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Theming Prehistory: Institutionalizing the Media of Deep Time in the Museum and Beyond

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by

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ABSTRACT

Theming Prehistory: Institutionalizing the Media of Deep Time in the Museum and Beyond

by

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This dissertation project explores the convergence of museum and themed entertainment design through the lens of Deep Time—a concept that has important implications for connecting mass communication to scholarship on the Anthropocene. Based on case studies that represent a variety of exhibition contexts, I consider how paleontology, evolutionary theory, art history and archaeology function as public histories that structure and mobilize our understanding of the remote past. I examine several US-based sites: the George C. Page Museum at the La Brea Tar Pits in Los Angeles, the *Evolving Planet* exhibit at the Field Museum of Natural History in Chicago, and the *Dinosaur* attraction at Disney's Animal Kingdom Theme Park in Orlando, Florida. In France, I conduct research on the replicated cave paintings of *Lascaux IV* and *Caverne du Pont-d'Arc*, at the International Centre for Parietal Art in Montignac and Grotte Chauvet 2 in Ardèche.

These sites explore Deep Time as a theme that links media, temporality and ecology; I consider how this theme is implemented in designed spaces, and how these spaces go on to shape our shared scientific imagination. I conduct in-person research at each site; this entails formal analysis of attractions and their host institutions, ethnographic observation and

consultation with attraction personnel. This in-person research is framed by spatial and temporal approaches to film and media theory, as well as key texts in museum and themed entertainment studies. The research sites represent distinct approaches to spatializing and temporalizing information, and each uses a unique combination of aesthetic and performative strategies in order to construct unique relationships between visiting publics, institutions and industries. These relationships imply a range of social, cultural and political contexts for exploring the intersection of media, temporality and environment, and each site proposes novel reconstructed environments and experiences as a basis for engaging the remote past and ultimately the Anthropocene.

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Introduction

This dissertation project expands discussions of visual culture in science and technology, as well as the intersection of media and environment, by exploring the convergence of museum and themed entertainment design through the lens of Deep Time—a concept that has important implications for connecting mass communication to scholarship on the Anthropocene. Based on case studies that represent a variety of exhibition contexts, I consider how paleontology, evolutionary theory, art history and archaeology function as public histories that structure and mobilize our understanding of the remote past. I examine several US-based sites: the George C. Page Museum at the La Brea Tar Pits in Los Angeles, the *Evolving Planet* exhibit at the Field Museum of Natural History in Chicago, and the *Dinosaur* attraction at Disney's Animal Kingdom Theme Park in Orlando, Florida. In France, I conduct research on the replicated cave paintings of *Lascaux IV* and *Caverne du Pont-d'Arc*, at the International Centre for Parietal Art in Montignac and Grotte Chauvet 2 in Ardèche.

These sites explore Deep Time as a theme that links media, temporality and ecology; the following chapters will consider how this theme is implemented in designed spaces, and how these spaces go on to shape our shared scientific imagination. In the popular imagination Deep Time connotes a remote past that is characterized by spectacular flora, fauna, landscapes and artifacts, and its material traces present a record of upheaval, reconfiguration and disappearance. As the same forces continue to shape the planet, the theoretical and media frameworks through which we engage Deep Time inflect our relationships to the rest of the living world. It is only through media that we are able to make

sense of temporality, and my research sites combine environmental, bodily and technical processes of mediation. They explore versions of the ancient Earth that have been lost to climatic, ecological and geological change; by presenting and contextualizing prehistoric artifacts, creatures and landscapes, each uses creation in order to emphasize irreversible disappearance. This project steps off from spatial and temporal approaches to film and media theory, and examines sites that propose reconstructed environments and experiences as a basis for engaging a universe whose boundaries have been extended beyond our comprehension.

The Problem With Prehistory

While on its surface the term prehistory simply refers to a period before record-keeping, this distinction is far from straightforward. In *Maps of Time*, David Christian works against this anthropocentric and literary bias by considering humanity as one brief episode in a narrative that includes the entire timeline of the knowable universe. Here, Christian points out that human intelligence and civilization co-evolved with the ecosystems of the Pleistocene, and even non-biological discussions of our species must consider this ecological context.[1] It is proposed that by reading our interactions with these landscapes the narrative of our species is not only extended beyond the appearance of written language,[2] but also integrated into a trajectory whose scale can be extended to encompass our planet, solar system, galaxy and beyond. Mary C. Stiner and Gillian Feeley-Harnik further destabilize the arbitrary distinction between our species and the rest of the living world by characterizing

1 David Christian, *Maps of Time: An Introduction to Big History* (Berkeley: University of California Press, 2011): 168.
2 Ibid., 202.

early humanity based on rapid changes observed in Earth's ecosystems and in other Hominin cultural groups existing during the Upper Paleolithic.[3] Their critique of the Anthropocene as a designation for our historical moment—while in no way denying our species' impact on Earth's systems—resists framing other ecological agents as forms of intellectual property in need of nothing more than responsible management.[4] These perspectives shift our understanding of the remote past by framing it in terms that are not strictly technological, temporal or biological, but instead relational.

Theming as a Cultural Practice

Relationality is important for any scientific understanding of the remote past, and it is also critical in helping to establish stakes for contemporary lay observers. A personal or community connection to the remote past is central is most origin myths, and this project's research sites constitute performative approaches to myth-telling. One contemporary practice that frequently works to establish such performative spaces is theming. Scott A. Lukas describes theming as a practice by which most or all physical elements of a designed space serve a central, unifying idea.[5] This idea can take any form, although stories, historical settings and cultural identities are among the most popular. Whatever the context and purpose, a themed venue is meant to be experienced beyond the bare mechanics of the products or services offered. Though Lukas focuses on commercial sites such as amusement parks and other entertainment venues, he stresses that theming is employed in a variety of

3 Mary C. Stiner and Gillian Feeley-Harnik, "Energy and Ecosystems," in *Deep History: The Architecture of Past and Present*, Andrew Shryock and Daniel Lord Smail (Berkeley and Los Angeles: University of California Press, 2011): 91.

4 Ibid., 101-102.

5 Scott. A. Lukas, "The Themed Space: Locating Culture, Nation, and Self," in *The Themed Space: Locating Culture, Nation, and Self*, ed. Scott A. Lukas (Lanham, MD: Lexington Books, 2007): 1.

applications from education to transportation, and it is fast becoming a preferred practice for designers working in many settings.

This project considers a group of themed attractions that offer dynamic and immersive settings for encountering prehistoric organisms and environments. This group represents two industries—amusement parks and museums—whose histories have been linked for well over a century, and whose embrace of theming practices in the last several decades has led to a great degree of convergence in operations. Furthermore, these attractions claim to present experiences that are both entertaining and educational in character. By creating spaces in which visitors can depart from their everyday existence and inhabit unique environments, they propose an understanding of our planet's remote and recent past that is anchored more in visceral experience than in distanced observation. This engagement, it is hoped, will prompt visitors to consider the relevance of the attractions, and the lessons they offer, in their own lives.

Theming as a Social Public Spectacle

The attractions considered for this project rely upon theming practices. In addition to informing their aesthetic experiences, it is critical that each of these sites uses theming as a foundation for establishing specific forms of sociality. In reference to the themed casinos of the Las Vegas strip, Cher Krause Knight argues that the practice of theming is an aspect of contemporary culture that represents a shift away from personal gardens and other private uses that dominated in previous centuries. Las Vegas revives a Baroque era approach to public spectacle, but expands access and combines multiple commercial enterprises such as

hotels, casinos and entertainment spectacles.[6] We will see that pictorial and sculptural representations of the remote past have always incorporated elements of spectacle into their design—as seen in popular illustrations, as well as the cabinets of curiosities that were foundational to the modern museum—but our present concern is the recent convergence of cultural and scientific exhibition with entertainment design, which has blurred boundaries and united disparate enterprises in much the same way. Of particular interest for this project is the combination of distinct modes of consumption in these spaces, and the distinct social configurations that result.

Theming has been shown to be a ubiquitous practice—both Knight and Lukas consider it the norm, rather than the exception, for designed spaces—however themed environments are often thought of as being set apart from everyday life. Knight states that Las Vegas' designed public spaces rely on an insular frame of mind, and they offer both escape and protection from the tedium and unpleasantness that characterize the daily experiences of many visitors.[7] The issue of separation is central for the sites explored in this dissertation. All are leisure venues, and beyond that some are coded almost exclusively as spaces for play. As such, the act of visiting implies at least a conceptual withdrawal from everyday life. The alignment is not total, however, and we will see that the research sites diverge from the Las Vegas casinos on the issue of insularity. While they are presented as spaces that are set apart, these sites for the most part use theming to encourage—or at least suggest—engagement with a larger ecological or historical context. Rather than offering protection from the outside world, these sites attract and transport visitors in the hopes of

6 Cher Krause Knight, "Beyond the Billboard: Sidewalk Spectacle and Public Art in Las Vegas," *Journal of American and Comparative Cultures* 25, nos. 1/2 (Spring/Summer 2002): 10.

7 Ibid., 12.

orienting them toward the external.

This orientation toward the external is made possible by design and operation practices that regard the senses as inherently social, and which Lukas explores further in "Theming as a Sensory Phenomenon." He explains that the practices used by Las Vegas resort casinos fall into two broad categories: microtheming and performative theming. Microtheming entails specific and nuanced appeals to all of visitors' sensory faculties, and it is often characterized by a profusion of sensory details, some of which are barely perceptible —e.g. projecting moving clouds onto a ceiling that represents an open sky, rather than painting static ones. Performative theming, while still concerned with the senses, adds a social dimension by incorporating human action into themed spaces—as seen with theme park ride operators dressing in costume and using language specific to the attraction or its location in the park.[8] Like Las Vegas' themed resorts, the sites considered in this project employ both microtheming and performative theming practices, although this creates different types of environments that ultimately serve different purposes. While the replicated Paleolithic cave paintings at *Lascaux IV* and *Caverne du Pont-d'Arc*, along with Disney's *Dinosaur* attraction, employ the kinds of illusionistic design seen in many Las Vegas casinos, the George C. Page Museum and the Field Museum's *Evolving Planet* exhibit mostly eschew explicit scenic design in favor of creating abstract theoretical environments that are nonetheless aesthetically coherent and engaging to the senses. Furthermore, each site employs some form of performative theming, ranging from guided tours to the inclusion of research and conservation in displays. By creating communal spaces for sensory exploration,

8 Scott A. Lukas, "Theming as a Sensory Phenomenon: Discovering the Senses on the Las Vegas Strip," in *The Themed Space: Locating Culture, Nation, and Self* , ed. Scott A. Lukas (Lanham, MD: Lexington Books, 2007): 76-77.

these sites communicate in ways that reach beyond the purely linguistic.

For Lukas, themed spaces emphasize the processes of representation over content;[9] this is a point of departure for the sites considered in this project, as these operate for the most part in an instructional context. Las Vegas' themed resorts are—somewhat obviously—entirely entertainment-oriented, which implies a different context for the theming practices they employ. In this case, visitors are meant to engage the themed environments primarily at the level of representation, and as a backdrop for play and other forms of consumption. While aesthetic engagement is central for visitors to this project's research sites, they must also serve the goal of supporting an explicit message. In the context of themed spaces, the senses become a "collective medium of communication," which can be leveraged to induce consumerist forms of sociality,[10] and the interaction between these behaviors and popular science exhibition practices adds a layer of complexity to the project sites that is not present in other themed environments. The project sites allow us to examine the implications for marking the remote past as a site of immersive entertainment, which is somewhat at odds with their ecological and historical orientations.

Prehistory as Theme

The case studies that form the core of this project differ substantially in design and intentions, however all characterize the remote past as a theme that visitors are invited to explore. This reflects a broader trend. In the late 20th century, museums and other exhibiting institutions began to embrace design strategies that emphasized interactivity and immersion; these practices frequently originated in the entertainment industries. This follows several

9 Ibid., 81.
10 Ibid., 82.

shifts in scientific research, art and media exhibition. Most notable are the broad acceptance ecological frameworks in the biological sciences, the 'Dinosaur Renaissance' in popular culture and the emergence of installation art. This helped to unite a research and exhibition community that was thinking about the remote past in more dynamic and systemic terms, with a visiting public that was beginning to approach exhibitions as coherent aesthetic experiences. Taken together, these factors helped to transform the concept of prehistory from a disembodied category conceived by scientists and exhibitors, to a more active reality that could be apprehended directly by visitors. This necessitated a mode of exhibition that favored distinct visual and spatial design with clear trajectories, rather than relying upon assemblies of objects.

Martin J. S. Rudwick argues that Biblical illustration set a critical precedent for visualizations of geological time, which was an emerging concept in the 19th century. This tradition's main contribution is the tendency to sequence events, which likely contributed to the assumed directionality of evolution,[11] and enabled new ways to narrativize the remote past. As reconstructions during this period were largely seen by the scientific establishment as heavily conjectural, and the public encountered illustrations that were inflected profoundly by legend and heraldry, it is not surprising that from the start paleontological illustration was associated with myth. This reliance on myth has powerful implications for modern themed entertainment, as it establishes a performative space in which the past can be re-enacted socially, and it provides a framework for linking contemporary reality to events of the past.

This is aptly demonstrated by John Martin's frontispiece for Gideon Mantell's *Wonders of Geology* (1838), which merged Biblical—a practice based on the interpretation of

11 Martin J. S. Rudwick, Scenes From Deep Time: Early Pictorial Representations of the Prehistoric World (Chicago and London: The University of Chicago Press, 1992): 100.

texts—with Natural History—based on the examination of physical specimens—illustration in order to address a paleontological topic.[12] Whether idyllic or nightmarish, the deep past was seen as a dramatic setting for a pseudo-Darwinian struggle for existence, in which ruthless—though ultimately wise—natural forces shaped, tested, and ultimately dispensed with progressively more advanced organisms in preparation for the appearance of humanity.[13] This narrativization of Earth history, in addition to inflecting the interpretation scientific findings, was also essential as illustrations moved from the printed page to photographic and moving-image media in the 20th century.

Travel is central to the concept of theming; specifically: the notion that entering a themed environment entails moving into another reality that is distinct from one's daily existence. This idea has also been central in paleontology and geology education from early on. Ralph O'Connor notes that many 19th century scientists relied heavily on both literal and imagined travel—in addition to specimens and other visual aids—to engage audiences. William Buckland's geology lectures at Oxford, which often moved outside the classroom to visit sites of interest, are noteworthy.[14] Although Buckland spoke from the present, he conceived of the Earth Sciences as a discipline to be apprehended first-hand, even if one was only encountering a trace of the past. A contrasting tactic was adopted by Hugh Miller, who, in spite of his fierce opposition to evolution and long-Earth chronology, was a prolific writer and lecturer on geology. While Miller's work addressed audiences through the lecturer's podium or the printed page, his vivid descriptions of prehistoric landscapes were delivered as if he was guiding audiences on an in-person tour.[15] These examples demonstrate that whether

12 Ibid., 80-81.
13 Ibid., 206.
14 Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802-1856* (Chicago and London: The University of Chicago Press, 2007): 75.
15 Ibid., 406.

physically traveling in order to imagine the past *in situ*, as was the case for Buckland, or imagining oneself to be physically inhabiting the past, as with Miller, the notion of travel was essential for the popularization of paleontology.

The idea that one apprehended the deep past through direct observation was also quite common in the popular press. Although it appeared as a joke, an illustration of William Buckland entering a cave inhabited by prehistoric hyenas—which was included in a broadside describing his fossil research at Kirkdale cave—demonstrates some acceptance of the notion of time travel as part of paleontological research.[16] This was likely inspired by two literary tropes—the dream-vision and the fantastic voyage—which portrayed scientists as explorers who took extraordinary journeys for the purpose of enlightenment, and thus served as both a guide and a stand-in for audiences. In Pierre Boitard's *Paris Avant les Hommes*, a naturalist is transported through time in a dream by a demon, in order to view the long history of Paris as a theatrical show.[17] While this and other examples are firmly rooted in literature, as opposed to physical exhibition, they nevertheless demonstrate that by the middle of the 19th century, popular science audiences were comfortable with the thought of traveling back through time to observe the world before humanity. This willingness to entertain such a notion proved to be vital, as later exhibitors designed attractions that relied upon this kind of imaginative leap.

Chapter Overviews

This project discusses a group of multimedia attractions that converge on the use of theming practices to investigate topics related to the remote past; these include paleontology,

16 Ibid., 95-96.
17 Ibid., 374.

evolutionary theory, art history and archaeology. These fields are situated as public histories that frame our understanding of the remote past. The sites were chosen in part because they represent a range of strategies, and they operate at venues of different types. Broadly speaking, the chapters can be placed into two groups. The first—which consists of chapters one and two—concerns exhibits at science or natural history museums which favor illustration of a concept over illusionistic representation. The second group—chapters three and four—concerns attractions that indulge more heavily in entertainment and present fully-articulated environments for visitors to experience. Each group contains one site with a narrow geographic and temporal focus—The George C. Page Museum, and *Lascaux IV / Caverne du Pont-d'Arc*—and one site whose scope is much broader—the *Evolving Planet* exhibit and the *Dinosaur* attraction. These groups also represent shared thematic concerns; the attractions in chapters one and two ultimately discuss the human impact on Earth and its ecosystems, while those in chapters three and four explore kinship through the sensing bodies of visitors. Finally, the chapters are arranged based on their reliance dramatic narrative spectacle, from least to most. While this particular characteristic is not a central concern for the dissertation, the arrangement will encourage consideration of how scientific imaginaries are drawn into systems of political and economic exchange through the leisure industries.

Chapter one discusses the George C. Page Museum at the La Brea Tar Pits (1977). This National Natural Monument is known as one of the largest Pleistocene fossil caches in the world, the contents of which were donated to the Natural History Museum of Los Angeles County by George Allan Hancock in 1924 with the stipulation that they be placed on public display. Through its research on the tar pits and their contents, the Page Museum divides its attention between locality—the specimens on display overwhelmingly represent

the Los Angeles area during the Wisconsin Glaciation (75,000 – 11,000 YBP)—and the constant presence of the human hand—ongoing research is featured prominently. The Museum claims that its specimens offer a portal into a prehistoric ecosystem, and that this portal has great relevance to contemporary visitors, as the tar pits preserve a record of prehistoric climate change. I use Anne Brigham's and Dean MacCannell's writings on backstage and behind-the-scenes tourist sites, and combine William Uricchio's theory of liveness with Mary Ann Doane's discussion of filmed executions, in order to understand how the Page Museum reconstructs the moment of death in order to generate knowledge of a broader ecological reality.

Chapter two considers the issue of performed time through the *Evolving Planet* exhibit (2006) at the Field Museum of Natural History in Chicago. The exhibit explores the origin, diversification and evolution of life on Earth through specimens from the Field Museum's catalog, which originated as the natural history collection of the World's Columbian Exposition (1893). As its subject matter covers ~3,800,000,000 years, the exhibit is distinct in the ways it linearizes evolution and manipulates temporality. By physically traversing the exhibition space, visitors perform the passage of time, which is compressed and elided through elements of the visual design. I reference Raymond Williams' theory of flow to examine how the exhibit assembles multiple overlapping temporalities from a disparate group of specimens, and uses this complex layering of meanings to integrate visitors into historically and culturally specific patterns of consumption. Critically, this exhibit combines visual, audio and tactile elements to create an environment that, while not strictly referential—in that it generally does not represent explicit inhabitable locations—is aesthetically coherent, and presents itself as a space set apart from everyday life and even the

bulk of the museum that hosts it. These characteristics are ultimately used to draw visitors into a conversation about the Anthropocene, which helps to articulate clear stakes for evolutionary research.

Chapter three examines two independent, but closely related, attractions: *Lascaux IV* and *Caverne du Pont-d'Arc*, the replicated cave paintings associated respectively with Lascaux (Montignac) and Chauvet (Ardèche) caves in France. These two attractions are organized around reproductions of clearly-delineated geographical sites during specific periods of time. Rather than focusing on the display of artifacts, they recreate the Paleolithic paintings and the cave environments in which they are found. Both lack the overt institutional framing of the Page Museum and *Evolving Planet*, so visitor interaction is framed by guided tours that emphasize proximity and distance simultaneously. In simulating temperatures and light levels, and creating a path that closely follows the natural contours of both cave spaces, the replicas engage the sensing body as a basis for cognition, after Etienne Pelaprat and Michael Cole. Using Jonathan Crary's discussion of productive discontinuity, I argue that the immersive design of the attractions reminds visitor of their kinship with Paleolithic humans. This sense of shared humanity operates in tension with the attractions' unconventional treatment of temporality. Drawing on Daniel Sipe's and Dimitrios Latsis' discussions of early motion photography, I explore how each attraction assembles a series of vignettes that both demonstrates and elides the passage of time, rendering the accumulation of human activity legible, but ultimately unquantifiable. This emphasizes the human capacity for image production as a primary species characteristic, as well as a critical framework through which temporality is constructed and manipulated.

Chapter four considers the research site that is the most entertainment-oriented, and

the one at which theming practices are the most overt: *Dinosaur* (1998). This headlining attraction is located at Disney's Animal Kingdom theme park in Orlando, Florida, and is centered around a thrill ride that depicts a prehistoric sight-seeing trip gone disastrously wrong when riders' time travel vehicle arrives perilously close to the asteroid impact connected the Cretaceous-Paleogene Extinction Event (~66,000,000 YBP). Although it is located within a wildlife- and conservation-themed park—which includes a number of live animal habitats, shows, research and husbandry displays—the attraction is entirely dramatic in its conception. Since it does not explicitly represent any known ecosystem or habitat, the themed environment is synthetic in every sense; this characteristic is also linked to the attraction's unique approach to temporality. Using Jake Fraser's commentary on Friedrich Kittler's theory of time axis manipulation, I argue that the attraction's ride system and mise-en-scène cycle between the spatialization and temporalization of information. When inflected by the dramatic narrative framing, these elements provide forms of sensory pleasure aligned with Linda Williams' theory of body genres, which subject riders to involuntary affective assaults. This orientation toward the sensing body as an interface between organisms and their physical environments is drawn from Ron Broglio's discussion of surface encounters, which emphasizes shared physicality as a framework for expanding human notions of cognition and interspecies relationships.

Representation as Evolution

Each of this project's research sites in some way attempts to address the remote past as a tangible reality that can be inhabited by visitors. This stands in contrast to exhibits of the 19th and early 20th centuries, which presented the concept of prehistory as an abstract

category articulated by researchers and exhibitors, and whose principles needed to be spatialized and then physically traversed in order to be grasped by audiences. In addition to changing scientific and public attitudes toward the topic, this trajectory in exhibition design also implies a shift in our understanding of the relationship between sensory stimuli, perceptual and cognitive apparati. It is worthwhile to consider the ways that these exhibits are situated with respect to histories and theories of representation and imagination, and their role in the emergence of our species.

A number of authors have suggested that the capacity for symbolic representation is a uniquely human trait, lacking any history before the emergence of Anthropoid apes. In his commentary on the cave paintings at Lascaux, Georges Bataille argues that the production of art can be used to further separate behaviorally modern humans from other members of our genus. For Bataille, art production constitutes a form of play that is distinct from modes of production such as tool-making, which are oriented toward basic survival.[18] While an interest in aesthetics was without doubt shared by Neanderthals and our other close Hominid relatives, he argues that the type of art production seen at Lascaux was part of a larger ceremonial system in which the process of creating was as important as the end product.[19] The ceremonial/magical system in which Bataille situated these paintings is of special importance here. First: it is an act through which humanity defined itself as something distinct from the rest of the natural world. Art is thus a horizon line for our species, as well as an evolutionary milestone that is within our control. Second: magical thinking, of which art is one example, is critical in situating humanity against not only the natural world, but

18 Georges Bataille, *Prehistoric Painting: Lascaux, or the Birth of Art*, trans. Austryn Wainhouse (Milan: Skira, 1995): 27.
19 Ibid., 129.

also a broader universe. While magic serves a practical purpose, in appealing to higher powers regarding material needs, it also implies a clear limit to human ability. That is: while it allows access to power that can be temporarily wielded by those with the proper knowledge and authority, magic also clearly establishes a hierarchy of agency in which humans are not situated at the top.[20] It is critical to this discussion that symbolic representation has been a mixed blessing for our species for all of its history. It allows us to conceive of ourselves separately from our surroundings at the cost of a constant struggle over our relationship to them.

Writing a decade later, André Leroi-Gourhan shares the view that symbolic representation constitutes an essential species characteristic, although his analysis reduces the importance of intention by proposing that the social and cultural formations that define the stages of humanity were made possible by, and eventually took over, from the processes of biological evolution. For Leroi-Gourhan, the human brain is the inevitable result of a series of successive "liberation" of various body parts over the course vertebrate evolution, the most critical of which were the freeing of the forelimb from locomotion and the mouth from direct manipulation of objects.[21] This allowed for an increase in cranial capacity, as the skull no longer needed to support robust dentition and musculature, and a central nervous system with greater processing power, as even basic activities now called for the coordinated action of several body parts. This development was seen as finite, as the discovery of *Zinjanthropus boisei*—now *Paranthropus boisei*—marked a point at which products of industry could serve as taxonomic markers. While biological evolution continued, social and

20 Ibid., 127.
21 André Leroi-Gourhan, *Gesture and Speech*, trans. Anna Bostock Berger (Cambridge, MA and London: The MIT Press, 1993): 25.

cultural evolution began to take precedence, and the balance would be fully reversed with the appearance of *Homo sapiens*.

Although the ability to reflect on the observable world certainly existed long before Anthropoids, Leroi-Gourhan links the development of modern humanity to the rapid refinement of techniques for projecting and and communicating about these reflections. One particular issue merits further attention: the problem of fixing and passing on meaning. Leroi-Gourhan argues that the origin of figurative art is close to writing in a broad sense, such that in their early stages both would have depended heavily upon a pre-existing oral culture in which audiences worked alongside creators to negotiate meaning based on collective memory.[22] Processing an image involved some degree of personal interpretation, since no one symbol could contain the entirety of the context necessary for comprehension. The tolerance for individual interpretation has narrowed considerably over time, and with the emergence of sign systems such as alphabetic writing and sound film,[23] as the formation of words from letters constrained the meaning of each individual symbol and the addition of sound dominated the meaning of a moving image. Leroi-Gourhan laments two major implications of these processes: a diminished capacity for imagination—which he ties to the health and agency of societies on the large scale—and the implied balance of power—as the ability to create and circulate pre-digested images lies with a privileged and ever-shrinking minority.

The tension between imagination and fixity is especially important given this project's research sites, as contemporary exhibiting institutions are attempting to address historical imbalances in interpretive power in the face of changing standards for public participation in

22 Ibid., 190.
23 Ibid., 213-214.

scientific and cultural discourse. Additionally, exhibitors must re-define institutions and their relationships to audiences while relying increasingly on funding from corporate entities whose interests may oppose those of visitors, as well as on techniques of representation originating in entertainment industries with long histories of crafting and manipulating meaning. Whereas 19th century museums designed exhibits in which artifacts served as symbols whose relationships were negotiated between elites and—to a much lesser extent—the visiting public, their counterparts in the last third of the 20th century began to conceive of deep time as something to be grasped through direct experience, rather than as an abstraction. This entails a shrinking of the gap between image and concept—a fixing of meaning—and also a shift in our definition of understanding—from performing a concept spatially to inhabiting a tangible reality.

Setting aside its teleological implications, Leroi-Gourhan's argument is insightful in that it links abstract symbolic behaviors such as the physical layout of cities and the production of media objects to the earliest products of human industry; it grounds both in evolutionary biology, and suggests that a similar framework can be used to address them. While it is of course inadvisable to accept such a straightforward linear sequence without question, it is evident that symbolic representation has been influenced substantially by the physical realities of human life, and while the biological has ceded ground to social and cultural forces, our desire to understand and refine the ways we perceive and communicate about our surroundings continues to be inextricably linked to our concepts of space and time.

The sites discussed in this dissertation converge on a common set of behaviors that are derived from the themed entertainment industries. These behaviors—which include techniques for sensory and bodily interaction, as well as recognizing and responding to

storytelling conventions—constitute a mode of engagement that is constrained by the combination of pictorial, sculptural, theatrical and museological media that themed entertainment venues often incorporate. Cornelia Vismann describes a concern with the self-management of media and objects; the ways that these things dictate the scope of their use. She emphasizes treating objects as agents—rather than as passive tools to be used by active entities—and in doing so she emphasizes parallels in ecological thinking.[24] This is particularly important in light of the research sites, as all imply or refer to the incorporation of humanity into a wider context. Vismann's approach also helps us to consider visitor engagement in a more robust way, as the relationship of this group to exhibition content and institutions is also inflected by the social, political and economic settings in which this engagement occurs.

An Evolving Tourist Class

Although they are organized according to similar parameters—in that they rely upon shared narrative and aesthetic strategies—the sites discussed for this project are distinct from most film and television texts in that they are generally only available to those who are able to visit in person. This suggests the formation of a group identity that is distinct from those associated with screen media, who are always removed in space and time from the circumstances of production. Themed entertainment therefore uses travel to produce simultaneity. Each of this project's research sites is part of a history that has been defined by shifting conceptions of travel and travelers. Dean MacCannell investigates tourism as a peculiar feature of the modern middle class, who seek out the interesting and authentic in

24 Cornelia Vismann, "Cultural Techniques and Sovereignty," in *Theory, Culture & Society* 30, no. 6 (2013): 86.

order to re-connect themselves in the face of alienation produced by the machinery of advanced capitalism. MacCannell argues that tourism is the only large-scale, economically important complex of secular behaviors to be driven by a positive vision of the world, and the search for things that are worth experiencing.[25] These are important considerations, in light of this project. MacCannell does not specify whether the above description applies to touristic behaviors strictly, or to tourists themselves, and this allows for a degree of convergence between identity and activity. Furthermore, the sites considered for this project all identify the remote past as relevant for exploration—even if only as entertainment—and given the overriding desire for authenticity in tourists' interactions with attractions, there seems to exist some interest in moving beyond a binary understanding of past and present, and to seek a more integrated temporality. Regarding the remote past, MacCannell allows us to begin defining a tourist class based on relationships to temporality that are dictated by interactions with specific attractions.

Tourism is an act of self-discovery that based on interaction with an other, and it has moved across social groups for millennia. It began as the proper activity of heroes, as seen in the epics of Antiquity, then developed during the Crusades into a shared obligation for a socially-organized group. During the Enlightenment it became a marker of status for an elevated social class, as evidenced by the Grand Tour undertaken by the European nobility. Most recently, tourism has been reconfigured a universal experience available to the middle class.[26] This movement across class groups implies a shifting sense of obligation for travelers, as well as a reorientation of the benefits of travel; while ancient heroes founded

25 Dean MacCannell, *The Tourist: A New Theory of the Leisure Class* (Berkeley: University of California Press, 2013): xvi.
26 Ibid., 5.

civilizations and crusaders defended Christendom, their Enlightenment and modern counterparts typically act on behalf of their immediate social groups. Finally, it is critical that tourism is at least theoretically available to all. While MacCannell focuses on cultural and heritage attraction as a means of developing some form of class consciousness, this project's research sites in theory offer scientific discourse a degree of accessibility that would otherwise be unavailable to members of the lay public.

Authenticity will remain an important theme for this project, and MacCannell introduces a central problem. Experience is proposed as the basis for all understanding, and tourists understand specifically by sight-seeing. Understanding is somewhat compromised by the staged nature of most tourist attractions. The inability to reach a state of true understanding thus stems from acting "as if" tourist experiences are authentic, which itself is a product of the particular structural arrangements for viewing social objects which allow the viewer to articulate a relationship to society.[27] Here, MacCannell posits tourism—specifically to work-related sites—as a mechanism for the middle classes to "experience" work in order to regain some connection to the society from which they have been alienated. While it would be too much of a stretch to claim that visitors to natural history museums and the like are seeking some remedy for their alienation from the remote past, or even a sense of integration with a broader ecological reality, when considering themed entertainment more broadly MacCannell's theory is still informative. Rather than positioning themselves within an economy or society, visitors to these venues position themselves with reference to entertainment culture. The shift from productive identity to brand identity is critical in the themed entertainment industry, and in a way this project's research sites use the remote past

27 Ibid., 68.

not as content but as a setting for themed or immersive experiences. The identity of this new tourist group thus depends less on national or class identity, and more on shared interest in interacting with themed spaces.

Edutainment and the Exhibitionary Complex

We have seen that regardless of venue popular representations of the remote past have long incorporated spectacular visuals. This practice originated in the 19th century, since the development of modern museums was shaped by the perceived need for edifying entertainment among the middle and working classes. Spectacle remains a powerful motivator, and many exhibiting institutions have responded by investing heavily in modes of presentation borrowed from the entertainment industries. This trend has accelerated dramatically during the last several decades, and Ballofet et al. describe four forces that have "shaken the foundation" of the great museums during this period. These are the democratization of travel, the mass production of cameras, the advent of radio and television, and the "digital revolution." Together, these offer individuals access to previously closed spectacles, and do so using diverse modes of engagement.[28] These patterns have special resonance for natural history museums, along with other institutions that consider the remote past. In addition to informal fossil hunting, organized expeditions join ecotourism as popular options for vacationers, and an abundance of photo and video hosting websites and applications has made excavation and research sites available remotely. In broadcast and cable television, as well as the streaming media universe, viewers have access to an ever-expanding library of documentary content. Finally, advances in digital image creation and

28 Ballofet et al, "From Museum to Amusement Park: The Opportunities and Risks of Edutainment," *International Journal of Arts Management* 16, no. 2 (Winter 2014): 9.

manipulation have enabled the production of high-quality visualizations in both educational and entertainment contexts.

Contemporary museum goers seek shared, user-friendly and interactive experiences. The pursuit of sensory and emotional stimulation is also central. As a result, visiting publics seek and expect co-produced experiences that facilitate active, relational roles in exhibitions that combine playfulness and education.[29] This implies a desire among visitors for contact with the remote past, though questions of engagement and intentions persist. In a natural history context, there is near constant tension between the desire to see dinosaurs and other charismatic megafauna on one hand, and interest in developing a theoretical grasp of prehistoric ecosystems on the other. Furthermore, a move toward interactivity does not by necessity produce an equitable system of exhibition, nor does it guarantee substantial engagement with content. Beyond the common critique of edutainment practices—that entertainment elements too easily overwhelm instructional ones, or facilitate only surface-level understanding—it is important to consider the ideological and structural underpinnings of entertainment media, along with the implications for their use in exhibition contexts.

Contemporary theme park properties have a strong appeal with the leisure-seeking public, which influences numerous other industries and institutions. This results in the adoption of numerous design and presentation techniques in museums and other cultural institutions, which Ballofet et al place into four categories: dramatic effects, plot, grand scale and authenticity.[30] These are all present to some degree at the sites explored in this project. All employ some combination of theatrical lighting, models and props, kinetics and hands-on demonstrations. Additionally, most narrativize their content by prompting visitors to move

29 Ibid., 5.
30 Ibid., 8.

through spaces on a linear path with a discrete temporal, aesthetic and theoretical arrangement. All take advantage of scale by housing display elements inside large architectural spaces and representing large animal species. In addition to including genuine artifacts in some cases, the sites considered later in the dissertation are noteworthy for the quality of the visualizations they employ. Presentation strategies such as these are no doubt engaging for visitors, although it is necessary to extend the critique beyond the basic issues of efficacy and austerity described by Ballofet et al. This dissertation is concerned with the ways that different presentation strategies position visitors as investigators, and—in combination with hosting institutions—set the terms for engagement with the broader evolutionary, ecological and historical contexts they present.

The political implications for temporality are by no means a new consideration, and Tony Bennett examines this through the development of the 'Exhibitionary Complex' in the 19th century. This system of interconnected display institutions, as well as the attitudes and behaviors that supported them, facilitated the moral and cultural regulation of the working classes in European capital cities, and did so based upon principles of expanding visibility—curated collections of objects, which were thought to hold value in framing a rapidly-changing symbolic and social order, were opened to progressively wider audiences.[31] While the research sites are certainly involved in the expansion of visibility for significant objects, what most concerns us is their role in the formation of a tourist population whose ties to nation and socio-economic class have loosened considerably.

Developments in history and archaeology allowed 19th century exhibitions—alongside the principles of classification and display—to integrate with stories of nation and

31 Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London and New York: Routledge, 1995): 73.

empire following Western models. Then, the fields of geology and biology embedded these in broader global narratives oriented around progress; anthropology imparted a distinctly imperial spin.[32] While some of the research sites can trace their origins to this exhibition context, and all incorporate fields—such as paleontology and archaeology—whose imperial underpinnings are undisputed, there are distinct attempts to move away from the kinds of progressivist understandings of temporality that informed the design of exhibitions in the 19th century. The project sites align themselves for the most part with scholarship on the Anthropocene, they attempt to incorporate broader ecological understandings, and some foreground non-linear conceptions of chronology and development. This is not to suggest that any of these sites are ideologically unproblematic, but rather to note that a shift in exhibition content—away from Eurocentric and progressivist teleologies—coincides with a transition toward profit-driven exhibition industries that attempt to engage broadly differentiated publics with diverse relationships to the pasts that are being interpreted by institutions and attractions.

Finally, Bennett argues that exhibitions directed the rhetoric of progress toward the rhetorics of nationalism and imperialism, and—through their control of adjacent popular amusement attractions—they produced an expanded cultural sphere for the deployment of exhibitionary disciplines.[33] The sites considered for this project apply ecological and conservationist rhetoric to consumption behaviors in a capitalist entertainment context, and in doing so they attempt to reconfigure the visiting public without the framework of assumed common demographic markers.

32 Ibid., 77.
33 Ibid., 81.

Implications for Future Research

This project offers several possibilities for continued research. The first of these is the continuation and revision of the dissertation topic by refining work that was carried out during the COVID-19 pandemic and its immediate aftermath. All of the research sites were affected to some degree by hygiene and distancing requirements, travel restrictions, as well as personnel shortages and other operational issues at the time of my visits. While this did not prevent examination of any of the main attractions and exhibits, certain ancillary or peripheral experiences were inaccessible. Future visits will enable me conduct additional interviews, make further observations and carry out other research tasks. In addition to revisiting my original sites, I hope to expand this research by examining the gallery of Paleontology and Comparative Anatomy, along with the Grand Gallery of Evolution, at the Muséum National d'Histoire Naturelle in Paris. In considering these additional sites, I hope to articulate how a first-of-its-kind institution—a public natural history museum, in this case —has adapted to shifting exhibition paradigms in fields that it helped to shape, including paleontology and evolutionary biology.

Following the completion of the dissertation, I hope to explore this topic further by including research sites in new exhibition contexts. The most compelling of these is the commemoration of the bicentenary of Charles Darwin and sesquicentennial of *The Origin of Species* by the Natural History Museum, London. Of particular interest are the efforts of the Museum to present elements of evolutionary theory using distinctly artistic means, an endeavor which represents the confluence of three nineteenth century trends: the formative years of long Earth chronology and paleontology, the development of a distinct popular style for representing the remote past pictorially, and the incorporation of scientific achievements

into national patrimony more broadly. Furthermore, Wollaton Hall's 2017 *Dinosaurs of China* exhibit—developed jointly by the University of Nottingham, the Palaeozoological Museum of China and the Institute of Vertebrate Palaeontology and Palaeoanthropology of China—relies heavily upon high-end graphics and other visual storytelling techniques, and suggests a resonance with efforts to consider this exhibition paradigm in Chinese institutions. This claim is bolstered by the presence of a number of exquisite fossil caches, coupled with increased openness to outside researchers, which has helped to facilitate an eastward shift in the center of gravity for the field of paleontology during the last few decades. China's emergence as an industrial and economic power created distinct social configurations for experiencing temporality and collective memory, and these are mobilized through the importation of Euro-American exhibition formats such as the natural history museum and the theme park. This suggests a new context for political uses of the remote past, and considering these additional sites will be a crucial step toward expanding my research beyond western exhibition systems.

