains Indian practice that used the

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[1] "Field Museum to Renovate Native North American Hall, to Open 2021," Press Release, The Field Museum of Natural History, October 29, 2018, https://www.fieldmuseum.org/about/press/field-museum-renovate-native-north-american-hall-open-2021.

[2] This problem has been discussed at length. See, for example, Michael Ames, *Cannibal Tours and Glass Boxes: The Anthropology of Museums*, 2nd rev. ed. (Vancouver: UBC Press, 1992); and David Jenkins, "Object Lessons and Ethnographic Displays: Museum Exhibitions and the Making of American Anthropology," *Comparative Studies in Society and History* 36, no. 2 (April 1994): 242–70. For an early gloss on Anthropology and power disparities see Diane Lewis, "Anthropology and Colonialism," *Current Anthropology* 14, no. 5 (December 1973): 581–602.

recordkeeping books and maps white settlers and officials brought to tribal lands as a substrate for art.[3] Some of these images were installed on the walls around the collection, but others were converted into vinyl decals and affixed to the glass surface of the displays. In one example, seen on the case containing an animal skin bearing a pictographic biography of a warrior, Pappan pasted an image of native figures assembled shoulder to shoulder beneath an arcing rainbow (figure 5.1). They turn away from the viewer to face the painting on display, showing off the multicolored textiles around their bodies and interrupting the visitor's access to the object. Drawn in flat planes of color assembled from sketchy lines, the figures formally reflect those found on the animal skin, offering the impression of a community coming together to look at themselves and their history, which was codified and passed down in objects such as these.[4] He performed a similar exercise with other vitrines in the hall, including the American Bison display, where a historical photograph of the animal overlaid with drawings repeats around the exterior of the case in a band that evokes film (figure 5.2). Juxtaposing the image of the live buffalo against the stuffed one, Pappan's intervention refutes the sculpture's liveliness and instead draws attention to taxidermy as death.

Other native artists such as James Luna and Kent Monkman have also addressed the latent racism in anthropological display practices, but critiques like these typically occur outside of the original museums, in art galleries or on the street. By engaging with the collections *in situ, Drawing on Tradition* not only brought the commentary into the

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[3] Allison C. Meier, "An Artist Addresses the Field Museum's Problematic Native American Hall," Chicago Magazine, January 8, 2019, http://www.chicagomag.com/arts-culture/January-2019/Chris-Pappan-Field-Museum-Native-American-Halls/.

[4] For more on Native pictograms, both in ledger drawings and pictographic hides, see Janet Catherine Berlo, ed., *Plains Indian Drawings 1865-1935: Pages From A Visual History* (New York: Harry N. Abrams, Inc., 1996).

institution itself, it also implicated the material structure of the cases in the process. Pappan's layering of images left a trace of his experience on the surface of each exhibit, forcing the viewer to literally look through his perspective in order to access the institutional display, interrupting the process of mental separation that the glass panel permits. The decals acted as screens, barriers, or full obstructions that altered the viewer's access to the object, but more importantly—at least for the interests of this study—they called attention to how fundamentally the glass panels mediate the encounter (figure 5.3). Though Pappan's work engages with a different form of natural history display and has different political resonances, it nevertheless points to a similar set of issues as those discussed throughout this project. His impulse to intervene in natural history display at its point of interface echoes the formal interests of the artists who reinterpret the dioramas, thus emphasizing the critical role glass plays in both social understandings of museum subject matter and contemporary artistic engagements with natural history.

For the AMNH dioramas, glass physically codified an ideological practice that emphasized one's distance from the natural world, working in concert with illusionism to suggest that nature was defined by its isolation and picturesque beauty. Slowly evolving from nineteenth century vitrines and open specimens into the holistic niche exhibits, the dioramas reinforced the narrative contents of the displays with their formal properties, highlighting the role of vision as the primary sense of discovery and encouraging the viewer to depend on it exclusively in order to understand the world around them. More than just a theatrical experience, the habitat groups became a place where vision was focused and clarified through the glass front, and it identified the dioramas as sites of specialized knowledge. The midcentury groups, and the ones in the Hall of North

American Mammals in particular, further intersected with issues of environmental sovereignty, dovetailing with an American landscape tradition that has been used to rationalize the strength of American character. If conservation was the original catalyst for diorama development, the wartime social need for nationalistic pride and combat readiness instead reworked the groups into symbols of American vitality that required an appropriately incorruptible image of the nation to reassure the public of the value and inevitable success of the war.

The narrative of nature that Smithson, Dion, and Rockman rail against in their work emerges from that historical moment, and in each case, the artist's varying approaches to the properties of glass generate new responses to natural objects. Their work centers the operations of the glass screen and helps unravel the epistemological assumptions it engenders. Adapting a surface so closely associated with such visual learning practices, both Smithson and Dion promoted alternative engagements with natural objects in a Post-structuralist appeal to embodied experience while Rockman's vacillating opinion of the American Museum, worked through the conventions of the diorama, indicates a return to vision as a method for knowing in a "Post-Truth" world. Each of these artists responded to the collision between historical concepts of nature and their own social experiences of it after a midcentury rupture in the philosophical understanding of knowledge, experience, and narrative, but they chose to do so within the framework of the habitat group. Where Smithson reacted against the ways the Atomic Age split the social consciousness between the extreme future and extreme past, Dion eroded the institutional authority whose foreclosures on meaning and policing of truth ignored the current stakes of ecological destruction. Starting from a similar place,

Rockman's reinterpretations now rally with climate scientists to envision a near future through the conventions of display he once critiqued. Despite these different foci, each artist's reinterpretations show that the diorama has significantly shaped the way that we engage with and understand our relationship to nature and history. It is a visual shorthand for conceptual issues, one that permits the artist to engage in cross-disciplinary discourses. Each intervention reveals the work to be done around the displays, but also prompt discussion regarding the role of critique and cultural skepticism after the turn of the century. If these artists have reinterpreted scientific display practices and challenged a scientific hegemony, is the critique enough to prompt change, and do their alternative narratives sufficiently fill the gaps the old ones have left behind?

Artistically addressing the issues of authority inherent to the habitat dioramas—who gets to establish the narrative and why—has in some ways created a dialectic that has yet to be resolved, particularly because the critical interventions tend to happen in art galleries or other public spaces while the dioramas remain in natural history museums.[5] For this reason, Pappan's collaboration with the Field is especially interesting, and it both highlights areas for further study and suggests a way forward. Certainly, the visual culture and politics of other contemporary American science institutions demand closer examinations, as do the regional specificities and continuities in diorama culture and display more broadly. The role of social identity in critiques of natural history, too,

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[5] An exception to this divide was seen in the exhibition *Dioramas* at the Palais de Tokyo in 2017, which brought examples into the art gallery. Nevertheless, the teleological direction of the exhibit foregrounded the history of the type through to contemporary art rather than to rethink the living displays in the original institutions themselves. Richard Kalina, "Scene Stealers: 'Dioramas' Set Many Stages at the Palais de Tokyo," Review, Art News, August 17, 2017, http://www.artnews.com/2017/08/17/scene-stealers-dioramas-set-many-stages-at-the-palais-de-tokyo/.

requires more attention.[6] Yet as an institutional example of how contemporary natural history museums are seeking to balance the fact of an object with the manner of its display, *Drawing on Tradition* suggests that a focus on materiality can offer insights into broader questions regarding reception and social meaning and can even be applied within the institution itself to change their internal narratives without compromising the original installations.

But we all know that change is slow. Even while ethnographic exhibits in natural history museums across the country urgently require reconceptualization, not all institutions share the Field's initiative, and the hesitancy to reinstall or revise the collections more broadly is even less pressing for the mammal halls, whose narratives are more ambiguously pernicious. As the AMNH prepares to break ground on a $383 million dollar addition intended to increase the public understanding of science, it is unclear how the new center will alter the public's interactions with the old exhibits, anthropological and biological alike.[7] For the most part, it seems the current collection will remain the same, which may only make their artistic meanings less visible to publics who are actively being taught to think of such displays as a text for practicing scientific reasoning. Indeed, after the $2.5 million dollar restoration of the Hall of North American Mammals in 2012, it is likely these "old friends," these dioramas, will persist as they are for some time and continue to shape the definition of nature for generations to come.[8]

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[6] Those who perform critiques of natural history museums seem to be overwhelmingly cis-hetero male, for example.

[7] "Richard Gilder Center for Science, Education, and Innovation Fact Sheet" (The American Museum of Natural History, 2018), https://www.amnh.org/about/gilder-center/about-the-project.

[8] Henry Fountain, "Behind the Glass, Primping Up Some Old Friends," *The New York Times*, October 23, 2011.

APPENDIX:
ILLUSTRATIONS

Figure 1.1 Alaskan Brown Bear Diorama, 1941. Foreground by Robert H. Rockwell, G. Frederick Mason, and Joseph M. Guerry. Background by Belmore Browne. 14 x 21 ft. Hall of North American Mammals, American Museum of Natural History, New York City.

Figure 1.2 Charles Willson Peale, *The Artist in His Museum,* 1822. Oil on canvas. 103 3/4 x 79 7/8 in. Pennsylvania Academy of Fine Arts.

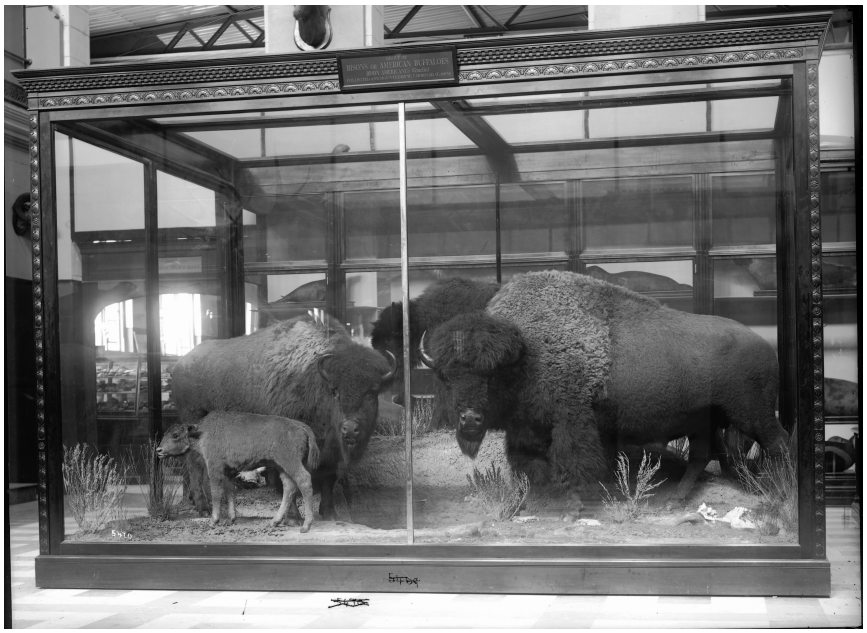

Figure 1.3: Unknown photographer, *William T. Hornaday Bison Group*, c.1887, Smithsonian Museum of Natural History. Smithsonian Institution Archives, Record Unit 95, Box 43, Folder: 1, 4323 or MNH-4323, siris_sic-7837

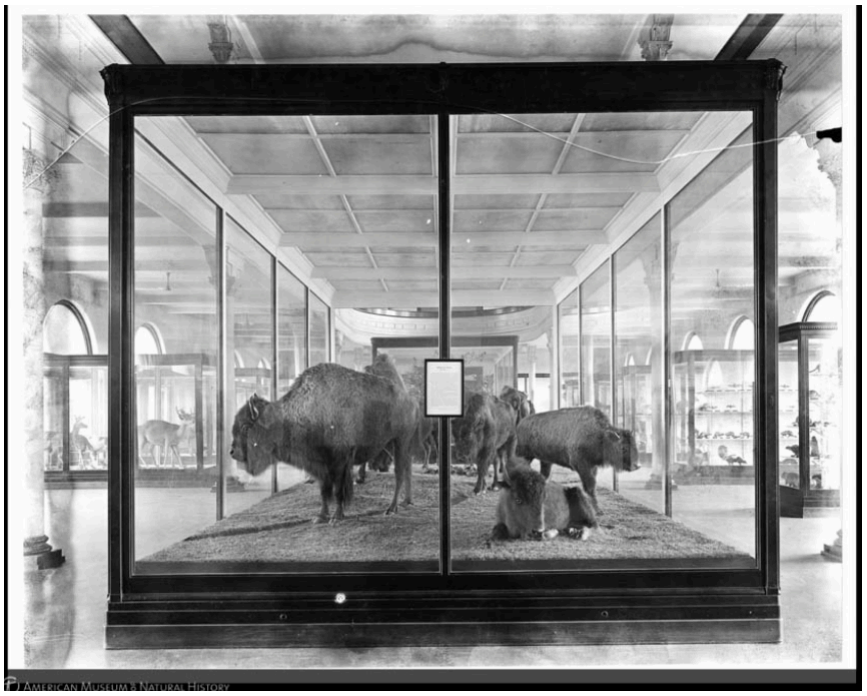

Figure 1.4: "American Bison Group, Hall of North American Mammals [1900-1945]," AMNH Research Library, Digital Special Collections, http://lbry-web-007.amnh.org/digital/items/show/47687.