Finally, I hope to expand this research by using the *Dinosaur* attraction as a springboard for exploring an entertainment-dominated exhibition context. I cite several authors who examine educational exhibitions, or popular film and television, but the presence of prehistoric creatures in themed entertainment merits further discussion. It is essentially impossible to discuss contemporary representations of prehistoric life in popular media without considering the influence of the *Jurassic Park* franchise, and while this topic has received ample attention I believe that by comparing Universal's theme park offerings to Disney's I can better understand how depictions of the remote past align with brand identity.

Timeline and Important Dates[34]

Big Bang and formation of Universe	13,000,000,000 YBP [years before present]
Formation of Earth and Solar System	4,600,000,000 YBP
Earliest life on Earth	3,800,000,000 YBP
Appearance of multicellular life	600,000,000 YBP
Mesozoic Era	250,000,000-66,000,000 YBP
Cretaceous-Paleogene Extinction Event	66,000,000 YBP
Earliest fossil evidence of genus *Homo*	2,000,000-1,500,000 YBP
Pleistocene Epoch	2,580,000-11,700 YBP
Earliest fossil evidence of *Homo sapiens*	250,000 YBP
End of last ice age	10,000 YBP
Appearance of agriculture	5,000 YBP
Appearance of global systems of exchange	500 YBP
Widespread use of fossil fuels	200 YBP
First use of nuclear weapons	80 YBP

34 Christian, 499-504.

Chapter 1 -
Instantaneity and Simultaneity at the George C. Page Museum

It is fitting to begin exploring the theme of Deep Time by discussing a site that focuses on the lived instant as an experience of temporality that is primary for most organisms. The La Brea Tar Pits of Los Angeles have established entrapment and death as one such experience by preserving the skeletal remains of thousands of prehistoric animals over a period of up to 38,000 years. The George C. Page Museum—which opened in 1977 as a permanent public display space for these specimens—offers an ecological and paleontological profile of the Los Angeles Basin during the Pleistocene epoch (c. 2,580,000 – 11,700 years before present [YBP]), and in recent years dialogue has shifted to incorporate the Tar Pits into climate change research. Hancock Park—which houses both the Page Museum and the Tar Pits themselves—is overlaid directly onto a site of significance which, by way of continuous asphalt seepage, literally forces its way into contact with the present.

The Page Museum's exhibits comment on their own artifice as much as the geological and biological history at La Brea. While the specimens excavated and processed at the site are the primary attractions for visitors, they are part of an exhibition strategy whose goal is much more than the presentation of interesting objects. At the Page Museum, skeletons, fossils and human artifacts work in combination with hands-on demonstrations, a 3-D film, murals, graphics and text, as well as ongoing research activities—visitors are invited to view current excavations and specimen preparation alongside the other exhibits. By featuring ongoing research alongside fossil specimens, the Museum emphasizes the role of contemporary human labor in articulating a significant event—entrapment, death and burial — which must be fixed in spatial terms in order to endure through time. The Pleistocene, as

it is envisioned at La Brea, is a period that possesses very real implications for contemporary observers, and it is through the aggregation of many instances of burial that observers begin to grasp another axis for apprehending Deep Time.

Framing the Encounter

The Page Museum is situated within Los Angeles' Hancock Park, which also houses the La Brea Tar Pits, from which the majority of its specimens were obtained. Large deposits and excavation pits—some of which are still active—are found throughout the park, and the sight, scent and texture of fresh tar signals the intrusion of the remote past into the present. The museum building is enclosed by an earthen mound, and the building is mostly hidden from view. Since it lacks the monumental architecture associated with many American natural history museums, and it is integrated into the landscape of Hancock Park, the Page Museum inhabits a small pocket of green space within the towering metropolis that is contemporary Los Angeles.

The museum's public areas are modestly sized, and they encircle an open atrium at the center of the building. Visitors are free to move through the exhibition halls in any direction and at their own pace, and traveling through the central atrium permits a degree of random access. Nevertheless, visitors are encouraged to make a clockwise circuit through the exhibition halls beginning at the entrance. From this starting point the first display offers contextual information for the entire museum by juxtaposing the current city of Los Angeles with the Pleistocene landscape; it also briefly introduces the mechanism of preservation for specimens and presents a reproduction of one of the site's flagship specimens: the skull of a Columbian Mammoth (*Mammuthus columbi*). As there are no clear spatial, temporal or

causal links between displays, and there is no required trajectory through the exhibition halls, the layout of the building emphasizes the Page Museum's interest in exploring a moment—in geological terms—rather than a collection of events to be encountered in sequence. Additionally, by foregrounding charismatic specimens the Museum prompts visitors to consider how such objects acquire new meanings in different contexts.

Specimens as Boundary Objects

The research and exhibition history at La Brea—as well as the institution's claims to offer a window into Pleistocene ecosystems—depends upon the intercessory potential of the specimens excavated from its many tar pools. These objects, along with other display elements, must suit the needs of a range of users. Susan Leigh Star and James R. Griesemer define boundary objects as scientific objects which inhabit several intersecting social or professional worlds, and which satisfy the informational requirements of each.[35] Boundary objects are polysemic; that is: their meaning is variable, and is largely determined at the moment of reception by different use communities. Stuart Hall has argued that meaning is framed by power relationships, such that an audience's interpretation of a media object may diverge from that of its creators based on each group's position relative to systems of production.[36] The potential for divergent readings has been a matter of concern in all manner of scientific exhibitions since the 19th century, and a shift toward more inclusive pedagogy relies in part on an understanding of the intersection between science communication and social, political and economic hierarchies. Boundary objects such as museum specimens

35 Susan Leigh Star and James R. Griesemer, "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39," in *Social Studies of Science* 19, no. 3 (August 1989): 393.

36 Stuart Hall, "Encoding and Decoding in the Television Discourse," in *The Council of Europe Colloquy: Training in the Critical Reading of Televisual Language*" (September 1973): 4.

must be read against this background.

At the Page Museum, specimens function more as ecological units than as singular entities. While fossils do signal the presence of organisms or environmental processes, displays emphasize the systems in which they were situated. Furthermore, the scale of the excavations prompts consideration in the abstract; rather than showcasing the uniqueness of individual organisms, the sheer number of fossils—on display and in the research collection —serves to provide statistical certainty for the theoretical claims of researchers. In this configuration, specimens function simultaneously as objects of interest and data points.

Star and Griesemer argue that translation processes allow boundary objects to move between, and continue to speak to, distinct communities. The standardization of collection practices offers guidelines for field researchers, while that of documentation allows museum researchers to make sense of physically remote locations and diverse specimens. In this way, tangible objects such as specimens and locations enabled the production of abstract ones, such as field notes and taxonomic categories. All of these were then linked by increasingly abstract cognitive maps.[37] La Brea's natural tar seeps were long exploited by indigenous communities, and this use gave way to more systematic excavation by Spanish, Mexican and later American residents seeking building materials. The same pits were eventually used by petroleum geologists to assist in the search for fossil fuels. Each specimen enters human consciousness as part of a disarticulated mass which must be mechanically separated and cleaned before any individual piece can be identified. Once prepared, specimens must be catalogued and stored in preparation for research or exhibition. Several translations occur throughout this process. Through excavation and preliminary processing, concretions

37 Ibid., 406.

become individual objects. Following cleaning and preservation, these objects become specimens. Through research, the specimens become records of Pleistocene organisms and ecosystems, which contribute to our understanding contemporary climate change. Thanks to National Natural Landmark status and the public mission of the Museum, the site and its specimens become symbols of local identity. Thus, each object must participate simultaneously in multiple systems of discourse, becoming increasingly abstract as it moves further from the moment of excavation.

A bizarre mixed media display—found in Museum's north hall—demonstrates how a hybrid mode of representation supports interpretation by multiple diverse communities. A large wall-mounted case presents roughly 400 Dire Wolf (*Canis dirus*) skulls arranged in a grid under dramatic orange-tinted lighting—the Dire Wolf is one of the most well-represented species at this site, with some 200,000 specimens excavated to date. This case faces a large panoramic display which includes several Dire Wolf skeletons in active poses, a full body sculptural reconstruction and several 3-dimensional landscape elements, in front of a dramatic mural depicting a night-time landscape with several additional wolves engaged in what appear to be hunting behaviors. This display offers evidence for several intersecting narratives, which is a subject rarely explored in popular science exhibitions. Steven W. Allison-Bunnell argues that while museums actively display objects or knowledge, they present exhibition as distinct from research. Exhibitions rely on research for factual accuracy, of course, but in most institutions the process of mounting one is rarely linked explicitly to the knowledge on display.

Science is not easily formalized from an aesthetic standpoint. Although a great deal of standardization and integration has occurred in the last century and a half, the fact remains

that many of the activities associated with scientific practice are in fact rather ordinary looking, and not easily distinguished as inherently scientific. For Allison-Bunnell, this has implications for public perceptions of science and our conception of science communication. In light of growing critiques of dominant models of scientific communication and popularization—in which knowledge is transmitted fully formed from experts to passive audiences, and success is determined by the degree to which the integrity of that knowledge is maintained—Allison-Bunnell suggests that research and exhibition should not be so readily disengaged.[38] These processes, difficult though they may be to differentiate based on aesthetics—fabricating a pedestal or display case in wood, for example, is hardly distinguishable from carpentry in any other application—are critical parts of the apparatus of knowledge production. Similarly, excavations at La Brea largely resemble excavations for other architectural or infrastructural purposes, and do not generally distinguish themselves until fossils begin to appear in the masses of soil and asphalt removed from the ground.

Allison-Bunnell turns to *The Leaf Thieves* (Burnham, 1964)—a promotional film documenting the production of a rainforest diorama at the National Museum of Natural History—as a case study. This film articulates key elements of the visual iconography of scientific practice in the mid-20th century. The film must been seen in the context of a growing desire in the post-war years for higher quality science communication, which was intended to raise the level of scientific literacy among the general population, thereby encouraging informed decision-making and ultimately a more robust democracy grounded in the shared adventure of intellectual engagement.[39] While the Page Museum on the whole

38 Steven W. Allison-Bunnell, "Making Nature 'Real' Again: Natural History Exhibits and Public Rhetorics of Science at the Smithsonian Institution in the Early 1960s," in *The Politics of Display: Museums, Science, Culture*, ed. Sharon Macdonald (London and New York: Routledge, 1998): 77-78.

39 Ibid., 80.

avoids overt discussions of exhibit design, its efforts to inform visitors about its research practices—through the creation of viewing areas for ongoing excavations, as well as conservation activities in the Fossil Lab—and to extend opportunities for participation through the volunteer program, articulates common stakes for at least one branch of scientific knowledge, the implications for which are directly relevant to members of any society affected by climate change.

Critically, while *The Leaf Thieves* does extend the boundaries of the term "research," it does not manage to reach all forms of museum practice. The activities of the scientists and exhibition makers are presented as aesthetically and procedurally linked, while those of curators—who lack much of the visual iconography associated with research—are interpreted as research in name only.[40] This is the culmination of a process that had gone on for nearly a century at the time of the film's production. Research and exhibition are historically rooted in the same forms of knowledge and practice, as the earliest public museums were derived from the curiosity cabinets which the privileged classes of the Enlightenment era occasionally opened to those outside their social circles. This slowly expanding group began to include naturalists, whose accounts provided critical information for other researchers. This approach was grounded in careful observation and systematic description, and in line with the standardization and professionalization of scientific practice in the mid-19th century it began to give way to experimentally- and theoretically-driven modes of inquiry.

This shift corresponds to a distinction between popular and technical scientific communication, which holds that a 'narrative of nature' omits the presence of a scientist in

40 Ibid., 85.

popular texts, while a 'narrative of science' brings practice and reasoning to the foreground in technical ones. As Allison-Bunnell argues, the habitat group, a staple in natural history museums worldwide and the subject of *The Leaf Thieves*, exploits this tension by shifting constantly between these two types of narrative. The aesthetics of the display attempt to overshadow the material reality of its fabrication, as it is designed to appear lifelike and unstaged, while the viewers' awareness of the illusion draws attention back to the technical finesse required to produce it.[41] While habitat groups are lacking at the Page Museum—which favors mounted skeletons and individual reconstructions in exhibits—the aforementioned Dire Wolf display produces a similar tension. Although it is doubtful that this display was intended to be illusionistic in any way, it nevertheless manages to produce a sense of realism to complement the fantasy of the composition. Its creators united three distinct orders of representation—genuine specimen, 3-dimensional reconstruction and 2-dimensional image—which highlights the cultural underpinnings of all conceptualizations of the natural world. Here, specimens are joined with sculpture and painting in such a way that the human hand becomes a unifying factor for every element. This scene—no version of which could ever be observed or recorded in real time—shifts visitors' attention from imagining the remote past as a goal in itself, and toward an investigation of how that past has been constructed.

Although the specimens in the Page Museum's collection are central attractions, their framing ties the Museum into more than one type of leisure destination. Dean MacCannell places modern museums into two broad categories: re-presentation and collection. A re-presentation museum features objects as part of a situation or context, and displays are

41 Ibid., 94.

designed to be meaningful from the standpoint of the objects they contain. These displays are typically truncated; that is: they are extracted from a larger context, which can be reconstructed physically or in the imagination of the visitor based on the logic of the objects on exhibit. Identification and extrapolation are central goals for institutions of this type. Collection museums, on the other hand, catalogue related objects based on their placement in one or more categories. Rather than identification and recognition of the contextual totality that is inferred from a re-presentation exhibit, those based in collection are focused on the theoretical and conceptual links between objects. Displays are therefore organized according to aesthetic criteria. Rather than a logic that is consistent and extendable, objects are arranged and ordered based on principles that are largely arbitrary and imposed by researchers or curators.[42]

It is not easy to situate the Page Museum with respect to MacCannell's schema. While the stated goal of providing visitors with a window into Pleistocene Los Angeles suggests that it is a re-presentation institution, the conceptual and aesthetic arrangement of its specimens works in combination with their origin in a restricted fossil cache to suggest that collection is an equally valid paradigm. We therefore turn to another of the venues explored by MacCannell—the backstage tour—for additional context. Backstage tours are, quite simply, intended to reveal the inner workings of a site or an institution to outsiders. They allow access to information, objects and spaces that would otherwise be off limits, while also offering an opportunity participate in the lifestyle or activities of the venue through the act of consumption. However, backstage tours are generally exhibits rather than actual productive

42 Dean MacCannell, *The Tourist: A New Theory of the Leisure Class* (Berkeley: University of California Press, 2013): 78-79.

spaces, and most maintain a an aura of superficiality that is not always noted by visitors.[43] The Page Museum acts as a sort of hybrid space; it incorporates elements of both types of museum, while presenting research and specimens according to a backstage paradigm. However, even this categorization is problematic; although the fabrication of the remote past is foregrounded, these acts of mediation are carried out through genuine specimens, which are prepared by genuine museum personnel as visitors watch. La Brea, the Page Museum included, develops a complex relationship toward authenticity that is grounded in the ability of its flagship specimens to occupy multiple symbolic orders simultaneously.

Charismatic Fauna as Graphic and Figurative Objects

The La Brea Tar Pits came to modern scientific attention through the discovery of the remains of Pleistocene mammals, which the Page Museum was created to showcase. La Brea's charismatic megafauna serve as the core of the exhibitions and the lens through which the remote past is examined and articulated. As Cathy McNassor notes, La Brea has a long and convoluted history of excavation and ownership; this situates its former residents within narratives of national and local consciousness, as well as scientific practice. The archaeological record indicates that indigenous communities dating back to the Pleistocene have used asphalt as an adhesive and sealer. Following the area's transition to Mexican rule, a land grant dictated that local residents be permitted to collect the substance for personal use —largely roofing and other construction. In 1875, English geologist William Denton was given a canine tooth from a Sabre-Toothed Cat (*Smilodon fatalis*), and it became clear that the bones found in the tar pits were of prehistoric origin, rather than representing modern

43 Ibid., 98.

species.[44] The first official excavations were carried out in 1906, at the request of petroleum geologist W.W. Orcutt, by the University of California at Berkeley.[45] Exclusive digging rights were granted in 1913 to the Los Angeles County Museum of History, Science, and Art —now the Natural History Museum of Los Angeles County—and the area containing the richest deposits was donated to the county, to become Hancock Park, in 1924.

While the Pleistocene fauna of La Brea have been part of Los Angeles and California history for only a century and a half, fossil mammals have played a critical role in the development of American national consciousness and identity since the early days of the republic. Paul Semonin argues that the American Mastodon was the nation's first prehistoric monster, which became an expression of the young nation's ambitions, and a justification for its expansion. The founding fathers were highly motivated to construct a glorious past on which their notions of American ascendancy could be based, and to this end the study of Natural History became a substitute for that of Classical Antiquity. Fossils and other geological specimens became monuments, artifacts and textual records through which the nation's heroic past could be articulated.[46] The study of natural history, and particularly the search for prehistoric monsters, was thus critical to the formation of an early American national consciousness. Not only did these ferocious creatures hint at a long and glorious (if barbaric) past for a nation that was thought to lack one, they also provided justification for its territorial expansion and the wholesale destruction of the indigenous population. A similar logic was invoked roughly a century later with the discovery of large dinosaur fossils in the western states.

44 Cathy McNassor, *Los Angeles's La Brea Tar Pits and Hancock Park* (Charleston: Arcadia Publishing, 2011): 7-8.
45 Ibid., 23.
46 Paul Semonin, *American Monster: How the Nation's First Prehistoric Creature Became a Symbol of National Identity* (New York and London: New York Unversity Press, 2000): 227.

The study of La Brea's Pleistocene fauna—the identities of which are inextricably bound with that of the site—upholds and subverts the expansionist tendencies of vertebrate paleontology. In spite of the long history of human in and around La Brea, it took the discovery of the bones' spectacular origins to merit significant attention. Once "discovered" officially, efforts to consolidate and rationalize the ownership and administration of the land kept pace with the transition from Mexican to American rule, as well as its eventual incorporation into the city and county of Los Angeles. As with their saurian counterparts from the Mesozoic, the discovery of the Pleistocene mammals of La Brea has been closely tied to fossil fuel exploration, and their public exhibition was facilitated by the donation of a wealthy philanthropist. Finally, echoing the narrative of the American Mastodon, La Brea has had a lasting impact on the local consciousness. Following its designation as the official fossil in 1973,[47] *Smilodon fatalis* became a part of the insignia of the state of California. Its unique anatomy seemingly provided evidence of the apparent savagery of the natural world, and this conception resonated with the practices of American capitalism at the time of its discovery. Furthermore, although its characterization as a predator is more grounded than in the case of the Mastodon, its ferocity and its extinction shortly after a substantial expansion of the human population seemingly represented an old world order that must inevitably be destroyed to make way modern civilization.

The Pleistocene megafauna at La Brea thus straddle a boundary between specific and general. They have come to symbolize a city and a state, and their remains function in a complex system of cultural, political and economic exchange. At the same time, research of the site and its inhabitants is driven by attention to the unique. The painstaking work of

47 McNassor, 76.

excavating, preparing and cataloging specimens is put on public display, while researchers strive to articulate concrete connections between historical and contemporary climate change. This tension between generality and specificity has been key to scientific and artistic investigations of animal subjects for centuries. Joan B. Landes considers parallels between the illustrations from Buffon's *Histoire Naturelle* (1749-1789) and Picasso's visual methodology in the middle third of the 20th century, some examples of which were commissioned for a planned modern edition of *Histoire*. At the center of the argument is the way that illustrations invoke both concrete observations and abstract principles. Buffon's illustrations synthesize many individual animals in order to create a practical representation of a given species. Rather than simply an ideal type or a beautiful specimen in the Classical tradition, his purpose was to produce a descriptive image that permitted comprehension of that species. It also articulated a framework through which any member of any species could theoretically be approached. The images thus created and illustrated an order of knowledge simultaneously.[48]

Buffon's illustrations occupy a position somewhere between everyday experiences with common animals and the theoretical realm of comparative anatomy and natural history. This movement, from known to unknown, finds parallels in Picasso's visual methodology. It is especially apparent in a 1945-1946 series of lithographs depicting a bull in profile. With each successive print the figure drew closer to geometric abstraction, and a colleague remarked that Picasso jokingly referred to the omitted detail as meat to be sent to a butcher.[49] This reference is especially poignant, given the peculiar conditions of preservation at La

48 Joan B. Landes, "Animal Subjects: Between Nature and Invention in Buffon's Natural History Illustrations," in *Gorgeous Beasts: Animal Bodies in Historical Perspective*, ed. Joan B. Landes, Paula Young Lee, and Paul Youngquist (University Park: The Pennsylvania State University Press, 2012): 32-33.

49 Ibid., 37.

Brea. Given the extreme over-representation of carnivores, it has been theorized that these animals were drawn to the tar pools by the presence of prey species that were already trapped. The predators would then have been trapped themselves, losing their own ability to obtain and process the material sustenance they desired. The processes of decomposition and eventually preservation would ultimately aggregate all remains regardless of species, removing all tissue and preserving nothing but skeletal remains—an abstract rendering of each individual, in anatomical terms.

Landes is careful to point out that it would be unreasonable to simply name Picasso as Buffon's heir. While Buffon used abstraction to articulate typicality in specimens, with the intention of facilitating comparison and ultimately placing humanity definitively within the animal kingdom, it was Picasso's goal to find a fundamental graphic reality. In stripping an image of visual detail imposed by European aesthetic convention, he sought to render the animal in an essential state that approached the "magical" images in Neolithic cave paintings or the art of Africa and the Pacific. In spite of their contrasting purposes, both invite viewers to consider the contingent elements of their images and the animals they represent, and finally our species' relationship to the rest of the natural world.[50] For Buffon this is the broad variation in living animals—though their placement within human frames of reference is suggested by the pictorial scenes which they inhabit—while Picasso pursues a conscious separation from the history of European pictorial representation.

The Page museum emphasizes tension between the general and the specific, and this is nowhere better articulated than in its displays of charismatic megafauna. The preserved bones are by nature subject to abstraction, as when matter is removed from an animal body

50 Ibid., 38.

the articulated skeleton is typically the last point at which the specimen is still recognizable to lay viewers. Beyond this ontological point, the specimens on display at the Page museum are put to quite different uses. Full skeletons are overwhelmingly mounted in a style that mimics natural history illustration going back to the 18th century; specimens are typically presented in static, or nearly static, poses and arranged on simple pedestals. Two or more specimens representing related species occasionally occupy the same display. Physical barriers, such as stanchions or low fences accompanied by text panels, separate viewers from specimens and encourage distanced, general observation. Fragmentary remains are, on the other hand, more dynamic in their presentation. A wall display in the Museum's western hall uses several strategies to provide ecological context for these specimens, such as tying scarring and fracturing to past injury, or inferring diet from tooth and jaw anatomy. The preparation and cataloging operations carried out in the Fossil Lab literally animate specimens for viewers.

Both full and fragmentary specimens are seen as keys to the past, but the two groups function in different ways. While the scale of the full skeletons hints at a glorious prehistory, the austerity and rigidity of their presentation points to an understanding of the Pleistocene that is generally comparative and decidedly abstract. Conversely, the fragmentary remains are positioned firmly within research practices, and paradoxically offer a more tangible representation. Here, each idiosyncrasy adds nuance to our understanding of Pleistocene ecosystems, and—as is argued by recent additions to the exhibits—offers a point of connection between ancient and contemporary climate change.

This tension is perhaps best demonstrated by the museum's Dire Wolf display—described above—in which exhibition practices and intentions are confused in productive

ways. The grid of skulls placed in the northern wall—while it offers an exquisite opportunity for comparative study and illustrates the imbalance between carnivores and herbivores in the Museum's collection—is ultimately memorable for its graphic qualities and its sheer scale, rather than the insight it provides. Its counterpart—a display containing full skeletons in active poses and 3-dimensional models mounted in front of an elaborate painted background—provides more overt evidence of the human hand. However, this hand is implied to be that of an artist rather than a scientist, as the design of the display is more evocative than explicitly descriptive. As does the Page Museum on the whole, this display implies that Pleistocene megafauna play an ambiguous role in articulating the site's remote past. Furthermore, the lack of a unified vision for its exhibits seems to demonstrate that while the Page Museum views this past as highly relevant to the present, the precise nature of our relationship to it is less clear.

La Brea as a Threatened Site

While La Brea's charismatic megafauna are both abstract and specific descriptive objects, the site itself also participates in cultural and historical narratives at varying scales. The relationship between the institution of the Page Museum and the site of the La Brea tar pits is perhaps best described as coterminous, shifting and threatened. Located within Hancock park, the museum building was superimposed over the existing Pleistocene site; external viewing areas extend the functional exhibition space into the surrounding park to engulf the various active and exhausted tar pits. While the two can not be considered coterminous in the strict sense—the rectilinear grid of the museum building, the surrounding park, and the urban streets that serve as a boundary does not match the footprint of the

original tar pools—they are nevertheless part of a sign system in which signifier and signified happen to penetrate each other spatially. There are numerous examples of this interpenetration throughout the site. Inside the Museum, specimens from the collection pits are included in exhibits alongside the preservation and cataloging processes. On the grounds of Hancock Park, a meandering path leads visitors to a series of viewing areas that have been constructed at excavation sites; these viewing areas are supplemented by additional static displays at boxing sites and exhausted pits. While the ancient and modern sites can be spoken of as distinct objects, it is never entirely possible to separate them completely, nor to extract either from the physical space they share.

Just as the boundaries of the Page Museum and the tar pits tend to converge, those of work and display areas—as well as past and present—are highly contingent and constantly shifting. While the Los Angeles streets that enclose Hancock Park form a more or less impermeable barrier to the museum's expansion, the arrangement of objects and spaces within the park will likely never be static. Furthermore, both the active and exhausted tar seeps show little regard for the city's grid. New pits will undoubtedly be discovered in the future, as demonstrated by recent caches uncovered in connection with the construction of a LACMA parking structure—an internal find—and an extension for the Los Angeles Metro Rail—an external one. Although these pits were or will be filled in and covered over to permit construction, the fact remains that there is an underlying tension between the aggressive and largely unpredictable intrusion of the Pleistocene in the form of active tar seeps, and the orderly development imposed by the contemporary city of Los Angeles. This confused temporality is complemented by the intersection of work and exhibition spaces at La Brea. It has been stated that visitors are invited to view excavations on the grounds, as

well as preparation and cataloging in the museum building, and although this observation does not bear repeating the ongoing presence of volunteer laborers at the site contributes to a constantly changing staff profile, as well as a blurring of the boundary between leisure, work and exhibition for visitors.

The site of the La Brea Tar Pits is threatened by contemporary urban development, in its past and present forms alike. As it is hemmed in by city construction, Hancock Park is increasingly becoming a green island, something of a retreat from the the city of Los Angeles and the development of the surrounding neighborhood as a leisure and culture destination. The tar pits and the Page Museum are even vulnerable within Hancock Park, as they share space with other higher-profile—and more lucrative—museum and leisure destinations such as the LACMA campus and the nearby Petersen Automotive Museum. Although the conditions of George Allan Hancock's gift of the property and specimens to the County of Los Angeles will likely ensure that both the tar pits and the Page Museum will be preserved in some way, the desire to develop both the park and the surrounding area suggests that negotiations for physical space or access to facilities will be inescapable for the foreseeable future. The unpredictability of the site in geological terms, has also proven hostile to the rational development favored by Los Angeles city planners. As tar continues to seep to the surface—sometimes carrying with it evidence of new collection pits—potential excavation sites are frequently discovered by accident. Without diligent surveying work, those outside of the park risk unwitting destruction. Even pits that are situated firmly within its boundaries are not entirely safe from harm, as demonstrated by damage done to Zed—a nearly complete Columbian Mammoth (*Mammuthus columbi*) skeleton discovered during a LACMA expansion—by construction equipment unknowingly operating in an area that contained a

major cache.

The most poignant embodiment of risk at La Brea can be found in the parallel between contemporary and prehistoric climate change. Near the end of the Last Glacial Period (c. 11,700 YBP), human activity likely threatened megafauna worldwide, and began to transform local ecosystems in small but important ways. While responsibility for Pleistocene climate change can not be attributed solely to our species, nor can the moment at which we became a geological force be determined precisely, it is significant that *Homo sapiens* has been implicated in large-scale ecological change at both moments. This risk in fact transcends time, as the actions of our Pleistocene ancestors were part of a set of global behaviors whose recent dramatic acceleration has resulted in the current climate catastrophe. Conversely, the human activities driving contemporary climate change put both the modern site and ancient record it preserves at risk. In this way, contemporary climate change threatens to erase the past as well as the insight it provides into our present.

Alhough the Page Museum engages and tries to preserve the past, it does not generally try to reconstruct it in a strict sense. Taken together, its exhibits function as a re-enactment of a very specific type, which is aligned in some ways with panoramas of the 18th and 19th centuries. As Allison Griffiths explains, these panoramas prefigured some aspects of cinema by adopting re-enactment as paradigm for display. For all intents and purposes cinema depicted events or processes that were—at least from the perspective of the shot—anchored firmly in space and time. However, panoramas can only depict space directly. Motion, and therefore time, must be simulated or implied by means external to the images themselves. Panoramas thus rely upon re-constituting and re-constructing events, which is a

form of re-enactment that is distinct from that of cinema.[51] Such re-enactment also aligns panoramas with death, which they embody through stillness, but negate through aesthetics. Death, being both a state and an event, is preserved in panoramas and museums alike.[52]

The simultaneous embodiment and negation of death is evident throughout La Brea and the Page Museum. Specimens, being skeletal and often fragmentary, are both animal and not-animal. Mounted on pedestals or inside display cases, they are both representation and object. Furthermore, these specimens rarely appear alone, and are often accompanied by additional material such as background murals or text panels. This interaction with 2-dimensional media, while it raises the ontological status of the supplemental illustrations, also reveals the specimens to be somewhat less descriptive, as the depiction of soft tissue—so often required for identification by the non-specialist—is simply an impossibility with a skeleton. The exhibits rarely rely on skeletal remains alone, and instead use them as part of a broader strategy of showcasing the methods of reconstruction in use at the site. These methods are oriented toward the re-enactment of a grand and expansive Pleistocene environment that is nevertheless presented as a singular reality.

The scale of the re-enactment is articulated physically by the remains of enormous animals, mathematically by reference to the sheer number of specimens that continue to be collected from the tar pits, and rhetorically by repeated verbal references to the vastness of the landscape and the mass of its residents, as well as the severity of the climate crisis which current research helps us to understand. Finally, Pleistocene Los Angeles—as revealed at the Page Museum—is in actuality a composite reality. Although it is presented as a snapshot, the

51 Allison Griffiths. *Shivers Down Your Spine: Cinema, Museums & the Immersive View* (New York, Columbia University Press, 2008): 44.
52 Ibid., 74-75.

re-enactment is significantly more complex. The specimens collected from the tar pits represent a range of tens of thousands of years, although their discovery as masses of disarticulated bones does little to make this immediately clear. Rather than foregrounding the temporal and taxonomic breadth of the specimens, the exhibitors at the Page Museum compress the displays into a singular image of the remote past. Impressions of motion, time and change are largely omitted with the exception of a few animated models, a 3-dimensional film and references to the ongoing research at the site. These research activities are not only responsible for the articulation of this vision of the Pleistocene, but are also directly implicated in La Brea's recognition as an object of touristic interest.

Dean MacCannell's analysis of the semiotics of tourism provides some useful insight into how this is accomplished. Page Museum serves as a marker for the sight of the La Brea Tar Pits. MacCannell argues that a marker represents a tourist sight by providing information to identify, explain or contextualize it. However, the interest of viewers does not always fall equally onto sight and marker. MacCannell refers to this phenomenon as sight involvement —a situation when the sight itself dominates viewer's attention—and marker involvement—when the marker dominates.[53] Slippage of this type is noticeable at La Brea, as the inaccessibility of the ancient site and the ecosystems it represents, necessitates a marker to alert visitors to its presence and provide the context needed for interpretation.

It is sometimes the case that for various reasons a tourist sight comes to be dominated by its marker. This sort of marker-sight obliteration is not inherently negative, and it may even enhance the value of the sight in certain cases. This is especially true when a marker contains information about a past action or event at a sight, particularly one for which there is

53 MacCannell, 112-115.

little remaining evidence, or said evidence is in some way insufficient. In these situations, the marker can in fact invigorate—and maintain interest in—the site.[54] The Page Museum represents such a marker-sight obliteration. In this case, the original sight is the La Brea Tar Pits. This sight becomes an object through the intervention of scientific research. Next, science establishes the Page Museum to act as a marker for the sight it has created from the tar pits. Once opened and operating, the marker, in the form of the museum, becomes a new sight. While the tar pits themselves are still physically present, their status has become quite abstract. As they have never been a singular phenomenon, but are instead the modern result of processes stretching back tens of thousands of years, their construction as an object always required human direction—first in the form of excavation for building materials, next in oil prospecting, then in scientific research. They have therefore never been truly accessible in any direct way. Furthermore, given La Brea's importance in both evolutionary and climate research, it can be argued that the object of the Page Museum's interest is Pleistocene Los Angeles, rather than the tar pits themselves. Finally, the fact that the specimens and the land containing them were given to the county of Los Angeles as part of a philanthropic donation, also grants La Brea the status of a political and economic object.

It can perhaps be said that there are several nested semiotic systems in operation at La Brea. At the core is Pleistocene Los Angeles, which has been granted the status of sight in light of its connection to contemporary climate research. It is established as a sight by the tar pits, which serve as the framework through which it must be articulated. The Page Museum acts as a marker for the site of the tar pits, which provide little in the way of engaging material for viewers on their own. The popularity of the Museum as an attraction makes it

54 Ibid., 127-128.

the dominant sight, and its significance as an institution is articulated through its participation in civic life as a public land grant and a national monument, as well as in the financial and political spheres as a part of the area's leisure economy. Finally, its link to climate research grants it global significance and returns our attention to the Pleistocene with which the chain of signification began.

Theming Natural History Research

The exhibits at the Page Museum—and at La Brea in general—do not constitute an immersive themed space in a traditional sense; that is: rather than creating a discrete environment that is inhabitable by visitors, the exhibits foreground processes of research and reconstruction. This strategy emphasizes the role of the modern human in designating and framing the remote past. Exhibits engage the imagination in several important ways: by providing visitors with rudimentary stimuli in the form of the tar pits and the objects excavated from them, by illustrating the range of cognitive and technical processes operating upon them through specimen preparation to multimedia displays, and by articulating the stakes of the endeavor by linking contemporary climate change to that of the Pleistocene. At La Brea, the remote past is accessed through the activity of the imagination—to be conceptualized and investigated, but not literally visited—that nevertheless carries very real significance. Therefore, it is productive to consider La Brea as a sort of backstage or behind-the-scenes site, at which the mechanisms for constructing the remote past are offered up for display.

The east hall of the Page Museum is the most overtly research-focused, and while it does feature representations of charismatic megafauna in several formats—including

mounted skeletons, full body reconstructions and robotic figures—a presentation of the museum's backstage activities is the focal point. The Fossil Lab is designed to give visitors an impression of the preparatory work carried out at the site. This glass enclosure, which protrudes into the gallery space, is lined by outward-facing work stations where museum employees and volunteers clean and prepare specimens excavated at the nearby pits. Microscopes, cleaning implements and other supplies are arranged in full view of visitors, as are specimens in varying states of completion. A nearby cataloging lab is also on display to visitors, in which a staff member produces high-resolution 3-dimensional scans of specimens in the collection. Additional lab facilities are visible beyond the work stations, a few of which appear to be staffed at all times; this makes the Fossil Lab one of the most dynamic and variable spaces at the Page Museum.

The Fossil Lab is a hybrid space, as preparation and conservation work clearly contributes to the museum's research and exhibition goals—that is: the lab is staffed by museum personnel working with specimens that will eventually be incorporated into the collection—and it also provides a critical platform for public engagement. The facilities are designed for viewing by, and communicating with, visitors; all work stations face outward into the exhibition hall, loudspeakers and dry erase boards allow for contact between visitors and staff, and posters and diagrams offer context for the specimens being processed at a given time. In addition to being one of the more dynamic spaces in the Museum, the Fossil Lab is a location at which "character" plays a prominent role. While the majority of the exhibits conform to museum conventions, the Fossil Lab provides some opportunities for individual expression. Toys, origami figures and other trinkets surround the work stations, while unique handwriting on dry erase boards and a shifting roster of workers gives the sense

that individual humans contribute to the research carried out at La Brea, and help to shape our understanding of the past.

Dean MacCannell discusses a substantial relationship between the instructive and aesthetic functions of backstage attractions, and the aestheticization of the Fossil Lab makes for an interesting application of his theory. He argues that backstage attractions are quintessential tourist activities, although their value does not lie in their ability to exhibit a literal reality—even if this may sometimes be the case for less discerning observers. Rather, these attractions help to articulate tourists' relationships to the sites they visit. Above all, backstage attractions exhibit the logic, and simulate the operations of, the institution or system that they represent. Instead of presenting their subject directly, they help the visitor interpret "what it is" and "how it works," and in doing so they provide opportunities for connections to productive institutions packaged as acts of consumption. Tourist settings, including backstage attractions, rely upon the staging of authenticity in order to generate informative value; they are by definition designed only to be seen. Typically installed at or near genuine sites of productive activity, they frequently simulate processes, and contain objects or materials associated with those activities. While seemingly satisfying the empirical requirements for validity, they never offer the observer any legitimate role in the process. Rather, they are intended to move observers from front to back—or outer to inner—spheres of operation, providing knowledge or experience deemed more authentic than what their status as outsiders and tourists would normally dictate.[55]

The knowledge of institutional logic is of limited value if the experience lacks sufficient resonance for visitors. For industrial or commercial facilities, operators must find

55 Ibid.,, 100-101.

ways to connect with heterogeneous visitor groups, which always include those who are not familiar with the product or service on offer. In the case of La Brea, museum personnel must stimulate interest in the plant and animal remains themselves—which have little meaning on their own, and must undergo extensive cleaning and organizing before becoming recognizable to the non-specialist—and also prompt visitors to consider the ecosystems which these remains represent, and to understand their relevance for the experiences of contemporary observers.

This particular function of the backstage tour is explored by Ann Brigham, who considers how sites such as Universal Studios (Hollywood) and the Ford Rouge Factory (Dearborn, Michigan) engage visitors as active participants in production processes from which they are likely very far removed. Brigham argues that backstage tours perform two key functions: they offer behind-the-scenes knowledge, and resurrect the figure of the active producer in an era defined by consumption. Sites such as Universal and the Rouge Factory echo the modern European interest in regarding "primitive" cultures as more authentic, and vanishing, ways of life, which must be preserved. In this way, backstage attractions are grounded in the argument that the absence of productive labor from modern middle class experience can be remedied by immersing oneself in ways of life that are thought to be closer to a more “natural” or “general” state of being. In this case, rather than the “primitive” person who is shielded from the alienation of modern civilization, attractions showcase the artisan worker who is free from the domination of mechanization and bureaucracy.[56] This seems at first to be a strange comparison, as the specific type of labor exhibited at La Brea

56 Ann Brigham, "Behind-the-Scenes Spaces: Promoting Production in a Landscape of Consumption," in *The Themed Space: Locating Culture, Nation, and Self*, ed Scott A. Lukas (Lanham, MD: Lexington Books, 2007): 209.

and the Page Museum is difficult to describe as productive in the same sense as Ford's or even Universal's. While staff and volunteers indeed produce material objects in the form of prepared specimens, these are far from consumer goods such as automobiles or motion pictures. Therefore, the fact that personnel are engaged in the production of knowledge rather than goods is what sets La Brea apart as a backstage experience.

Visitors access this production through acts of tourist consumption, which many have identified as a critical vehicle for identity formation for modern people—particularly Americans living under late Capitalism. Seeking out an identity that is identified in some way with some form of production—whether or not one actually takes up the activity—becomes a viable, and more authentic, alternative to the shallowness of an existence that is defined strictly by consumption.[57] Visitors to Universal see behind-the-scenes film production spaces on the park's backlot tour, they participate directly in live shows, and they are drawn into the narrative structures of other rides and attractions. Absent are any references to Hollywood's legacy of exploitation or the often destructive ideological influence wielded by the entertainment industries. Similarly, Ford's Rouge Factory tours allow visitors to observe certain automotive production practices, and they offer glimpses of cutting edge designs. Critically, this is done in such a way that the program glosses over the massive inequities inherent in Fordism by focusing on processes of fabrication and invention. By linking these concepts with the figure of Henry Ford, as the quintessential American entrepreneur, the tours successfully characterize production as dynamic rather than drudgery, and the factory as a site of invention as opposed to exploitation.[58]

While they resonate in important ways, neither of these explanations offers a

57 Ibid., 210-211.
58 Ibid., 217-219.

comprehensive perspective on the exhibits at the Page Museum, or of La Brea as a whole. MacCannell's analysis of the semiotics of tourist sites provides additional insight by making the distinction between a tourist sight, and its marker. In contemporary tourist settings, a sight is essentially any object or area of interest, while a marker is conventionally used to point to, or provide some explanation for, it. Separation is critical in this relationship, as the marker is rarely the same as the sight itself. Furthermore, while it is frequently incorporated into a physical or virtual object such as a plaque or a website, it is the informative content rather than the object itself that constitutes the marker.[59] This means that while a sight itself is often fixed, the marker is typically more easily altered, and the meaning of the sight is thus determined mostly by context. In the case of La Brea, while the fixity of the ancient site is debatable—in that the tar pits, their contents and the surrounding soil are all subject to geological and anthropogenic forces—its inaccessibility to lay observers, along with the extensive research and exhibition apparati required to make it intelligible, dictates that public knowledge of the site be generated almost exclusively through markers rather than the site itself.

This follows Pierce and Saussure, who stress the arbitrary nature of the relationship between signifier and signified. In linguistics, this is demonstrated by the fact that a word such as a noun rarely resembles the thing to which it refers, and words referring to the same thing often vary widely across language groups. Rather than being inherent, the relationship between things and ideas—if they are indeed separate—is socially determined.[60] Applied to tourism, this means that the identity of a sight malleable—in that it must be identified as such by a marker—and also that its meaning is contingent upon the viewer's relationship to the

59 MacCannell, 110-111.
60 Ibid., 117-118.

system of thought used to interpret it. That is: the viewer is not forced to follow the marker's lead in apprehending the sight, but might generate a unique understanding based on personal experience or insight from some other external source.

We have considered MacCannell's discussion of processes known as marker-sight transformation, which occur when a marker comes in some way to dominate the sight to which it refers. An additional process—redemption—is significant for the current discussion. A marker is said to redeem a sight when little-to-nothing exists to be seen by a viewer, or when extensive effort is required for recognition. This is particularly important when a sight is known primarily for its involvement in a past event, for which witnesses and material evidence may be unavailable due to time, natural processes or human effort. The marker thus becomes the object of interest for the visitor, and the actual sight the carrier of raw information for the marker to identify, interpret and present.

As a whole, the exhibits at La Brea are a behind-the-scenes presentation of the process of imagining the deep past. Located at and around the actual tar seeps from which the Pleistocene specimens originate, visitors are invited to view select parts of the excavation, preparation and cataloging processes. While the site remains one of legitimate productive labor—in that the specimens extracted from the tar pits are prepared in working facilities by actual staff members and will eventually become part of the museum's collection —the exhibits are unambiguously staged. This is best seen at the Page Museum's Fossil Lab, which employs a range of supplemental display strategies—none of which are essential to the labor of preparing specimens—to add a layer of intelligibility to a set of procedures that would otherwise be largely impenetrable to outsiders. The ontological status of the displays, as containers for legitimate production, counteracts their framing as an attraction. Crucially,

the Page Museum carefully articulates the stakes for the information it presents, and it engages viewers as active participants. By presenting specimens as windows into an extinct ecosystem—which offer insight into climate change—the Museum argues that embracing and understanding the past becomes the key to saving the future, as well as a motivator for action outside the boundaries of the site. Furthermore, in addition to providing behind-the-scenes knowledge of its activities, the possibility of volunteer labor means that at least in theory, visitors are given the opportunity to take a tangible role in research and exhibition processes. From the standpoint of semiotics, the relationship between the Page Museum and the La Brea Tar Pits resembles that of a marker which has transformed its site in a significant way. The presence of the tar seeps has never been a secret, as the record of their use goes back for millennia, although it took the imposition of a scientific framework—an intellectual marker—to identify the site as significant, then an act of philanthropy to grant access—a legal and cultural marker—and the intervention of exhibition practices to articulate its importance to the visiting public. In this way, the Page Museum manages to redeem what would otherwise be a poorly noticed and largely unrecognized site.

Simultaneity and Veracity

The Page Museum presents itself as offering a direct link to the Pleistocene epoch. While this seems to suggest an instance of basic simultaneity between past and present, the exhibits propose a more nuanced temporality. This temporality is characterized by an assemblage of diverse display objects—each of which suggests a distinct relationship to a common space and time—that offer a range of perspectives from which to contemplate the Los Angeles area's relationship to the remote past. This is best seen in the west hall, where

representations of large herbivores are given center stage. Mounted skeletons of flagship species such as the Columbian Mammoth (*Mammuthus Columbi*) and the Shasta Ground Sloth (*Nothrotheriops shastensis*) are supplemented by one skeleton copy, myriad skeletal fragments and several full body reconstructions. These headlining specimens are mounted on their own pedestals, independently lit and generally viewable in the round. Since they have little in the way of textual or graphic support, these specimens seem intended to inspire awe above all else. Their placement on pedestals suggests reverence, while their physical size dwarfs visitors. This is especially the case with the Columbian Mammoth, a full skeleton of which is mounted directly next to a full body reconstruction in an identical pose. Beyond offering visceral visual pleasure, such a display hints at the entanglement of research and representation at La Brea. This connection is explored in several of the west hall's less dramatic—though no less intriguing—displays. Several cases along the outer wall offer brief summaries of comparative anatomy, taxonomy and rudimentary ecology. Focusing on skeletal fragments from several prominent species, these cases detail how researchers come to know what they know, treating specimens as textual objects that can be "read" to reveal how organisms lived and participated in their ecosystems.

Rachel Garfield explores similar issues in contemporary art, arguing that a 'maximalist' aesthetic—exemplified by the multimedia work of Vivienne Dick and Melanie Jordan—is grounded in the use of collage and editing to offer viewers the impression of multipositionality, excess and contingency. This is in contrast to the singular and sequential camera work that characterizes 'Long Look' photography and cinema.[61] These collage and assemblage techniques overwhelm the mind to defy totalizing frameworks, and to shift

61 Rachel Garfield, "Parallel Editing, Multi-Positionality and Maximalism: Cosmopolitan Effects as Explored in Some Art Works By Melanie Jackson and Vivienne Dick," *Open Arts Journal* 1 (Summer 2013): 50.

discussions of cosmopolitanism to include a greater awareness of the implications of place.

This tension between 'Long Look' and 'maximalist' aesthetics highlights an important issue for modern museums. The 'Long Look' is generally required to facilitate contemplation and comprehension, but display objects are often fragmentary or lacking in inherent context. Additionally, some degree of aesthetic or affective stimulation is typically needed in order to engage visitors to an exhibition or attraction. The Page Museum is a challenging case, as its specimens overwhelmingly represent a single category—the skeletal remains of Pleistocene fauna from the Los Angeles area—and as a result novelty quickly fades once anatomical differences are taken into account. Since they lack some of the variability that would generate interest based on appearance alone, the specimens at the Page Museum must rely upon a range of other display objects for context and viewer engagement. While it is critical in maintaining aesthetic interest, this reliance on multimedia elements tends to draw attention away from sustained observation. However, it ultimately succeeds in suggesting a unified theoretical framework, as these multimedia pieces provide context that would otherwise be unknown to most lay observers.

The 'Long Look' denotes seeing more—whether through depth, detail or time spent—while collage and montage are concerned with establishing contingency through variety and simultaneity. In work of this type, a lack of linearity is a focus.[62] Although La Brea and the Page Museum are supported by a coherent framework, both the site and the institution embrace contingency. This is expressed spatially, as there is little in the way of an established trajectory through either the grounds or the museum spaces. Additionally, display objects are arranged around the sides of a rectilinear building, and while visitors must

62 Ibid., 51.

generally move either clockwise or counterclockwise through the space, there appears to be no overriding sequence implied by the placement of display pieces.

The absence of an obvious trajectory contributes to the Page Museum's attitude toward the continuity of past and present. Since it is promoted as a direct portal to the Los Angeles area during the Pleistocene, its exhibits stress the continuity of ecological, biological and geological forces, which operate now as they did during this period. Furthermore, numerous references to the wealth of the tar pits themselves—in terms of the number and diversity of pieces they have preserved—suggest the good fortune in both the traps and their discovery. The Page Museum consistently foregrounds the role of the human hand as a means of integrating the landscape and original specimens with other types of display materials, as well as a structuring device for understanding their relevance. This offers visitors a variety of starting points for connecting instantly to the remote past, to be encountered as they choose, and which suggest a range of parallel possibilities for organisms living during the Pleistocene.

The knowledge of ecological, geological and biological continuity offers more than a conceptual link to the remote past. In reference to the moving image work of Vivienne Dick, Garfield describes the use of filming and editing techniques that reinforce the experiential aspects of sites and locations, while the resulting fragmented simultaneity inspires a type of subjectivity that lets go of stable orientation and creates the critical distance necessary to inspire awareness and active spectatorship.[63] Active spectatorship and critical awareness are linked by necessity at the Page Museum. Although a sense of genuine kinship with the specimens likely eludes many visitors, an understanding of the forces that continue to shape

63 Ibid., 54.

ecosystems and their inhabitants provides the basis for a sense of shared animality—or, at the very least, shared physicality. This acknowledgment of consistent parameters for material existence facilitates the acknowledgment of ecological responsibility which the Page Museum advertises.

However, an admission of connectedness does not equal simultaneity. William Uricchio distinguishes between distinct conceptions of liveness and simultaneity in reference to several varieties of recording media. Liveness was central to promotional success and pleasure for cinema and phonograph audiences at the end of the 19th century, but this characteristic was not attributed to each medium equally. While both offered recordings of live events, it was the telephone that allowed for true simultaneity and contact at a distance. Simultaneity therefore preceded film in the public imagination, and film could always only imitate—but never actually reproduce—this crucial effect.[64] This demonstrates a more nuanced understanding of recordings at this time, which highlights an important issue: while audio and visual recordings have iconic and indexical relationships to that which they depict, the Page Museum is for the most part incapable of making any illusionistic claims regarding its specimens or the ecosystems they represent. While the specimens function effectively as indices—in that they are material traces of once-living organisms—their potential for iconic representation is limited.

An expanded notion of liveness is at work at the Page Museum, which employs a combination of display strategies that moves beyond illusionistic representation—although this is present in a few displays, it is by no means the central practice. Most conspicuously, La Brea foregrounds the work of its research and exhibition personnel. This includes real-

64 William Uricchio, "Television, Film and the Struggle for Media Identity," *Film History* 10, no. 2 (1998): 119.

time excavations that are viewable at various active pits in Hancock Park, as well preparation and conservation activities in the Fossil Lab. Beyond the literal presence of live people, the presentation of genuine museological activities—some of which are available to visitors through a volunteer program—offers the possibility of theoretical and tactile relationships to the specimens and the ecosystems they represent. Additionally, hands-on exhibits and live shows serve to illustrate—but not directly recreate—living Pleistocene animals, along with aspects of the environments in which they lived. These forms of live display contextualize the less iconic recordings provided by the fossil specimens themselves. These elements combine to create a sensory and cognitive relationship between visitors and the Pleistocene that suggests simultaneity, but does so without the suggestion of co-presence, and rarely resorting to direct or illusionistic representation.

Uricchio argues that while there are still several major events in live television—such as the Olympic Games, or the FIFA World Cup—the medium has for the most part shifted away from presenting content that is simultaneous with the audience's viewing. Instead, it now permits instant access to a catalogue of moments from the entirety of the recorded past. Television's present is therefore disconnected from many of its real-world referents.[65] This is true in a literal sense for the Page Museum, which somewhat obviously presents a catalogue of specimens that no visitor can ever have encountered as living organisms. What is more intriguing is the fact that the Page Museum offers multiple channels through which to access a single point in the remote past. Rather than capturing a broad segment of a recorded past, the exhibits offer numerous relatively contemporaneous and fragmentary traces of a brief moment. In this way, the Page Museum moves—in the opposite direction from television—

65 Ibid., 124.

toward simultaneity between past and present. At this institution, different display objects provide a range of vantage points, each of which illustrates a distinct experiential relationship to a specific moment in the remote past. Recalling Garfield, this prompts visitors to assume an active stance as spectators and investigators, and through a realization of shared materiality it promotes the critical distance necessary to recognize ecological continuity and common stakes for climate crises. This integration of different conceptions of liveness works to construct a complex form of simultaneity.

The discussion of simultaneity can be pushed further, since the circumstances of La Brea's formation—and the development of the Page Museum—are tied together by the documentation of traumatic deaths. Mary Ann Doane explores how death is constructed as an event through the analysis of two films: *Electrocuting an Elephant* (Edison, 1903)—which concerns the demise of a circus elephant who had recently killed several people—and *Execution of Czolgosz, with Panorama of Auburn Prison* (Porter/Edison, 1901)—which reenacts the execution of the assassin of president William McKinley. While both films depict a scheduled death by electrocution, *Czolgosz* stands out in that it pairs a dramatic reenactment of the event with establishing shots of the prison facility taken on-site the day of the execution; *Elephant*, in contrast, documents the event as it occurred with little context.[66]

In spite of their apparent similarity, the two films make radically different use of documentary evidence. *Czolgosz* is particularly informative in this respect, as its two constituent sequences reinforce each other. While the opening panorama serves to validate the staged death by providing documentary evidence of the site on the day of the execution, the death serves to contextualize the panorama by offering vital clues as to the significance of

66 Mary Ann Doane, *The Emergence of Cinematic Time: Modernity, Contingency, the Archive* (Cambridge and London: Harvard University Press, 2002): 152-153.

the otherwise uninformative site.[67] While the actual execution was not filmed, the film crew's live recording of the prison grounds on the day demonstrates at the very least a co-presence in time and a near-miss in terms of location. The partial co-presence of the film is then viewed by audiences who are co-present with the images, but distanced in both time and space from the event. Similarly, visitors to the Page Museum are co-present with the modern site only, while the specimens on display share presence in part with both the modern and ancient sites—in that they were once present as living organisms, and are now present as fossilized remains. These specimens provide a form of documentary evidence in support of the scientific understanding of the site, while the other display elements contextualize the specimens. While there is little in the way of explicit staging of the type seen in *Czolgosz*, the specimens and the still-flowing tar seeps located outside the museum building, validate the suggestion of simultaneity while the fabricated display pieces fulfill the reenactment criteria to explain the presence of the specimens.

Doane also argues that film possesses an inherent unreliability and unreadability with regard to the images' relationship to temporality and their own origins, and that this can never be resolved. Instead, it is displaced through the development of elaborate structures that produce images of a coherent and unified "real time" that is more "real" than real time itself. Cinema thus attempts to negotiate the contradiction between the acts of recording and signification.[68] La Brea and the Page Museum both struggle against this issue. Like filmic images, the objects on display both record and signify. Since at best they offer visual approximations of living organisms, they can only truly present the effects of the accumulation of time, rather than direct representations of specific moments. That is: while

67 Ibid., 154-155.
68 Ibid., 163.

their age and life cycle can be determined through examination and experimentation, as images and objects these skeletal remains are incapable of expressing temporality on their own terms. Ultimately, the site problematizes notions of simultaneity. The specimens are present at both times, but they must rely upon exhibition apparati to establish their pastness, to locate themselves in that past and then to link that past to the present. What is true of individual specimens is also true at the large scale; to date the site has produced hundreds of thousands of specimens, as if the tar pits were actively concentrating Pleistocene ecosystems into heterogeneous masses.

This orientation around the event of death reveals other intriguing parallels between La Brea, *Electrocuting and Elephant* and *Execution of Czolgosz, with Panorama of Auburn Prison*. Both of the films discussed by Doane are concerned with documenting a moment of demise, and both actively explored electricity's ability to both support and end life. La Brea substitutes petrochemicals for electricity, as the tar was responsible for the demise of the Pleistocene animals, their revival as scientific specimens and through them necessary indicators of the presence of petroleum—which serves as both the foundation of the modern energy complex and a leading cause of the destruction of our own present.

Teasing the Anthropocene

While specimens of charismatic megafauna are headlining attractions, the role of humans as mediating agents—both during the past and in the present—is a central concern throughout the Page Museum. This is expressed implicitly and explicitly by *Titans of the Ice Age*, a 3-D film introducing key topics explored elsewhere within the exhibition halls. The film offers an overview of landscapes, climate and ecosystems in the Los Angeles Basin

during the Pleistocene, as well as an explanation of the trapping phenomenon observed at La Brea. However, the most significant topics are the role played by humanity and the principle of continuity. The film states explicitly that research at La Brea will illuminate historical patterns that are valuable for understanding contemporary climate change, and that our species' environmental impact can be traced to its origins in the late Pleistocene.

The late Pleistocene is characterized at La Brea as distant and intangible, yet highly relevant. Rather than granting it a literal existence to coincide with the everyday experiences of visitors, the exhibits at the Page Museum set the remote past apart as a separate reality that is nevertheless critical to explaining and preserving modern biodiversity. Furthermore, this is a past that is not to be directly observed, but must instead be accessed through specimens that require discovery, excavation and processing to be brought nearer to visitors. Finally, with the addition of several recent exhibits Pleistocene Los Angeles is conceived as highly relevant to the present, both within Los Angeles and beyond, based on its importance in climate research.

Separating the remote past from the present has a history that matches long-Earth chronology itself. Andrew Schryock, Thomas R. Trautman and Clive Gamble discuss excavations of large caches of Acheulean (1,760,000 – 130,000 YBP) stone tools in the French town of Amiens during the 1850s, which helped to establish the notion of prehistory as a valid scientific concept.[69] In the minds of researchers drawn to the site, the remote past was characterized not as linear or cyclical, but as vertical and stratified. Rather than being a traversable path, this new past was a hidden one that must be uncovered and reconstructed in

69 Andrew Shryock, Thomas R. Trautman, and Clive Gamble, "Imagining the Human in Deep Time," in *Deep History: The Architecture of Past and Present*, Andrew Schryock and Daniel Lord Smail (Berkeley: University of California Press, 2011): 21.

order to be properly understood. Furthermore, the short stretch of time allotted to humanity, which was recoverable only through textual evidence at that point, required that the vast period before human record-keeping be bracketed off in order to uphold the conventions of text-based scholarship that continues to dominate discourse on the past.[70]

While they have been dated to a more recent period, the specimens preserved at La Brea help to maintain a barrier between modern civilization and the Great Before. Although humans are known to have lived in the area during this period, the paucity of remains and artifacts precludes any hope of legibility through textual means. In failing to preserve substantial evidence of Pleistocene human communities, the specimen pits at La Brea have managed to create a detailed record of an ecosystem that, while aggressively tangible and relatively close in time, is ostensibly devoid of the human element and is thus largely irreconcilable with established historical thinking. Furthermore, the substantial physical and cognitive labor involved in interpreting the site recalls the murky, layered prehistory conceived at Amiens in the mid 19th century. At La Brea, specimens are separated at several discrete collection points, remains from multiple animals are mingled within the pits, and these pits are separated from contemporary visitors by millennia of ground cover and over a century of urban construction. A few active tar seeps, along with the scent of petroleum, are the only indices of the labyrinthine record that exists below the surface. This record recalls a past that is constructed as different, but not entirely alien. The presence of extinct mammalian megafauna, and the implication of a few paleolithic humans, marks Pleistocene La Brea as simultaneously familiar and monstrous, an arrangement that is to be interpreted less as an act of reading than of digging, sorting, cleaning and guessing.

70 Ibid., 26-27.

Much of the labor involved in research at La Brea involves differentiation and articulation. Since each separate collection pit contains numerous remains—many of which have been scattered or otherwise disturbed by the movements of the tar and the gasses seeping up through it—very few animals are preserved intact. Therefore, the physical processes associated with burial work to flatten the apparent biodiversity at the site, which must be designed back in by examining, preparing and assembling masses of undifferentiated skeletal fragments into fully articulated animal specimens. As the collection pits form by seepage to the surface from below, rather than deposition in horizontal layers from above, and the tar inside never completely solidifies, they lack the relative uniformity of—and are more sensitive to disruption than—the surrounding layers of rock. This complicated dimensionality means that traditional stratigraphic dating methods are not especially effective within the pits, and researchers must instead turn to alternate methods such as radiocarbon dating to establish chronology. La Brea's remote past is therefore not to be accessed by the public, except through substantial expert intervention. The site nevertheless maintains a high degree of tangibility, as the processes involved in its formation can still be observed, and the labor of research and exhibition is foregrounded in display and publicity materials. Here, the Pleistocene—while distant—can still be accessed in some way by the contemporary visitor. Physical contact is permitted to those who walk the grounds—and may interact directly with active tar seeps—while direct contact with specimens can be achieved through volunteering in the excavation pits or the Fossil Lab. Participation in research and exhibition activities also facilitates a cognitive link between past and present, which is extended to some degree to those who view the exhibits. Even though La Brea's remote past is definitively bracketed from the present, the ongoing research locates the site within discourse surrounding

humanity's relationship to the rest of the physical world.

This links the exhibits at the Page Museum to discussions of the Anthropocene as a context for thinking about the remote past. At La Brea, this context is approached differently in different sections of the museum. Older exhibits attempt to establish a sense of simultaneity by creating a snapshot of the Pleistocene and offering compelling visualizations that do not seem to participate in a broader conversation. However, a discussion of the Anthropocene is at least implied when one considers the realities of preservation at the site. The remains of predator species famously outnumber those of prey species at La Brea, and this ratio is far outside the relative population sizes to be expected in mammal-dominated ecosystems. This imbalance reveals how deeply the struggle for resources is connected to any discussion of the past. David Christian explains that the flow of energy has been central to the development of the physical universe, from the Big Bang to the appearance of complex life.[71] This is perhaps most evident in the dynamic food networks that characterize most ecosystems. The complexity required to navigate these ecosystems comes with a very real trade-off, however, in the form of fragility of individual systems.[72] This is somewhat obvious from the perspective of thermodynamics, but La Brea provides another interesting illustration. The overabundance of large predatory mammals—which in some analogous ecosystems display more complex social organizations and more sophisticated food acquisition behaviors than their prey species—suggests a sort of a naturally-occurring corrective, as if the tar pits themselves can be read as a statement against over-exploitation.

In such a way, food is central to any historical or prehistoric narrative concerning

71 David Christian, *Maps of Time: An Introduction to Big History* (Berkeley: University of California Press, 2004): 42.
72 Ibid., 80.

development. It is critical that humans, being the most efficient predator species in that ecosystem, managed to avoid entrapment in the tar pits, as this fact points back to Anthropocene scholarship as an implied context for visualizing the Pleistocene at La Brea. Felipe Fernández-Armesto and Daniel Lord Smail argue that since food is controllable above all other survival factors, it should also be of central importance in our own narrative.[73] However it is determined and dated, the beginning of human history marks a substantial increase in the management of increasingly complex energy flows—which is perhaps best observed through through food production—and the Anthropocene is defined as the period in which our species' influence over large-scale energy systems merits our classification as a force capable of acting at the planetary scale.[74] Reading the specimen distribution at La Brea allegorically, the lack of a human presence in the tar pits suggests that while we managed to avoid the fate of the other predators, a different sort of cataclysmic destruction may await us, and the actions of our Pleistocene predecessors may have already initiated such an event for the other residents of La Brea's past.

While the suggestion of the Anthropocene can reasonably be read into the Page Museum's older exhibits, it is invoked explicitly in several of the newer offerings—*Titans of the Ice Age* and the Proboscidean exhibit. Unlike the other exhibits, these make direct references to human activity in the late Pleistocene as a driver of ecological and climatic change. The Proboscidean exhibit contains an extinction display, which hypothesizes that hunting and habitat loss in the wake of large scale human settlement likely contributed to the extinction of most American megafauna following the Last Glacial Period. This display is

73 Felipe Fernández-Armesto, with Daniel Lord Smail, "Food," in *Deep History: The Architecture of Past and Present*, Andrew Shryock and Daniel Lord Smail (Berkeley: University of California Press, 2011): 132.
74 Ibid., 140.

significant in that, along with a small collection of stone arrow- and spear-heads, it explicitly frames humans as a predatory species capable of bringing about ecological change. *Titans of the Ice Age* expands the scope of human impact, as well as extending it in time. Although the film mostly provides an ecological view of Pleistocene North America, it echoes the Proboscidean exhibit in positing human activity as a likely cause for extinction, and concretizes this hypothesis by depicting humans on screen with other megafauna. The film further implicates humanity by emphasizing La Brea's contribution to climate research. Since the tar pits preserved a range of organic tissues intact—including pollen—laboratory analysis of these materials provides valuable insight into historical climate patterns. This in turn offers a fuller picture of the stresses placed upon Pleistocene ecosystems, and their response, as an analog for the threat posed by contemporary climate change. In this way, the remote past is conceived as highly relevant to the daily lives of visitors.

Humanity, along with the Anthropocene, seems to haunt the Page Museum. Our species is visible only in traces, and we are known more for our effects than our presence. This seeming ambivalence over our preferred status also highlights some limitations of Anthropocene scholarship as a theoretical model. As Stiner et al point out, by framing the past exclusively through the lens of the Anthropocene, we risk overlooking much of the nuance of earlier periods in favor of the drastic upturns in population, atmospheric CO_2 levels, and other J-graph variables tied to modernity. This focus on global trends comes at the expense of recognition of the fractal nature of human development, as many important biological and cultural changes took place at relatively small scales, and many metrics tied to the Anthropocene fail to fully grasp the extent to which humanity is shaped by the physical

world which it inhabits.[75]

The exhibits at the Page Museum both negate and support Anthropocene thinking in important ways. By addressing visitors as observers of the past—rather than as participants in it—and by offering contact with the mechanisms of reconstruction, the museum succeeds in bracketing off the Pleistocene from contemporary existence. La Brea's is a past that is not meant to be inhabited by individuals, but rather one that is to be reconstructed collectively. Conversely, by building back biodiversity from the undifferentiated mass of specimens excavated from the tar pits, the exhibits offer an engaging and highly detailed snapshot of the same period. Ultimately, the Page Museum seems to display some ambiguity regarding the Anthropocene as a framing device. While our role in the Pleistocene collapse—along with the contemporary climate crisis—is undeniable, our relative absence from La Brea casts doubt on the centrality of our species in the historical narrative.

Conclusion

We have seen that humanity haunts the exhibits at the Page Museum. The literal presence of our species is limited due to the lack of physical remains; one bodily specimen and a few local artifacts are presented. Our presence must therefore be implicated discursively. This is most evident in the *Titans of the Ice Age* film, which situates La Brea relative to anthropogenic climate change. Although we are largely absent from the physical site during the Pleistocene, images of our ancestors inhabit the ancient landscape depicted on the screen, and researchers establish a contemporary relationship. Elsewhere in the museum

75 Mary C. Stiner, Timothy Earle, Daniel Lord Smail, and Andrew Schryock, "Scale," in *Deep Time: The Architecture of Past and Present*, Andrew Shryock and Daniel Lord Smail (Berkeley: University of California Press, 2011): 246-247.

and on the grounds, exhibits highlight the necessity of human imagination and labor in the conception and articulation of the remote past by including excavation and exhibition work as critical display elements. While this focus on research activity helps to establish a relationship with La Brea's past, its status as a National Natural Landmark lays the foundation for a very public future.

While much of the recent research at La Brea is oriented toward anthropogenic climate change, the site troubles discussions of the Anthropocene in key ways. Although the matter is not entirely settled, the association of La Brea with the Pleistocene goes against the short chronology favored by many researchers—which places the starting date in the mid-20th century.[76] Research at La Brea therefore considers the flat portions of the J-graphs that have become central to the visual language of the Anthropocene. While the fossil record preserves ample evidence of a reduction in biodiversity shortly after large-scale human colonization of the Americas, this has little visual representation in in the exhibits. Instead, the original displays make explicit references to the abundance of remains deposited in the tar pits. These remains, as they are presented, bear little to no evidence of contact with humans. While this can be attributed to the circumstances of preservation—as the animals collected from the tar pits would generally have died of exposure, and as a result of their entrapment their carcasses are not likely to have been processed by humans—it is significant that interactions between our ancestors and other elements of Pleistocene ecosystems must be inferred based on findings outside La Brea.

Although it depends upon a past to which it can be compared, scholarship on the Anthropocene seems concerned above all with the present and the future. In this way, it

76 Christophe Bonneuil and Jean-Baptiste Fressoz, *The Shock of the Anthropocene: The Earth, History and Us* (London and New York: Verso, 2017): 16-17.

works as framing device for the remote past without applying directly to it. Similarly, the Page Museum is called upon to provide evidence in support of the Anthropocene without recording any human activity. Since it opened in 1977, the museum predates much of the officially recognized scholarship on the Anthropocene—although the origins of the concept can be traced further back in time.[77] However, recent additions such as *Titans of the Ice Age* and the Proboscidean exhibit have begun to explore the concept in earnest. These are gestures to extend the discussion of human activity and impact into our own early history and —more broadly—to cultivate a more relational view of the remote past. Such a discussion is fairly preliminary, however, as the displays were originally designed to serve a different purpose and a fundamental revision of the exhibition program is needed in order to address this goal more fully. Ultimately, the Page Museum offers an incomplete integration of humanity into the natural world as a direct participant. When our role is shifted to that of examiners and designers, however, we become much more central.

Of the sites discussed in this project, the Page Museum is easily the least invested in illusionism. Because of this, it also makes the most overt statement about the past as a human construct. Although the implications have broadened, the museum as originally designed was oriented around the representation of a fixed geographical and temporal location. Displays, and the specimens they contain, are therefore used to reveal a specific reality first, and a general one later. There is an interesting tension between the concrete and abstract value of the site, which is best demonstrated by the inclusion of excavation and research work in the exhibition spaces. This work is framed using language that stresses recovery, interpretation and extrapolation; specimens are rescued and rehabilitated in order to

77 Ibid., 4.

prepare them for study, which allows participation in dialogue that reaches beyond the physical and temporal boundaries of the site.

This extrapolation is somewhat limited in scope, at least as originally intended. In its early years, the Page Museum was intended to give visitors an impression of Pleistocene Los Angeles, so specimens collected from the pits were only called upon to speak as straightforward representations of their species. A fuller extrapolation came thanks to La Brea's connection to climate research, since specimens were taken as evidence of processes operating at the level of ecosystems. This instilled a sense of urgency in the site, as the research conducted there has profound implications for our understanding of contemporary climate change. Furthermore, the role of the specimens in saving the future is echoed by the role of the museum in saving the past. At the time of writing, we are approaching the 100th anniversary of George Allan Hancock's gift of a section of Rancho La Brea to Los Angeles County. As stipulated, the land was set aside to be used as a public park, while the specimens were set aside for the purposes of research and exhibition. In this way, the museum provides some degree of protection, from the continuing development of leisure facilities in the surrounding area, to both the site and its specimens.

As a space set aside, the Page Museum is somewhat curious in that its exhibits do not suggest a spatial, temporal or conceptual separation from everyday life. It is the site that is the least invested in illusionism, and although the two concepts are not identical, it also shows the lowest degree of immersion of the case studies in this project. No richly articulated environments are presented for visitors, and no specific journey or trajectory is implied. While there is a degree of aesthetic consistency, this can likely be attributed to an institutional desire to conform to the conventions of museum exhibition, rather than an

explicit design strategy. Engagement at the Page Museum is thus fostered through relevance. In the next chapter, we will explore an exhibition that goes a step further by employing a coherent aesthetic strategy to create a theoretical space that can be encountered physically by visitors.

Chapter 2
Performing Evolutionary Mythology at the *Evolving Planet* Exhibit

Since 2006, the *Evolving Planet* exhibit at the Field Museum of Natural History (Chicago) has occupied a peculiar niche. The exhibit—which describes the emergence and diversification of life on Earth by reference to evolutionary theory—refashions this broad theoretical framework into a coherent linear experience by combining a large collection of fossil specimens with textual, graphic, tactile and media display pieces. Similar to the Page Museum, which was discussed in the previous chapter, visitors are made to engage an environment that is not accessible to them physically. Whereas the Page Museum focuses on instantiation and simultaneity, *Evolving Planet* explores Deep Time as a trajectory that visitors can reenact. In borrowing methods and techniques from the entertainment industries, *Evolving Planet* joins other late 20th century exhibits in using dimensional storytelling practices to foster knowledge production. Departing from other exhibits with similar subject matter, *Evolving Planet* incorporates scholarship on the Anthropocene by highlighting the role of extinction in evolutionary narratives and considering human activity as a driver for evolutionary change. Although it is based on a truly staggering array of specimens—which represent all kingdoms of life, locations across the globe, and 3.8 billion years of evolutionary time—what is most compelling is the way that *Evolving Planet* assembles an array of discrete and differently-related units into a coherent sequence that is organized around a single theoretical framework. Ultimately, it encourages visitors to engage and identify with the remote past without the implication of bodily presence in a fully-articulated prehistoric environment.

Reading Through Objects

The experience of *Evolving Planet* begins outside the exhibit hall, as visitors are led to its entrance by several dramatic representations of prehistoric reptiles. A copy of Máximo, the flagship specimen of the recently-described *Patagotitan mayorum*, is situated on the ground level of Stanley Field Hall—the atrium from which all exhibits are accessed. Several full body reconstructions of large Pterosaurs hang from the ceiling in Field Hall, and visitors can trace their flight trajectory to its origin point at the exhibit's entrance on the second level. The entrance is abutted on one side by a life-size reconstruction of *Quetzalcoatlus northropi*, which functions primarily as a prop for photos. Aside from signage providing its title, there are few exterior references to the contents of *Evolving Planet*. The *Quetzalcoatlus* model does provide thematic clues, but for the most part the exhibit's conceptual footing is only fully revealed upon entering. The reliance upon high profile prehistoric animals reveals an interesting tension: like many similarly-themed exhibits, *Evolving Planet* must harness the attractive power of the spectacular in order to generate interest in the underlying theoretical framework that dictates its content. Spectacular prehistoric creatures are thus seen and seen through. Furthermore, these animals are seen through in multiple ways; like the other display elements, they offer evidence or interpretation of exhibition content while maintaining a distinct symbolic resonance based on preexisting relationships with visitors.

The meanings contained in individual display elements—from spectacular animal specimens to mundane text panels—is not intrinsic to the objects themselves, and much of their communicative potential is determined by institutional framing. Dean MacCannell divides modern museum displays into two broad groups: re-presentation, which articulates a specific tangible context through objects; and collection, which focuses on categorization and

theoretical connections.[78] The host institution—the Field Museum—demonstrates both approaches, and *Evolving Planet* is similarly nuanced. *Evolving Planet* relies heavily upon disparate objects, which it integrates with designed aural and visual elements in order to illustrate the theory that connects them. While some displays concern specific paleo-historical contexts, these examples are presented in service of the exhibit's broader message rather than their intrinsic value in temporal or geographical terms.

MacCannell's modes of museum display also imply distinct modes of engagement and organization, with re-presentation requiring identification and collection requiring aesthetics. Incorporating both modes in the same exhibit dictates that visitors be prepared to consider each display element at multiple registers. No object is presented as part of a total tangible context, as dioramas are cropped and their speculative nature is never hidden. Conversely, the organizational scheme imposed on objects is never completely arbitrary, as specimen groups serve as evidence of the theoretical framework that unites them. *Evolving Planet* creates a performative space in which visitors explore evolutionary theory as a coherent linear experience, and it is in this context that visitors apprehend elements of the mise-en-scène. Skeletal remains of prehistoric animals are unquestionably the exhibit's primary attractions, however they share space with interactive props, text and graphics, audio-visual displays and theatrical lighting. Owing to the unity of vision in the exhibit's design and layout, evolutionary theory begins to transcend the abstract and become an inhabitable environment.

The parameters for framing display objects in *Evolving Planet* are introduced in the first section of the exhibit, which considers the origin and early development of life on Earth,

78 Dean MacCannell, *The Tourist: A New Theory of the Leisure Class* (Berkeley: University of California Press, 2013), 78-79.

beginning ~3,800,000,000 YBP. Evolutionary theory is immediately identified as a guiding principle, but because of its resistance to direct representation core concepts such as sexual reproduction and natural selection are illustrated through highly stylized animated displays. Evolution is presented here in antagonistic terms, and displays describe dynamic and hostile environments that demand innovation from organisms hoping to survive. In the early stages of this narrative, increasingly complex arrangements of cells "join forces" to create life, and organisms continue this struggle for existence to the present day.

These early attempts to dramatize evolutionary change suggest that causality and continuity are major organizing principles, and their placement in a linear space prompts visitors to consider evolution in terms of sequences to be interpreted through literal and figurative movement. Martin J.S. Rudwick notes that 19th century illustrators began to depict Deep Time in spatial terms by referencing the geological strata in which fossils were found; age increases, and resolution decreases, as one moves farther from the surface.[79] This strategy posits a cumulative history of life that must be uncovered and excavated in order to be understood. This is demonstrated by a diorama depicting soft-bodied marine organisms from the Ediacaran (~600,000,000 YBP). This is situated atop a display case containing the fossil remains on which the reconstructions were based, and a nearby animated display describes processes of fossilization; this frames the geological record as an historical text to be read. In these early displays, visitors are encouraged to view theory, object and medium as a unified system of communication, the aim of which is to apprehend the evolutionary narrative by moving figuratively through time.

Through this unified vision, *Evolving Planet* functions as a historicization of

79 Martin J. S. Rudwick, *Scenes From Deep Time: Early Pictorial Representations of the Prehistoric World* (Chicago and London: The University of Chicago Press, 1992), 84.

evolutionary theory. However, it is important to move beyond a mode of engagement that is purely textual. Ludmilla Jordanova argues that since works of visual and material culture signal in complex and ambiguous ways, methods of interpretation derived from reading texts, which assume a pre-existing meaning or message, can prove reductive.[80] By representing Deep Time as a linear narrative, as Rudwick notes, evolution can be easily misconstrued as linear and ultimately teleological. Furthermore, it must be noted that the featured specimens of *Evolving Planet* are not deliberate or even human-made objects. Because they lack the explicit content that can be found in words or images, strong narrative framing is essential to impose intelligibility onto a collection with little apparent internal cohesion.

Jordanova argues that human artifacts always contain clues for contextualization, in that characteristics such as materials, production methods and aesthetic markers are always observable, and therefore some degree of classification is almost always possible.[81] The situation is different in the case of fossils and similar specimens, particularly for the lay visitor, as classification typically requires some previous knowledge of paleontology or a related field. Chronology, for example, can only be determined based on factors external to fossils themselves, such as stratigraphy or comparative anatomy. Furthermore, while human artifacts are always situated within specific historical and material contexts, these relationships can be much more difficult to determine for objects of great age. A fossil specimen is only a representation of the remains of a once-living organism, so its immediate context is much less clear; a fossil can never respond directly to a physical environment, as it must by definition come into existence after the fact. Evolutionary theory begins to bridge

80 Ludmilla Jordanova, *The Look of the Past: Visual and Material Evidence in Historical Practice* (Cambridge: Cambridge University Press, 2012), 10.
81 Ibid., 102.

the gap between a specimen and its context, thus providing a framework for objects in the present to initiate dialogue with the remote past.