Figure 1.5: "Summer bird life of Cobb's Island, Virginia, exhibit, March, 1903," AMNH Research Library, Digital Special Collections, http://lbry-web-007.amnh.org/digital/items/show/25177.

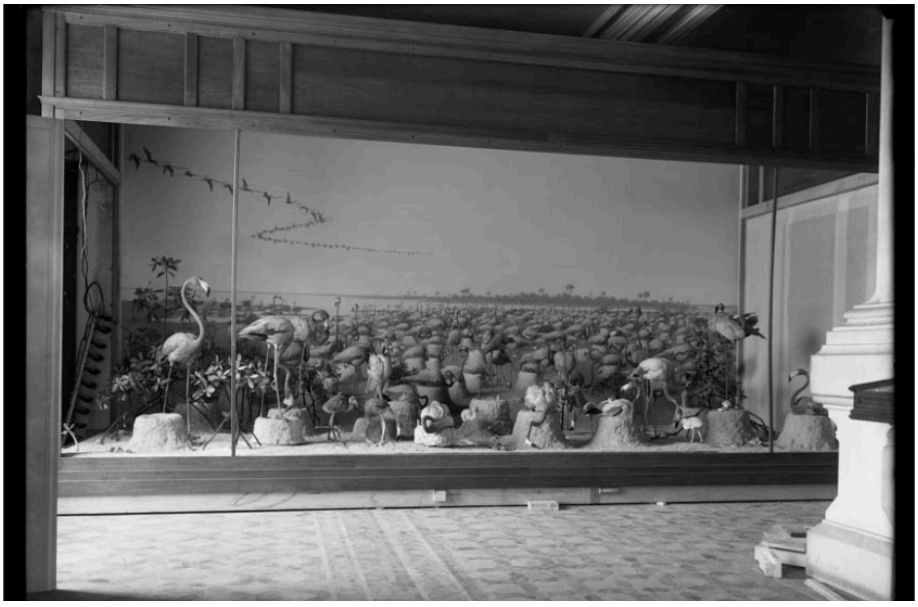

Figure 1.6: "Flamingo Group, Andros Island, Bahamas, Habitat Groups of North American Birds, 1905," AMNH Research Library, Digital Special Collections, http://lbry-web-007.amnh.org/digital/items/show/47875.

Figure 1.7: "Wapiti Elk Group, Hall of North American Mammals, 1907," AMNH Research Library, Digital Special Collections, http://lbry-web-007.amnh.org/digital/items/show/22629.

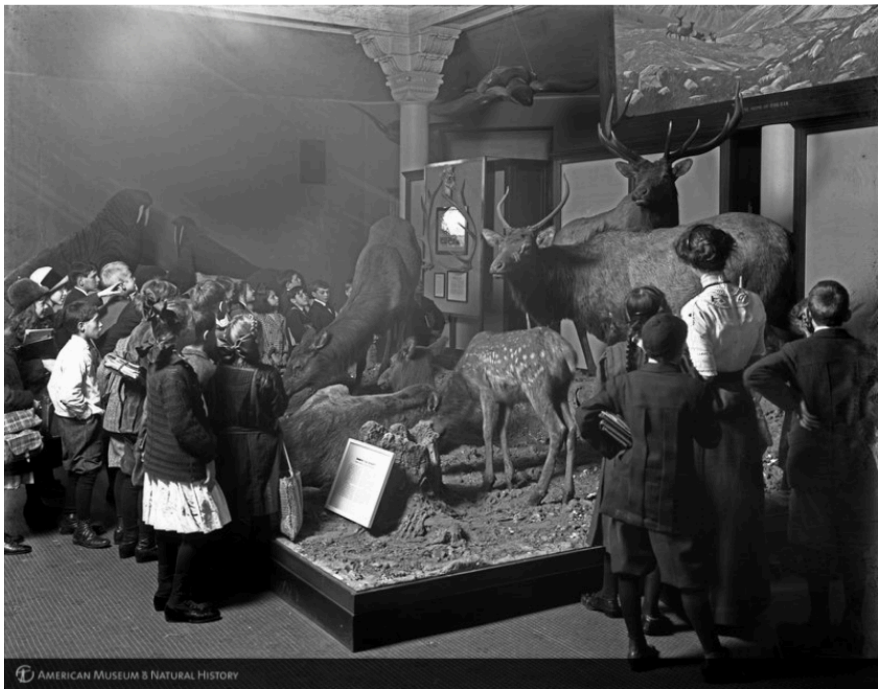

Figure 1.8: "Children viewing mammal exhibits, [Hall of Mammals], 1911," AMNH Research Library, Digital Special Collections, http://lbry-web-007.amnh.org/digital/items/show/22335.

Figure 1.9: "Mountain gorilla diorama, Kivu Mountains, Zaire, Akeley Hall of African Mammals," AMNH Research Library, Digital Special Collections, http://lbry-web-007.amnh.org/digital/items/show/40748.

Figure 1.10: Mountain Lion Group, completed 1942. Foreground by Gardell D. Christensen, George Adams, G. Frederick Mason, and Raymond Delucia. Background by Charles S. Chapman. 16' x 23.' Hall of North American Mammals, American Museum of Natural History, New York City.

Figure 1.11: "Dall Sheep, Mt. McKinley in background, diorama, Hall of North American Mammals," AMNH Research Library, Digital Special Collections, http://lbry-web-007.amnh.org/digital/items/show/40863.

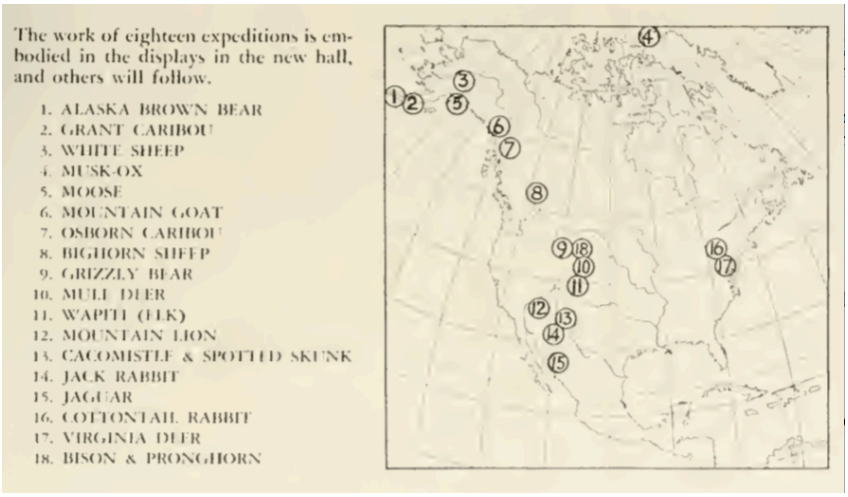

Figure 1.12: Locations for original diorama groups, from "A Grand Tour of North America", in *Natural History* 49, no. 4 (April 1942): 191.