Relying heavily upon an external narrative framework carries the risk of distorting an exhibit's scientific content, and Tony Bennett's writing on the Exhibitionary Complex provides critical historical context for the fusion of scientific inquiry with nationalist and progressivist sentiments in the emergence of the modern public museum. Emerging museums in the 19th century brought temporal and spatial organization to specimens, which was a departure from previous modes of exhibition that were based on culturally-codified notions of similarity and difference.[82] Although he does not suggest any historical trajectory, this transition is reminiscent of MacCannell's discussion of display modes; it can be described as a movement away from collection (exclusively) and toward a mixed mode that incorporates both collection and re-presentation. It is noteworthy that during this period wildlife habitat groups and miniature dioramas became increasingly important in exhibitions, and this coincided with an expanding audience for scientific discourse.

Evolving Planet joins science and natural history exhibitions of the 19th century in attempting to reveal the general through the specific. A totalizing order, in the form of a universal narrative of progress, was applied to museum displays during this period; as audiences traversed exhibition spaces, they symbolically performed these progress narratives. Since they observed from within the physical space of the museum—the museum did not claim to transport them literally to another space or time — they emerged as the realization and beneficiaries of these patterns of development, and did so without being explicit parts of

82 Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London and New York: Routledge, 1995), 77.

it themselves.[83] In addition to uniting scientific advancement with the political and economic agendas of European imperial powers, these exhibits were also important in establishing scientific and humanistic knowledge as common intellectual property, to which all citizens were entitled access.

While the Field Museum on the whole echoes the mission of its European counterparts, and *Evolving Planet* engages audiences in a similar mode of spatio-temporal performance, the exhibit departs from 19th century exhibition models in several important ways. As an American museum, the Field has a more ambiguous relationship to systems of global exchange than its European counterparts. While patterns of imperial expansion map fairly well onto the history of the American West, paleontological specimens carry much greater symbolic resonance in the American national consciousness than those of any European nation. That is: rather than treasures of conquest, fossils have been seen as part of American cultural patrimony since before the Revolution, and these very fossils were frequently called upon to bolster the legitimacy of the young nation in the 18th and 19th centuries. Furthermore, *Evolving Planet*'s spatio-temporal structure is considerably less teleological than its predecessors. Critically, *Evolving Planet* situates the viewer as part of the narrative of evolution, rather than its endpoint. The few accessible human specimens are located away from the exhibit's exit—that is: humanity is kept at a literal and figurative distance from the end of the narrative—and these specimens focus on the origin of the genus *Homo*, rather than the achievements of the species *Homo sapiens*. Humanity is thus presented as a participant in the evolutionary story, to which it is inextricably tied. Finally, our species' interactions with the rest of the living world are given ecological framing

83 Ibid., 79.

through the presentation of fossil human specimens. In *Evolving Planet*, objects are not intrinsically sequenced. Rather, they are given meaning through their evolutionary relationships. Each specimen is presented as evidence of an organism that occupied a specific ecological niche, and the supporting elements articulate the theory that connects individuals to ecosystems. By presenting humans as animals, equality between species is implied, although our capacity to alter our environment takes on new significance as our activities disrupt evolutionary processes.

Interpreting Trophy Specimens

The animal body is subject to both implicit and explicit investigation throughout *Evolving Planet*, and the breadth of bodies on display in the exhibit necessitates a framework such as evolutionary theory. Although the animal specimens in the exhibit's early sections are clearly identified as such, their unfamiliar appearance tends to work against this classification. It is through an exploration of comparative anatomy—a field which operates alongside, and supports, evolutionary biology—that visitors begin to encounter organisms that are more readily incorporated into the ecological imagination. This field is introduced in a series of four semi-autonomous displays that illustrate the emergence of important evolutionary adaptations. These are positioned throughout the exhibit based on chronology, and they explore jaws, limbs, the amniote egg and flowers in sequence. These displays add a layer to the pacing of the exhibit, and they offer visual evidence for linking observed characteristics throughout.

The first of the milestone displays introduces a section of the exhibit that explores life in the early oceans. This is an important transition, as visitors encounter the first truly

recognizable specimens, and ambiance takes a central role in messaging. Visitors encounter the first skeletal specimens in this section, as well as the first objectively large animal: the cranium of *Dunkleosteus terrelli*, an armored Devonian fish. It is significant that this species is introduced in this manner, as its large size—lengths have been estimated at up to 10 meters—and overtly predatory lifestyle mark it as a trophy specimen; an object which has long been a central element of natural history exhibitions. The display emphasizes implied ferocity, as visitors are directed toward elements of the anatomy associated with offense, and the obvious difference in scale between visitor and specimen works in combination with scenic elements. Lights are lowered in this section, and the palette shifts toward cool colors; this gives the impression of exploring an underwater space, and the reduced visibility inspires unease. Taken together, this display strategy prompts visitors to apprehend the *Dunkleosteus terrelli* specimen in state of reverence, or perhaps even supplication.

While the use of dramatic staging techniques is not unique to *Evolving Planet*, the exhibit uses this shared vocabulary to accomplish different ideological goals from its predecessors. Donna Haraway's discussion of taxidermy at the American Museum of Natural History in the early 20th century offers interesting parallels. At that time, individual animals in habitat groups acted as steps in a developmental sequence, while the groups acted as coherent representative units of their species. Within a single display, and in contrast to earlier natural history museums, viewers were required to read objects that communicated in multiple registers. To support this, each specimen needed to be legible to both a specific and general gaze. This kind of hybrid visibility was, at that time, best accomplished through death, though it was a highly rationalized form of death.[84] Animals were selected for their

84 Donna Haraway, "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936," in *Social Text* no. 11 (Winter 1984-1985): 24-25.

representative clarity, killed with precision to preserve their appearance, then mounted so as to present an idealized account of how such individuals would appear in groups in the wild. While a reliance upon fossil specimens sets *Evolving Planet* apart in an obvious way, it is also important that the social and political context of scientific research has shifted dramatically in the intervening century.

Haraway points out that the technologies of exhibition embody existing power relationships within a given society, and the dominant American demographic—represented by industrialists, philanthropists and the like—was also at the forefront of exhibitions.[85] By naturalizing the ideology of Realism—which held that perfect specimens could be collected and presented so as to demonstrate an ideal natural order that would present itself upon visual inspection by audiences—exhibitions created and maintained the concept of pristine nature; this operated in parallel to eugenics programs, which were called upon to preserve the American elites of the period.[86] Preservation is critical to *Evolving Planet* and its predecessors, though the methods and purposes differ substantially. Whereas Haraway discusses the American Museum of Natural History and its interest in mobilizing Realist depictions of extant animals in order to maintain the sociopolitical order, *Evolving Planet* uses the fossilized remains of prehistoric creatures to characterize modern humans as subjects and drivers of evolutionary change.

The charismatic fauna of *Evolving Planet* function both symbolically and iconically, although its distinct subject matter allows for several interventions. Both types of natural history exhibition establish an important dichotomy: specimens of extant species function as foils to white manhood, while those of extinct species become representatives a barbaric past

85 Ibid., 52.
86 Ibid., 57.

to be overcome by advanced industrial societies. *Evolving Planet* updates this paradigm by placing modern humanity in direct dialogue with both our immediate environments and with evolutionary history. Rather than adversaries to be conquered, extinct animals are our ancestors and our peers, to whom we are deeply connected through biology and ecology. A certain sense of equality is established between the contemporary human viewer, as our ancestors are presented as subject to the same evolutionary pressures as every other species with which we have shared the globe, and the ecological damage resulting from our activities takes on a new significance as it becomes clear that we are quite capable of disappearing by our own hand.

Though the megafauna of *Evolving Planet* do indeed act as animals, they must also function as something more than mere organisms. As indicated earlier, nearly every skeletal specimen in the exhibit is actually a composite object. They are assembled using a mixture of authentic and simulated materials, the remains of multiple animals, as well as fossils and supporting structures. Taxidermy specimens are also composites, in that genuine skins are mounted on frames made of other materials. Whereas these specimens represent animals through the process of sampling—in that elements of the outward appearance are preserved in the skin, which is foregrounded in the final display—those of prehistoric creatures are several steps removed; because none of the matter of the original animal exists, and the skeletal form foregrounds its death, fossils can easily be perceived as less representative. The mounted skeletons of *Evolving Planet* do not show animals directly, but instead demonstrate the understanding of the animal as a concept. Since fossils are naturally-occurring copies which must be identified and separated from the surrounding rock matrix, classified and reassembled for exhibition, the layers of processing are always apparent.

Furthermore, while habitat groups—which can be empirically verified—are common with extant species, the social and ecological context of most extinct animals can only be theorized and is rarely represented. Any overt attempt illusionism registers as realistic when paired with taxidermy, but speculative or entertainment-oriented when applied to fossils. The reality of death can thus never be avoided in the imagination of the viewer, as it can with taxidermy specimens, and fossil specimens nearly always exhibit a hint of the monstrous, or at the very least the spectacular.

This spectacular quality is associated with a shift in the function of taxidermy, from science toward entertainment. In *The Breathless Zoo*, Rachel Poliquin argues that taxidermy began the 19th century as a scientific practice. However, following the appearance still and motion picture photography, and new theoretical models later in the century, specimens were increasingly produced and utilized for popular education and aesthetic pleasure.[87] In an exhibition context, where they were mostly likely to be encountered by the lay public, specimens demonstrate relationships between organisms, as well as an underlying order that structures all of life. This suggests a sort of democratic sameness, as each specimen is capable of making more or less the same contribution to knowledge regardless of its individual features.[88] As the focus of the practice shifted toward public exhibition, it began to fall out of favor with practicing scientists, as the two populations could no longer use the same specimens in the same way. Taxidermied animals thus became an expression of a pre-formed consensus, rather than a means of establishing that consensus. We have seen that there are important differences between specimens of extant versus extinct animals, however

87 Rachel Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park: The Pennsylvania State University Press, 2012), 115.
88 Ibid., 125-126.

it is still the case that shifting research and visualization methods have brought a number of powerful tools to the field of paleontology; this challenges the centrality of mounted skeletal remains in research practices.

Poliquin argues that the animal body signals most profoundly when viewed in an entertainment context. While it may seem contradictory, the entertainment value of an animal body is nearly always inseparable from its scientific value. Specimens are meant to represent order, but they must also rely upon aesthetic magnetism to attract the attention of viewers. The animal's identity and uniqueness always intrudes on the mind of the viewer, potentially disrupting the principle of sameness and overshadowing the very order it is meant to represent. Thus, there is always tension between uniqueness and representational efficacy, when considering animal specimens of any kind.[89] This is further complicated by the uniqueness of prehistoric animals, whose semi-imaginary status combines with their unusual appearance and the fragmentary nature of their remains to inspire in viewers a sense of curiosity, comprehension and knowledge of the inevitability of their own demise.

We have seen that fossil specimens are inherently composite objects, and in *Evolving Planet* they operate alongside other exhibition materials and technologies to create a rich multimedia environment. Phil Bagust argues that the definition and boundaries of realness are troubled by the increasing prevalence of film editing and special effects techniques in certain nature documentaries. Film has always made it possible to represent the previously unrepresentable on screen, but now this can be done with a degree of photorealism that signifies "truth" for many viewers.[90] It is therefore now possible for viewers to confront a

89 Ibid., 133-135.

90 Phil Bagust, "'Screen Natures': Special Effects and Edutainment in 'New' Hybrid Wildlife Documentary," in *Continuum* 22, no. 2 (2008): 213-214.

screen image that is mostly, or even entirely, fabricated, and whose structure is inflected by popular entertainment, but still accept it as scientific "truth." In new documentaries, cutting-edge visual technologies operate alongside long-standing genre conventions or to signal authenticity for viewers, but for extinct animals the representational space becomes real in previously impossible ways.[91] Direct observation of a landscape or animal is theoretically possible for living subjects, and this fact offers some security against the most egregious exaggerations. Since verification is essentially impossible for extinct animals, they become accessible only on the screen and in the imagination, at least for the lay viewer. This is not to say that every representation of an extinct animal is by definition inaccurate or dishonest, but rather that they have always been creatures informed by both science and entertainment, and it has now become increasingly difficult to distinguish between influences.

Effects and other post-production techniques see many different uses in these documentaries. Beyond simply producing an image of an animal or phenomenon, some call attention to their own status as fabricated objects by depicting, for example, the physical presence of the camera in a scene. Rather than nature, these new documentaries present dream worlds accessible to an audience whose relationship with media has shifted toward a greater degree of empowerment. Bagust ultimately describes a hybrid reality mode, which combines advanced representation and simulation, self-reflexivity, and the promise of real-time interactivity and integrated marketing.[92] This description can be extended to *Evolving Planet*, as its genuine fossils are joined by moving images, models, interactive pieces and a host of other display elements. While the unity of the representational space does not hold in the manner that Bagust describes for film and television documentaries—in that the exhibit

91 Ibid., 220.
92 Ibid., 223.

on the whole shows little interest in illusionism—displays routinely demonstrate slippage.

The mini-exhibition for Sue the *Tyrannosaurus rex* offers a particularly interesting example. The "Sue Experience" is unquestionably anchored by the ~90% complete fossil skeleton, but this is accompanied by several multimedia elements that provide theoretical context for both the research surrounding the specimen and the species it represents. Two of these are particularly noteworthy. First: a series of animations projected behind the skeleton depict scenes involving the living animal. These have a symbiotic relationship with the skeleton; while it is physically real, it lacks defining features such as tissue and, critically, motion. Neither can conclusively be labeled definitive, and taken together they function as complementary representations of the animal. Second: a narrated presentation uses projection mapping to highlight points of interest on the fossil skeleton, and situate these characteristics with respect to ongoing research. This animates the skeleton in a literal sense by adding motion, as well as a figurative sense, by drawing attention to the research process that informs our understanding of *Tyrannosaurus rex* as a once-living species. This presentation can never be separated fully from the skeleton, and although the logical impossibility of this image-object is never denied, the experience leverages long-standing exhibition conventions to read as scientific fact while leveraging its spectacular aesthetics to engage observers viscerally.

The Sue display offers the most dramatic example of the type of hybridity found throughout *Evolving Planet*. Its flagship specimens, which are also used to advertise the exhibit, are composite objects that are frequently fleshed and animated by the entertainment industries. The skeletal remains on which the exhibit is based offer clues to the ecological function of the living animals, and ultimately the evolutionary relationships that connect

them to modern humanity. Critically, these creatures are only "real" within the exhibition hall, and this realness is achieved through the interpellation of fossils and exhibitionary apparati of various kinds. These animals signal in complex and sometimes contradictory ways, and in doing so they foreground the human framing necessary in representing the remote past.

The Museum and the Receding Site

Many of the charismatic specimens of *Evolving Planet* are also memorable for their connection to the formation and exploitation of fossil fuels. This ties evolutionary theory to the mechanisms of industry that helped to bring Deep Time into modern economies, and ultimately to processes of imperial expansion. Although issues of nation and politics are not discussed in *Evolving Planet*, the institution of the public museum and the fields of paleontology and evolutionary biology are critical in framing the relationships between audiences and specimens. The field of Natural History, along with the institutions that shaped it, has been implicated in processes of territorial expansion since the founding of the nation. Kyla Schuller argues that fossils and photography were important elements of a media strategy that aimed to deterritorialize the past and sever its ties to occupied populations in the present. By differentiating between fossils and "normal" rocks, scientists laid claim to both present land and the historical past on behalf of the US government, and they transformed past lives into a national resource in the name of disinterested scientific exploration.[93] As a result, the American public began to consider the continent's prehistoric past as a sort of common intellectual property. In this way, the act of finding and studying

93 Kyla Schuller, "The Fossil and the Photograph: Red Cloud, Prehistoric Media, and Dispossession in Perpetuity," in *Configurations* 24 no. 2 (Spring 2016): 233.

fossils, which was frequently tied to—and financed by—fuel exploration, supported expansion both physically and philosophically. Those who encountered fossil displays or images of indigenous people would therefore have encountered not just *a* past, but *their* past, and seen their own national identity as the necessary culmination of a narrative on the geologic scale.

Paleontology research—while concerned with literally removing objects from the ground—was also responsible for removing them conceptually from their original context, in preparation for new contexts of reception. Any other excavated objects were stripped of any inherent temporality during the excavation process; appearing in the present, and without any of the surrounding rock matrix, they were confined completely to a singular and undifferentiated past.[94] Since it lacks a location-specific paleontology collection, the Field Museum considers geography as a peripheral matter. The specimens on display in *Evolving Planet*, rather than speaking on behalf of the times and places they represent, function primarily in service of the exhibit's larger message. Though they have been collected from all over the world, and represent 3.8 billion years of evolutionary time, this identifying information is little more than a footnote in most displays. The uniqueness of the specimens makes them attractive from an aesthetic standpoint, and this is a necessary step in the museum communication process, but Poliquin and others remind us that any aesthetic attraction to the individual must ultimately recede before the institutional influence of the Field Museum and the explanatory power of the exhibition. While site is critical to evolution —in that mutation and adaptation are relevant only in reference to an organism's surroundings—it does not bear directly on *Evolving Planet*'s overall message. The exhibit

94 Ibid., 238.

thus employs a design scheme that creates a schematic space, rather than a strictly representational one.

We have already seen that narratives of European imperialism map well onto the conquest of the American West, and since the Field Museum's collection was first assembled for the World's Columbian Exposition of 1893, it inherited many of the progressivist inclinations of its predecessors. While it would be too much to suggest that this represents a claim to the entire world and all of evolutionary time, *Evolving Planet* does indeed use museum apparati to assert the scientific over other narratives, thereby deterritorializing and dispossessing the remote past. However, the exhibit is not able to decontextualize the past fully—and in fact, it aims to do the opposite—as evolutionary theory necessitates strong connections between seemingly disparate temporalities. Therefore, while individual displays pull away from time and space in favor of theory, the particular theory which they illustrate shifts attention back to those factors. In this way, *Evolving Planet* proposes a journey without a destination, as viewers experience places and times not as worlds to inhabit, but as part of the context that informs the objects on display. Evolution thus provides a trajectory, uniting displays conceptually and suggesting connections between the otherwise disparate specimens they contain.

Though it is not presented as literal, a sense of movement along a trajectory is essential to the communication strategy for *Evolving Planet*. Virtual travel has been part of a number of media spectacles, and Erkki Huhtamo's exploration of 19th century moving panoramas stands out based on the principle of organizing visual information along a linear trajectory. In addition to offering entertainment, these spectacles proved to be a critical articulation of modernity, especially for the middle and working classes; the emergence of

truly global transportation and communication networks meant that for the first time much of the world was theoretically available to mass audiences. For this reason, media spectacles frequently referenced travel, using its language and imagery to create an imaginative space in which viewers could explore a world of information organized according to Western pictorial logic. This aesthetic tradition proved especially adept at depicting views from hot air balloons. Although they were common spectacles, balloon flights held little visual interest for spectators on the ground beyond the take-off and landing of the aircraft. Panoramas therefore attempted to render journeys as aeronauts had described them. The balloons offered vistas that were higher and wider than those associated with their stationary counterparts, which were theoretically available to all who were able to make the trip to a vista point.[95] Additionally, as balloon journeys tended to involve long durations and long distances, panoramic images required extensive editing, with artists omitting material thought to be of little interest to viewers.[96] Rather than 1:1 reproductions of entire journeys, balloon panoramas were composites that were presented in a format that owed as much to the mode of transportation that inspired it as it did to the art practice that made it possible to share with audiences.

A consideration of balloon panoramas is relevant in two ways. First: *Evolving Planet* is a linear experience. While the visitor's attention need not move to every one of the displays in sequence, and pauses and reversals are possible, truly random access is prohibited by the layout of the exhibit. Similarly, the movement of a panorama depended upon a crank, and while it could be turned in either direction or stopped altogether, it was never possible to

95 Erkki Huhtamo, *Illusions in Motion: Media Archaeology of the Moving Panorama and Related Spectacles* (Cambridge and London: The MIT Press, 2013), 113.
96 Ibid., 118.

reveal any individual part of the image without moving the entire canvas. Second: *Evolving Planet* is based on a journey that is only available to a privileged class, and which corresponds to a very broad view that must be edited so that only the most noteworthy moments are presented to viewers. The physical processes of evolution can not truly be witnessed in real time, and as an object of thought the theory itself has no inherent aesthetic qualities. A comprehensive view of the concept is therefore only accessible to those with the appropriate scientific education, so the exhibit instead relies upon a series of charismatic specimens and multimedia displays that reference key moments in evolutionary history. Furthermore, in both cases movement is performed by the viewer, rather than the visual medium itself. This seems counterintuitive, as the canvas of a moving panorama does indeed move while spectators remain stationary. However, I would argue that this motion was not intended to be illusionistic. That is: visitors traverse the exhibition space of *Evolving Planet* as a way to mark the passage of time, literally advancing the narrative through their action, and the motion of panorama prompts viewers to imagine themselves on a journey that animates the otherwise static image before them.

The assumption of an underlying visual logic has proved central to creating compelling and informative interpretations of non-fiction topics. In reference to the visual representation of non-European cultures in World's Fairs and other exhibitions, Timothy Mitchell explores the conception of a chaotic reality that could somehow be apprehended and rendered using western pictorial logic; this assumes both a "real" that presents itself for observation and a recording apparatus that can be made to correspond exactly while remaining separate from it.[97] Although modern science would likely frown upon labeling the

97 Timothy Mitchell, "The World as Exhibition," in *Comparative Studies in Society and History* 31 no. 2 (April 1989): 218-219.

living world as entirely chaotic, evolutionary theory is nevertheless a framework for describing relationships between organisms that has been naturalized within certain cultural circles, and is found to be valid only by the standards of those groups. *Evolving Planet* continues this trend by presenting the intangible theory as a linear performance which follows Euro-American pictorial and narrative conventions.

In the 19th century exhibition, and the travel experiences that inspired it, viewers were placed within scenes set up for observation, without truly being participants in them. This required very specific ways of arranging and managing distance, both between the observer and the scene, and that between the scene and the referent.[98] Separation is especially important in *Evolving Planet*, as the processes of evolution are not strictly observable, and they act directly on visitors. Evolution must therefore be set up as a sort of show, in which visitors explore the theory and its implications through their bodily presence in the space. This sort of aesthetic presentation has been criticized, especially at a time when there is significant overlap between museums and the entertainment industries, as it has been said to draw patrons away from real experiences. Mitchell points out that this critique misses the point, as exhibitions in a commercial context do not alienate viewers from the real, but in fact create the effect known as the real.[99] Rather than cheapening or commercializing the "real" evolutionary theory, *Evolving Planet* instead draws attention to the unrepresentability of the theory by prompting visitors to engage its material evidence. Further distance is added through supporting materials such as text panels and media displays, and the non-illusionistic design of the space.

Evolving Planet is a compelling attempt to represent the unrepresentable, especially in

98 Ibid., 223.
99 Ibid., 225.

reference to the remote past. The exhibit is based on a group of largely undifferentiated specimens, in the sense that they require extensive processing in order to be rendered intelligible to a lay viewer, and even then they require ample supporting materials to provide context. They are critical to our own existence as a species, but also separated from us by time, location and biology. Beyond this, the intangible and unobservable concept of evolution is rendered both visible and intelligible by the exhibit's insistence on close examination and physical movement through the space. Visitors are thus immersed in a theoretical environment, rather than a physical or temporal one, and many of the tensions inherent in 19th century exhibitions are put to productive use.

Understanding Evolution Through Narrative Immersion

It has long been common for entertainment attractions to employ immersive design practices for aesthetic purposes, such as encouraging theme park visitors to participate as characters in a media franchise; it is also common for exhibiting institutions to recreate environments such as historic buildings or landscapes, in order to contextualize specimens or artifacts. In both cases the body is a platform from which to observe an immersive space, although the space largely performs by itself. That is: while themed environments are designed with visitors in mind, their interaction with spaces rarely figures into their logic in a fundamental way. There is often a degree of symmetry between illusionistic themed environments and everyday environments, as scenic elements can overlap with their outside counterparts in terms of function. *Evolving Planet* takes a distinct approach to immersion, in that it does not present an illusionistic environment as a setting for visitor engagement. The elements of display have few analogs outside their host institution, and as a result

comprehension requires engagement beyond observation and recognition. *Evolving Planet* therefore relies upon visitors' action to facilitate its argument, and it states explicitly that this content is relevant beyond the exhibit.

We have already discussed *Evolving Planet*'s evolutionary milestones displays, and another group of extradiegetic inserts demonstrates how a lack of symmetry between the themed and everyday environments of visitors. Evolution is expressed cyclically throughout the exhibit; periods of recovery, diversification and proliferation punctuated by periodic mass extinction events, which are described in a series of semi-autonomous displays placed throughout the exhibit. These displays are situated according to chronology, and they use a consistent design scheme that sets them apart from other display elements. This presentation strategy suggests that the extinction events are disruptive, but also generative, as each one reconfigures the planet and introduces new ecological niches to be filled by emerging organisms. It is critical that the mass extinction displays—along with the evolutionary milestone displays—are both non-illusionistic and extradiegetic; they are somewhat removed from the timeline, and there is little resonance with any objects that visitors might encounter outside. Visitors must break from the flow of the exhibit in order to comprehend an important structuring principle: the oscillations between disruption and recovery that drive evolutionary change. These non-diegetic moments provide an important sense of trajectory for the exhibit. While the overarching narrative is not especially teleological—e.g., modern humans are not presented as the endpoint of evolution—the exhibit does culminate with the introduction of the Sixth Mass Extinction, which is attributed largely to human activity. The first five extinction displays thus establish a theoretical link between past and present, and provide a context for examining our own impact on the planet in historical terms.

Evolving Planet makes an important intervention by relying upon visitor performance to activate an environment. This has echoes in 20th century art practices, and Benno Hinkes cites Bruce Nauman and Ilya Kabakov as Installation practitioners who explores the effect of space on human perception and understanding by encouraging investigative action.[100] Nauman especially foregrounds bodily action in response to altered environments through the use of meticulously designed, but minimally adorned, spaces. Although the displays in *Evolving Planet* contrast with these minimal installations, the exhibit relies upon built features to direct visitor movement. Rather than housing all displays in a single room to be encountered without direction, *Evolving Planet* constructs a meandering path that controls visibility to create a series of vistas that support its overarching narrative.

Hinkes describes engagement as a state of connection in which a perceiving subject and an environment coexist, therefore installation artists facilitate the investigation and comprehension of human environments through the perceiving human body.[101] This is not to say that the exhibition space possesses sentience or agency, but that it is more than a site to be passively observed; a learning environment emerges through the exchange between body and space. Whereas Nauman's installations emphasize the physicality of this relationship, *Evolving Planet* adds a layer of narration through its display elements such that visitor action and exhibition content reinforce each other. By moving through the exhibition hall, visitors become aware of the spatial and temporal principles that link the otherwise disparate specimens; this reframes evolutionary change in relative terms, as the scale of the exhibit resists comprehension in numerical terms. Furthermore, an awareness of their own

100Benno Hinkes, "Approaching Aisthetics Or: Installation Art and Environmental Aesthetics as Investigative Activity," in *Espes* 6 no. 2 (2017): 63-65.
101Ibid., 67-68.

physicality also enables visitors to connect themselves to evolutionary narratives; this can include the comparison of their own bodies to specimens on display, or the conscious examination of their interactions with the space.

The ability to perform the passage of time while also seeing across it is aptly demonstrated in a section of *Evolving Planet* that deals with the emergence of land-based quadrupedalism. Here, visitors are prompted to search for elements of themselves in the specimens on display. These specimens are mounted on unadorned pedestals which arranged inside cases set into the walls; skeletons are shown in static poses, with all four feet on the ground, and are viewed almost exclusively in profile in order to facilitate comparison in the abstract. This presentation style is reminiscent of Natural History illustrations common in the 18th and 19th centuries, which influenced museum exhibition during the same period, and on the whole the design of this section is at odds with both the scientific significance of its subject matter and the dynamic displays found elsewhere in the exhibit.

It is significant that this section contains *Evolving Planet*'s first full mounted skeletons. This is a motivated transition, as life on land during that period required comparatively robust skeletal structures, and an earlier shift to a new mode of display—in the early oceans section, the *Dunkleosteus terrelli* cranium introduced the trophy specimen as an important Natural History trope — also proposed a new paradigm for engaging Deep Time. This section's drastic aesthetic shift draws visitors' attention away from the appearance of an evolutionary milestone, and toward a moment of identification that may have otherwise gone unnoticed. Specifically: it is in this section that the basic body plan shared by all tetrapod vertebrates emerges; this body plan is both a recognizable visual signature and a critical piece of evidence in support of evolutionary theory. The shift away from a sensational event

allows visitors to recognize a common anatomical thread, and in doing so it facilitates an understanding of kinship between observer and observed. The quadrupedalism section thus allows visitors to move through space and time by peering inside the bodies of unfamiliar animals in order to discover abstract similarities that link them to many of the other bodies on display.

Given the scope and scale of the exhibit—*Evolving Planet* presents specimens collected throughout the world, and spanning 3.8 billion years—producing a comprehensible rendering necessitates complex negotiations between the presentation of content and the management of visitors' encounters. Brooke Belisle examines how media spectacles dating back to the 19th century have attempted to produce total immersive views of vast or abstract topics using similar methods. These include the Panorama,[102] the Georama[103] and the Celestial Globe.[104] While these spectacles functioned differently, and they served different purposes, they converge in important ways. First: each encourages audiences to apprehend subject matter based on relatable patterns. The Georama created a world map on the interior of a large sphere which could be entered and explored by visitors; this allowed them to situate themselves relative to newly emerging networks of regional and global exchange. Second: each spectacle relies upon impossible motion to emphasize scale and trajectory. The Celestial Globe simulated movement through our solar system using moving platforms synchronized to the motion of automata and effects; this spectacle did not reproduce scale or detail, but nevertheless claimed to offer visitors some impression of the relative movement of celestial bodies that would ordinarily be inaccessible to Earth-bound observers.

102Brooke Belisle, "Nature at a Glance: Immersive Maps from Panoramic to Digital," in *Early Popular Visual Culture* 13 no. 4 (2015): 316.
103Ibid., 318-320.
104Ibid., 325

In relying upon condensed schematic representations of incomprehensibly vast phenomena, which were accessed through non-illusionistic representations of impossible movement, these spectacles prefigure design strategies that are seen in contemporary exhibitions such as *Evolving Planet*. The exhibit combines these technical strategies with modes of performance that have their origin in literature. In moving rapidly across space and time, visitors act out a journey linked to the dream-vision and the fantastic voyage. These two related genres, which were often used for didactic purposes, were adopted by popular science writers in the 19th century.[105] This approach lent itself particularly well to the geological sciences, given the magnitude of that time scale. By exploring a space that represents the whole of the Earth over 3.8 billion years, and whose subject matter has direct bearing on their material existence, visitors to *Evolving Planet* re-enact journeys into the unknown taken by scientists-as-sages centuries ago.

Evolving Planet condenses 3.8 billion years of evolutionary time into a coherent singular experience that is accessible to visitors over the course of just a few hours, and it is particularly compelling as a narrativization of evolutionary theory. Here, fossil and genetic records function as reservoirs for memories, from which evolutionary theory arises as an organizing principle, and the exhibit attempts to reconstruct that narrative for visitors, who on the whole are at least somewhat aware of its immediate outcome. Marie-Laure Ryan defines simulation as an audience's mode of performance for a narrative work.[106] This is an important intervention when considering *Evolving Planet*, as this definition shifts focus away from the work of designers and curators, and toward visitors as participants. Simulation thus

105Ralph O'Connor, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802-1856* (Chicago and London: The University of Chicago Press, 2007), 372-374.

106Marie-Laure Ryan, *Narrative as Virtual Reality* (Baltimore and London: The Johns Hopkins University Press, 2001), 113.

becomes a matter of embodied performance, rather than one of design or fabrication.

If simulation is to be reframed through visitors' agency, we must also consider how perceiving humans interact with environments that are characterized by the juxtaposition of different media objects and formats. Ryan argues that the primary difference between virtual reality and real life, on one hand, and text on the other, is the semiotic nature of textual interaction. Real life and virtual reality are based on direct bodily action, while text requires signs that function both as tools and as targets for action.[107] *Evolving Planet* contains many objects which fit more than one of Ryan's modes of interaction. The exhibit obviously employs a great amount of text, but many of the other display objects also function semiotically. For example: fossils, which are indices of once-living organisms, can also be read iconically as representations of said organisms. Furthermore, the selection of specimens tends to favor charismatic species such as non-avian dinosaurs and Pleistocene mammals; this allows for a symbolic reading, as these animals are used in advertising and tend to have strong cultural associations outside the exhibition. Alongside semiotic interaction with text, graphics, media and specimens—which must first be apprehended with the senses—comprehension of the exhibit's theme depends upon visitors acting in and with the space.

The necessity of interacting with diverse objects that signal in multiple registers figures prominently in a section devoted to the early Mesozoic Era (250,000,000 YBP). This section immediately follows an elaborate mass extinction display, and it introduces the seemingly inevitable proliferation of reptiles as a recurring theme. This shift in focus foregrounds charismatic animal specimens, and it is accompanied by an increase in the resolution and elegance with which specimens are presented. A display featuring the Triassic

107Ibid., 284.

dinosaur, *Herrerasaurus ishigualastensis*, demonstrates: the display pairs a mounted articulated skeleton with a full-body reconstruction, both in active poses, on top of a textured platform that also contains several basal mammal specimens. When viewed alongside other definitively artistic representations of prehistoric animals—such as a series of large paintings by renowned paleoartist, Charles R. Knight—it reminds visitors of the centrality of visual representation in paleontological research; these images also introduce tension by referencing the type of dynamic presentation that until fairly recently had been more at home in institutions of entertainment than in those dedicated to public education. While this should not be taken as an argument that high-end visualizations inevitably lead to spectacularization, or to a diminished understanding of evolutionary theory, it should be noted that poetic representation is often instrumental in generating the affective and aesthetic responses central to other frameworks such as mythology.

Evolution as Flow

The articulation of time in *Evolving Planet* is more complex than is immediately evident. Although visitors do enact duration in a straightforward way by traversing the exhibition space, there is more to the exhibit's temporality than simple linearity. Similarly, visitors must be prompted to consider evolution beyond the linear framework in which it is presented and commonly understood. Stephen Jay Gould points out that the application of the term 'evolution' to Darwin's theory of descent with modification was an attempt to offer a more succinct label for the theory that would also accommodate existing uses of the term in the mid-19th century. The conventional definition—which was based on the idea of orderly linear sequences—implied progressive development, from a rudimentary state to a mature

one. Evolution thus became tied to notions of progress, as it was defined by European industrial societies.[108] Gould identifies a critical moment, in which an emerging scientific theory began to converge with myth in the popular imagination; specifically, this was a progressivist myth with Eurocentric, patriarchal and imperial implications. While this teleological understanding ran contrary to Darwin's actual opinion, since important evidence —such as genetics—was unknown, the explanatory power of the progressivist myth exceeded empirical arguments for many at that time.

While *Evolving Planet* is firmly in agreement with Darwin regarding the non-directionality of evolution, there are moments of obvious tension between strict adherence to science and indulgence in the mythic status of the non-avian dinosaurs, as their prominence inside and outside the Field Museum makes them focal points within the exhibit. The Elizabeth Morse Genius Hall of Dinosaurs is situated at *Evolving Planet*'s halfway point, and is without doubt its most popular section. This is evident in concrete terms, given the consistently large crowds relative to other sections of the exhibit; and in the abstract, as this and the adjacent mini-exhibition for Sue the *Tyrannosaurux rex* account for roughly 53% of the exhibit's total footprint, which is some 10 times greater than the 5% that the Mesozoic Era would occupy if floor space was to be allocated on the basis of time. Displays in the Hall of Dinosaurs focus on Jurassic and Cretaceous specimens, and preference is given to popular species. Skeletons are mounted in dynamic poses that largely conform to conventions in wildlife illustration; notably, this includes positioning active carnivores against passive herbivores. The textured platforms which hold the skeletons are encircled by stanchions and glass barriers marked with diagrams that depict the composition of specimens with respect to

108Stephen Jay Gould, "Darwin's Dilemma: The Odyssey of Evolution," in *Ever Since Darwin: Reflections in Natural History* (New York and London: W. W. Norton & Company, 1977): 35-36.

the authenticity of their parts. The layout of the hall reflects the current understanding of dinosaur taxonomy, with specimens grouped accordingly, although this falters somewhat when positioning dinosaurs relative to other prehistoric reptiles.

In many ways, the Hall of Dinosaurs updates an exhibition aesthetic that is heavily informed by traditional natural history illustration; while the presentation is more lively than those of even a few decades ago, the basic formula—skeletons on pedestals or in cases supported by text and graphics—remains largely intact. One of the more intriguing displays in this section of the exhibit is the last of a series of displays that illustrate important evolutionary milestones, in this case flowering plants and the principle of co-evolution. Unremarkable as it may seem given its monumental neighbors, this display is significant in that it is one of *Evolving Planet*'s few explicit references to ecology. The trajectory of the is shaped at least in part by scholarship on the Anthropocene, and although this particular display makes no reference to humanity, it encourages consideration of the relationships between organisms and the evolutionary framework that they represent. While this display offers a foundation for thinking through the lens of the Anthropocene, it struggles to overshadow the suggestion that the non-avian dinosaurs were fantastic beasts who, advanced though they may have been, must inevitably be destroyed to make way for humanity.

The issue of inevitability can be difficult to avoid in evolutionary discourse, and although Gould understood the issues inherent in framing scientific research through myth, his own writings do occasionally indulge in the practice. Gregory Schrempp critiques Gould's thoughts on the significance of human evolution based on this issue. He argues that while myth and science are often contrasted—in that myth is associated with fiction or falsehood, while science denotes fact and truth—many popular science writers, Gould

included, readily employ tropes and other devices derived from myth in order to engage mass audiences.[109] Popular science raises and attempts to answer major questions concerning humanity's position in the cosmic order, just as myth continues to do, and it is common practice to address mass audiences without relying exclusively on field-specific language. In this way, myth has never been counter-empirical, but rather it attempts to move beyond empiricism by articulating the context and stakes for knowledge that is drawn from our everyday experiences. One can argue that *Evolving Planet* frames evolutionary theory as a myth. The exhibit is organized around a single theme, which every element helps to articulate. Furthermore, its addresses temporality and causality at a large scale, as its point of origin is in the ancient past and it offers a unified theoretical explanation for the condition of the world as we know it. Finally, by referencing scholarship on the Anthropocene as a central concept, it gives a warning for our future, and offers itself as a cautionary tale.

While framing evolution as a myth potentially permits accessibility and comprehension on the part of lay audiences, an overindulgence in narration can foster distorted ideas of causality. Schrempp explores this risk in his critique of Gould's use of the "Drunkard's Walk" metaphor to explain the statistical curve that represents the presence and frequency of complex life on Earth. This metaphor concerns a drunk walking along a sidewalk between a wall and the street; even walking without intention, and with a minimum of control, the drunk will make forward progress based in large part on elements of the surrounding environment—that is: the drunk will fall into the street if he veers too far to that side, but he will rebound from the wall, and will thus continue moving forward. Since life requires a base level of complexity, any random development must at minimum meet this

109Gregory Schrempp, *The Ancient Mythology of Modern Science: A Mythologist Looks (Seriously) at Popular Science Writing* (Montreal & Kingston: McGill-Queen's University Press, 2012): 20.

standard. Further complexity is thus always a statistical possibility, and will inevitably develop given a sufficient sample size, even though the system may have no inherent preference for it. This is expressed graphically as a curve with a considerable right tail, and for Gould, humanity's position on the right tail of this curve is neither special nor guaranteed.[110]

This understanding is both supported and contested in *Evolving Planet*, and evidence can be found by examining broad patterns in the specimens on display. While the exhibit stresses that there is no teleology in evolution, the displays reflect the preference of the fossil record for large vertebrates; specimens of this type far outnumber those of invertebrates, microorganisms and plants. This preference can perhaps be excused, as large animals make for clearer illustrations of the principles being discussed, but this may seem to suggest to visitors that evolution favors the development of large, complex organisms. At the same time, the exhibit demonstrates consciousness of the positioning of our species. To this end, it places its human evolution display away from the conclusion, instead placing it adjacent to displays of other Pleistocene mammals and the mini-exhibition for Sue the *Tyrannosaurus rex*. This arrangement suggests that our animality dictates our overshadowing by more imposing and, perhaps, impressive organisms whose dominance was also constantly in question.

This questioning of teleology is also aptly demonstrated by the aforementioned Sue Experience. This mini-exhibition opens with an overview of the animal's death and the eventual discovery of its remains. The original skull, which is kept separate for ease of access, sits in front of a scrim that depicts the living animal in its Cretaceous environment.

110Ibid., 76-77.

The full skeleton is located behind this scrim, mounted on a large platform with dramatic lighting, and posed to match the pictorial representation in front of it. The specimen is visible in the round, and is ringed by tactile displays of individual body parts and notable anatomical features. The rear of the experience contains an ecologically-themed image depicting a reconstructed Cretaceous landscape, displays dedicated to sensory perception and several projected animations depicting Sue as a living animal. These displays support the experience's main audio-visual element: a short narrated presentation using projection mapping to animate the specimen, which highlights notable skeletal features and their significance to the research process. Evidence of injuries and illnesses are offered as clues illuminating the life of an animal that—despite its likely position at the top of the food chain—was nevertheless vulnerable to its environment. This constructed animal offers a window into a prehistoric world that can only be approached through inference and speculation, and by using media technology to animate a specimen, the Sue experience animates an inaccessible reality.

Schrempp notes that Gould's attitude shifts, and that he both praises the right tail as epitomizing the whole of the graph, and derides it in favor of the mode—the simple organisms that represent the vast majority of life on Earth.[111] In this way, Gould simultaneously reverses progressivist understandings of evolution while preserving some degree of anthropocentrism.[112] This is significant in light of *Evolving Planet*, as the exhibit relies upon a framework that is heavily influenced by Anthropocene scholarship in order to remove humans from the pinnacle of evolution. In doing so, human ascendance is conceived as both generative of and subject to evolutionary forces, though this ultimately does little to

111Ibid., 84.
112Ibid., 97.

resolve the issue Schrempp finds in Gould's work. Conversely, while the status of humans is questioned, that of other spectacular organisms—Sue, and the other non-avian dinosaurs in the Hall of Dinosaurs—is affirmed. *Evolving Planet* thus attempts to maintain an uneasy balance between the exceptionality and unexceptionality of species that represent the right tail of Gould's complexity graph.

While the positioning of humanity in the evolutionary narrative can never be fully resolved, and it does not seem to be the object of *Evolving Planet* to do so, the mechanisms, processes and sequences of evolution are explored with much greater intention than Gould's drunk. Raymond Williams argues that the characteristic experience of all developed broadcasting services is one of sequence, or flow. Considering time on the order of several hours, up to a day, this refers to a move away from a program composed of discrete units with periodic inserts of content such as advertisements and station identification, and toward a planned sequence of programs structured and transformed by the deliberate use of interruptions.[113] Critical here is the fact that the viewing experience is designed to fit a programming block; rather than watching a single program, viewers are encouraged to watch for several hours or more, and the design and arrangement of all elements supports this longer period of engagement.

For Williams, it is critical to understand the transition between a program series of timed sequential units, and a flow series of differently related units where the timing—while real—is undeclared and the real organization is different from that which is declared by the broadcaster.[114] Williams is ultimately concerned with fitting this semiotic analysis into a

113Raymond Williams, *Television: Technology and Cultural Form* (London and New York: Routledge, 2003): 91.
114Ibid., 93.

political economy framework, and the use of multiple overlapping temporalities is useful in reference to *Evolving Planet*. Williams identifies three primary orders of detail. The first occurs within a programming block, and concerns the advertised listing of content. The second refers to the succession of items within and between the published sequence of units, and this is critical in understanding how a collection of disparate elements is assembled and transformed into a coherent sequence. The third is grounded in the actual succession and juxtaposition of words and images. This includes the combination and fusion of the words and images, as well as the movement and interaction that occurs between them. Here style often overshadows content, and this layer of analysis is often dominated by the deliberate use of the medium.[115] My concern here is the relationship between these layers of analysis, and how this positions vistors.

At the long range *Evolving Planet* considers questions of temporality at the large scale, as its organization consistently follows the geologic time scale and all major elements follow this chronology. Furthermore, additional structuring is provided by an interest in key evolutionary innovations and milestones, which is addressed explicitly and implicitly. At the middle range, the relationships between specimens rise to prominence. Having established the core principles early on, displays explore evolution as a process that is driven by adaptations to local conditions and diversification to fill niches left vacant by periodic mass extinction events. To this end, specimens are contextualized based on the ties that bind individual organisms to their environments, as well as variations in these ties between groups and across time. Finally, at close range, our focus turns to individual specimens and other display elements. Here, the exhibit appeals to the aesthetic and affective sensibilities of

115Ibid., 97.

visitors, who react to features such as the unfamiliarity of the physical forms and differences in size. Interpellation with display elements of other kinds also becomes critical at this scale; media such as text and graphics offer expository information to orient visitors with respect to the goals of the exhibit, and elements such as lighting and sound heighten the dramatic effect of the specimens.

The theme of extinction and recovery finds expression in the juxtaposition of two sections. The first is one of *Evolving Planet*'s few geographically-specific presentations: an impressive multimedia display that features specimens, text, graphics and audio-visual materials examines a cache at Fossil Lake, Wyoming. Through an interactive map—which allows viewers to examine various fossils with respect to location—and a library of short expository video presentations, visitors are given an impression of an exquisitely preserved prehistoric ecosystem. Critical here is the fact that this display contains very few physical specimens; the extensive catalogue of high-resolution fossil images and in-depth expository materials blurs boundaries between digital and physical objects. Though location on the whole is not a major topic in the *Evolving Planet*, the Fossil Lake display explicitly discusses a rise in biodiversity following a major extinction event, which sets the stage for the next section: the proliferation of mammals following the Cretaceous-Paleogene Extinction Event (66,000,000 YBP). In contrast to the Fossil Lake display, this early mammal display is quite drab. It pairs specimens, mounted in static poses on a grid of pedestals and viewed from the orthogonals; these are supplemented by 2-dimensional reconstructions. Though largely unimaginative, this section is notable for its discussion of the creation and occupation of ecological niches through the examination of predator-prey relationships, and for its introduction of the concept of convergent evolution.

We can discuss these sections by reference to flow at all three orders described by Williams. At long range, both address an important moment in evolutionary history: the aftermath of the Cretaceous-Paleogene Extinction Event. They are analogous to programs in a block; though they have little to do with one another, their placement explains their significance relative to the overarching message. At medium range, each is composed of a series of discrete items whose relationships to one another are determined by this overarching message; rather than viewing skeletons simply as skeletons in the mammal display, for example, visitors' attention is drawn to common features and their contributions to the occupation of new ecological niches. At close range, visitors are encouraged to observe individual elements on their own merits; in the Fossil Lake section, the interactive audio-visual display enables visitors to choose from a variety of fossils to examine in depth, aided by expository information provided alongside the specimens.

If one of the implications for Williams' flow analysis is how broadcasters design programming blocks to integrate television viewers into patterns of consumption that serve their sponsors, then we can examine how the creators of *Evolving Planet* have modified this practice to fit the exhibition format. While corporate sponsorship is quite common for museums and individual exhibits—*Evolving Planet* has ties to McDonald's, among others—references to these relationships is generally understated compared to television advertisements, and it is more productive to think in broader terms. We will see that the philanthropic museum was critical in articulating American modernity in the late 19th and early 20th centuries, as these institutions allowed emerging industrialists to develop cultural and political capital in addition to their established economic influence while audiences were situated as the culmination and beneficiaries of the entirety of human and Earth history. If

natural history exhibits offered Gilded- and Progressive Age visitors a stake in the coal- and petroleum-fueled industrialization which was at the center of the American economic and political landscapes, then how do exhibits like *Evolving Planet* situate contemporary museum audiences with respect to the "Experience Economy" and a stated cultural preference for integration rater than stratification? This necessitates a rather delicate balance between placing humanity at the center of an Earth Historical narrative, and attempting to move beyond teleological understandings of the relationships between Earth's systems and inhabitants. For a growing number of science and humanities scholars that balancing point is the Anthropocene, and this concept is critical in structuring the experience at *Evolving Planet*.

Prehistory and the Anthropocene

Positioning visitors is critical in *Evolving Planet*, as finding a personal stake in exhibition content facilitates performative engagement. Although it may seem unlikely that the content of an exhibit like *Evolving Planet* would resonate with contemporary audiences, given the staggering scale of the subject matter and representational limits of the design, considering human observers in terms of their physical bodies provides a much needed link to the remote past. Daniel Lord Smail and Andrew Shryock argue that the human body is critical to any historical endeavor. It acts as a bridge between the present and prehistory, and provides a frame through which we can organize and interpret the past. Furthermore, the development of our species in an evolutionary sense is seen as analogous to that of individuals in a population, so our own life cycle often functions as a framework for the

narrative of our species.[116] The body is also a critical interface between an organism and its environment, and it is in this context that the human body is presented in *Evolving Planet*.

While it is not particularly lively in terms of design or presentation, *Evolving Planet*'s mammal section is significant as a setting for the only direct representation of humanity. The genus *Homo* is one of the most over-represented taxonomic groups in the exhibit; it occupies roughly 6% of the total floor space, rather than the 0.08% it would receive based on time. Here, highly detailed reconstructions of human ancestors accompany fossil specimens and casts of individual body parts. This section also includes a reconstruction of a Paleolithic burial site, and several early human artifacts, which introduce the concept of cultural evolution as a force that operates alongside the biological. This particular combination of specimens operates on two registers. First: in prioritizing origins and evolution over civilization, it situates humanity firmly within the animal world. Second: in displaying early expressions of material culture, it suggests that our species became an environmental force early on. Taken together, these two statements provide the necessary foundation for a discussion of the Anthropocene, although this connection is made explicit until the end of the exhibit.

Although the floor space allotted to the genus *Homo* is radically out of proportion to its known presence in the fossil record, its specimens on display in *Evolving Planet* are still scarce in absolute numerical terms, especially when compared with groups such as the non-avian dinosaurs. Occupying a small part of the space devoted to Cenozoic mammals, the human displays consider the last 2,600,000 years, and discuss two types of evolution. They employ several different representational strategies, the most significant of which is the

116Daniel Lord Smail and Andrew Shryock, "Body," in *Deep History: The Architecture of Past and Present* (Berkeley: University of California Press, 2011), 58.

pairing of skeletal specimens with full-body reconstructions. These link the internal and external structures of human ancestors, and use visual means to connect the living human body with the fossil history on which the exhibit is based. These pieces are accompanied by tactile models that compare analogous structures—such as hands and faces—across hominin species. These comparative displays, which focus on the evolution of our most distinctive features, suggest that the human story is grounded in the development of bodies; they also offer visitors an opportunity to situate themselves in this story by comparing themselves to the specimens on display. Smail and Shryock also state that one particular strength of the human brain is the assimilation of objects—such as tools—into the bodily territory governed by the central nervous system.[117] An adjacent display of early stone tools, which are arranged in a grid similar to that used for skeletal specimens, suggests that these objects developed as extensions of the human body, and they encourage the visitor to consider the evolution of human works as analogous to that of human bodies.

The human body does not function in isolation. Every organism exists as part of an environment, and the body is a critical interface between the two. Considering the human first as a physical body allows us to understand the human as an animal. David Christian states that the human form is deeply inflected by its emergence in the late Pleistocene, although significant moments in our evolution can be traced back to the Cretaceous-Paleogene Extinction Event (66,000,000 YBP); at this moment, the small body size of mammals proved critical in surviving the extinction event that wiped out most larger organisms.[118] The body, considered in its most basic physical terms, has thus been a part of

117Ibid., 62-63.
118David Christian, *Maps of Time: An Introduction to Big History* (Berkeley: University of California Press, 2011), 125.

the human story from the beginning. Arising from this lineage, all primates are linked by features associated with apprehending and acting in an environment. These include binocular vision, opposable digits and a brain specialized for processing and integrating complex sensory and motor information.[119] This close resemblance between primate—and specifically hominoid—species reveals an interesting tension, since observable differences in the fossils of human ancestors are often negligible. Therefore, the human narrative has traditionally been aligned with culture rather than biology.[120] While it is useful for the purpose of classification, establishing chronology in this way makes it difficult to incorporate humans fully into the living world. Although we are unquestionably animals, our differences in this capacity tend to recede in the face of differences in our culture.

The human displays in *Evolving Planet* attempt to integrate two types of evolution, and they frame culture as an extension of biology. The displays introduce humans as animals, who are subject to evolutionary forces, but they also include the possibility that our species is capable of acting as an agent of evolution. While the ecological consequences of human activity are implied throughout *Evolving Planet*, it is not until the end of the exhibit that visitors are presented with any creature that could possibly have experienced them first-hand and in real time. The final section of *Evolving Planet* concerns Eurasian and American mammals of the Last Glacial Period (115,000-11,700 YBP). This section falls somewhere between the static design seen in the quadrupedalism section, and the more lively presentation of the Hall of Dinosaurs, though on the whole it still recalls 18th and 19th century natural history illustration. With a few exceptions, notably a Short-Faced Bear (*Arctodus simus*) rearing up onto its hind legs and a Sabre-Toothed Cat (*Smilodon fatalis*) mired in a

119Ibid., 125-127.
120Smail and Shryock, 69.

simulated tar pool, specimens are mounted on bare pedestals in static poses. The walls and ceiling are animated by projections simulating the Aurora Borealis, while interactive demonstrations of glaciation and tar entrapment add kinetics to the floor level and an animated display discusses the concept of biogeography as a partial explanation for the unique adaptations of Pleistocene mammals. As the specimens in this section of the exhibit represent species that lived alongside ancient humans, there are two important implications. First: the proximity of human hunting artifacts, in combination with their close resemblance to extant species, immediately suggests a human-animal relationship that persists to this day. Second: based on the aforementioned traits, the specimens in this section resonate profoundly with extant species we know to be threatened by us.

The Anthropocene, after Christophe Bonneuil and Jean-Baptiste Fressoz, is the proposed designation for a geological period in which the impact of human activity rivals the major natural forces shaping the planet.[121] Expanding upon Erle Ellis' model for a human-inflected biosphere, they argue that rather than operating separately, human manipulation of the flow of energy must now be considered a major part of Earth's systems.[122] Many dates have been proposed for the beginning of the Anthropocene, including the emergence of *Homo sapiens* in Equatorial Africa (200,000-150,000 YBP), the large-scale adoption of agriculture in the Fertile Crescent (10,000 YBP), the European colonization of the Americas and the first use of the atomic bomb.[123] While the starting point remains debatable, it is important to note that the majority of researchers no further than three centuries before the present. Though theoretically justified to some degree, this short chronology creates issues in

121Christophe Bonneuil and Jean-Baptiste Fressoz, trans. David Fernbach, *The Shock of the Anthropocene: The Earth, History and Us* (London and New York: Verso, 2013), 4.
122Ibid., 9.
123Ibid., 14-17.

reference to the remote past. Focusing on modernity draws attention away from the ways that many animal species have shaped their environments throughout the history of life, so imagining the remote past solely through the lens of the Anthropocene can create a false division between a human present and a non-human past, making it difficult to integrate long geological time with short human time.

Evolving Planet attempts to reconcile two chronologies that have historically been kept strictly separate. Its human displays feature tools as extensions of the body, which argues for the centrality of cultural development in human chronology. At the same time, the display of skeletal and other reconstructions highlights the deep evolutionary roots of the human narrative, grounded as they are in the animal body. In this way, humans appear as both animals and planetary agents. This complex identity is echoed by the overall layout of *Evolving Planet*, as the human displays are not the exhibit's endpoint. Located next to other Pleistocene mammals, rather than at the exhibit's conclusion, humans are situated spatially as products of evolutionary forces like any other organism. It is only in the final display, describing human-caused environmental destruction, that human agency is given explicit attention. The pace of the exhibit is set by mass extinction events, which establish chronology and provide a backdrop for evolutionary adaptation. In the final display, the Anthropocene Extinction is presented as equivalent to the five that preceded it. This offers visitors sense of continuity with other organisms, as we are connected by the bonds of evolution, and a personal stake in the future, as our activities have observable consequences whose long term implications could well be apocalyptic.

The aforementioned final display concerns the Sixth Mass Extinction, which is ongoing and largely attributed to human causes. While relatively sedate—it is little more

than a small case set into the wall and containing plastic waste, an overview of our species' ecological impact that includes climate change, agriculture and resource exploitation, and an active counter for species lost—this display makes the most explicit case for Anthropocene scholarship as a framework for imagining the past. Though the term is not mentioned explicitly, humanity is directly implicated in the cycle of extinction and recovery developed throughout the entire exhibit. This is used to articulate a message of ecological responsibility and the interconnection of all life forms, the gravity of which is somewhat undercut by the gift shop through which visitors must exit the exhibit.

As we have seen, *Evolving Planet* is an exhibit that takes a peculiar approach to the concept of immersion. Rather than a discrete, fully-articulated environment, its designers chose to create a schematic space. Following Hinkes' discussion of Bruce Nauman, visitors' bodily presence in the exhibit forms the foundation for intellectual understanding. While the space contains some familiar elements, the lack of direct analogues to everyday life establishes critical distance and reorients visitors toward engagement with the theoretical content of the exhibition, rather than the physical space itself. Recalling Belisle, we see that the designers condensed an inconceivably large field of information into a format legible to those familiar with western pictorial and textual traditions. Furthermore, by constructing a traversable path, the visitor's bodily performance animates the exhibit by producing spatial and chronological change. Finally, references to Anthropocene scholarship help to articulate personal stakes for visitors. By situating the human body as part of an evolutionary narrative, then emphasizing human activity as a destabilizing force, the contemporary visitor is tied to both the past and future of the biosphere. In this way, *Evolving Planet* establishes a dynamic relationship between contemporary humans and the remote past, rather than strictly

separating the human present from non-human prehistory. While this may imply a positive development, we must note that the recent trend in immersive exhibition design has come about as the result of close interaction with the entertainment industries and hefty corporate sponsorship. Implications for this discussion therefore concern the political stakes of private influence over public science communication, as well as the difficulties inherent in designing and managing immersive spaces to accommodate an increasingly diverse visiting public.

Conclusion

In *Evolving Planet*, the remote past is characterized as both immediate and intangible, relative to the visitor. That is: while highly relevant to contemporary humans, the exhibit does not on the whole make specific locations or times directly accessible to us. Through evolution, every visitor is tied to every organism and every ecosystem on display. We are made to understand that these forces operate in response to constant changes in environments and their inhabitants, with each influencing the other. Evolution therefore created our species, and it also provides us with a sense of kinship with the entirety of the living world. We are, however, also connected to evolution in a more destructive way. We see that the 6th Mass Extinction Event has been conclusively linked to human activity, as our control over certain energy flows has affected nearly every one of Earth's major systems, and definitive evidence of our cultural works has recently entered the geological record. This attitude posits humanity as a major agent of evolution, rather than simply one of its subjects. In this way, the deep past is made personally relevant to all visitors as a sort of common patrimony, while the future of life on the planet is framed as our collective responsibility.

While the importance of the remote past is difficult to overstate, *Evolving Planet* also

takes care to highlight its intangibility to visitors. Although this is largely done for the sake of conservation, most specimens in the exhibit are located inside cases, under vitrines, on stantioned pedestals, or are otherwise kept at a remove from visitors. Literal physical contact is strictly prohibited by the exhibition design, and the only elements that allow tactile interaction are models, media objects or specimen copies. These objects, all of which are clearly fabrications or supporting elements, stress that the remote past is only available in a mediated state. Though it is seen as critical to our existence, there is also a conceptual gulf between the visitor and the remote past, as each specimen is separated by geographical distance, time and the state of extinction. Every animal or plant on display is thus unavailable as a real-life experience. Finally, and most critically, very few prehistoric environments are reproduced in any significant way in the exhibit. Beyond a simulated Carboniferous forest and a virtual reality flight display set in the Cretaceous, *Evolving Planet* does not make a literal claim to transport visitors to any point in prehistory. Rather, the exhibit seems to favor Ryan's definition of simulation as a mode of performance. Following this approach, *Evolving Planet* prompts visitors to reconstruct the narrative of evolution, through bodily movement and sensory engagement, as it stretches through the remote past. Perhaps the most important contribution offered by *Evolving Planet* is the use of the Anthropocene as a framing device for approaching the remote past. Here, destructive human activity is tied to the health of the biosphere, and incorporated into existing narratives of mass extinction.

Chapter 3
Reckoning With the Remote Past as New Media
at *Lascaux IV* and *Caverne du Pont-d'Arc*

Theorizing the remote past in a compelling way is an exercise in the creative negotiation between continuity and discontinuity, and the collision of these two opposing states marks *Lascaux IV* and *Caverne du Pont-d'Arc* as unique sites. These attractions house reproductions of the Paleolithic cave paintings at Lascaux (17,000 YBP) and Chauvet (37,000-28,000 YBP), respectively. Relying upon elaborate set design, theatrical lighting and period-accurate panting techniques, and only accessible by guided tour, they are intended in part to inspire in visitors some of the sensations that may have been present for the caves' original occupants. Rather than researchers, tourists or omniscient observers, we are invited to experience a particular moment in prehistory from the perspective of our ancestors, or, in the case of *Lascaux IV*, the perspective of the rediscoverers in 1940. While the purpose of the original paintings will never be known, the themed environments at *Lascaux IV* and *Caverne du Pont-d'Arc* aim to give some sense of the material conditions which may have informed their production and use, thus allowing contemporary visitors to participate in their own origin narrative.

Compared to the other sites discussed for this project, *Lascaux IV* and *Caverne du Pont-d'Arc* are somewhat odd. Unlike *Evolving Planet* and the *Dinosaur* attraction, these are both based on an explicit location and time period. Unlike the Page Museum, the resonance between past and present is largely theoretical. Rather than commenting explicitly on the relationship between humanity and the rest of the living world, the International Centre for Parietal Art [ICPA] and Grotte Chauvet 2—the museum complexes housing *Lascaux IV* and

Caverne du Pont-d'Arc, respectively—are framed by human exceptionalism. In addition to celebrating our species' capacity for imitation through image making, both replicas were constructed to protect, and serve as a substitute for, the originals. As there is no original to speak of for any other site, in that any prehistoric setting they represent is only accessible through traces, these are perhaps the most frustrating due to the simultaneity of proximity and distance. These attractions thus inhabit the already tenuous boundary zone that separates factuality from artifice. They are functionally real, in that the original paintings were copied by hand using period-accurate materials and techniques, but situationally fictitious, as some element of the composition or framing renders impossible the encounter as presented by the tours. Beyond simply providing a compelling setting for viewing admittedly spectacular works of art, *Lascaux IV* and *Caverne du Pont-d'Arc* manipulate temporality in a way that is wholly unique, with the intention of linking contemporary and ancient practitioners.

Differentiating Attractions

At first glance, it may seem that the replicas at Lascaux and Chauvet are nearly identical in purpose, design and execution. However, despite their many structural and aesthetic similarities these two sites were developed based on different premises, and they function in distinct ways. While there is resonance between both sets of replicas, the framing offered by the separate sites offers differing connotations for the motivations and methods of replication. For this reason, rather than providing a full step-by-step narration of each, this section will compare the two attractions based on their responses to the needs of their host institutions and regions. It is hoped that such a comparison will reveal the complementary nature of these experiences, and make an explicit argument in favor of the role of mediation

in establishing—and defining our own relationship to—Earth's geologic timeline.

Neither *Lascaux IV* nor *Caverne du Pont-d'Arc* exists in isolation. Rather, each is incorporated into a tourist site oriented around either Paleoart or Paleolithic life, more broadly. Therefore, we begin by examining the complexes that host the replica paintings. In addition to being located in different French provinces, *Lascaux IV* and *Caverne du Pont-d'Arc* function differently as destinations. The ICPA, which houses *Lascaux IV*, is located adjacent to the village of Montignac, and is easily accessible from the village center by a short walk. Additionally, the original Lascaux Cave, along with *Lascaux II* (1983)—the first replica to be produced—can be found a short distance away. Conversely, Grotte Chauvet 2—which hosts *Caverne du Pont-d'Arc*—is located several kilometers from the commune of Vallon-Pont-d'Arc and the original Chauvet Cave, and is only accessible by automobile. While Grotte Chauvet 2 includes exhibits whose explicit purpose is contextualizing the cave and its artists, the fact that the attraction is located at such a distance seemingly reduces the significance of the original cave. Conversely, while the ICPA only mentions the lifeways of its artists at the beginning of the tour, the fact that the original cave can be seen on the grounds of the attraction resonates powerfully with visitors.

These differences in setting influence how each site functions as a destination. The ICPA is housed mostly within a single building, with the original cave and an earlier replica being located a short distance away. There is little else offered at the site, save for a café, a gift shop and two ancillary exhibits—one explores the rediscovery of prehistoric art by modern artists, and the other the production of the replicas. These increase the Centre's offerings numerically, but they are generally similar in purpose: they reinterpret the paintings and the original cave. By contrast, Grotte Chauvet 2 is located at a distance from any

population center, and the complex is comprised of several attractions that are broader in focus. Although these are thematically connected, they differ in terms of their specific topic, format, aesthetics and audience. This site operates as more of a self-contained destination, as its geographical isolation and the variety of its offerings dictate a longer visit and appeal to a seemingly broader audience. Since it houses a smaller and less varied group of attractions, and it is easily accessible from the village center, the ICPA supplements a visit that is otherwise focused on Montignac and its surroundings.

This brief comparison of the two sites indicates that while *Caverne du Pont-d'Arc* focuses the visitors' attention on the replicated paintings and their surrounding environment, *Lascaux IV* is concerned just as much with the processes and methods of replication used by its designers and artisans. Acting in conjunction with the other attractions at Grotte Chauvet 2, *Caverne du Pont-d'Arc* indulges heavily in theatricality and illusionism in order to provide context for the paintings in the original cave. Conversely, while the International Centre for Parietal Art is unquestionably interested in offering a sense of context for its paintings, the fact that *Lascaux IV* is the third and most elaborate extant copy of a site that has been described as the "Sistine Chapel of Prehistory" suggests an equal fascination with the modern ability to copy great works of art. The next section will discuss the complicated status of the reproductions at each site, in that they act as copies of spectacular works, spectacular objects in their own right and interdependent parts of a complex performative environment.

Closing the Gap Between Modern and Paleolithic Experience

Unlike fossil specimens in a natural history exhibition, engagement with parietal art is often said to provide a direct link between the contemporary and prehistory. It is therefore

useful to consider how each site frames visitor interaction with the replicas. The two tours begin quite similarly: visitors are first led to a vista point overlooking the landscape. There, guides give an overview of the context for the paintings' creation. Although the specific content varies in response to the geography of each site, each presentation includes geological, climatic, biological and cultural information relevant to the location and chronology of each cave. *Lascaux IV* adds to this in a significant way, as this introduction is immediately followed by a short film that depicts the landscape and local wildlife at the time of the paintings' creation (20,000-17,000 YBP), and then an audio recording which reenacts the cave's rediscovery in 1940, and is played along the exterior of the building as visitors exit the film and approach the entrance to the cave replica. Both tours then move to an acclimation chamber. This chamber allows visitors to adjust to the temperature and light levels inside the replicas, which was said to match those of the original caves, and this purpose is explicitly addressed by guides on each tour. This use of a fabricated and highly controlled entry point—that is: the replicas are accessed through a door, rather than the natural openings used by the artists and discoverers; these entrances then become points of interest for the tours—serves practical and dramatic purposes, as it would be impossible to move all visitors safely and quickly through the natural entrances at both sites, and its use facilitates a sense of anticipation on the part of visitors.

Before discussing *Lascaux IV* and *Caverne du Pont-d'Arc* any further, it is important to understand how the images on which they are based have come to be understood by modern audiences. Georges Bataille argued early on that the paintings at Lascaux are foundational to art history, and to the emergence of modern humanity.[124] During the Upper

124Georges Bataille, *Cave Painting: Lascaux, or the Birth of Art*, trans. Austryn Wainhouse (Milan, Skira: 1955): 12.

Paleolithic (50,000-12,000 YBP), humans began to engage in a symbolic ordering of the perceptible world by producing visual images. This interest in representation situated our species relative to others in the environment, and by doing so initiated the crucial transition from anatomical to behavioral modernity.[125] While Bataille insists on the intellectual continuity between modern humans and the original artists, his writing maintains an experiential gap between the two groups. As Yue Zhou argues, Bataille conceives of the Magdalenian (17,000-12,000 YBP) as being far removed from modern politics and disciplinary boundaries,[126] and thus describes human prehistory as fundamentally separate from our own reality. *Lascaux IV* and *Caverne du Pont-d'Arc* foster a form of engagement with parietal art that allows for phenomenological symmetry with prehistoric people, and in this way they extend Bataille's argument.

A growing number of researchers argue that works of paleolithic art preserve more than simple documentation of the surrounding landscapes. Using paintings found at Chauvet as examples, Marc Azéma and Florent Rivère claim that techniques such as superimposition —the addition of varied repetitions of elements of an image, such as a limb—and juxtaposition—the sequential arrangement of images of the same figure in poses representing different phases of complex movements—were combined with specialized lighting to break down and represent animal movements systematically.[127] These representations of both movement and narrative were then put to allegorical and ultimately instructional use,[128] as whatever unknowable ritual purpose they may have served was forever made to coincide with the theoretical exploration of the perceptible world on which their production was

125Ibid., 27
126Yue Zhou, "Alongside the Animals: Bataille's 'Lascaux Project,'" in *Yale French Studies* 127 (2015): 21-22.
127Marc Azéma and Florent Rivère, "Animation in Paleolithic Art: A Pre-Echo of Cinema," in *Antiquity* 8 (2012): 318.
128Ibid., 323.

based, and which facilitated an understanding of humanity's place in the universe.

While both groups use the production of art as a link between modern and Paleolithic people, their approaches are distinct. Bataille's discussion concerns the artistic impulse, and highlights our shared intellectual capacity to revise an ontological claim about the origin of our species. Conversely, Azéma and Rivère focus on a set of shared techniques, claiming that processes thought to originate in the 19th century have in fact been present throughout our history. When considering *Lascaux IV* and *Caverne du Pont-d'Arc*, it becomes clear that the attractions attempt to establish technical and experiential continuity with the Paleolithic societies that created the original paintings.

Both the ICPA and Grotte Chauvet 2 are oriented around replica paintings in the same medium and using the same methods as the original artists. This suggests a symmetry between the modern reconstructions and the ancient art, as the naturalistic representation of Paleolithic animals echoes the modern fabricators' attempts to faithfully reproduce the original paintings and their cave environments; the ability to produce legible visual representations unites both ancient and contemporary practitioners. Looking beyond the images themselves, the instructive impulse tied to their creation represents a link between the two communities of practice. While the ancient images represent some theoretical exploration of the world, in that they preserve evidence of both systematic analysis and purposeful reproduction, the modern reproductions inform audiences of the parameters of discussions of human origins, since the understanding and execution of prehistoric techniques necessitates a theoretical modeling of the context surrounding their development.

While scholars have posited symmetries between the conception and execution of the original paintings, and that of their modern reproductions, there are other forms of interaction

that merit attention. While it is impossible to determine what audience they would have had in their own time, since both Lascaux and Chauvet were occupied over many generations the earlier paintings would have been encountered by successive generations at each site. Furthermore, although both caves are now closed to the general public, their paintings have been extensively documented, and circulate in some form to a global audience. We must therefore consider the perceptual experience of viewing the paintings as another trajectory for creating a unified human narrative that reaches well beyond recorded history.

Nicholas S. Literski argues for the use of depth psychology in research on the images and environment of Chauvet, and suggests a powerful symmetry between the viewing experiences of modern and ancient observers. He favors a process of active imagination in response to works of parietal art as a method for accessing modes of archaic thought, some of which are still present in our collective unconscious. This form of engagement, which is based on the idea that images should be approached as distinct entities, produces subconscious responses that can be referenced against established cultural symbols, thus providing a link with analogous thoughts from ancient people.[129] This is a process that is not intended to demystify or explain the production or context of images, but rather to replicate the thoughts and feelings that ancient observers may have experienced while interacting with them.[130] Here, Literski offers a mode of interaction with parietal art that is not based on a conscious theoretical exploration or a production technique, but rather on dialogue with an image whose creation is almost impossibly far removed from the experience of any contemporary observer. If the original production of these images was an articulation of

129Nicholas S. Literski, "Engaging the Paleolithic Images of Chauvet Cave," in *Psychological Perspectives* 61, no. 3 (2018): 367-368.
130Ibid., 372.

humanity, this type of modern engagement acts as a reminder. Literski proposes a mode of interaction that, while it is impossible in the case of the original paintings, lends itself well to the types of reproductions offered at the ICPA and Grotte Chauvet 2. At these sites, the paintings and caves are treated as source material. The replicas— faithful though they may be—are interpretations rather than exact copies, and encounters with them are only minimally informed by the factual context of the paintings or their historical settings. In this way, they are set apart from the attractions in previous chapters. Instead of serving an expository purpose, articulating a theoretical framework through which to engage some aspect of the remote past, the framing offered at *Lascaux IV* and *Caverne du Pont-d'Arc* constructs a series of visceral encounters in which spectacular images are apprehended in the dramatic environment of the cave. However, the mechanisms by which these encounters are produced are never far from consciousness, and they inspire reflection on both the paintings and the methods used to recreate them.

It bears repeating that the original paintings at Lascaux and Chauvet have long been off limits to all but those engaged in essential research, conservation or documentation work. It follows that at present some form of mediation is necessary to engage the images, and this inflects our understanding of the work and our relationship to it. Barnaby Dicker and Nick Lee explore the implications of aesthetic responses to parietal art, and their relationship to modes of scientific investigation, by comparing Werner Herzog's *Cave of Forgotten Dreams* (2011) to the writings of Georges Bataille. They argue that Herzog's engagement with Chauvet Cave are best understood in this way. That is: his film is not concerned with presenting a factual account of the cave or its paintings, but rather with inspiring audience

reflection using the creative processes associated with the medium.[131] The film offers audiences the opportunity to experience the cave and the art as a researcher or a documentarian might. *Lascaux IV* and *Caverne du Pont-d'Arc* are perhaps best seen in this light. Their status as high-quality copies is never disputed, but ultimately visitors gain little knowledge of the paintings based on observation alone. Furthermore, the expository information typically provided by signage or other supplemental material is largely absent from both, which ensures that any contextual information must be obtained elsewhere at the site, or in conversation with guides and other staff.

In this way, the framing provided at the ICPA and Grotte Chauvet 2 provide a dimensional analog for what was attempted by Bataille and Herzog. Both Bataille and Herzog present poetic responses directed toward wide audiences, but in both cases the work emerges as the result of privileged access to a space that is otherwise off limits. Furthermore, the space is revealed through technical means; Bataille's book offered the first color photographs of the Lascaux paintings, while Herzog's film was released in3D.[132] *Lascaux IV* and *Caverne du Pont-d'Arc* were produced using 3D scanners, high-resolution reference photos and CNC fabrication techniques, all of which supported hand painted copies of the original artwork using period-correct methods. The critical difference between these and previous poetic responses is the framing of the visitor's encounter. While audiences experience Lascaux and Chauvet through the work of Bataille and Herzog respectively—encountering the environments from the perspective of the researchers—the ICPA and Grotte Chauvet 2 dictate that visitors engage the work as themselves rather than through the eyes of

131Barnaby Dicker and Nick Lee, "'But the Image Wants Danger': Georges Bataille, Werner Herzog, and Poetical Responses to Paleoart," in *Time and Mind* 5, no. 1 (2012): 37.
132Ibid., 41.

a practitioner. Here, the work of designers and fabricators is meant to inspire moments of reflection with transformative results, but their work is not sidelined. When compared to the other works, an interesting trajectory appears. Bataille's activities at Lascaux are given little attention in his text; that is: while he describes the paintings based on careful inspection, he gives no account of his research or writing processes. Herzog's presence in his film—he appears on camera and provides voice-over narration—makes explicit reference to the medium by which the paintings at Chauvet have been made available. The practitioners of *Lascaux IV* and *Caverne du Pont-d'Arc* occupy a fraught position by comparison. While they are unseen and largely anonymous, their work is openly celebrated to the point that it becomes an object of interest. Rather than seeing the paintings at Lascaux or Chauvet, visitors travel to these sites to be impressed by our species' ability to recreate. It is therefore the job of the designers and fabricators to represent faithfully so that visitors are free to have a transformative experience with the paintings. While this seems at first to reduce the importance of the creator's interpretation, the mechanisms that create the reproductions inflect both our understanding of the original artwork and the parameters for describing and studying it.

Replication and Simulation

Cave images are always understood through the mechanisms used to record them, along with the dominant epistemologies at the time of study. These epistemologies in turn influence the parameters for determining and discussing their own origins.[133] Reconstructions of ancient images are therefore always apprehended through the products of

133Ibid., 47.

contemporary thought. These include the disciplines of Art History and Archaeology, media such as documentary film and immersive exhibition, and institutions of the theme park and the museum. Each of these frames the production and reception of the replica paintings in important ways, and a preliminary classification of the representations at *Lascaux IV* and *Caverne du Pont-d'Arc* will help to orient their discussion. At both sites, copying the paintings *in situ* was a necessity for preservation, since CO_2 and waste from visitors was found to be responsible extensive damage to the paintings and the environment. As a result of these closures, the paintings are only publicly available through still and motion picture photography, and the replicas created at *Lascaux II – IV* and *Caverne du Pont-d'Arc*. This implies that a spatial experience surpasses the "distanced" observation necessitated by 2-dimensional images. Their operators claim that in replicating cave environments along with the paintings, both sites are able to capture some of the ambiance of the original spaces. Additionally, this mode of reproduction offers perhaps a more explicit example of the context for each set of paintings; Grotte Chauvet 2 includes several exhibits on Paleolithic life in the region, and the ICPA focuses on the study and production of the images.

While a full narration of each tour is not possible here, it is still important to understand how the copied paintings function at each site. The aspect in which the two sites diverge most widely is undoubtedly the "accuracy" of the simulation. *Lascaux IV* is promoted as being close to a 1:1 replica of the original Lascaux Cave; its shape and surfaces were constructed based on 3-dimensional scans of the cave, the tour mostly follows this layout, and nearly 100% of the known paintings have been reproduced as they appear in the original cave. In contrast, *Caverne du Pont-d'Arc* is more of a composite experience. In addition to scaling down the physical space quite dramatically, designers included a smaller

percentage of the known artwork in the replica; this amount is a matter of some uncertainty, with some sources claiming as little as 40%, and there is little explanation to be found for how and why individual paintings were determined to be significant enough to merit reproduction. In addition to being subjected to an ill-defined selection process, many of these prominent paintings are shifted from their original locations and arranged around a walkway that does not match the layout of the original cave.