Figure 1.13: Thomas Moran, *The Chasm of the Colorado*, 1873-1874, oil on canvas, mounted on aluminum, 84 ¾ x 144 ¾ in. Smithsonian American Art Museum, Lent by the Department of the Interior Museum, L.1968.84.2

Figure 1.14: Thomas Moran, *Grand Canyon of the Yellowstone*, 1872. Oil on canvas mounted on aluminum, 84 x 144 ¼ in. Smithsonian American Art Museum, Lent by the Department of the Interior Museum, L.1968.84.1

Figure 1.15: Grizzly Bear Group, 1941. Foreground by Gardell D. Christensen, George F. Petersen, Bernard F. Chapman, and Raymond DeLucia. Background by James Perry Wilson. 11 x 19 ft. Hall of North American Mammals, American Museum of Natural History, New York City.

Figure 1.16: Alaska Moose Group, 1942. Foreground by Robert H. Rockwell, G. Frederick Mason, and James Carmel. Background by Carl Rungius. 16 ½ x 34 ½ ft. Hall of North American Mammals, American Museum of Natural History, New York City.

Figure 1.17: Albert Bierstadt, *Among the Sierra Nevada, California.* 1868. Oil on canvas, 72 x 120 1/8 in. Smithsonian American Art Museum, Bequest of Helen Huntington Hull, granddaughter of William Brown Dinsmore, who acquired the painting in 1873 for "The Locusts," the family estate in Dutchess County, New York, 1977.107.1

Figure 1.18: Coyote Group, 1946. Background by James Perry Wilson. 7 ½ x 13 ft. Hall of North American Mammals, American Museum of Natural History, New York City.

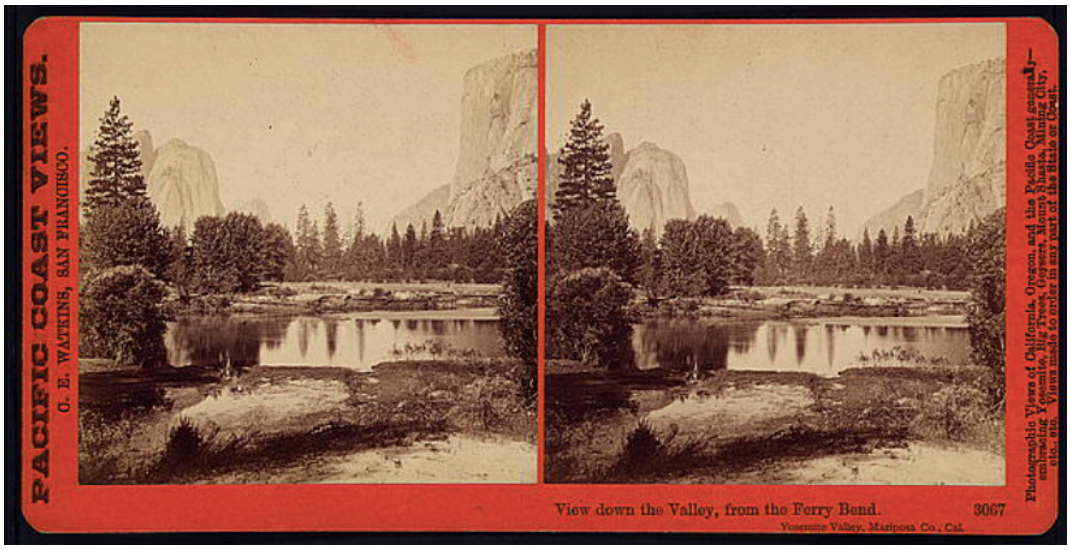

Figure 1.19: Carleton Watkins, *View Down the Valley, From the Ferry Bend, Yosemite Valley, Mariposa co., Cal.* Albumen stereograph card, ca. 1869. Library of Congress Prints and Photographs Division, negative 3067.

Figure 1.20: Thomas Hill, *Bridal Veil Falls, Yosemite,* 1895. Oil on canvas. 35.5 x 54 in. The White House Historical Association, 977.1331.1

Figure 1.21: Wolf Group, 1946. Background by Charles Wilson Perry. Hall of North American Mammals, American Museum of Natural History, New York City.

Figure 1.22: Mouse Group, Heimat Diorama, ca. 1940. Naturhistorisches Museum, Bern, Switzerland.

Figure 1.23: Bausch & Lomb, "This is an "Optical" War," in *Nature Magazine*, October 1943.

Figure 1.24: Bausch & Lomb, "American War Birds Have Keen Eyes," in *Nature Magazine*, Aug/Sept 1942.

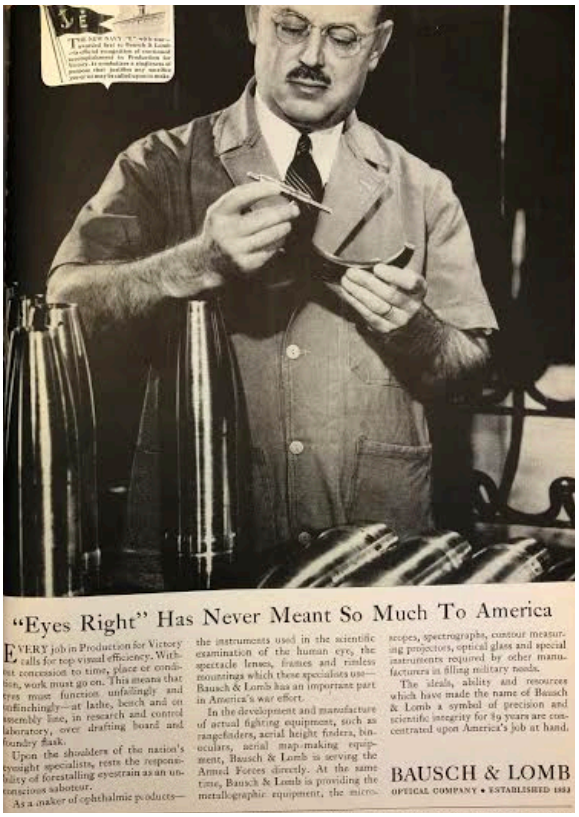

Figure 1.25: Bausch & Lomb, "'Eyes Right' Has Never Meant So Much to America," in *Nature Magazine*, Aug/Sept 1942.

Figure 2.1: Robert Smithson, *Mirror With Crushed Shells,* 1969. Three mirrors; sand and shells from Sanibel Island, Florida. 3 x 3 x 3 ft.

Figure 2.2: Robert Smithson, *Red Sandstone Corner Piece,* 1968. Three mirrors; sand and sandstone from the Sandy Hook Quarry, New Jersey. 4 x 4 x 4 ft. Philadelphia Museum of Art, Purchased with funds (by exchange) from the Samuel S. White 3rd and Vera White Collection and with funds contributed by Henry S. McNeil, Jr., Mrs. Adolf Schaap, Marion Boulton Stroud, and Mr. and Mrs. Harvey Gushner, 1988, 1988-43-1a-g

Figure 2.3: Robert Smithson. *Nonsite Petrified Coral with Mirrors,* 1971. Three mirrors and petrified coral limestone from Sanibel Island, FL. 3 x 3 x 3 ft.

Figure 2.4: Robert Smithson. *Corner Mirror with Coral,* 1969. Mirrors and coral. 3 x 3 x3 ft. The Museum of Modern Art, New York, gift of Agnes Gund in honor of Ann Temkin, 86.1991.a-d

Figure 2.5: Smithson with works for *Assemblages* at Richard Castellane Gallery, 24 October, 1962. Photograph by Fred W. McDarrah

Figure 2.6: Robert Smithson, *Termite Colony,* 1962. (Lost)

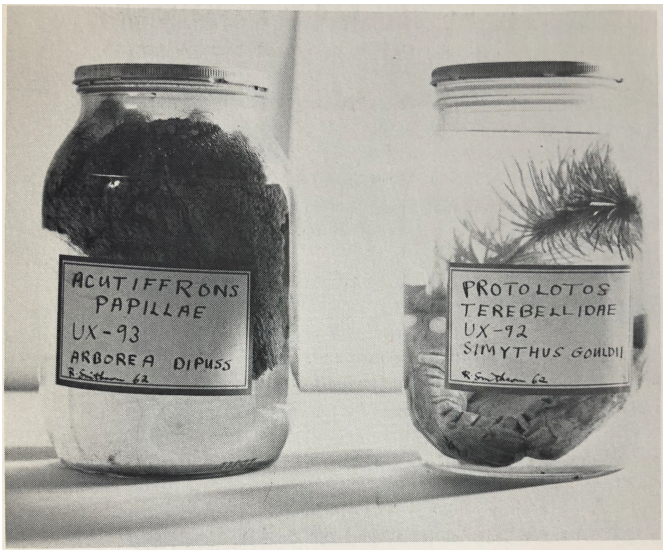

Figure 2.7: Robert Smithson, "Acutiffrons papillae, UX-93, Arborea dipuss" and "Protolotos Terebellidae, UX-92, Simythus gouldii," 1962. (Lost)

Figure 2.8: Robert Smithson, *Nonsite—Essen Soil and Mirrors,* 1969. Soil and twelve mirrors. 36 x 72 x 72 in. SFMOMA, purchase through a gift of Phyllis C. Wattis and the Accessions Committee Fund: gift of Collectors' Forum, Doris and Donald Fisher, Patricia and Raoul Kennedy, Elaine McKeon, Helen and Charles Schwab, Norah and Norman Stone, and Robin Wright. 2000.572.A-P

Figure 2.9: Contemporary installation view of Robert Smithson, *Map of Broken Glass,* 1969. Glass. 48 x 240 x 192 in. installed. Dia:Beacon, Dia Art Foundation; Partial gift, Lannan Foundation, 2013, 2013.027. Photo by Florian Holzherr.

Figure 2.10: Robert Smithson, *Dead Tree,* 1969. Tree and mirrors. Destroyed.

Figure 2.11: Robert Smithson, *Nine Mirror Displacements,* in Artforum, September 1969, p. 29.

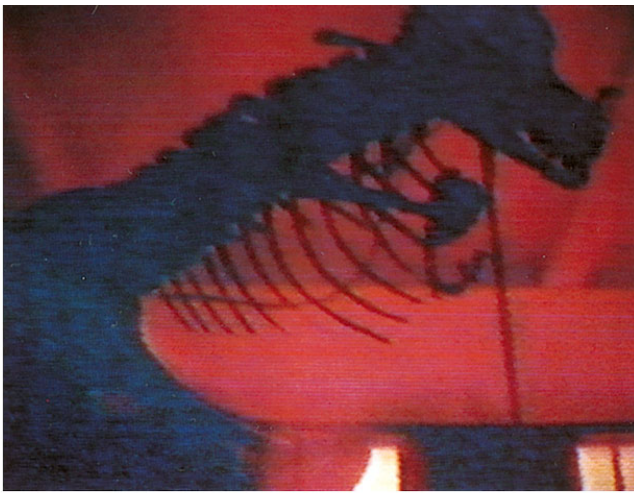

Figure 2.12: Robert Smithson, frame from *Spiral Jetty,* 1970.

Figure 2.13: Sedan Crater at the Nevada National Security Site. Photo courtesy of National Nuclear Security Administration/ Nevada Field Office

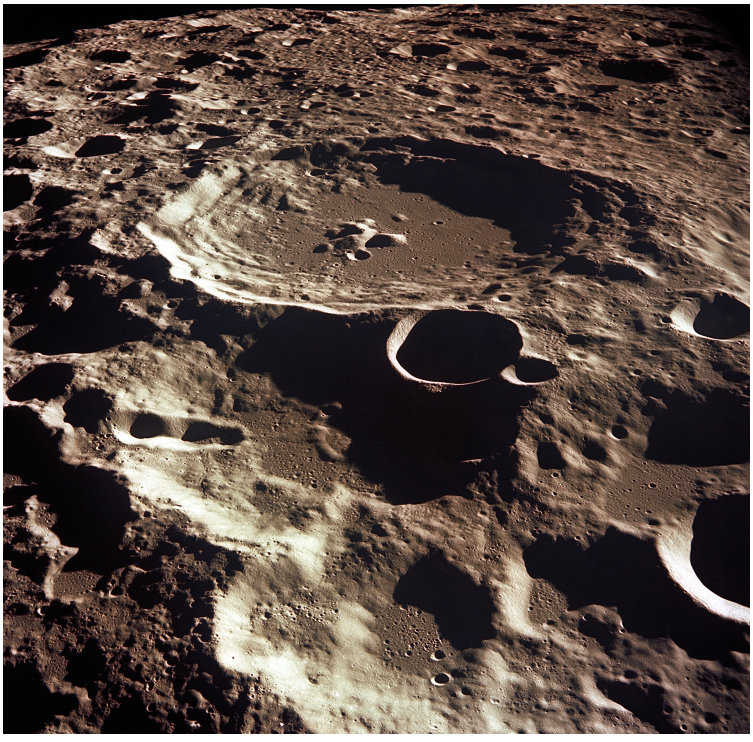

Figure 2.14: Crater 308 on the Moon, July 1969. Image courtesy of NASA, # AS11-44-6609.