N. James describes an important distinction between different modes of historical representation, claiming that replication concerns itself with copying an object or space as faithfully as possible, while restoration—or reconstruction—is a more overt act of interpretation and interpellation. Although replication is never free of interpretation, the central concern here is the degree of mediation undergone by the object or site, with restoration/reconstruction generally reaching further in this respect.[134] Although neither *Lascaux IV* nor *Caverne du Pont-d'Arc* can be classified as reconstructions or restorations, since they do not involve the original caves or paintings in any way, both are heavily mediated and thus merit consideration under James' schema. *Lasxaux IV* replicates the cave space and the images at high resolution, but it includes several significant interpellations. Most notable are the alteration of the cave floor, which was leveled and smoothed in order to accommodate a footpath, the integration of lighting and handrails into the walls and ceiling, and the addition of a cutaway tunnel to avoid backtracking while moving between different chambers. On the other hand, *Caverne du Pont-d'Arc* offers a more fraught set of mediations. While it does replicate some of the core components of Chauvet, *Caverne du Pont-d'Arc* alters their setting in a profound way. While many important geological features

134N. James, "Replication for Chauvet Cave," in *Antiquity* 90, no. 350 (2016): 521.

are preserved, the cave space itself is scaled down quite drastically and the topology is distorted to support the composition created by the replicated paintings. A selection of the known images are presented, and these—the most spectacular—have been rearranged in a sequence from simple to complex.[135]

Although James does not argue that these are mutually exclusive, it is important to note that both *Lascaux IV* and *Caverne du Pont-d'Arc* employ a mode of reproduction that sits somewhere between replication and reconstruction. More specifically: each attraction is based on replication at its core, but frames replication through acts of reconstruction. This is particularly evident at *Caverne du Pont-d'Arc*, where the cave environment is altered dramatically in order to create a setting for the replicated paintings that approaches a linear narrative. This raises important questions about how mediation strategies inflect visitor interaction with the simulated spaces and their consideration of the originals, and while James does not explore the point in depth, a central concern for both the ICPA and Grotte Chauvet 2 is how the experience that frames the replicas informs visitors about the context for the images.[136]

Jean Baudrillard offers an entry point to this conversation through his discussion of holograms and holography by calling into question the alleged superiority of complex and high-resolution copying. Here, Baudrillard compares holographic images to their 2-dimensional counterparts, claiming that the addition of another dimension—or other increases in fidelity— sharpens the divide between objects and the images that represent them. This characterizes increased fidelity not as a closer approximation of an actual object, but rather the imaginary of a lower order of fidelity, as exact copies are by necessity too exact

135Ibid., 523.
136Ibid., 524.

and ultimately less effective than the (unintentional) originals.[137] This is relevant to both *Lascaux IV* and *Caverne du Pont-d'Arc*, as both sites are accessible through multiple modes of representation that facilitate comparison. *Caverne du Pont-d'Arc* stands out, as the public has access to still photography, Herzog's film and the replica. The film is especially important in this regard, as it divides its attention between the documentation of the paintings themselves and the experience of viewing them *in situ*. By releasing it in 3-D, Herzog attempts to counteract the apparent mediation of both the page—for printed images—and the screen—for 2-D films—although his authorial stamp still frames the paintings as part of someone his experience. *Caverne du Pont-d'Arc* carries this a step further by placing visitors bodily into the simulated space and removing the apparatus of film, although it can be argued that the design and fabrication of the attraction is still heavily inflected by the logic of the medium. Returning to Baudrillard, we can construct a sequence that begins with the original cave, then passes through still, moving and 3-dimensional images, and concludes with the replicas at *Lascaux IV* and *Caverne du Pont-d'Arc*. If the fidelity of the copies is not actually improved by the technical innovations, then the replicas' critical intervention is connected to ambiance. In this formulation, a high resolution copy is functionally indistinguishable from the original. Having attained this, the experience of the caves' Paleolithic occupants becomes the imaginary of contemporary visitors.

Special consideration is required when an element of history is taken as the imaginary in a work of art or media. Baudrillard argues that history, as it is presented in film, is not related to a historical "real," but rather invokes resemblance while simultaneously proving the disappearance of the object in its representation. Historical films therefore function as

137Jean Baudrillard, "Holograms," in *Simulacra and Simulation*, trans. Sheila Faria Glaser (Ann Arbor, The University of Michigan Press: 1994): 107.

simulacra by presenting detailed representations that signal a past without corresponding to it directly.[138] If we struggle to consider the historicity of *Caverne du Pont-d'Arc* and *Lascaux IV* on Baudrillard's terms—treating the replicas as analogous to film images—it is still possible to problematize the concept of resemblance in reference to other characteristics. If the historicity of the paintings can be verified to some degree, the same can not be said for the slippery qualities of technique and ambiance that seem to separate these from previous representations. The paintings at *Lascaux IV* and *Caverne du Pont-d'Arc* are aligned with the methods of Experimental Archaeology, in the sense that the contemporary artists used methods inferred from material evidence obtained from Lascaux and Chauvet, and that have been found to produce results quite similar to the originals.

While it is unlikely that the work of the replicators differs substantially from that of the original artists, it must be said that this does not not constitute scientific certainty, and the equivalence may be negated by future research. Furthermore, promotional literature and tour guides stress material authenticity as a point of connection between contemporary visitors and the caves' Pleistocene occupants. This technical affinity points toward a second problematic aspect of historicity at these sites: the visitor experience. It goes without saying that no amount of research will ever reveal the bodily and sensory experience of visiting Lascaux of Chauvet during the periods of the paintings' creation, and even if known such an experience could never be replicated in any meaningful way. We can return to Baudrillard's theory in reference to this ambiance. While he concentrates on the observation of a final product, and not on production processes or tactility, the ambiance of sites such as *Lascaux IV* and *Caverne du Pont-d'Arc* constitutes the extra dimension that fuels the historical

138Jean Baudrillard, "History," in *Simulacra and Simulation*, trans. Sheila Faria Glaser (Ann Arbor, The University of Michigan Press): 45.

imaginary in contemporary observers.

While Baudrillard describes this historical imaginary in reference to film and television, Umberto Eco offers a more thorough explanation for how this type of audience engagement is framed at physical sites. In his discussion of the reproduction of the Oval Office at the Lyndon B. Johnson Presidential Library, Eco points out the necessity of technical and material equivalence. Much like the paintings of *Lascaux IV* and *Caverne du Pont-d'Arc*, the objects and materials in this reproduction are promoted as matching those found in the original Oval Office during Johnson's administration. This equivalence is necessary, since in order to function effectively as a sign the reproduction must seem real on its own terms. The sign therefore becomes a double, and blurs the distinction between object and reference while eliding the method of replication.[139] We have seen that the paintings at *Lascaux IV* and *Caverne du Pont-d'Arc* trouble distinctions between original and copy through the use of period-appropriate materials and techniques. In combination with careful staging in the form of lighting, scenic design and temperature control, these sites conflate—in Eco's terms—the "completely real" with the "completely fake." There is a critical difference, as Eco claims that the goal of Johnson's Oval Office is ultimately to be forgotten as a sign. I argue that this is contrary to the purpose of both the ICPA and Grotte Chauvet 2. Since both institutions interpret early examples of graphic representation, the act of image production becomes more of an attraction than the images themselves. Therefore, the production of the copies must be seen as equivalent to the production of the originals, and the processes of signification must be admired rather than erased.

The importance of re-creation as a topic suggests one final point of comparison: the

139Umberto Eco, "Travels in Hyperreality," in *Travels in Hyperreality*, trans. William Weaver (San Diego, Harcourt: 1986): 6-7.

dramatic contrast in endings; this offers important insight into the intentions and foci of the two tours. After exiting the replica proper, visitors to *Caverne du Pont-d'Arc* pass through a second acclimation chamber. This cavernous room, minimally lit and with dark-colored ceiling and walls, is quite plain compared to both the adjoining interior space and the vista point that awaits. While it may be tempting to claim that this chamber simply acts as a sort of visual palate cleanser, easing the transition between the environment inside the replica and the Ardèche Valley which the exit overlooks, I argue that it takes on greater significance as an overt reference to the fabricated nature of the replica and the complex. While *Caverne du Pont-d'Arc* does not include any exhibits that discuss its own design or construction in explicit terms, a few moments spent in a "backstage" space such as this offer a crucial reminder of the mediating presence of the attraction, which would perhaps be lost if visitors were to emerge from the replica and move immediately to the exterior of the building. While the tour at *Lascaux IV* does not end with the replica, its end provides a wholly different reminder of its status as a fabricated space. After exiting the replica proper, visitors proceed into an exhibition space that is dedicated to the replications themselves. In addition to copies of difficult- or impossible-to-see paintings, these displays present a scale model of the replicated cave space, moving image projections illustrating the production, superimposition and interpretation of selected images, and samples of equipment and materials used by the artists and designers. This is followed by the *Gallery of the Imagination*—an interactive media exhibit focused on the interpretation of prehistoric art by modern practitioners.

Admiration requires a sense of reverence for the original, and Eco offers the Palace of Living Arts as an example. This California institution, which offers wax reproductions of famous paintings from the European canon, claims to "improve" these pieces through the

addition of color, true-life scale and a third dimension. Each wax tableau is accompanied by text and audio descriptions of the original work, as well as a low-quality reproduction for comparison. This serves the dual purpose of venerating the original, and implying the reproduction's superiority, to the effect that the reproduction becomes the preferred version.[140] *Lascaux IV* and *Caverne du Pont-d'Arc* echo this approach; since guides and promotional literature take great pains to proclaim the achievement of the original artists, the veneration takes on a different character and serves different ends. While most prominent works of Western art are theoretically available to anyone able and willing to visit the institutions which house them, access to Lascaux and Chauvet remains an impossibility for the general public. It is therefore less a case of presenting a copy to reduce desire for the the original, and more of presenting a copy of an original that can never be seen. The concept of equivalence, which is upheld at all costs by ICPA and Grotte Chauvet 2, is also distinct. Because their purpose is to create a compelling viewing experience centered on the original paintings, rather than presenting commentary on them, the "improvements" made by *Lascaux IV* and *Caverne du Pont-d'Arc* are applied to the environments rather than the works themselves. By creating viewing spaces that are more stable and accessible, and which narrativize the images, designers and fabricators attempt to incorporate context into the visitor's interaction with the spaces. This runs counter to sites such as the Palace of Living Arts, which references the context of art works as a pretext for enhancement through reproduction in wax.

The sensitivity to historical context is not without precedent in the leisure and tourist industries, and Eco's discussion of the Getty Villa in Los Angeles has interesting implications

140Ibid., 19.

for *Lascaux IV* and *Caverne du Pont-d'Arc*. At Getty, curators and designers took great pains to establish a connection with the ancient past by replicating the material context for the art on display; this can be seen in the architectural and horticultural design of the villa.[141] A sense of loss is implied by such a presentation; Eco points out that for a Roman collector who would have occupied such a villa, the art on display represents a lament for the (Greek) civilization whose destruction and assimilation were foundational to his own society. While it would be ludicrous to claim responsibility for the disappearance of any Paleolithic cultures, a sense of loss is nevertheless palpable at both sites, and this loss takes on new significance in light of conversations surrounding the Anthropocene. The obvious expression of this is the fact that replicas of both Lascaux and Chauvet became necessary because modern human visitors threatened the physical integrity of the original sites. A more profound loss is implied when one considers the experiential gap between modern and ancient visitors to the sites. While the scientific sentiment that guides the ICPA and Grotte Chauvet 2 cautions against Edenic interpretations of human prehistory, and recent evidence suggests that our activities impacted our surroundings even at this early point, it is indisputable that our lifeways differ substantially from those of our predecessors.

Knowing that the paintings at these and other Paleolithic sites were made by anatomically and behaviorally modern humans—for all intents and purposes they were created by *us*—it is disturbing to realize that we will never fully comprehend the framework through which they engaged their surroundings. The importance of augmentation becomes apparent in the face of this loss. By "improving" the presentation of the copied paintings through the painstaking design and fabrication of their surroundings, the creators of *Lascaux*

141Ibid., 34-35.

IV and *Caverne du Pont-d'Arc* hope to inspire in modern visitors sensations and thoughts that may have been passed on from the beginning of the human narrative, and in doing so prompt critical examination of our own relationship to our surrounding environment. This experiential knowledge relies upon a specific approach to immersion, which shifts our engagement from simply observing a hyperreal situation to taking an active role in it.

Immersion at Lascaux and Chauvet

There are unique issues associated with the production of immersion, as there is an obvious disconnect between the tourist-friendly modern sites and the original caves on which they are based—which the forces of geology and time shaped with no regard for any particular inhabitants. It should be clear that illusionism is not a central goal for either site. It follows that if visitors are not "convinced" by the replicas, then we might look to their mode of interaction with the spaces as a catalyst for understanding. In *The Body in the Mind*, Mark Johnson argues that our lived bodily experience generates cognitive structures which then provide a framework for structuring and organizing further experiences. The schema is a critical component in this theory of meaning, and is defined as a recurring pattern or set of relationships which helps to organize our experiences and comprehension.[142] Schemata emerge out of bodily experience, to the effect that many of our cognitive processes are adaptations of our own physical interactions with our environments. One of the most prevalent of these schemata is the path. There are a number of important implications that arise directly from such a physical movement. The most important of these are distinct points, a distance between them, a direction of travel and a time for completion.[143] By

142Mark Johnson, *The Body in the Mind* (Chicago and London: The University of Chicago Press, 1987): 29.
143Ibid., 113-114.

turning our attention from the paintings and their presentation to the actual path followed by visitors, we can examine the independence of the tour from the space at *Caverne du Pont-d'Arc*, compared to the near total fusion seen at *Lasxaux IV.*

As noted above, visitors to *Lascaux IV* navigate a path that was designed and fabricated along with the rest of the space. That is: the walking surface is embedded in the structure and bound by the walls, as if the floor or the cave had simply been flattened and smoothed in order to accommodate a footpath. *Caverne du Pont-d'Arc*. maintains a deliberate separation between the cave and visitor spaces. Rather than a modified "natural" surface, visitors traverse an independently-fabricated metal walkway that has been installed on top the cave floor. This walkway visually references the walkways used by researchers in the original cave, and it stands in stark contrast to the integrated floor seen at *Lascaux IV.* Rather than a space designed from the beginning to accommodate tour groups, *Caverne du Pont-d'Arc* suggests that visitor facilities have been superimposed upon an already-existing space.

Beyond determining the separation between visitor and space, the footpaths work in conjunction with lighting design to influence each attraction's apparent pace and continuity. *Lascaux IV* can be briefly described as fractured. Due to the physical layout of the original cave, which was faithfully copied in the replica, the trajectory of the tour is not difficult to ascertain. Specifically, the linear and relatively narrow chambers make it so that much of the space can be observed from a single vantage point near the entrance. Complementing the tunnel-like construction, the replica is lit brightly and evenly throughout. While this lighting scheme was no doubt a practical decision as much as an aesthetic one—it allows for better observation of both the paintings and the footpath—it also dictates that upcoming and

previous segments of the tour, along with other tour groups, are readily visible at most points. This frustrates attempts to establish a strong sense of chronology, as each space is continuously inhabited and does not change in appearance between tour cycles. Furthermore, the branching structure of the replica makes it impossible for a second set of chambers to be entered without backtracking. To remedy this, designers added a tunnel connecting the end of the (main) Axial Gallery to the head of the passageway leading to the (offshoot) Nave. This moment of "teleportation" also interrupts the continuity of the tour; while the physical movement remains linear the sense of rational motion through the replica is broken by the rather sudden transition into and out of a "backstage" space.

The fracturing seen at *Lascaux IV* stands in stark contrast to the spatial and temporal experience at *Caverne du Pont-d'Arc*. Despite undergoing a ~65% reduction in surface area from the original cave, this replica's footprint is considerably larger than *Lascaux IV*. Furthermore, the footprint of the replicated cave space means that the placement of the walkway is dictated by the location of paintings, geological features and other aesthetic considerations. Rather than being channeled through a narrow passage, visitors traverse a path that meanders through a large and mostly open space. Rather than even lighting throughout, the cave space is kept mostly dark. The metal walkway is consistently but minimally illuminated, and guide-operated panels control spotlights at a series of vista points throughout the tour. Therefore, while other segments of the tour are visible at several points, this lighting scheme isolates groups from each other and provides a sense of forward momentum as different areas of the cave space are revealed in a clear sequence. As noted above, *Caverne du Pont-d'Arc* is more an interpretation of the Chauvet Cave than a 1:1 replica, since only a selection of the original paintings have been reproduced and their

locations do not match what is found in the original cave. These acts of curation contribute to an experience with a greater sense of temporal and spatial continuity, in spite of the fact that the source material possesses little of the inherent coherence found at Lascaux Cave. Ultimately, the tour seems more exploratory than expository, and it readily indulges in its carefully-designed atmosphere to provide important context for the paintings.

We have seen that when used in a design context, immersion implies being completely enveloped or absorbed by a space, to the extent that the universe outside is accessible only through thought. Furthermore, such spaces offer the potential for transformation to any who occupy them.[144] As this transformative potential is most often realized through sensory and relational means, immersive spaces are typically present visitors with a great quantity and variety of stimuli. A profusion of stimuli can easily become overwhelming, and this section argues that *Lascaux IV* and *Caverne du Pont-d'Arc* manage discontinuity in order to facilitate a sense of kinship across the millennia that separate contemporary visitors from the original occupants of Chauvet and Lascaux caves.

Both attractions engage in a process of establishing and problematizing coherence. Research has revealed that Lascaux and Chauvet caves were both occupied for several thousand years, and the original paintings were produced by many generations of artists. Furthermore, the theoretical framework that informed the creation of the art, along with other aspects of Paleolithic life remains unknown to contemporary visitors. Each attraction addresses a site that appears continuous to the contemporary observer, in that the paintings share aesthetic similarities and are located in clearly defined spaces, but revelation of the details of the occupation at each cave breaks this sense of continuity. This process operates

144Scott A. Lukas, "Introduction: The Meanings of Themed and Immersive Spaces," in *A Reader in Themed and Immersive Spaces*, ed. Scott A. Lukas (Pittsburgh: ETC Press, 2016): 3.

in reverse in reference to the lives of the artists, as the temporal gap is mitigated by the anatomical and behavioral symmetry between Paleolithic and contemporary humans, and ultimately closed by the simulated experience of encountering the paintings in situ. *Lascaux IV* and *Caverne du Pont-d'Arc* indulge in a cycle of establishing and problematizing coherence in order to generate a more complex understanding of the history and context of human image-making.

Jonathan Crary problematizes the concept of in/attention during the late 19th and early 20th centuries, giving special consideration to explorations by artists and media makers during this period. Previously, fixed attention was thought to allow for a stable perspective from which a human consciousness could engage the outside world; this was found to be illusory, as experimentation revealed the human senses to be in a state of constant flux, and easily prone to distraction.[145] This implies that modern life at this time was viewed as chaotic —owing to the newly mechanized, electrified, diversifying and media-saturated experience that was becoming the norm—and that focus and concentration were required to rationalize it. Crary's suggestion that attempts to facilitate and systematize attention in fact had the opposite effect, reveals intriguing parallels between art and media production from this period, and contemporary attempts to replicate paleoart. Just as the search for an empirical understanding of unbroken attention revealed its fundamental impossibility, efforts by the designers and fabricators at *Lascaux IV* and *Caverne du Pont-d'Arc* to produce faithful copies of the paintings and the cave environments highlight the replications' status as copies.

Furthermore, Crary argues that attention became a discursive object at a moment when the senses were decoupling from the historical codes that lent them stability and

145Jonathan Crary, *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (Cambridge, MA: The MIT Press, 1999): 64-65.

credibility. As a result, individuals were increasingly defined using objective statistical language whose goal was to facilitate integration into the various social, institutional and technological settings emerging during this period.[146] An interesting comparison can be made here, as visitor integration is also a major concern at *Lascaux IV* and *Caverne du Pont-d'Arc*. While the attractions themselves do not represent an attempt to quantify or otherwise rationalize attention, they belong to an industry—tourism and leisure—that has invested heavily in such research for the last several decades. In this capacity, the attractions leverage a set of framing techniques derived from the entertainment industries, the intention of which is to vectorize movement and attention. This serves the goal of making this mode of cultural production—parietal art—legible to the global leisure industries and their customers. Furthermore, the perceptual experience of encountering replicated paintings in situ also integrates attraction visitors with a humanistic and ecological narrative, as opposed to the technological and industrial contexts of the late 19th and early 20th centuries.

One significant difference between the replicated paintings at *Lascaux IV* and *Caverne du Pont-d'Arc*, and the art and media work discussed by Crary, is the characterization of the concept of discontinuity. While for Crary discontinuity is an internal concern, in that the constant variance of the human senses prevents fixed attention and permits external stimuli to become distractions, at *Lascaux IV* and *Caverne du Pont-d'Arc* discontinuity is largely a characteristic of the physical environment. The original paintings exist in a state of discontinuity at both sites, based on the history of occupation at each cave, although this is not apparent at first glance. The modern attractions must draw attention to the discontinuity by problematizing the apparent unity of the caves as they exist now, then

146Ibid., 287.

using the mechanism of the tour to reestablish a sense of order. This is accomplished at Grotte Chauvet 2 through composition; the cave and the paintings are composed into a singular experience, as opposed to the millennia-long processes of exploration and augmentation that their prehistoric occupants would have encountered.

The effort required by the reproductions—to faithfully copy and compellingly present both the paintings and the setting—points to another source of discontinuity: temporal and theoretical separation between ancient occupants and contemporary visitors. This discontinuity is addressed through the Lascaux Studio and *Gallery of the Imagination* at the ICPA. These exhibits stress symmetries of technique—in the Lascaux Studio— and continued artistic engagement with prehistoric landscapes and ecosystems—in the case of the *Gallery of the Imagination*. These acknowledge that while time separates us, there is a profound physical and intellectual consistency between contemporary and ancient humanity. While an aesthetic consideration more than a structural one, it is also worth noting that *Lascaux IV* and *Caverne du Pont-d'Arc* continue to cycle between continuity and discontinuity in relation their contemporary surroundings. In parallel with the subjects of Crary's discussion, the contemporary tourism, leisure and media environments which inform the sites are often characterized by fractured modes of engagement. Each site offers a sense of serenity by comparison, and the prohibition of most media use during tours suggests that fixed attention and sustained contemplation are simultaneously unreachable and unavoidable.

It is reasonable to suggest that, contrary to first impressions, the replications at *Lascaux IV* and *Caverne du Pont-d'Arc* are actually meant to accentuate and instrumentalize the instability and unpredictability of human sensation. Since they are enhanced by theatrical design and entertainment framing, the replicas emphasize technical, intellectual and

experiential continuity in order to establish a connection with the remote past. If one imagines that the deliberate manipulation of visitor attention creates a sense of disorientation that leads to a sense of kinship, then this suggests that—as Crary points out—attention has never been a viable remedy for distraction. The paintings of Paul Cézanne capture sensation as a dynamic process of engagement with a rich and varied environment, rather than a state of distanced contemplation,[147] and a similar embrace of instability is put to constructive use at *Lascaux IV* and *Caverne du Pont-d'Arc*, as interaction with a simulated environment becomes the basis for creative cognition.

The ICPA and Grotte Chauvet 2 both leverage distraction, distance and interruption to prompt imaginative action, which leads to intellectual engagement and eventually connection with the original artists a each site. While these and other immersive or themed spaces are frequently aligned with imagination, such engagement is often placed in opposition to other cognitive processes, and this section will argue that the imaginative leap by which contemporary visitors identify with our Paleolithic ancestors, is vital to conceptualizing our relationship with our own surroundings. Etienne Pelaprat and Michael Cole define imagination as a process of resolving and connecting a fragmented or poorly-coordinated experience of the world in order to generate a stable image, which then allows for the placement of oneself in relation to said world. The drawing together of fractured experiences varies based on three primary factors: biology, culture and individual development.[148] Imagination is thus foundational to all human cognition, and helps to forge vital connections between the physical and intellectual realities simultaneously inhabited by all people.

147Ibid., 344.

148Etienne Pelaprat and Michael Cole, "'Minding the Gap': Imagination, Creativity and Human Cognition," in *Integrative Psychological and Behavioral Science* 45 (June 2011): 399.

Critically, imagination is not strictly based on absence, in the sense that it is involved in the processing of information that may not be directly available to an organism. They argue that imagination is also essential in processing a present reality, and as such it is a relational activity. Imagination relies upon the filling of gaps in perception, and several gaps are readily observed at *Lascaux IV* and *Caverne du Pont-d'Arc*. They are associated with three elements of the experience: the copied paintings, the temporal and theoretical distance between the original artists and contemporary visitors. Although they are functionally indistinguishable from the originals, the copied paintings are never confused with them. The narration provided by tour guides vacillates between the present and the past, simultaneously addressing visitors as if they are encountering the caves from multiple temporalities. Because they left no explicit record, we will likely never know for certain how the caves or the paintings functioned as part of any Paeolithic worldview. Although these gaps are conceptual rather than sensory, Pelaprat's and Cole's description is still useful here. Differences in experience—based on culture, biology and individual development—constrain our relationships to images and objects, and these must be resolved cognitively. While the sensory experiences at *Lascaux IV* and *Caverne du Pont-d'Arc* are subject to the type of discontinuity they discuss, they ultimately serve to problematize the cognitive gaps that exist between contemporary visitors and the original artists.

Because it aids in the evaluation of one's present reality, imagination is essentially action- and future-oriented.[149] This is an important characteristic, as neither the ICPA nor Grotte Chauvet 2 are self-contained institutions. While both are integrated into local and regional tourism networks, and the original caves have been classified as UNESCO World

149Ibid., 404-405.

Heritage sites, their placement at an early point in the modern human narrative draws them into discourse surrounding our species' interaction with the ecosystems which it inhabits. The relationship between these sites and scholarship on the Anthropocene will be discussed in greater detail later, but it is sufficient at the moment to recognize that these sites are engage multiple temporalities in which humans have been found to play a pivotal role, and the imagination is called upon to facilitate this understanding.

Lascaux IV and *Caverne du Pont-d'Arc* rely upon the imagination to fill experiential gaps, but they extend this action beyond momentary sensory apprehension of an object or image. Here, visitors are asked to understand simultaneously the present and the past, with current sentiment dictating that our shared future be taken into consideration. Interpretation of the copied images is provided directly by tour guides, based on iconographic resemblance. Moving away from the concrete, the significance and purpose of these images is inferred, but not directly experienced by visitors. The final step in this process entails identification with the original occupants, which is based on sensory engagement with the space. This is a complex undertaking, and Pelaprat and Cole's notion of social proprioception is illuminating here. This is defined as the orientation of oneself relative to a given social setting, and their analysis is based upon examples that include Twitter coverage of the Iranian Green Revolution (2009). They argue that small pieces of information, observed over time, provide gaps for a viewer to fill through imagination, which results in feelings of investment in and deep personal connection with a remote individual with whom they may have no other contact.[150] Although they lack the specificity of Twitter posts—in that no Paleolithic occupant of Lascaux or Chauvet is likely to be identified by anything other than physical size

150Ibid., 410-411.

and/or artistic style, which precludes any serious investment in their personal life—we can see opportunities for some version of social proprioception at *Lascaux IV* and *Caverne du Pont-d'Arc*. Both maintain a careful balance between concrete and theoretical, and between proximity and distance. By cycling continuously between these positions, the attractions create gaps based on conceptual rather than sensory apprehension, using immersive design to inspire a sense of kinship with Paleolithic people.

We have discussed *Lascaux IV* and *Caverne du Pont-d'Arc* in terms of sensory engagement, although anatomical symmetry with the original occupants is critical to the establishment of intellectual kinship. I argue here that the re-creation and eventual viewing of paleoart functions as a technique of the body, in Marcel Mauss' terms. Both the ICPA and Grotte Chauvet 2 stress that the production of images represents the beginning of behavioral modernity for our species. Sensory and anatomical continuity are implied, but emphasis is placed on the intellectual kinship between contemporary visitors and the original artists, and it is technique that connects sensation, cognition and eventually kinship. Mauss argues that the body is our species' first technical implement, and that techniques for its use are developed culturally. Furthermore, these vary based on demographic factors such as age, class and gender.[151] As this implies that there is essentially no "natural" way for an adult human to act, there are two important implications for this discussion. First: although he himself would likely disagree with such a proposition, the distinction between "primitive" and "modern" humanity disappears when our current body emerged some 200,000 years ago. Second: even relatively complex ceremonial or ritual behaviors can be discussed in this framework.

151Marcel Mauss, " Techniques of the Body," in *Economy and Society* 2, no. 1 (1973): 75-76.

Mauss is concerned mostly with classification of various body techniques, however this discussion can be applied to two particular aspects of the experience at *Lascaux IV* and *Caverne du Pont-d'Arc*. The first is art production, which must be re-learned by modern artists so that it can then be imaginatively apprehended by visitors. While art production is often aided by tools, I would argue that the suite of techniques employed here is centered on bodily action. This is seen directly, in the case of numerous hand prints found at many Paleolithic sites, and indirectly, in the likely use of blowpipes for some images. Furthermore, since the remains of tools such as brushes are fairly scarce, contemporary artists were responsible for inferring and reconstructing these implements, and their probable use, at both sites. Drawing on methods borrowed from Experimental Archaeology, these modern practitioners engage a set of techniques that, while they produce the tools that are frequently the basis for our classification, are evidence of the brains and bodies at the center of our evolutionary narrative.

It should be mentioned that Mauss stresses cultural variation in his discussion of body techniques, and while regional and chronological variety are discernible in parietal art, the actual techniques of production are, so far as we know, largely standardized. Furthermore, the social, ceremonial or ritual context surrounding the production or use of images can never be known with any certainty. For this reason, we must look to the second major aspect of the visitor experience at *Lascaux IV* and *Caverne du Pont-d'Arc*: the physical encounter with the art. This encounter is framed physically by the reconstructed cave environment, and more important, behaviorally by the influence of the tourism and leisure—themed entertainment, in particular—industries. *Lascaux IV* and *Caverne du Pont-d'Arc* use the guided tour as a body technique that enables contact with ancient populations. Narrativization, queueing and

waiting, periods of anticipation and acclimation, controlled movement and looking without touch all constitute a set of techniques particular to modern tourists. By framing the art encounter as a spectacular journey into an immersive environment that is based on our own Deep History, the designers draw upon a suite of behaviors that sits somewhere between museum and theme park. This framing is meant to inspire reverent engagement that conforms to the logistical needs of the commercial tourism industry, and it leverages the cognitive discontinuities that surround the original paintings in order to facilitate a sense of imagined kinship with their artists.

Media Representations of Time

Of all sites considered for this project, *Lascaux IV* and *Caverne du Pont-d'Arc* offer the most problematic representations of the passage of time. While chronology is relatively well defined—insofar as the scale and relative position are explicitly described and more or less well understood by visitors—the representation of duration, as well as its significance for the visitor, is less straightforward. As we have seen, the Page Museum is concerned with establishing simultaneity between two distinct moments. *Evolving Planet* organizes time along a linear path to be traversed by visitors. In the next chapter, we will examine how Disney's *Dinosaur* attraction is based on the manipulation of time by the various ride and effects systems it uses. In contrast, *Lascaux IV* and *Caverne du Pont-d'Arc* present what appear to be coherent moments that are in fact composites. Rather than offering a window into the Paleolithic, these sites offer meditations on the methods and techniques used by modern humans to reconstruct our past. It is therefore helpful to examine the temporality of the copied paintings as they are encountered on tours at either site.

The two sites differ substantially in their framing strategies for the copied paintings. While both feature high-quality recreations of their respective source material—which is presented in a format designed to move large crowds efficiently—each highlights different issues. Since it simulates the cave at the moment of its rediscovery in 1940, *Lascaux IV* is distinctly modern in its focus. Beyond choosing such a recent moment for replication, the designers included a large exhibit explicitly focused on the methods of production for the replica. By pulling back the curtain in such a way, the designers of *Lascaux IV* elevate their own work to the level of that of the original artists, and they make a bold claim for the centrality of human mediation in imagining our collective remote past.

Caverne du Pont-d'Arc takes a different approach by situating visitors at a much earlier period. Rather than the 1994 rediscovery, its designers chose to replicate the more recent of Chauvet's two periods of human occupation (~28,000-31,000 YBP). This strong, though implicit reference to the historical setting—a date was never specified by the tour guides, and must instead be inferred based on information offered elsewhere—works alongside the more varied focus of the complex's other attractions to suggest that Grotte Chauvet 2 is more concerned with articulating context for the paintings, and it uses replication techniques as a means to understand Paleolithic life, rather than as an attraction on their own.

Tom Gunning describes attractions not as early technical and aesthetic experiments that would be cast aside as soon as the techniques of classical narrative were discovered, but instead as key elements of film language before 1908 that continue to coexist with storytelling. This Cinema of Attractions foregrounds novelty and demonstrate fascination

with the act of display.[152] Although it is an oversimplification, this language aptly describes the framing at *Lascaux IV* and *Caverne du Pont-d'Arc*. As destinations, ICPA and Grotte Chauvet 2 are confrontational in their design. Both are housed within abstract geometric structures in concrete that stand in stark contrast to their surroundings. These structures enable a reframing of human life and activity as the result of mechanical, industrial and commercial incursion into regions associated with previous modes of existence. Unlike attractions-based cinema, which incorporated existing spectacles as a way to draw audiences into a newly mechanized existence, the ICPA and Grotte Chauvet 2 reference a form of expression that, while still in use, appears in one of its earliest known forms. *Lascaux IV* and *Caverne du Pont-d'Arc* create a spectacular—though still reverent—encounters with representations of the original paintings, celebrating both their novelty as artistic expression and the technical achievement of the act of reproduction.

While they are meant to leave a lasting impression, in visiting both *Lascaux IV* and *Caverne du Pont-d'Arc* one is struck by the ephemerality of the encounter with the copied paintings. Gunning describes a similarly limited temporality associated with the Cinema of Attractions, which is oriented around transitions between presence and absence.[153] This mode of presentation is concerned more with the timing of the appearance of a spectacle, rather than its cause or its operation. This is particularly evident at *Caverne du Pont-d'Arc*, which uses careful staging to bring the replica paintings into and out of view for visitors. This is accomplished primarily through composition, routing and lighting; the paintings have been rearranged within a purpose-built space, the walkway leads visitors on a meandering

152Tom Gunning, "'Now You See It, Now You Don't': The Temporality of the Cinema of Attractions," in *The Velvet Light Trap* 32 (Fall 1993): 4.
153Ibid., 6.

path that alternates the bare geology of the cave space with paintings, which are strategically lit and darkened in response to group proximity. The approach taken at *Lascaux IV* is quite different. Because of the footprint of the space, and its less evocative lighting, the replica can be seen almost in its entirety from a single vantage point. This compresses all of the paintings into a single instant, and necessitates a frame that is physically located outside the replica. The timing of the revelation of the paintings is thus articulated on the approach to the cave replica, whereas *Caverne du Pont-d'Arc* structures its paintings as a series of attractions to be revealed within the structure.

While the encounters with the replica paintings are notable for their ephemerality, the experiences at the ICPA and Grotte Chauvet 2 are not without a sense of trajectory. Narrative framing, though not unknown in the Cinema of Attractions, functions differently from classical cinema. Rather than development or transformation in time, it is used to provide a structure on which to arrange the momentary appearances and disappearances of attractions.[154] While *Caverne du Pont-d'Arc* does create an internal sense of time, both it and *Lascaux IV* rely upon media systems external to the cave replicas to create a sense of temporality to contextualize the paintings. For this purpose Grotte Chauvet 2 uses its Aurignacian and Temporary Galleries, and they function in a relatively straightforward way; while the Aurignacian Gallery introduces the local fauna and geological history, the Temporary Gallery hosts artistic responses to the site and its broader subject matter (this is currently occupied by *Animal: From Prehistory to Street Art*, an immersive projection show examining the use of animal imagery from the Paleolithic to modern times). Rather than exploring the Paleolithic context of Lascaux, the ICPA focuses on contemporary responses in

154Ibid., 9.

the Lascaux Studio, and the *Gallery of the Imagination*. These are encountered immediately after the cave replica, and they explore the research, design and fabrication strategies used in the production of *Lascaux IV* and rediscovery of paleoart by 20th century artists, respectively. While it is difficult to discuss the ICPA and Grotte Chauvet 2 in narrative terms, in the same way that the concept was used to organize a series of visual spectacles pre-1908 films, both sites make explicit attempts to offer a sense of context—whether ancient or modern—for the caves and paintings that they replicate.

It has been argued that Paleolithic artists were adept at representing motion, time and narrative in both parietal and mobiliary art. While the artwork found at sites such as Lascaux and Chauvet has pushed back the point of origin for both motion pictures and graphic arts, it is difficult to deny that these objects and images were somewhat self-contained. That is: while a modern observer can indeed gain some understanding of seasonal cycles, hunting or mating activities by viewing them, these works engage a sense of temporality that is limited to the time of their creation, and thus fundamentally inaccessible to anyone lacking the theoretical framework of the area's Paleolithic inhabitants. There exists a substantial temporal gap between paleohumans and the contemporary practitioners and visitors of Grotte Chauvet 2 and the ICPA, and it can be attributed to both the disconnect in cultural time and the relative distance between the two populations. Unlike this project's other research sites—for which the passage of time is simulated, performed or elided—the ICPA and Grotte Chauvet 2 work to inscribe duration in the various media objects on display outside the replica caves.

Even without motion, images can contain powerful traces of the passage of time, as Dimitrios Latsis argues in an examination of Eadweard Muybridge's photographs of the

American West during the late 19th century. These photographs investigated the movement of time through a wild landscape that was organized according to pictorial planes and sight lines imposed by the apparati used to capture them, and informed by the aesthetic sensibilities of Euro-American artistic discourse.[155] The images at Lascaux and Chauvet operate in a similar way, although the framework through which the original artists approached their surroundings can not be known with anything near the level of certainty for any modern practitioner. What concerns us instead is the way that duration has been attributed to the originals, and framed by both the copies and the exhibits that surround them. For Muybridge, time was evident in both observable moments and in the gradual transformation of the Earth. In particular, his waterfall photographs—taken at Yosemite—extended human vision across time, and incorporated multiple perspectives.[156] The idea that duration can be observed directly and inferred from traces is critical here, especially given that an observable moment for the original paintings of Lascaux or Chauvet is functionally nonexistent for all but a handful of researchers and conservators.

We have seen that *Lascaux IV* and *Caverne du Pont-d'Arc* present spaces that are frozen in time, in that they present the replica paintings and cave spaces at seemingly discrete moments. In both cases, media presentations outside the replicas do the work of describing duration. At *Lascaux IV*, a time-lapse film depicting the landscape at various points over ~20,000 years constitutes an early segment of the tour. Following this film, a series of hidden speakers lining the walkway to the replica cave entrance depicts the 1940 rediscovery of the cave from the perspectives of the area residents who made it. Taken together, these

155Dimitrios Latsis, "Landscape in Motion: Muybridge and the Origins of Chronophotography," in *Film History* 27, no. 3 (2015): 9.
156Ibid., 16-17.

presentations frame visitors' arrival at the replica as two distinct movements: one through time at a fixed position, and one through space at a fixed point in time. Time is abstracted during the segments of the tour that follow the replica. This is particularly apparent in the Lascaux Studio, which includes several animated displays that depict sections of Lascaux cave in which images have been superimposed over time. In the abstract, the building housing the ICPA was inspired by the fissures of a Scandinavian glacial landscape, with geological strata represented in the concrete of the exterior hallways. Echoing Latsis' description of Muybridges' photography, we can see several distinct expressions of time and duration. The two audio-visual presentations that open the tour present a flow that is linked with space, each dimension of which can be altered to foreground the other. The replica itself presents the opportunity to halt that flow altogether. Finally, the Lascaux Studio and exterior architecture present time as a matter of accumulation at the small and large scales.