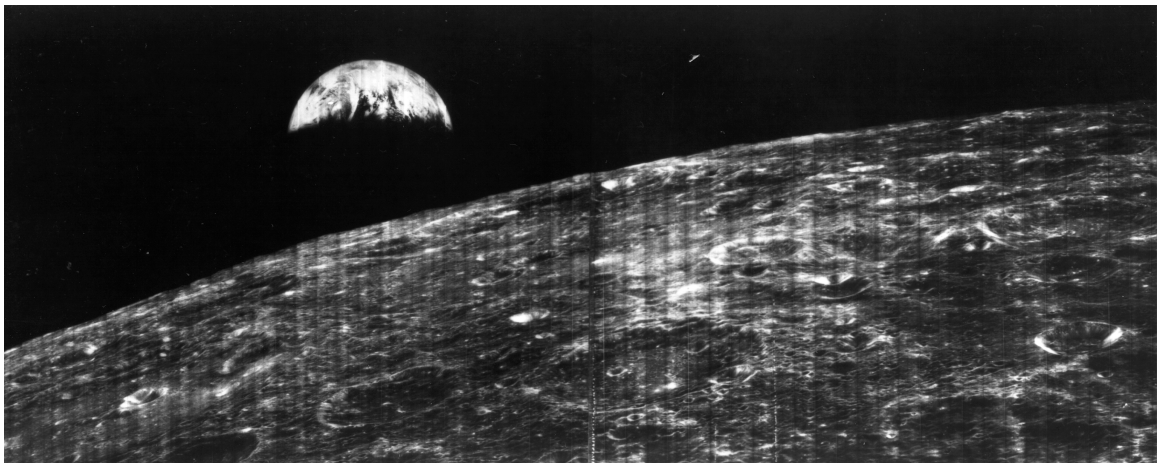

Figure 2.15: First photo of the earth from the moon by Lunar Orbiter 1, August 23, 1966.

Figure 3.1: Installation view, Southwest side of Mark Dion, *Neukom Vivarium,* 2006. Mixed-media installation, greenhouse structure: 80 feet long. Olympic Sculpture Park, Seattle Art Museum, gift of Sally and William Neukom, American Express Company, Seattle Garden Club, Mark Torrance Foundation and Committee of 33, in honor of the 75th Anniversary of the Seattle Art Museum, 2007.1

Figure 3.2: Installation view, northeast wall of Mark Dion, *Neukom Vivarium,* 2006. Mixed-media installation, greenhouse structure: 80 feet long. Olympic Sculpture Park, Seattle Art Museum, gift of Sally and William Neukom, American Express Company, Seattle Garden Club, Mark Torrance Foundation and Committee of 33, in honor of the 75th Anniversary of the Seattle Art Museum, 2007.1. Photo by author.

Figure 3.3: Mark Dion, *Extinction Series: Black Rhino with Head,* 1989. Wooden crates, stenciled lettering, color photographs, rhino head, wood chips, map of Africa. Dimensions variable.

Figure 3.4: Mark Dion and William Schefferine, *Acid Precipitation*, from *Wheelbarrows of Progress,* 1990. Bullhead catfish, Adirondack map, Alberta tree, water, water filter, silicon blue enamel wheelbarrow, 63.5 x 68.5 x 141 cm.

Figure 3.5: Mark Dion, the nine cabinets of *Cabinet of Curiosities,* Weismann Art Museum, 2001.

Figure 3.6: Mark Dion, *Landfill*, 1999-2000. mixed media, 71 1/2 x 147 1/2 x 64 in. Museum of Contemporary Art San Diego, Museum purchase, Contemporary Collectors Fund, 2000.4.

Figure 3.7a: Mark Dion, *Neukom Vivarium* cabinet, western entrance alcove. *Neukom Vivarium,* 2006. Mixed-media installation, greenhouse structure: 80 feet long. Olympic Sculpture Park, Seattle Art Museum, gift of Sally and William Neukom, American Express Company, Seattle Garden Club, Mark Torrance Foundation and Committee of 33, in honor of the 75th Anniversary of the Seattle Art Museum, 2007.1.

Figure 3.7b: Mark Dion, *Neukom Vivarium* cabinet drawer, western entrance alcove. *Neukom Vivarium,* 2006. Mixed-media installation, greenhouse structure: 80 feet long. Olympic Sculpture Park, Seattle Art Museum, gift of Sally and William Neukom, American Express Company, Seattle Garden Club, Mark Torrance Foundation and Committee of 33, in honor of the 75th Anniversary of the Seattle Art Museum, 2007.1. Photo by author.

Figure 3.8: Mark Dion, *After Neukom Vivarium*, *2006*, 2017. Diorama model of existing installation. Approximately 36 x 48 x 50 in. Installation view ICA Boston, photo by author.

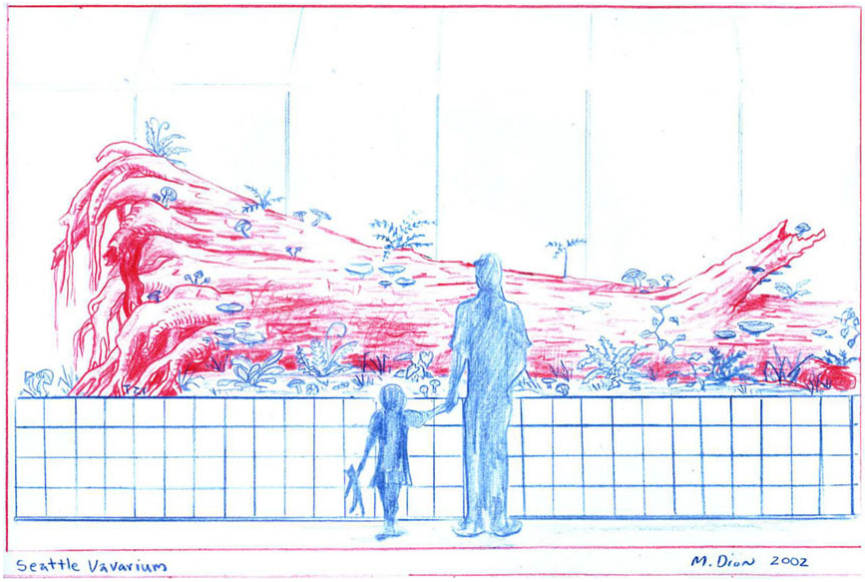

Figure 3.9: Mark Dion, *Seattle Vivarium*, 2002. Colored pencil. 9 x 12 in. Museum of Modern Art, New York, Acquired through the generosity of the Contemporary Arts Council of The Museum of Modern Art. 646.2013.a

Figure 3.10: Contemporary exhibition view of the Mountain Goat Diorama, Hall of North American Mammals, the American Museum of Natural History, New York. Completed 1942, restored 2012. Background by Belmore Browne.

Figure 3.11: Mark Dion, *Seattle Vivarium,* 2005. Watercolor on paper, 5 ¼ x 7 ¾ in. Seattle Art Museum, Gift of Sally and William Neukom, American Express Company, Seattle Garden Club, Mark Torrance Foundation and Committee of 33, in honor of the 75th Anniversary of the Seattle Art Museum, 2007.1.5

Figure 3.12: Performance view of Mark Dion and David Lang, *Anatomy Theater,* 2016. LA Opera. Photo by Craig T. Matthew.

Figure 3.13: Mark Dion, *Anatomy Theater* set*,* 2016.

Figure 3.14: Mark Dion, *Library for the Birds of New York,* 2016, Tonya Bonakdar Gallery installation view.

Figure 3.15: Detail, Mark Dion, *Library for the Birds of New York,* 2016, Tonya Bonakdar Gallery installation view.

Figure 3.16: Mark Dion, *Memory Box,* 2016, Tonya Bonakdar Gallery installation view.

Figure 3.17: Mark Dion, interior view, *Memory Box,* 2016, Tonya Bonakdar Gallery installation view

Figure 3.18: Specimen in Mark Dion, *Memory Box,* 2016, Tonya Bonakdar Gallery installation view

Figure 4.1: Alexis Rockman, *Balance of Terror,* 1988. Oil on canvas, 72 x 84 in.

Figure 4.2: Alexis Rockman, *Forest Floor*, 1990. Oil on wood, 68 x 112 in.

Figure 4.3: Life on the Forest Floor exhibit, installed 1958. Hall of North American Forests, American Museum of Natural History, New York City.

Figure 4.4: Emil Schmidt, plate from Ernst Ludwig Taschenberg's *Die Insekten, Tausendfüssler Und Spinnen*, 1884.

Figure 4.5: Alexis Rockman, *Object of Desire,* 1989. Oil on canvas, 96 x 72 in.

Figure 4.6: William Heath, *Monster soup commonly called Thames water, being a correct representation of that precious stuff doled out to us!!!* c. 1828. Hand-colored etching, the British Museum, 1935,0522.4.121

Figure 4.7: Alexis Rockman, *Drop of Water,* 1990. Oil on canvas, 90 x 102 in.

Figure 4.8: Ernst Haeckel, *Pedigree of Man (Stammbaum des Menschen),* 1874. Lithograph from *Anthropogenie: oder, Entwickelungsgeschichte des Menschen: Gemeinverständliche wissenschaftliche Vorträge über die Grundzüge der menschlichen Keimes- und Stammes-Geschichte.*

Figure 4.9: Alexis Rockman, *Phylum,* 1989. Oil on canvas, 112 x 66 in.

Figure 4.10: Alexis Rockman, *Evolution,* 1992. Oil on wood, 96 x 288 in.

Figure 4.11: Frederic Edwin Church, *Cotopaxi,* 1862. Oil on canvas, 48 × 85 in. Detroit Institute of the Arts, Founders Society Purchase, Robert H. Tannahill Foundation Fund, Gibbs-Williams Fund, Dexter M. Ferry Jr. Fund, Merrill Fund, Beatrice W. Rogers Fund, and Richard A Manoogian Fund, 76.89

Figure 4.12: Alexis Rockman, *Biosphere: The Ocean*, 1994. Oil on wood, 120 x 96 in.

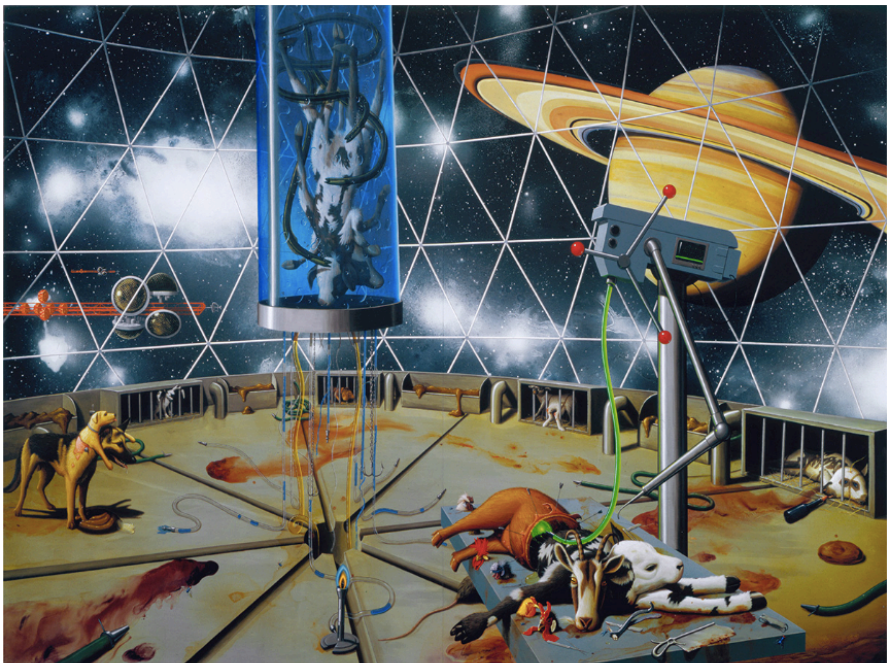

Figure 4.13: Alexis Rockman, *Biosphere: Laboratory*, 1993. Oil on wood, 96 x 120 in.