Caverne du Pont-d'Arc takes a distinct approach, which is perhaps best described using the exhibits housed in the Aurignacian Gallery. This gallery offers the most fully articulated representations of local fauna, and the experience opens with a live-action film that depicts a Paleolithic hunting party entering and decorating the cave. From this moving image production, visitors enter the gallery space through a set of doors below the screen and encounter life-size models of prominent fauna in simulated landscapes. This fixes the moment of visitor interaction at the time of the original paintings' creation (~28,000-36,500 YBP), and it embeds the interaction in the experience of daily life. Elsewhere in the gallery, an animated presentation uses time-lapse-inspired imagery to depict changes in the contour of the cave's interior space during the 8,000 years it was occupied. This topographical presentation is supplemented by the production of major paintings, which appear in the

display at the time of their creation. Moving beyond the Aurignacian Gallery, the *Animal* show in the Temporary Gallery explores the use of animal imagery across time, incorporating living and once-living bodies into both prehistoric and modern landscapes. At Grotte Chauvet 2, we see a different collection of articulations of time. In the Aurignacian Gallery, we are presented with a flow that is grounded in the physical processes of existence, recalling the lived moments explored by Muybridge. Beyond this, in the Temporary Gallery, we see time as an abstract principle that is constructed by the assembly and arrangement of images. Rather than fixing time, as is the approach taken by the ICPA, the designers of Grotte Chauvet 2 seem to have chosen to explore the lived experience of time, which the exhibits attempt to integrate with more objective measures through the abstraction of media representation.

These media presentations complement the replica paintings at both sites by providing context for the ephemeral bodily experience inside the cave spaces. The use of figurative or graphic representation seems at first to support explicit understanding of a given topic, and while in this context they can create a sense of fixed or determined time, images also resist experimental efficacy in intriguing ways. In an examination of the chronophotography of Etienne-Jules Marey, Daniel Sipe points to a revelatory aesthetics at play for many 19th century scientists and artists, which foregrounded the ability for still or moving images to inform viewers.[157] This paradigm is still widely accepted in exhibitions of all kinds, and it is taken up differently inside and outside the replica caves at Grotte Chauvet 2 and the International Centre for Parietal Art.

The apparati used by Marey and others were intended to measure bodily phenomena

157Daniel Sipe, "Aesthetics and the Methods of Visual Enquiry in the Photography of Étienne-Jules Marey," in *French Studies* 74, no. 4 (October 2020): 555.

that were not directly observable by the human eye, due to their internality, or being too rapid or complex to be apprehended without technological intervention. In order to make sense of these complex motions, chronophotography focused on infinitesimal units of time that were occupied by bodies moving in space.[158] This is particularly interesting in reference to the aforementioned time-lapse animation found in the Aurignacian Gallery at Grotte Chauvet 2. Here, the reverse of this process takes place. Based as it is on stratigraphy and other trace evidence, there is no way to directly capture any of the physical dimensions of the original cave at any moment other than the present, so these images possess essentially nothing in the way of indexicality. Rather than working with infinitesimal units of time occupied by bodies in space, this display compresses large stretches of time (~8,000 years) into a presentation that lasts a few short minutes. Furthermore, this display is only capable of reproducing space and time with any degree of accuracy, as the bodies that populate the animated cave are either hypothetical—in the case of several silhouettes of *Ursus spelaeus*, representing the cave's primary inhabitants—or images themselves—the paintings, which appear as graphics at the time of their production. This compression serves to "correct" natural human vision, which is limited in both space—not being able to view the entirety of the cave at one time, or from outside—and time—being able to observe, theoretically, for a maximum duration of a single human life.

For Marey, chronophotography was never able to accomplish its goal. While his images were able to preserve and subdivide motion, they were incapable of providing any physical measurements, which would have made them useful to the scientific establishment Marey professed to serve. They thus functioned as aesthetic pieces whose primary value lay

158Ibid., 557-558.

in the discursive possibilities they created.[159] Contrary to this, the moving-image representations of duration at the ICPA and Grotte Chauvet 2 are more akin to data visualizations. Based on verifiable measurements—the layering of images at Lascaux, and the contours of the cave surfaces at Chauvet—these displays represent fixed bodies and spaces over long stretches of time through successive images. Rather than rendering complex physical motions mathematically or linguistically legible for practicing scientists, as Marey intended to do with his chronophotography, they render abstract measurements and long durations sensible and comprehensible for lay observers.

It is hopefully becoming obvious that sites like the ICPA and Grotte Chauvet 2 engage multiple overlapping temporalities. From the lived experiences of both Paleolithic and modern visitors to the sites, to absolute natural markers, to the abstractions of scientific and cultural chronologies, each site asks visitors to negotiate between conceptions of duration that can signal and function quite differently. Johan Fornäs considers the integration of multiple conceptions of time by contrasting inner or lived time, which is a subjective interpretation of an experienced flow, to cosmic time, which is a more objective scale derived from observable and measurable change in a material environment. "Third time" bridges the two through mediating and communicative practices. This cultural approach to time is experientially tertiary, in that both inner and cosmic time by necessity precede the conscious perception of an observer, but logically primary, as it is only through mediation that the others are made legible.[160]

In their interpretation of the original cave sites, both the ICPA and Grotte Chauvet 2

159Ibid., 563.

160Johan Fornäs, "The Mediatization of Third-Time Tools: Culturalizing and Historicizing Temporality," in *International Journal of Communication* 10 (2016): 5214-5215.

embody the tensions inherent in defining and presenting time in these distinct registers. Here, inner time is simultaneously accessible and inaccessible. Tours stress the biological symmetry between modern and ancient humans by implying that were we to apprehend the original paintings *in situ* we might react in much the same way as our ancestors. However, as the day to day realities of Paleolithic life—including the theoretical framework from which paleo humans engaged their world—can only ever be inferred, their representation at *Lascaux IV* and *Caverne du Pont-d'Arc* is little more than a fiction. Furthermore, our interaction with contemporary copies, in full knowledge of the originals' existence, places another barrier between modern time and Paleolithic time. Cosmic time is problematic in other ways. Although it is known and understood, at least in a rough sense, the 37,000 years separating the original caves from the present have little meaning beyond mathematical abstraction. Such a duration, while quite brief on the geological scale, is barely comprehensible from the standpoint of human experience. Visitors to both sites therefore require some form of mediation in order to comprehend either, and the fact that the original paintings represent a vanishing point for certain aspects of human culture provides the necessary framework.

Fornäs identifies the calendar as a media device that serves the purpose of uniting several distinct registers of time. It has three primary functions: identifying a founding event for a given timeline, providing a moment of inscription which spatializes the representation of time and allows for backward and forward movement, and integrating units of measurement and/or calculation. In doing so, it is particularly adept at bridging the gap between inner and cosmic time.[161] It is tempting to think of the reproductions at *Lascaux IV*

161Ibid., 5217.

and *Caverne du Pont-d'Arc* as calendars of a sort. The original paintings constitute a vanishing point for figurative art, which is a fitting founding event. In copying and re-staging the paintings, which were produced over periods of thousands of years, the ICPA and Grotte Chauvet 2 have made a number of critical inscriptions that facilitate intellectual movement along the timeline established by the earliest occupation of the original caves. Finally, while the replicas themselves contain no explicit markers of time in any discrete sense, text- and image-based exhibits elsewhere at the sites, combined with extensive narrative framing by tour guides, embeds several chronologies—both inner and cosmic—in the spaces. This comparison ultimately falls short, however, as the organizational function performed by calendars has no analog in any of the exhibits at either the ICPA or Grotte Chauvet 2. While they offer the opportunity to link subjective experiences of duration with other conceptions of time, these sites lack the capacity to coordinate most forms of activity involving multiple humans, and therefore they provide mostly theoretical value. Nevertheless, an examination of the calendar illustrates how *Lascaux IV* and *Caverne du Pont-d'Arc* shape discourse about the relationship between different conceptions of time.

It is important to note that, like calendars and other "third time" tools, *Lascaux IV* and *Caverne du Pont-d'Arc* are products of human thought and action. The complexes at the ICPA and Grotte Chauvet 2 serve as examples of a concept identified by Fornäs as *mediatization*. This describes an increase in the degree to which media and communication systems are embedded in culture and society. Media are necessary for defining and comprehending history and historicity, but media use is also subject to historical influence.[162] The original paintings at Lascaux and Chauvet allow for both absolute and relative dating,

162Ibid., 5221.

based on their material and aesthetic characteristics. At the time of their production, they became the first entry in a record that was not to be conceptualized until tens of thousands of years later. Mediation, in the form of measurement, documentation and categorization, gave shape and scale to this record. As mediation became necessary for the survival of the original paintings, the market pressure for institutions to deliver transformative experiences, coupled with the capacity for high-resolution sampling, pushed modern practitioners to rethink the gap that separates ancient from modern interactions with the images. The modern capacity for reproduction, by some estimates the culmination of the trajectory initiated by the original paintings, has been called upon to downplay the very sequence of events that preceded it. Somewhat ironically, while modern media technologies delivered the high-resolution samples upon which the replicas were based, it was the judgment and action of human artists that produced the final images. This insistence on symmetry of production bends the arc of art history into a loop, while simultaneously troubling questions of authenticity for reproductions of all kinds.

Conclusion

Lascaux IV and *Caverne du Pont-d'Arc* occupy an interesting position relative to this project's other research sites. In their ability to transport viewers, they are second only to the *Dinosaur* attraction. While each presents a fully-articulated environment that bears a strong resemblance to the original, the frame provided by guided tours provides enough critical distance or visitors to separate themselves from the experience; this is largely avoided by *Dinosaur*, which contains no explicit references outside the diegesis of the attraction. Compelling though the may be, the instructive potential of the reproductions is rather low.

As they provide encounters with high quality reproductions of the original paintings and their contexts, they succeed in informing in a way that *Dinosaur* never attempts. As the context—provided by tours and supplemental exhibits—is restricted to that which is directly relevant to the paintings, the applicability of the experience does not extend far beyond the sites.

While they are limited in their scope, it must be stressed that *Lascaux IV* and *Caverne du Pont-d'Arc* are fascinating in their representation and handling of temporality. At *Lascaux IV*, a moment of rediscovery in the present reveals thousands of years of artwork. Within *Caverne du Pont-d'Arc*, several distinct space-times are compressed into a singular presentation. Rather than the performance of time seen in *Evolving Planet*, or the reversal seen in *Dinosaur*, these sites deal in the momentary appearance and disappearance of accumulations of time. These dimensional counterparts to the Cinema of Attractions effectively reveal, then elide the tens of thousands of years that separate prehistoric from modern people.

In doing so, *Lascaux IV* and *Caverne du Pont-d'Arc* are profoundly anthropocentric. Interestingly, although these two sites are deeply concerned with humanity, neither examines our species through the lens of the Anthropocene. While tours stress both the biological symmetry between Paleolithic and contemporary humans, and the profound physical relationship our predecessors must have had with their surroundings, little of this material logic seems to extend into the present, or beyond the boundaries of the ICPA and Grotte Chauvet 2. While few researchers would associate the beginning of the Anthropocene with the Magdalenian or Aurignacian cultures, few would deny that at least some of the behaviors responsible for the current climate crisis were part of human life and identity during the Paleolithic. Furthermore, the fact that damage caused by visitors represents a proven risk to

the original cave environments suggests the basis for frank conversations concerning our species' interaction with the rest of the living world. Ultimately, these concerns seem distant from the minds of most visitors to *Lascaux IV* and *Caverne du Pont-d'Arc*. The sense of kinship inspired at these sites seems intended to cross temporal, rather than species, boundaries.

Chapter 4
Emphasizing the Animal Body in Disney's *Dinosaur* Attraction

Disney's Animal Kingdom Theme Park opened on April 22, 1998 as the most recent of four theme parks at the Walt Disney World Resort in Orlando, Florida. This wildlife- and conservation-themed park is a hybrid venue, in that it combines features of high-end zoos—elaborately designed animal displays and live shows—with traditional theme parks—entertainment-oriented rides and Broadway-style stage productions. The park is divided into seven themed lands: the Oasis, Discovery Island, Africa, Asia, Rafiki's Planet Watch, Pandora - The World of *Avatar* and Dinoland U.S.A. *Dinosaur* is, unsurprisingly, located within Dinoland U.S.A.; the land focuses on non-avian dinosaurs and other prehistoric animals, which it addresses as multivalent cultural phenomena. There are two distinct sub-themes: "serious" scientific research, which is exemplified by the Dino Institute—a fictional organization that hosts the *Dinosaur* attraction, and whose facilities can be seen throughout the land—and low brow entertainment, as seen in the adjacent Chester and Hester's Din-O-Rama—this area is modeled after mid-century American roadside attractions, and it includes an elaborate gift shop and carnival-style rides. *Dinosaur*—a thrill ride which features robotic dinosaurs and special effects—depicts a prehistoric safari gone horribly wrong when the riders' time travel vehicle arrives perilously close to the Cretaceous-Paleogene Extinction Event (66,000,000 YBP).

The Dinosaur as a Metonym for Prehistory

The whole of Dinoland U.S.A. demonstrates the American popular fascination with dinosaurs. The design of the land and its attractions emphasizes two core characteristics: the

exceptional appearance and dramatic disappearance of the prehistoric reptiles. Although this phenomenon is well-established, it is curious that a group of organisms—which existed for less than 5% of the 3.8 billion years predating the appearance of modern humans—should come to represent the entirety of that period. This perspective is quite pronounced in *Dinosaur* than any of the other attractions examined for this project. *Evolving Planet* is deliberately broad in its scope, as it incorporates specimens that represent a range of time periods, ecologies and taxonomic groups. The Page Museum, *Lascaux IV* and *Caverne du Pont-d'Arc* derive much of their content and the visitor experience from their geographical and temporal specificity. In contrast, *Dinosaur* focuses on a single clade to signify the remote past; this version of Deep Time does not follow the same ecological logic as the rest of Animal Kingdom's offerings, or that of the other research sites. Although most riders are already likely to frame all prehistory through dinosaurs, this perspective is made explicit in the queue.

The queue is divided into to two primary spaces, the first of which is an exhibit room which is reminiscent of natural history museums. The small specimen cases are ecologically-oriented, and they focus on topics such as predation, extinction and survival. Rather than following an abstract theoretical principle, these materials establish an ecological framework with profound implications for the attraction's narrative. Following the exhibit room, riders enter a rotunda that, while still using museum vocabulary, presents a more dynamic contemplation of the concept of extinction. The multimedia displays—which include skeletal specimens and dramatic murals—are framed by a looped audio recording narrated by Bill Nye, the Science Guy. Accompanied by lighting cues, Nye discusses prevailing theories about prehistoric life, as well as key points on the Mesozoic timeline. A mounted

Carnotaurus sastrei skeleton is the most striking visual element in the rotunda, and riders circle its central pedestal as they move through this final portion of the queue. Since it echoes signage on the exterior of the show building, this skeleton foreshadows the *Carnotaurus*' role as the attraction's primary antagonist.

Any discussion of *Dinosaur* must consider the circumstances surrounding the emergence and implications of dino-centrism. Material contingency must be acknowledged first, since dinosaurs' prominence owes much to processes of sedimentation, fossilization and excavation. On the whole, individual soft-bodied organisms are not well-represented in the fossil record, since nearly all of their tissues decay or are consumed before fossilization can take place. Among vertebrates, the comparatively delicate skeletons of small animals are more vulnerable to damage or dispersal, and these are less likely to be preserved intact. The fossil record is therefore inherently biased toward large vertebrate organisms. Although the majority of dinosaur species were smaller than humans, because there were enough Mesozoic ecosystems capable of supporting a variety of large vertebrates, and dinosaurs were the dominant group, if an organism from the era is to have been fossilized it is somewhat more likely to have been a dinosaur.

These same large fossils are also more likely to be noticed, and then recognized as belonging to once-living organisms. While this alone does not favor dinosaurs exclusively—as it would be equally true for any large animal—their unfamiliar anatomies, along with a lack of living analogues, makes their remains more memorable than those from lineages with extant members. Finally, given their position on the geologic timeline, Mesozoic fossils of all types have frequently been encountered in the search for fossil fuels and other mineral

ore.[163] Although there are records of fossil discovery throughout recorded history, a rapid increase in exploration and excavation coincided with growing acceptance of concepts such as Deep Time and extinction in the scientific community, and emerging media technologies allowed information pertaining to their discovery and study to reach mass audiences.

In *A History of Paleontology Illustration*, Jane P. Davidson argues that beginning in the Renaissance depictions of fossils were most commonly encountered in instructive texts such as natural history books, where they were described and classified along with other unique geological and biological specimens.[164] In the 19th century, Cuvier and other researchers began including skeletal reconstructions in their texts.[165] This suggests that fossils were most frequently encountered at a distance, in the singular, and in a rudimentary state. While this says less about representing prehistory as a concept, it seems that the tendency has been to visualize prehistoric organisms as discrete objects rather than participants in complex systems.

However, these long-gone environments are not absent in the history of visual culture. Martin J. S. Rudwick provides an overview of the genre in *Scenes from Deep Time*. Because no living person could possibly have witnessed events of the remote past first-hand, it was the illustrator's task to create plausible and instructive images based on scant fossil evidence. In order to do this, they frequently incorporated conventions found in other traditions—specifically natural history and Biblical illustration—in order to make their work intelligible to audiences.[166] These conventions were applied to Darwinian evolutionary theory in the

163O'Connor, Ralph, *The Earth on Show: Fossils and the Poetics of Popular Science, 1802-1856* (Chicago and London: The University of Chicago Press, 2007): 73.

164Davidson, Jane P., *A History of Paleontology Illustration* (Bloomington and Indianapolis: Indiana University Press, 2008): 7.

165Ibid., 42.

166Rudwick, Martin J. S., *Scenes from Deep Time: Early Pictorial Representations of the Prehistoric World* (Chicago and London: The University of Chicago Press, 1992): 237-238.

mid-19th century, to the effect that dinosaurs became representatives of a chaotic and undifferentiated universe whose destruction by the Deluge was an integral part of a teleological narrative culminating in modern humanity.[167] One key lesson in Rudwick's text is that prehistory entered the popular imagination as a frightful reality that was completely foreign, and which must be destroyed to make way for more orderly modern existence. In addition to its savageness, this universe is impossibly distant from contemporary observers; the Deluge, and later the Cretaceous-Paleogene Extinction Event, served as a definitive breaking point. Dinosaurs, as the most spectacular (i.e., the most "advanced") representatives, serve as witnesses to the teleological narratives advanced by some scientists and artists during the period.

We have seen that discontinuity is a dominant theme in the history of pictorial representations of the deep past, and it has also been central for dimensional representations. Even those that claim to offer more sober visualizations, such as museum exhibits, have contributed substantially to the conflation of the figure dinosaur and the concept of prehistory. Museum exhibits operate surreptitiously in this regard, as sheer physicality grants specimens a seemingly higher ontological status than any image can hope for, and the institutions that host them have only recently been critiqued in a substantial way. In *Articulating Dinosaurs*, Brian Noble examines the exhibition of *Tyrannosaurus rex* and *Maiasaura peeblesorum*. These species have come to represent radically different understandings of the Mesozoic. The unfamiliarity of non-avian dinosaurs emphasizes discontinuity as a defining characteristic, and this feeds into a rather circular logic of classification: "the Mesozoic is different because that is when dinosaurs lived, and dinosaurs

167Ibid., 171.

are different because they only lived during the Mesozoic . . ."[168] Both of Noble's examples leverage discontinuity, but to different ends. A turning point occurred during the 1960s, when John Ostrom's research on *Deinonychus antirrhopus* helped to popularize the notion of dinosaurs as active and dynamic creatures.[169] The exhibition of *Maiasaura peeblesorum* continues in this vein by emphasizing parental care, along with the potential for other complex behaviors. Additionally, the exhibition foregrounds research, reconstruction and specimen preparation, which draws back a metaphorical curtain that had been zealously guarded by museum professionals since the industry's early days.[170] Based on these details, Noble argues that the *Maiasaura peeblesorum* exhibition—aptly titled *The Maiasaur Project*—establishes a sense of continuity between the contemporary and prehistoric worlds by proposing a theory of dinosaur behavior that resonates with human relationships, and by showcasing direct interaction with specimens. However, this exhibition can not escape discontinuity; by focusing on the uniqueness of the featured specimen, relying on a rigidly binary understanding of gender, and incorporating entertainment-coded visualizations, *The Maiasaur Project* seems to suggest that even when seeking more nuanced understandings of dinosaur biology and prehistoric ecology it is never quite possible to escape the singular spectacle that is the dinosaur body.

We have seen that the unfamiliarity of dinosaurs marks them as inherently sensational. While this is not unreasonable, dinosaurs also owe much of their sensational status to the manner in which they came to public attention. The moment of conflation between the dinosaur and prehistory can arguably be tied to one specific historical event,

168Noble, Brian, *Articulating Dinosaurs: A Political Anthropology* (Toronto: University of Toronto Press, 2016): 46.
169Ibid., 136.
170Ibid., 191.

which James A. Secord discusses at length in "Monsters at the Crystal Palace." This text examines Benjamin Waterhouse Hawkins' outdoor installation for the Great Exhibition (1851) as an event at which commercial capitalism and rational education converged,[171] and which hosted the first sculptural display of prehistoric animals designed for a mass audience. Leveraging the large-scale interest in visual spectacle during the 19th century, Hawkins' display possessed a number of important features, the most obvious of which is scale. The concrete models, which represented a variety of extinct animals, were considerably larger than life-size. Although this was partially a practical decision, as visitors would be viewing from a distance, the figures easily dominated the elaborate fabricated landscape which housed them. While previous illustrations had for generations situated charismatic animal figures as central figures in prehistoric landscapes, they fell mostly within accepted margins in terms of scale. Hawkins' immense beasts therefore accomplished physically what pictorial images had generally only approached discursively.

Secord's also links dinosaurs to the mechanisms of advanced capitalism. As an object of mass entertainment, the display was inherently polysemic, since it presented a "world before our own" that was interpreted alternatively as a vibrant and evolving environment, or as a doomed antediluvian one.[172] Finally, a series of miniature models, which foreshadow those offered at museum gift shops to this day, was produced and sold to educational institutions. Along with posters and other printed material, these models allowed the sculptures to circulate, at least in some form, to a wider audience than would ever have seen them in person.[173] Publicity materials seem to indicate that of the roughly 15 genera

171Secord, James A., "Monsters at the Crystal Palace," in *Models: The Third Dimension of Science*, ed. Soraya de Chadarevian and Nick Hopwood (Stanford, CA: Stanford University Press, 2004): 139.
172Ibid., 158.
173Ibid., 162.

represented in the exhibit, only the reptile figures were reproduced as miniatures. Whether this represents the continuation of an existing bias, or the introduction of a new paradigm, it is clear that at the time of the Great Exhibition dinosaurs, as its most popular and profitable inhabitants, were seen as fitting ambassadors of the Mesozoic. Whether or not it was intentional the Crystal Palace Dinosaurs took advantage of an existing representational strategy, demonstrated its profitability, and distributed it as a commodity to a mass audience that was yearning for spectacle.

While the creation of the Crystal Palace Dinosaurs helped to usher the dinosaur into the mass market, the relationship was to mature several decades later across the Atlantic. In *Assembling the Dinosaur*, Lukas Rieppel examines how industrial business practices in the late 19th century inflected the science of paleontology, and the practice of museum exhibition. Links between the emergence of the dinosaur in the public imagination, and the rise of American capitalism, are particularly intriguing. During the late 19th century, dinosaurs came to be viewed as quintessentially American. The abundance of fossil caches and the scale of individual specimens—many of which dwarfed their European counterparts—conspired with the vastness of the landscape and the rapidity of industrial development to characterize American dinosaurs as the grandest and fiercest in the world.[174] This link to business is especially important, as dinosaurs entered popular scientific discourse primarily through philanthropic museums. In addition to being objects of scientific interest and economic exchange, emerging industrialists recognized that fossil specimens possessed great symbolic capital; many sought to secure their legacies by working through display

174Rieppel, Lukas, *Assembling the Dinosaur: Fossil Hunters, Tycoons, and the Making of a Spectacle* (Cambridge, MA and London: Harvard University Press, 2019): 26-27.

institutions to develop high-profile public education endeavors.[175] As a result, non-profit museums became increasingly dominated by administrative logic derived from business. In particular, the need to manage excavations at a distance, and to efficiently process the materials they sent back, led to the adoption of a variety of information technology practices —such as the standardization of systems for representing dig sites and cataloging specimens —by paleontologists and museum professionals during the period.[176] While these trends are not apparent to many museum visitors, the fact that fossils circulated very publicly in both tangible and intangible economies, alongside their numerous representations in emerging media technologies, indicates that by the early 20th century the dinosaur was likely already an abstract object in the public imagination.

Manipulating Rider Subjectivity Through Narration

Much can be learned by examining the storytelling strategies of an attraction such as *Dinosaur*, beginning with its relationship to established amusement park genres—which is apparent in its preshow. The preshow is a common device in the theme park industry, which typically takes the form of an audio-visual presentation that explains the narrative context of an attraction, and often provides safety and other operational information. In *Dinosaur*, riders encounter the preshow after traversing the queue through the Dino Institute. Riders enter a standing theater with automatic doors on each side, which features a large projected video. The first segment of this presentation is hosted by Dr. Helen Marsh, director of the Dino Institute. Marsh addresses riders directly, commenting on the "quaint old" exhibits they have just seen and describing the Dino Institute's mission to revolutionize paleontology

175Ibid., 46-47.
176Ibid., 122.

research and education. This push toward advancement is literalized through the introduction of the Time Rover, a proprietary time travel vehicle. Marsh explains that riders will soon board these vehicles to begin a sight-seeing trip to the early Cretaceous period.

The scene transitions to a live feed from a control room, which is hosted by Dr. Grant Seeker, a Dino Institute researcher overseeing the tour program. Seeker sets the plot of the attraction in motion by announcing his plan to hijack the upcoming tour and divert the Time Rover from its intended path in order to retrieve a particular *Iguanodon bernissartensis* specimen living at the end of the Cretaceous. According to Seeker, this Iguanodon—who is vaguely associated with the protagonist from the 2000 film of the same title—holds the questionable title of being the key to understanding all dinosaurs. Seeker is interrupted by Dr. Marsh's entry into the control room, and her protestation that such a plan endangers riders by positioning them too close to the Cretaceous-Paleogene Impact Event. Seeker appears to concede, and proceeds to give a safety briefing, then quickly reverts to his former plan immediately following Marsh's departure. With the knowledge of the new unofficial mission, riders are released from the preshow theater to enter the loading area for the ride portion of the attraction.

Deborah Philips explores several common amusement park genres in *Fairground Attractions*, and argues that attractions in the "Adventure" mode derive much of their iconography from popular British serials directed at boys. These publications from the late 19th and early 20th centuries offered vivid descriptions of dangerous exploits in what were then-newly colonized lands, in order to allow a White male hero to establish himself atop the symbolic order.[177] This hero—H. Rider Haggard's Allan Quatermain is a quintessential

177Philips, Deborah, *Fairground Attractions: A Genealogy of the Pleasure Ground* (London and New York: Bloomsbury Academic, 2012): 151.

example—was an individual who simultaneously transgressed and reaffirmed boundaries by operating in both the centers and the peripheries of their imperial worlds. Philips finds similar threads in American youth fiction of the same period, although it is important to note the presence of the remote past in the public imagination in this context. Schuller reminds us that the conquest of the American West was supported by activities of scientists, who imposed an ostensibly neutral theoretical framework on indigenous territories, and in doing so marked the land and its inhabitants as targets for future political and military activity.

As a representative of the Dino Institute, Dr. Grant Seeker aligns with the imperial science projects seen in Philips' examples. While the racial and gender dynamics of the plot are downplayed—likely due to the attraction's institutional affiliation—Seeker's status as a liminal figure is noteworthy. It is revealed during the preshow that he has been reprimanded for carrying out unauthorized expeditions, and his improbable obsession with a single specimen further highlights his apparent orientation toward the wilderness of the remote past. As an oganization, the Dino Institute embodies the tension surrounding the extractive logic that underpins modern relationships with the remote past, which entertainment and paleontology research frequently mask. Much like the adventure serials discussed by Philips, rider alignment with field- vs. laboratory-based approaches to paleontology—characterized by direct engagement and distanced observation, respectively—represents, if not a dissatisfaction with the privileged position of modern science, at least an interest in inhabiting multiple positions in the symbolic order. Although the Cretaceous-Paleogene Extinction Event has no human cause, surviving the destruction of the dinosaurs represents a symbolic victory for individual riders, and this victory is made more poignant by our species' eventual rise to dominance based on fossil fuel extraction.

Structurally speaking, Adventure attractions are organized around distillations of exciting incidents, which align riders with the explorer-hero. This is based on traditions that date at least as far back as the Crusades, in which a European Christian hero travels to "exotic" lands in the course of his civic or ecclesiastic duties. The images evoked by texts, and later added to print versions, are based on standardized signifiers that connote the "exotic," and are frequently marked by historical and geographical confusion.[178] Similarly, *Dinosaur* is oriented around a series of spectacular and visceral encounters with charismatic prehistoric reptiles, which are staged according to well-established conventions that signify prehistory and savage nature. Although they suggest a coherent environment, scenes that take place during the Mesozoic do not represent any known ecosystem, as modern museum displays frequently do. The dinosaur characters are instead encountered individually, or in rare cases in small groups, and are situated so as to address riders, rather than each other. These figures are located adjacent to the ride track, they face the vehicle, and they are posed in such a way that their physicality is always emphasized. Rather than simply existing or, as logic would dictate, attempting to escape the impending impact, they are staying put to perform for riders. Since references to paleontology exhibition are included in the queue and preshow, the attraction declares itself to be the pinnacle of research, but upon arrival in the late Cretaceous, riders find an eclectic collection of signifiers rather than a truly coherent environment. While such ecosystems did exist in abundance during the Mesozoic, the attraction ignores the diversity of prehistoric landscapes to locate the action within a generic jungle whose purpose is overwhelmingly dramatic. Furthermore, all of the dinosaur specimens are compressed into a single spatial and temporal context, whereas the animals in

178Ibid., 145-146.

fact lived across the globe and were separated by up to tens of millions of years. While orienting a critique around pointing out scientific inaccuracies in popular entertainment is of little value, it is telling that in an adventure narrative context it is the fate of the hero to triumph over adversity through a series of fantastic encounters with a hostile and undifferentiated wold at the edge of consciousness for polite society.

While many remain recognizable after more than a century of use, certain adventure narrative tropes have been altered. In the case of Disney's Animal Kingdom, the figure of the explorer, with whom the audience is consistently identified, is no longer explicitly aligned with empire. Rather, this figure has been rebranded as an advocate for ecological and conservation interests. Nonetheless, much of the iconography of the adventure narrative is preserved, and the park's attitudes still align with imperial Eurocentric visions of the world.[179] The Asia and Africa sections of the park are amalgams of various signifiers of the Himalayas and parts of Southern and Eastern Africa, respectively. In addition to wildlife displays, these lands include buildings and signage that are styled after local referents. These lands represent regions with a considerable and longstanding British imperial presence, and there are parallels in the case of Dinoland, U.S.A. Here, the mission seems to be the colonization of the Mesozoic by American capitalism, which is represented by the Walt Disney Company. Rather than the material extraction presented by attractions in other areas of the park—elephant ivory in the original version of the Africa's *Kilimanjaro Safaris*, or lumber and tea, respectively, in Asia's *Kali River Rapids* and *Expedition Everest - Legend of the Forbidden Mountain*—Dinoland, U.S.A. and the *Dinosaur* attraction offer a form of symbolic extraction that sidesteps ecological issues and concerns surrounding the use of animal bodies.

179Ibid., 160-161.

While *Dinosaur* relies heavily upon Adventure iconography, aspects of the physical experience are relevant to other conversations about genre. Linda Williams characterizes pornography, horror and melodrama by reference to their excessive pursuit of affective assaults on the body as the basis for pleasure. For horror and melodrama audiences in particular, the threat of bodily harm and the act of weeping, respectively, are foregrounded. Beyond their excessive indulgence in spectacle, their lapses in Classical Hollywood realism and their appeal to primal emotions, Williams is interested in the way these genres problematize previously-theorized relationships between spectatorship and demographics.[180] As a "family" attraction, *Dinosaur* appears unamenable to this schema, since it is located in a resort designed to appeal to vacationing families, it references a popular animated film, and it is technically available to anyone meeting the 40" height requirement. However, the attraction relies upon many similar bodily excitations. The fear of bodily destruction through predation by an unfeeling and mechanized adversary invokes anxieties similar to those of horror, particularly the slasher subgenre. Fear of predation also implies an existential re-organization, as *Dinosaur* removes modern humans from the top of the food chain. Furthermore, by orienting the plot of the attraction around a decisive moment in evolutionary history—when the survival of our early mammalian ancestors depended upon their ecological subordination to the dominant organisms—*Dinosaur* resonates with melodrama in its desire to return viewers to an earlier developmental stage. As it is driven by a plot that serves as a framework for a series of spectacular encounters, the attraction orchestrates a series of bodily and emotional shocks that culminate in a tremendous release as riders escape with their lives at the last possible moment.

180Williams, Linda, "Film Bodies: Gender, Genre, and Excess," *Film Quarterly* 44, no. 4 (Summer 1991): 3-4.

Williams argues that these genres manipulate viewers by prompting pre-conscious—though not unanticipated or unwanted—reactions and attempting to match these to that which appears on screen.[181] Film spectatorship necessitates engagement with perverse visual pleasures, which vary based on the genre and the assumed audience. These pleasures are grounded in audiences' identification with characters, and the development of bodily equivalence. This highlights a rather significant point of divergence, as *Dinosaur* and other theme park attractions are by definition experienced from inside. Parks and attractions are consistently referred to by designers and industry personnel as film or theatrical sets which visitors enter directly.[182] This eliminates the mediating presence of the screen, and it offers visitors only physical bodies with whom they share some ontological status. Furthermore, the plot of *Dinosaur* can be divided between modern and prehistoric segments. In the modern segments—the queue, preshow, loading area and gift shop—the human presence is confined to screens and other audio-visual formats. These provide operational information and exposition, and familiarize riders with the structure of the attraction. The prehistoric segment—the bulk of the ride portion—features no visible human characters, and during this most dramatic segment the only way for riders to engage the narrative is through direct participation.

Direct participation is facilitated by *Dinosaur*'s ride vehicles, which physically transport riders through the show space, and heighten the drama through their exaggerated movements. In the attraction's loading area, riders encounter full-size versions of the vehicle that was introduced as a model in the preshow. This ride system is known as the Enhanced

181Ibid., 5.

182*Disneyland: Secrets, Stories & Magic*, directed by Bob Garner and Pete Schuermann (2007; Burbank, CA: Walt Disney Studios Home Entertainment, 2007), DVD.

Motion Vehicle, which consists of an open 12-seat hydraulic platform—similar to that used in Disney's other motion simulator attractions, such as Star Tours—which is mounted on top of 4 wheel drive carriage guided by a slot in the floor. The vehicle travels through the show building, and uses the hydraulic system to simulate bumps and exaggerated inclines, as if riders were traveling off-road through a dense forest. In addition to simulating road conditions, the hydraulic system is programmed to react to elements of the show scenes—for example: by recoiling at the sudden appearance of a dinosaur antagonist. While it would be too much of a stretch to consider the ride vehicle a character, the fact that it is capable of reacting to the environment allows it to function as a surrogate body for riders. This bodily entanglement with the action in the show building accomplishes physically what Williams describes visually for film audiences.

Ultimately, Williams problematizes rigid distinctions between audience experiences in several key body genres, and *Dinosaur* furthers this by eliminating on-screen bodies and even the screen itself. The attraction positions riders as prey, and throughout they are at the mercy of the carnivores (as characters) and the ride system itself (as tourists). Rather than active agents, they are reduced to sensing bodies, and this introduces tension as the attraction is premised upon the technical mastery which is typically used to elevate our species above others. This juxtaposition offers riders a sort of non-identity, which is its most vivid and existentially troublesome threat.

While the plot of *Dinosaur* threatens riders in fascinating ways, the attraction suggests other dangers when viewed as a popular media text. Luke White explores the compound threat of uncontrolled nature, paired with uncontrolled capitalism, in “Damien Hirst's Shark.” Hirst's 1991 sculpture, “The Physical Impossibility of Death in the Mind of

Someone Living," presents a 14-foot Tiger Shark, which is preserved in formaldehyde and suspended inside a display case. For White, the shark symbolizes a "universal" trigger for fear in humans, and it also captures shifting ideas about nature and the sublime. These ideas, which formed when capitalism began to emerge during the Enlightenment, are still relevant. *Dinosaur* simulates dinosaur bodies and presents them as representations of a return of wild nature during a time of increasing awareness of interconnected ecological and financial crises. Beyond this, viewing the attraction in light of its necessary technical and institutional and apparati allows us to understand how these issues intersect in the contemporary entertainment and tourism industries.

White argues that the shark is a hyperbolic example of the property of sublimity, which characterized nature for Enlightenment thinkers. In this context, a hostile nature acts in contempt of the tendency toward rationalization. Similarly, emerging capitalism operated according to its own motivations, rather than divine or civic mandate, and thus exceeded the capacity of systematic thought to contain it. This equivalence persists in shark-related fiction to this day.[183] *Dinosaur*'s version of nature functions in much the same way. It is wild, uncontrollable, and is meant to be observed and marveled at; it only becomes interactive through the mediation of taming or domestication. While the attraction opened well before the 2009 Financial Crisis, it can arguably be read as evidence of anxiety over consolidations in the entertainment industry during that period—Disney had acquired ABC in 1996, and had narrowly avoided a hostile takeover itself in 1984—as well as a concurrent shift from passive to active models of engagement with narrative media. This includes the growing popularity of video games, the emergence of VR as a mainstream entertainment format and the rise of

183White, Luke, "Damien Hirst's Shark: Nature, Capitalism and the Sublime," *The Tate Papers* 14 (October/November 2010): 7-8.

the commercial internet. In this context, new media formats can be seen as expressions of a hostile and uncontrollable media industry, to which a physical attraction serves as a foil.

White positions the shark as a monster that is peculiarly suited to the moment of contact between the old and new worlds. The names that were applied to the animal during this period—tiburón and shark in Spanish and English, respectively—were borrowed from the indigenous languages of colonized territories. The use of new world languages to describe a creature increasingly seen as a menace allowed the violence apparently inherent to the animal, as well as to imperial expansion, to be pushed away from European capitals as they reached for the edges of the map.[184] Interestingly, *Dinosaur* contains some of the very few explicit references to interspecies species violence in Animal Kingdom. While the original plot of *Kilimanjaro Safaris* concerned poaching, this was quickly eliminated. Similarly, *Kali River Rapids* was designed with an anti-logging message, and while still present this theme was never made explicit. *Dinosaur* does not attempt to hide violence, but uses prehistory to relocate it. By depicting predation and aggression as occurring in the remote past, it shifts ecological violence relative to time, where other attractions have done so in terms of space.

Although the concept of the sublime has a long history, White is concerned with the cyclical nature of its presentation in Hirst's sculpture and beyond. The contemporary image of the natural sublime emerges when the concept of a unified planetary system has both ecological and economic connotations. While the merging of these two theoretical frameworks is somewhat new, the order that results is still imagined with the old geographies of empire.[185] We have already seen that *Dinosaur* takes place at a time of growing awareness

184Ibid., 10.
185Ibid., 15.

of both ecological and economic crises, but the current moment also offers increasing public understanding of the historical roots of ecological and demographic violence. This can be seen in recent efforts by exhibition institutions to decolonize collections, recognize indigenous claims to land, and diversify research and exhibition practices. It is possible that, in addition to laying a conceptual claim on the remote past for the Walt Disney Company, *Dinosaur* engages temporality and chronology directly in order to sidestep questions of mediation and representation.