Figure 4.14: Alexis Rockman, *The Beach: Demerara River Delta*, 1994-96. Oil on wood, 96 x 64 in.

Figure 4.15: Alexis Rockman, *Concrete Jungle III,* 1991. Oil on wood, 56 x 44 in.

Figure 4.16: Alexis Rockman, *The Farm,* 2000. Oil and acrylic on wood panel, 96 x 120 in.

Figure 4.17: Alexis Rockman, *Neozoic Era,* 2000. Oil, acrylic, and digital print on wood, 40 x 60 in.

Figure 4.18: Alexis Rockman, *The Ecotourist*, 1997. Envirotex, digitized photo, artificial plants, carved Styrofoam, acrylic and oil paint, botanical models, synthetic hair, plasticene, latex rubber, clothing, nylon waist pouch, bird field guide, wedding ring, Fresnel lens, rice, plastic taxidermy human eyeball, leaves, empty pack of Camel unfiltered, and oil paint on two wood panels, 56 x 88 x 5 in.

Figure 4.19: Alexis Rockman, *Manifest Destiny,* 2004. Oil on wood, 96 x 288 in. Smithsonian American Art Museum, museum purchase through the Luisita L. and Franz H. Denghausen Endowment, 2011.36A-D

Figure 4.20: Alexis Rockman, *Red Hurricane,* 2006. Oil on gessoed paper, 48 ½ x 74 ¾ in.

Figure 4.21: Alexis Rockman, *South,* 2008. Oil and wax on gessoed paper, 75 x 358 ¾ in.

Figure 4.22: Detail, fifth panel from Alexis Rockman, *South,* 2008.

Figure 4.23: Alexis Rockman, *Cascade*, 2015. Oil and alkyd on wood panel, 72 x 144 in. Grand Rapids Art Museum.

Figure 4.24: Alexis Rockman, *Pioneers*, 2017. Oil and acrylic on wood panel, 72 x 144 in.

Figure 4.25: Alexis Rockman, *Spheres of Influence,* 2017. Oil and alkyd on wood panel, 72 x 144 in.

Figure 4.26: Alexis Rockman, *Watershed*, 2015. Oil and alkyd on wood panel, 72 x 144 in.

Figure 4.27: Alexis Rockman, *Forces of Change*, 2017. Oil and acylic on wood panel, 72 x 144 in.

Figure 5.1: Installation view, *Drawing on Tradition: Kanza Artist Chris Pappan*, The Field Museum of Natural History, Chicago, October 29, 2016 –January 21, 2019. Photo by author.

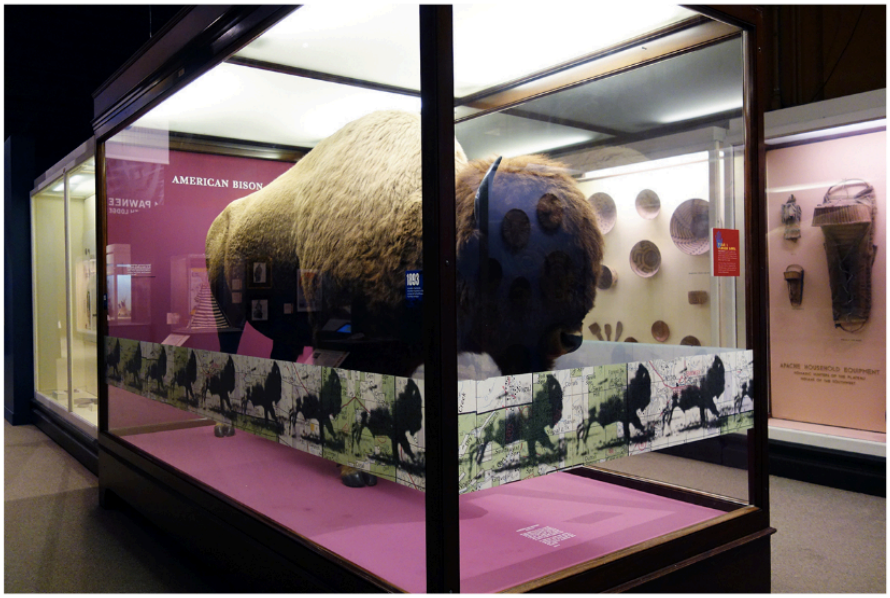

Figure 5.2: Installation view, *Drawing on Tradition: Kanza Artist Chris Pappan*, The Field Museum of Natural History, Chicago, October 29, 2016 –January 21, 2019. Photo by Allison C. Meier.

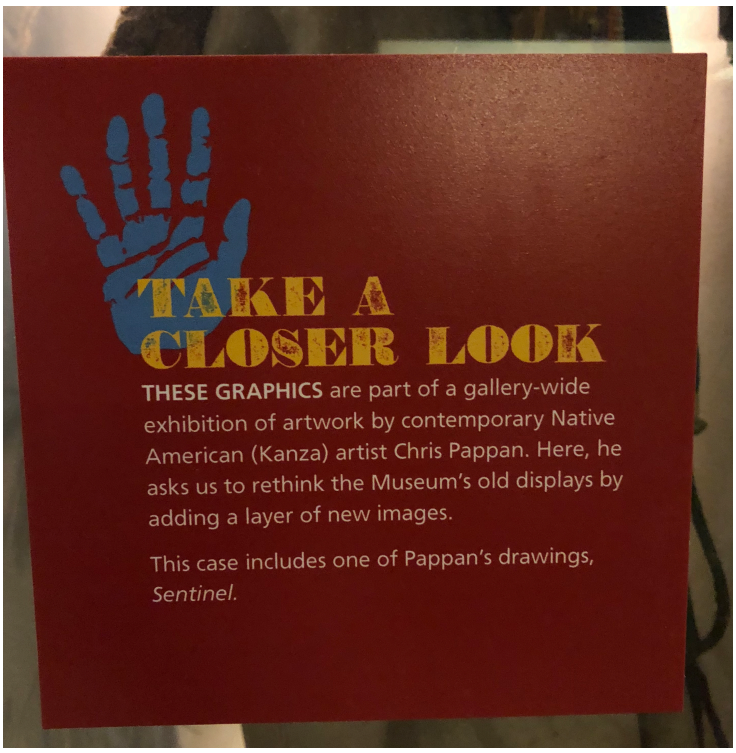

Figure 5.3: Signage from *Drawing on Tradition: Kanza Artist Chris Pappan*, The Field Museum of Natural History, Chicago, October 29, 2016 –January 21, 2019. Photo by author.

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