Manipulating Time Through Ride Systems

Dinosaur is based on two-way time travel; that is: riders are transported into the remote past, and then brought back. This simple premise masks a more nuanced and medium-specific approach to the movement and manipulation of temporality. Specifically: *Dinosaur* involves a two-way trip into the remote past, which serves as a setting for a series of spectacular encounters that ultimately affirms our identity as a species that is set apart by its understanding and mastery of temporality. A close examination of the on-ride portion of the attraction illustrates some of the technological and relational aspects of the experience and manipulation.

There is an interesting narrative dynamic at play during roughly the first half of the ride, as the vehicle's sight-seeing protocol is obviously in tension with Seeker's scheme; charismatic dinosaur specimens are identified by the onboard computer as vehicles pass the robotic figures, while Seeker commentates and explains mission objectives over the intercom. An early encounter with a *Carnotaurus*, mistakenly thought to be the *Iguanodon*, introduces the predatory species as an antagonist, and from his point Seeker's mission begins

to dominate the original sight-seeing protocol—this protocol will not disappear entirely, as the onboard computer can be heard identifying animals throughout the rest of the ride. Seeker engages the vehicle's tracking system to find the *Iguanodon*, which, along with escaping the impact, quickly becomes the new mission objective. The remainder of the ride consists of attempting to find the *Iguanodon* under the threat of the impending impact—whose proximity is made apparent by a countdown over the intercom and visible destruction in the surrounding scenery—all while being harassed by the *Carnotaurus*. Just as Seeker decides to call off the mission, the vehicle is "rescued" by the *Iguanodon*, whom it encounters just before the moment of impact—which the onboard computer has somehow managed to track, down to the second—and the riders are returned to the Dino Institute in the present. As the vehicle approaches the station, Seeker explains that the expedition has safely returned, and was even successful in retrieving the *Iguanodon*.

While *Dinosaur* is intended to thrill riders with the illusion of unpredictability, since it ultimately returns them triumphantly to the present, our species' control of time remains unchallenged. Bill Schwarz argues that modern humanity articulates itself as both modern and human through media use, and that media use is critical for establishing our relationship to time. The concept of media time concerns the inherent time of various media artifacts, as well as the sensations and experiences of time that are made possible by mass media. As the study of history concerns both human life and the humanity's self-realization, this external time is tied to the ways that communities engage information collectively. In this way, media time always inflects historical time.[186] While historical discourse traditionally operates at the scale of human societies, the public experience of mass media can be used to extend our

186Schwarz, Bill, " Media Times/Historical Times," *Screen* 45, no. 2 (Summer 2004): 99.

species' relationship to time at a much larger scale. *Dinosaur* attempts to merge human time and geologic time by manipulating three distinct, but intersecting chronologies. First, riders act in accordance modern human temporality, which concerns directed activities that occur at the scale of days, weeks and months. As part of the leisure industries, the attraction and the park turn toward abstraction through their ability to convert time to data and shift its focus toward categories such as seasons. The diegesis of the attraction includes geologic time, which progresses on the scale of millions of years. The Mesozoic and the remote past are by definition set apart from human time, and because of their immense scale they are only comprehensible by indirect means. The attraction's temporal structure, which is organized by narration, draws these two chronologies together.

In order to understand how this occurs, we must first examine how *Dinosaur* fosters a unique and significant mode of engagement for riders. Schwarz argues that format determines narrative possibilities, and that during the early part of the 20th century, film, television and radio each made new modes of thought possible; these experiences offered new imaginaries in the interior and exterior lives of audiences.[187] The influence of media on historical discourse has parallels in the themed entertainment industries, and Joel Zika discusses the emergence of the dark ride—a type of attraction characterized by small slow-moving vehicles which transport riders through a series of highly-controlled theatrical sets that tell a coherent story or reflect a central theme—as an important step in the development of immersive entertainment technology. Specifically: dark rides fostered private personal engagement with immersive sensory environments.[188] In contrast to film, television and

187Ibid., 94.
188Zika, Joel, "The Dawn of the Dark Ride at the Amusement Park," Proceedings of the *Conference on Interactive Entertainment* (2014): 1.

radio, *Dinosaur* and other dark rides embed moments of private engagement within very public outings.

The narrative and aesthetic characteristics of *Dinosaur* help to frame riders' relationships with Deep Time, and its institutional and formal structure does the same. From the standpoint of aesthetics, such attractions re-present long-standing conventions in paleontology illustration to characterize the Mesozoic as a time of wonder and danger. We have seen that under the influence of Biblical illustration, prehistoric creatures were historically portrayed as inhabiting a savage and utterly alien world, which was far removed from any current reality. In this barbaric past, which must be destroyed to make room for a more civilized modern world, human time travelers are no longer protected by the voyeuristic mechanisms of cinema and television, and must escape to avoid permanent immersion. Furthermore, the commercial entertainment context in which the *Dinosaur* attraction, the Animal Kingdom park and the Walt Disney World Resort are situated, dictates a unique set of behaviors and relations against which scientific inquiry takes place. Sensational displays have always figured prominently in popular science presentations, and *Dinosaur* adds to this by imposing the disciplinary structure of the theme park. Rather than simply viewing astonishing phenomena through an apparatus that enhances the capabilities of the human eye, riders are offered a semi-private journey to a seemingly uncontrolled environment whose success depends upon its ability to exceed human perceptual bandwidth.

For Schwarz, the figurative habitation of faraway places is a distinctive property of modern life; this is accomplished visually through film and television, and aurally through radio.[189] In these cases, transportation is both public and highly spatialized, and Schwarz

189Schwarz, 98.

argues that considering the temporal characteristics of mass media is vital to understanding the public's relationship toward historical time. *Dinosaur* combines visual and aural stimuli with the physical sensations produced by the ride vehicle, and organizes all of these under a narrative framework that facilitates performative engagement. By emphasizing physicality and verisimilitude, the attraction positions riders as participants rather than observers, and in locating the narrative action at a spatial and temporal distance, it positions them definitively as modern. This establishes a link between the contemporary human and geologic timelines.

Paul Ricoeur argues that narrativity and temporality have a reciprocal relationship. Since the act of being-in-time is distinct from measuring the intervals between instants, reckoning with time must precede measuring it. Reckoning with time concerns human attention and effort, and thus natural measures of time—such as days or seasons—provide references for representing time in the abstract, as these are closely intertwined with our own activities.[190] For modern humans, our being-in-time is completely removed from Deep Time, and therefore anything beyond the horizon of *Homo sapiens* can only be engaged in the abstract or reckoned with by analogy. This is a mathematical problem, as the geologic scale is largely beyond direct human comprehension, and a symbolic one, as there is no viable way to link hundreds of millions of years of evolutionary time with any human activity. Integrating these two timelines based on everyday human reckoning is thus essentially impossible.

It is not enough to simply point to significant actions, as action must first be vectorized before they can take acquire temporal significance. Since actions in a story have directedness, the story's conclusion serves as the pole of attraction for all actions within it.[191]

190Ricoeur, Paul, "Narrative Time," *Critical Inquiry* 7, no. 1 (Fall 1980): 173.
191Ibid., 174.

The Cretaceous-Paleogene Impact orients the actions that occur within *Dinosaur*, and the attraction brings human and geologic timelines into contact by providing a common pole of attraction; this was made even more explicit the attraction's original title: *Countdown to Extinction*. It is important that the timeline for riders overshoots this moment, as the vehicle is miraculously returned to the present at the last moment, which allows the extinction to proceed unhindered. The design of the attraction renders most independent action impossible for riders; that is: vehicles follow a pre-determined path in accordance with a pre-determined schedule. Furthermore, as the diegetic action is determined partially by the vehicle's onboard computer and partially by Seeker, moments of reckoning with time remain well outside the influence of riders. The resulting loss of rider agency offers an opportunity for manipulating the movement of time.

In a moment of action, in which agents insert themselves into the course of world events, world time begins to take precedence of the instant. This is not possible for *Dinosaur*, as the attraction is designed to inspire feelings of helplessness in riders. Helplessness is critical, as world events—in the form of the impact—are ultimately denied the opportunity to surpass individual actions in the minds of riders (even though their possible actions are limited). Ricoeur argues that by articulating within-timeness, an acting agent creates a point of intersection between ordinary and world time, which narrative helps to frame.[192] However, where other stories use moments of action to allow agents to surrender to larger concerns, *Dinosaur* maintains its focus on momentary encounters, to the extent that the impact simply becomes one of them. In this way, the attraction destabilizes the pull of temporality, and provides an important opportunity for manipulation beyond the obvious feat

192Ibid., 177.

of two-way time travel.

While narrativization helps to contextualize the relationship between time and action, Ricoeur's comments on the role of communication media illuminate the ways that *Dinosaur* uses its status as an amusement attraction to manipulate temporality. Hartmut Winkler argues that temporalizing and spatializing are parallel mediating processes. Winkler defines media as devices that shift the mobility of information between time and space by using one to overcome the constraints of the other.[193] Temporalization describes a transition from stasis to process, while spatialization describes the reverse.[194] Fossilization involves a transition from a once-living organism to a persistent object, and it relies upon the mediation of geological processes to facilitate the transition. This is a form of spatialization, as the death and mineralization of an organism fixes some of its "information" in a format that will persist longer than the original organism otherwise would. Once completed, however, this process is irreversible, and this stands in contrast to the recording media discussed by Winkler. The Walt Disney Company is somewhat more successful in this regard, as *Dinosaur* re-animates prehistoric bodies through through the use of proprietary methods of simulation.

Winkler's model can be extended to the theoretical framework that informs *Dinosaur*, as the attraction uses the fossil as a metaphor for traditional approaches to paleontology research and exhibition. Finding, excavating and examining physical evidence is portrayed as outdated and static; while traditional museum exhibits preserve the traces of the past, they are unable to reconstruct it as a dynamic reality. In the diegesis of the attraction, the Dino Institute uses time travel as a mechanism to access information about the Mesozoic world in

193Winkler, Hartmut, "Geometry of Time: Media, Spatialization, and Reversibility," presentation at the conference *Media Theory on the Move* (2009): 7.
194Ibid., 9.

a time-oriented format. Curiously, their approach is not grounded in direct action involving prehistoric animals or their remains; that is: spatialization is sidestepped altogether, as the Time Rover vehicles interact directly with the space-time continuum. In fact, it is Disney that fulfills the Dino Institute's promise to move beyond traditional paleontology and re-temporalize Deep Time.

Winkler goes on to argue that temporal processes, as they are experienced, are for the most part irreversible. They can, however, be made reversible through processes of spatialization. Friedrich Kittler describes this as Time Axis Manipulation.[195] Fossils can not be revitalized, as death in the physical world is by definition irreversible, although fiction has provided some intriguing hypothetical workarounds. The *Jurassic Park* franchise is perhaps the best known example. Here, extinct animals are reduced to data streams by mosquitoes and other blood-sucking insects, who retain DNA in the blood they ingest, which is then preserved when the insects themselves fossilize. This genetic information is later harvested, processed and used as the basis for reconstructing the long-departed dinosaurs as engineered organisms. The process of spatialization, followed by temporalization, positions the franchise's dinosaur characters as being derived largely from the symbolic order.

For Winkler, the reversal of time is only possible in symbolic space, and this space is frequently characterized by conditions of play.[196] Since it is located in a major American theme park, *Dinosaur* participates in a symbolic space in which the re-ordering and manipulation of reality is expected and celebrated by its inhabitants. Additional forms of reversibility are made possible within its show building. Most obviously, the attraction's plot is oriented around backwards movement through time. However, the more intriguing

195Ibid., 10.
196Ibid., 11.

operations, are the temporal manipulations that the various show elements perform. These are accomplished by producing physical representations of information drawn that was drawn from the symbolic register, which was itself derived from a prehistoric environment.

Jake Fraser sees recording media as a means of Time Axis Manipulation. Recording the flow of time allows for the retrieval or repetition of a given event, episode or period. This renders the past present once more, and it enables the reordering of a chronological sequence.[197] Following Winkler, the act of recording also generates a symbolic representation of a given event, which allows for its manipulation and re-presentation. Manipulating an event in the symbolic register, then circulating the manipulated version through exhibition or copying, can facilitate substantial shifts in the course of the event, or even the fabrication of new events from unrelated elements. The fabrication of new events forms a critical part of *Dinosaur*'s conceptual foundation.

The use of increasingly sophisticated recording media has expanded the possibilities for reversibility. In particular, digital synthesis allows for extrapolation from existing data to produce convincing representations of events that may not have occurred to begin with.[198] The animatronic figures used in the *Dinosaur* attraction serve as a fine example, as they provide dimensional recordings of individual animals that never lived. Since the processes of spatialization and temporalization are complementary, a process of spatialization such as recording, allows the ephemeral flow of time to be preserved in a durable support medium. Furthermore, this storage medium also acts as a platform for processing, which allows for the manipulation, and ultimately the re-temporalization, of the original flow.[199] Returning to the

197Fraser, Jake, "Turning Back Time: Friedrich Kittler, Reversibility, and Media of Time Axis Manipulation," *The New Centennial Review* 21, no. 1 (Spring 2021): 40.
198Ibid., 49.
199Ibid., 50.

animatronic figures used in *Dinosaur*, we can now see that the attraction jumps media in its efforts to re-temporalize the bodies and movements of prehistoric animals. Using data collected from fossil specimens—themselves static impressions of once-living animals—Disney personnel created figures that replicate the spatial characteristics of prehistoric bodies. Once constructed, these figures were animated frame-by-frame to create movements that were synchronized to an existing soundtrack. Furthermore, these programmed movements—which are said to capture naturalistic motions, based on the examination of fossils—operate on well-defined cycles and can be repeated, halted and adjusted in any way that the mechanics permit.

Disney's Animal Kingdom as a Setting for Consuming Animal Bodies

Operating as part of a wildlife- and conservation-themed park, *Dinosaur* is involved in an industry that converts abstract concepts and their material bases into consumable goods and experiences. This may seem odd, since aside from tenuous connections to the 2000 film, the attraction has few tie-ins to the Animal Kingdom park or the Disney brand. A brief examination of *Dinosaur*'s exit reveals its complicity in Disney's marketing strategy. After leaving the loading area, riders must pass through the attraction's gift shop to return to the park. As a reminder of the fate they have narrowly avoided—albeit temporarily—a prominent mural depicts several well-known dinosaur, fossil bird and mammal species, arranged in a parade formation under a text heading that reads simply: “EXTINCTION.” Several security monitors in this area show the aftermath of the ride experience—the *Iguanodon* wanders the hallways of the Dino Institute, while Dr. Marsh directs Seeker and other staff members in corralling the curious animal. Like many others in the park,

Dinosaur's gift shop features a mixture of attraction, film and park merchandise, as well as on-ride photos. Unremarkable though it may seem, *Dinosaur*'s gift shop demonstrates how framing and staging can influence consumer behaviors.

Jennifer Price's study of the retail chain, The Nature Company, describes how the idea of nature has been integrated into middle class consumption in the last quarter of the 20th century. Price argues that The Nature Company maintains a delicate balance by enticing shoppers with the promise of "Nature," and simultaneously inspiring suspicion about the concept. In short, it aims to sell to customers who are already inclined toward skepticism.[200] The tension between embracing the ideal of nature and its critique is vital to any enterprise of this type, as it leverages aspirational sentiments in its (mostly) middle class customers. By juxtaposing varied meanings of a concept such as "Nature," venues like The Nature Company imply that the concept can be personalized while positioning customers as conscious and discerning consumers.

Similarly, Disney's Animal Kingdom Theme Park navigates an assortment of meanings for the word "animal," which in this context refers to organisms, merchandise and the Walt Disney Company's animated characters. This is largely due to the fact that the park is situated firmly within a commercial entertainment context, as opposed to many traditional zoos and wildlife parks—although there has been a great deal of convergence between these venues in recent years. There is a tension between visitor expectations of authentic animal experiences and the obvious construction of a visit to any themed entertainment site, however this ultimately helps to elevate the product. Based on the reputation of the brand, any Disney

200Price, Jennifer, "Looking for Nature at the Mall: A Field Guide to the Nature Company," in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W.W. Norton & Co., 1996): 191.

theme park will be able to present itself as an outstanding entertainment experience with little additional effort. Animal Kingdom can use its wildlife- and conservation-orientation to distinguish itself further, as it is the only one of the company's parks to embrace these themes fully. In doing so, the park draws on the prestige of the Disney parks and resorts, and adds references to ecological and social consciousness through its theming.

Because accessing "Nature" requires a vacation in the first place, there are fascinating geographical implications for middle class consumer interaction with the non-human world. The concept of "Nature" counters the notion of placelessness that characterizes modern life, which is exemplified by institutions such as shopping malls. Unlike the immediacy and activity typically associated with cities and suburbs, "Nature" is characterized as static and tranquil. The Nature Company's retail stores assuage anxieties about the modern loss of place by using design to evoke non-human locations such as forests.[201] Moving a step further, Animal Kingdom exemplifies and transcends the theme park industry's tendency toward placelessness. Anaheim's Disneyland Park, and the other Magic Kingdom-style parks that follow its design, echo the midcentury American celebration of human motion through transitory spaces.[202] The transient nature of tourist populations, many of whom visit the resorts for relatively short stays, works in combination with architectural and design strategies in service of this goal. These include the liberal use of well-established iconography for in-park building façades, which tends to favor recognizability at the level of genre over text, and the often generic design of non-park spaces such as parking structures, which are typically coded for operational efficiency rather than textual integrity. These and

201Ibid., 194-195.

202Schwartz, Vanessa, *Jet Age Aesthetic: The Glamour of Media in Motion* (New Haven and London: Yale University Press, 2020): 62.

other strategies position parks and attractions as destinations that, while they share space and some thematic continuity, often operate largely independently from their immediate physical settings, and favor efficient movement through and between a series of spectacular moments, rather than a sustained interaction with an explicitly-defined location.

Animal Kingdom attempts to counteract placelessness by developing themed lands as specific locations with unique backstories. These include the fictional villages of Harambe and Anandapur in the park's Africa and Asia sections, the planet Pandora from the *Avatar* franchise and in the case of *Dinosaur*, Dinoland U.S.A. This themed land—which is not based on any real-life location—is dominated by two fictional institutions: the Dino Institute, and the adjacent Chester and Hester's Dino-Rama; all attractions within the land are set in this shared diegesis. This specificity is meant to contrast with everything outside the gates, and establish the park as a tangible "other" space. Visitors approach the park from a modern highway system which is surrounded by well-manicured local wood- and wetlands. With the exception of a few large attraction structures, the interior of the park is not visible from the unadorned parking lot, and it is not possible to ascertain its content or layout without entering through the main gate. Like The Nature Company's retail stores, which tend to be located within shopping centers, Animal Kingdom presents a seemingly static, distant and organic space that exists within—and offers relief from—hectic, sterile and over-fabricated commercial spaces.

Although its retail stores are advertised as being distinct from other commercial spaces, The Nature Company still encourages shoppers to approach the natural world as consumers. Shopping, buying and gift-giving demonstrate personal commitments to ideas about nature that are largely informed by middle class American values. The stores

characterize nature as anti-consumptive in order to create an anti-consumer consumer base. This elevated conception of its shoppers is aided by consumer- and company-level contributions to conservation organizations, which attempt to frame shopping at The Nature Company as helping nature.[203] In addition to positioning shoppers as discerning anti-consumers, emphasizing conservation efforts works to elevate customers. Additionally, there is a suggestion that by using part of their revenue in this way, The Nature Company attempts to link the shopping experience to technical expertise; engaging in or supporting rational investigation is central to middle class notions of ecological responsibility. This characterizes shopping at The Nature Company as smart spending, and we will see that Dinosaur leverages connotations of technical expertise in several key ways.

Similarly, Animal Kingdom attempts to characterize its visitors as anti-tourist tourists. We have seen that the Disney brand connotes premium entertainment, and Animal Kingdom leverages this prestige in its presentation of live animals. Rather than unadorned enclosures, the park presents animals in highly detailed simulated environments, which are situated within elaborate large-scale show sets. This suggests that the park is a better alternative to the less aestheticized wildlife displays that are found in all but high-end zoos. Furthermore, park visitors seek leisure, as well as knowledge of the non-human world, ecology and conservation. The park is promoted as an educational endeavor and an entertainment destination. Visiting Animal Kingdom therefore "helps" by providing knowledge and supporting conservation research and animal husbandry practices. Furthermore, many of the park's exhibits and attractions are presented as substitutions for expeditions or encounters in the wild.[204] While on the surface this seems to be a straightforward provision of something

203Price, 198.
204*Disney's Animal Kingdom*, directed by Andy Perrott (2010; Chicago, IL: Questar Entertainment, 2010),

that would otherwise be inaccessible, it is important to note that the Walt Disney Company offers entertainment products in an industry that it dominates. The topic of improvement will be addressed later on, but for the moment it is sufficient to say that the reliability, convenience and safety associated with the Disney brand dictate that Animal Kingdom and its attractions appeal to tourists whose elevated taste and ecological consciousness dissuade them from participating in the less specialized experiences that characterize "average" tourist attractions.

The Walt Disney World theme parks that were built after the resort's flagship park, the Magic Kingdom (1971)—which echoes the original Anaheim Disneyland—attempted to transcend what has come to be understood as the company's classic park design. EPCOT Center (1982), Disney-MGM Studios (1989) and Animal Kingdom (1998) aimed to entertain, as well as instruct. While Magic Kingdom-style parks were designed to engage Disney intellectual property and licensed material, the subsequent parks operate according to different paradigms. Animal Kingdom advertises an experience that is more authentic and, by its own internal logic, more informative. This imbues the park with a value beyond that of other tourist experiences. It is somewhat ironic that this extra value is provided by a massive entertainment conglomerate that operates at scale by offering standardized experiences executed by well-practiced staff. The seeming authenticity of the animal experiences, and the environments which house them, serve two primary functions. First, the commitment to theming the environments for both visitors and resident animals likely helped the company to direct attention away from the commodification of animal bodies that is the park's major operation. Second, by shifting toward mediation strategies that are more easily

DVD.

concealed, Animal Kingdom advertises an in-park experience that amounts to some form of direct communion with nature.

Animal Kingdom is not the first mediatized wildlife theme park; Sea World, San Diego sets an important precedent in this regard. Susan G. Davis argues that since the 19th century, many American attractions stressed direct, unmediated, intimate contact as a way to truly know and be transformed by nature.[205] This conception of nature as an essential and edifying retreat from modern urban life has remained more or less intact, and even within the Walt Disney World Resort, Animal Kingdom provides an experience that is "wild," relative to the other parks. It is ostensibly less groomed, with dense walls of tropical plants replacing manicured lawns, topiary and ornamental gardens. Rather than smooth and orderly walkways laid out according to geometric patterns, textured walkways meander between exhibits and prevent visitors from ascertaining the park's footprint; this creates a series of dramatic vistas, as exhibits and attractions are suddenly encountered as if by chance. Many of the animal exhibits join high-profile zoos in simulating natural habitats and integrating these into the overall design of the park, and in doing so they seemingly offer less mediated —i.e., more informative and transformative—encounters for visitors.

Communion with nature is predicated upon an initial separation. Davis observes that, contrary to its stated intentions, Sea World generally separates the natural and human worlds. Nature is imagined at a distance from civilization, and it must be activated by the efforts of researchers. This research, along with husbandry practices, puts a gentler face on human penetration of the non-human world, and seemingly replaces older modes of exploitative

205Davis, Susan G., *Spectacular Nature: Corporate Culture and the Sea World Eperience* (Berkeley: University of California Press, 1997): 98.

interaction such as hunting or animal labor.[206] In contrast, Animal Kingdom takes connection as its initial assumption. Its research agenda is ubiquitous, and this is foregrounded throughout the park alongside husbandry practices and conservation goals; Disney even features these practices as attractions in one area of the park. The critical difference seems to be based on a divergence in practice: while Sea World generally restricts its theming to the areas immediately surrounding animal habitats and non-animal attractions, Disney extends their theming inside the habitats and out into the park. This serves two main goals. First, by situating visitors and resident animals together inside a coherent environment, Disney seeks to eliminate the initial separation established by Sea World. Second, Sea World assumes that its animals, and the activities of its staff, are interesting on their own. This is never denied by Disney, but the company nevertheless takes great pains to integrate all aspects of the park into the broader entertainment context that the park supports. While Sea World implies that nature is ideally managed by experts, Disney takes this a step further by arguing that its expertise in entertainment design helps scientific research to reach a much wider audience, and to do so more effectively and enjoyably.

Sea World engages with many other forms of nature tourism in its themed displays. These displays resemble 3-dimensional postcard views of the animals, and since the themed elements rarely extend inside the enclosures, we must assume that it exists solely for human observers. More than anything, they speak to visitor expectations about the environments where the creatures are to be found. They are cultural, in the sense that they are manufactured, and in that they refer to predefined sights and established modes of viewing nature.[207] On the other hand, Animal Kingdom attempts to integrate seemingly natural

206Ibid., 230.
207Ibid., 107-108.

environments with limited expressions of human presence in the form of buildings, art and other objects that reference the appropriate local styles. As we have seen, by theming the displays and their settings, it is implied that these spaces are of consequence to both the resident animals and their human observers. While its displays are no less cultural than those at Sea World, rather than occurring "out there," Animal Kingdom's locates human-animal-environment interactions at the margins of the human world. As we will see, *Dinosaur* extends the margins of human interaction even further by incorporating inaccessible animals and an impossible setting.

As an attraction that borders on the fantastic, *Dinosaur* offers a reminder that Animal Kingdom, much like Sea World, operates as part of the commercial entertainment industries. Davis argues that Sea World has tended to target an upwardly mobile, middle class White audience with a century-old interest in yards, parks, classroom study and camping as core interactions with nature. As the study of nature continues to be seen as edifying, the park is aspirational by design, and it offers a space where interacting with nature is aligned explicitly with acts of consumption.[208] Given its corporate affiliation, Animal Kingdom calls for somewhat more complex consumption of animals and their bodies. This entails viewing in multiple modes simultaneously, as respectful tourists and upright citizens.

Citizenship and leisure have an intertwined relationship. Chris Wright argues that members of modern societies attempt to escape the restrictions of their social systems and seek self-determination, but generally fall back on these systems because this grounds their sense of selfhood and provides materially for their existence as individuals. Furthermore, vacationing, which is a popular form of escape, frequently relies upon established institutions

208Ibid., 37-38.

whose operations replicate and re-impose the very structures of control which necessitated escape to begin with.[209] At Animal Kingdom, Disney proposes that visiting a non- or minimally-human environment constitutes an escape to "Nature." In order to access most displays and attractions, visitors must depart from a marginal space. *Dinosaur* is an extreme case, as it is situated well away from any plausible human-non-human boundary. Furthermore, rather than exhibiting a pre-existing nature, it fabricates one from the ground up. This is to say that the attraction is very visibly reliant upon the systems of control employed by Disney's brand, and that by communing with this version of nature visitors articulate their own identities as members of human societies.

It is also significant that the version of nature presented by *Dinosaur* is characterized as inherently resistant to human interaction, both practically and aesthetically. Wright argues that pacification is a key function of modern centralized states. This entails the suppression or control of "natural" behaviors, which supports the separation of humanity from nature through bodily and emotional control; this signals social and cultural capital within human societies. Modernization is thus a process that necessitates the pacification and civilization of wild nature.[210] Animal Kingdom pacifies both human visitors and non-human resident animals in several ways. For resident animals, the mingling of species is restricted so as to prevent uncomfortable interactions such as predation from occurring in front of visitors; carnivores are fed away from public view, which further reduces opportunities for exploring the inconvenient implications of ecological inquiry. Many other natural behaviors are concealed from guests, and there are references to inter- or intraspecies violence in the park.

209Wright, Chris, "Natural and Social Order at Walt Disney World; the Functions and Contradictions of Civilising Nature," *The Sociological Review* 54, no. 2 (2006): 305-306.
210Ibid., 309.

Outside the animal enclosures, park visitors are subject to myriad rules of conduct, which are imposed by both Disney and the leisure industries more broadly. In this way, Animal Kingdom aims to build a society that includes human and non-human citizens, with each kept carefully in check through overt and covert strategies. *Dinosaur* extends the civilizing reach of modern society into the remote past by thwarting the Cretaceous-Paleogene Extinction Event and rescuing a "peaceful" herbivorous dinosaur from certain destruction.

The hybrid society envisioned at Animal Kingdom requires that barriers be maintained between members and spaces, and it shares this objective with its sister parks. The Disney parks make implicit distinctions between accessible and inaccessible areas by coding elements of the landscape as orderly (civilized) and disorderly (wild), and the positive representation of civilized nature is a central ideological theme throughout the Walt Disney World Resort.[211] *Dinosaur* uses related design strategies to separate the modern human world from the prehistoric. All contemporary ride scenes take place within the Dino Institute, which is presented as an orderly research facility. Exposed pipes and wiring hang from unadorned concrete surfaces, and visitors pass by pieces of vaguely scientific equipment on their way through the loading and unloading area. Drab though it may be, all parts of the research facility are coded as accessible by the relatively open floor plan and even lighting. By contrast, the prehistoric scenes are characterized by darkness, chaos and unpredictability. Ride vehicles traverse a path that has very few straight lines, and regular stops inhibit easy navigation. The theatrical lighting renders most walls invisible, and aside from the dinosaur figures the only visible physical objects are rocks, plants and other elements of the landscape. This suggests a world that extends beyond riders' field of vision; this world is uninviting,

211Ibid., 312.

hostile and uncivilized.

Ultimately, the wildness inherent to the prehistoric world is unable to escape the rationalizing influence of the Walt Disney Company, as the animals at Animal Kingdom are "civilized," even as they are presented in their "wild" settings.[212] We have seen that *Dinosaur* civilizes the remote past through the rescue of the *Iguanodon*, but the attraction also presents simulation as a civilizing force. As we have only the fossil record to rely on, there is lingering uncertainty over the appearance and habits of nearly every known dinosaur species, and this is reflected in modern depictions. Simply giving an extinct animal a fixed physical form represents the collapse of other potential states of being. Furthermore, the attraction's robotic figures and animated images make predictable, repeatable movements, and their programming can be altered if desired. Just as the Disney company uses animation to civilize living animal species by constraining natural behaviors and inserting human ones, the presentation of controllable dinosaur bodies in the attraction attempts to civilize the Mesozoic.

Shelly R. Scott argues that Animal Kingdom relies upon technical competence and entertainment design to convince visitors that the Walt Disney Company is the best caretaker for the animal world, and also the best teacher. This is evident in the name of the park, as the word "Kingdom" has both biological and political connotations, and implies both dominion and protection. The park generates excitement and promotes consumption, and in doing so places animals in a context in which they provide both for visitors.[213] In *Dinosaur*, and in Animal Kingdom on the whole, these performing animal bodies engage in symbolic as well

212Ibid., 313.

213Scott, Shelly R., "Conserving, Consuming, and Improving on Nature at Disney's Animal Kingdom," *Theatre Topics* 17, no. 2 (2007): 112.

as physical labor, and the park naturalizes these conditions of servitude. The modern American relationship with the remote past is often framed by conquest. Prehistory is characterized as a time of barbarism which must inevitably be overthrown by civilized society. While modern nature permits co-existence, the impossibility of domestication in progressivist evolutionary narratives necessitates that prehistoric ecosystems give way so that modern ones may flourish. As we have seen, the symbolic conquest of the prehistoric landscape was integrated with the literal conquest of the American west, which binds the study of the remote past inextricably to resource extraction. *Dinosaur* acts directly on prehistoric animal bodies; since care is not an option, and research is only possible through indirect methods, the attraction condemns its resident animals by forcing them to repeat the moment of their extinction for the amusement of park visitors.

This dramatized destruction has a curious effect, as there is one glaring difference between *Dinosaur* and the park's other attractions. Animal Kingdom juxtaposes living animals with animated characters in the form of costumed employees and merchandise; this creates a context in which the two are compared, and the living organism is found to be less impressive. This to some degree of anthropomorphizing, which works against the park's educational mission. However, it does offer a key "improvement" over the natural animal body.[214] Only simulated beings inhabit *Dinosaur*, and for the most part, the Dinoland U.S.A. area of the park. Rather than sharing space with living animals, the attraction's robotic figures are compared only to fossil specimens, which are inevitably found wanting. While the addition of flesh, sound and motion to the hypothetical skeletal frame arguably represents an improvement over the historic museum displays seen in the queue, the fact that the clade

214Scott, 115.

Dinosauria is represented exclusively in mediated form lends the creatures a hyperreality that is unrivaled by anything else in the park.

Therefore, *Dinosaur* presents a strained relationship between objects and their copies, which is visible elsewhere in the park. Scott points to an informative mimetic relationship that exists between a copy and a real or ideal prototype in the park's flagship attraction, *Kilimanjaro Safaris*. This attraction, in which riders are driven through a simulated savanna in a free-roaming vehicle, uses elements of plotting — foiling a group of ivory poachers in an early version—and mise-en-scène—naturalistic design, which conceals barriers and feeding stations — to reproduce both a real and an ideal African safari. Since most park visitors have no direct experience with the real in this case, their expectations tend to align more closely with the ideal.[215] Mimesis at *Kilimanjaro Safaris* functions to "improve" the real by merging it with the ideal. This offers visitors a viewing experience that is safe, convenient and free of misfortune for both rider and inhabitant. Furthermore, as the ride vehicle is not grade-separated and the animals have some freedom of movement, there is just enough unpredictability to maintain excitement, even in the absence of an explicit story arc.

Like this project's other research sites, *Dinosaur* can not draw on any direct references for its interpretation of Mesozoic ecosystems. While the design of figures, effects and sets is arguably based on genuine referents, their use in the attraction is largely informed largely by an ideal of prehistory that is informed an action-adventure narrative framework. This ideal, as Brian Noble explains, is characterized by brutality and hyper-aggression. Dinosaur figures are placed confrontationally, in that they face ride vehicles directly, and are positioned so as to foreground their physicality. The ride vehicles act as characters, owing to

215Ibid., 121.

their design, and the atmosphere depicted inside the show building reflects the tone of the plot, which grows more and more frantic as the impact approaches. In this case, the quality and drama of the mimetic presentation ultimately distracts from the commodification and exploitation that characterize both the attraction and the park as a whole.

The interaction between the authentic and the inauthentic is rarely a problem for visitors to Animal Kingdom, and it even seems to be a source of pleasure. Returning to *Kilimanjaro Safaris*, Scott observes that the attraction juxtaposes real and fabricated elements; living plants and animals are situated inside an enormous outdoor show set, which hides barriers, feeding stations and other infrastructure to give the impression of being an unaltered natural landscape. Visitors enjoy both modes of representation, and this knowing enjoyment also facilitates a sense of superiority based on the ability to differentiate—it is assumed that the resident animals are unaware of the ruse. This reflects the Judeo-Christian idea that humanity must take a position of dominance over the rest of the natural world, based on our powers of discernment, and our position is strengthened by the fact that the animals being dominated are some of the grandest in our own imagination, rather than more familiar creatures.[216]

Dinosaur represents an utterly exotic group of animals using a suite of techniques that serve as a monument to artificiality. Within the attraction, this includes the use of robotic figures and special effects inside a stage set, and as pat of a park visit Disney creates and controls these representations. Furthermore, Disney controls the narrative and thus the movement of time within the diegesis. Our understanding of the impending doom represented by the Impactor also separates us intellectually from the animal bodies on display

216Ibid., 122.

in the attraction, and suggests that full, unquestioned dominion might only be possible with fabricated beings.

Prehistoric Bodies in Performance

Penetrating the narrative and institutional layers surrounding *Dinosaur*, the attraction is at its core a series of dramatic encounters with aggressively physical fabricated creatures. Kristen Whissel examines such figures in screen-based media, describing as an effects emblem:

> a cinematic visual effect that operates as a site of intense gratification and gives stunning (and sometimes) allegorical expression to a film's key themes, anxieties, and conceptual obsessions—*even as it provides feelings of astonishment and wonder.* Effects emblems neither arrest narrative nor prevail over it. Rather, they are continuous with it and appear at major turning points in the plot of a film to represent, in spectacular terms, the very stakes of the narrative.[217]

Whissel stresses that effects emblems, while arresting, tend to operate in tandem with a film narrative, and this integration of effects emblems into the structure of film narratives allows them to signify in multiple registers, which offers a site for productive instability.

While *Dinosaur* does integrate a number of dramatic screen images into its show scenes, these are relegated to background and special effects. Instead, the robotic dinosaurs present a ferocious analogue to the digital effects emblems Whissel discusses. As physical objects, their ontological status is much closer to riders than that of the effects, and their absence from everyday life marks them as noteworthy. Furthermore, they are large, loud, and gifted with dynamic movement. Since the figures are based on creatures that can only be known through research, they represent the drive toward scientific understanding, which is

217Whissel, Kristen, *Spectacular Digital Effects: CGI in Contemporary Cinema*, (Durham and London: Duke University Press, 2014): 6.

frequently paired with a desire for resource extraction and political control. Within the diegesis, the ability to reach across geologic time to contact creatures from the remote past serves as a celebration of technical competence, which is mirrored by the attraction's reputation as a compelling piece of entertainment. Finally, riders' positioning as a prey species, which is also subject to the same agents of extinction that eliminated the great predators, speaks to human anxieties over a loss of identity as we attempt to colonize ecosystems to which we are not well suited.

Whissel argues that digital creatures often emblematize fantasies or anxieties concerning the increasing technological mediation of life and death, as well as the disruption of previous boundaries between the organic from the artificial, the biological from the technological, and genetic from computer code. Although they are never confused with the characters they represent, Disney's Audio-Animatronics figures are widely praised for the quality and complexity of their motions. Early developers referred to their creation as a process of *animation* rather than engineering or robotics, and the consoles used for programming are derived from puppetry. Furthermore, the language surrounding their use is frequently framed by performance.[218] In recent years the company has invested heavily in artificial intelligence research, and begun to integrate advanced robotics into live spectacles in its parks and resorts, which demonstrates an interest in further blurring the boundaries between organic and artificial bodies in this entertainment context. By abstracting living bodies into assemblies of repeatable electro-mechanical sequences, organisms are reframed as machines, while machines acquire connotations of life. This is especially true of the figures in *Dinosaur*, which are based on measurements obtained from fossil specimens rather

218*Building a Thrill Ride: Expedition Everest*, directed by Yehuda Goldman, written by Lisa Feit, aired April 20, 2006, https://www.youtube.com/watch?v=XJzHiEveVBA

than observations of living animals. While Audio-Animatronics figures are associated largely with entertainment, it is important to acknowledge that physical and digital modeling of various kinds is central to paleontology research. All prehistoric animals are, in a sense, always already mediated, and in most cases the medation is primary. In this way, the production of dinosaur figures is not simply an act of reproduction, but one of production.

Vital figures must appear excessively and dangerously alive. In order to appear to be more than masses of inanimate matter or images created from code, the design, animation and presentation of these figures links them ontologically to deadliness. Their vitality is thus dialectically related to death, and they are at their most lifelike when their deadliness and mortality are on display.[219] In the case of *Dinosaur*, the features that are tied to offense—such as teeth, horns and claws, or a horizontal and forward-oriented posture—are codified and associated with antagonism. These features are then foregrounded within the attraction. This is most notable in depictions of *Carnotaurus sastrei*, the attraction's main antagonist. This animal confronts riders at several points, and in every case the figure is noticeably larger than the living animal would have been. Beyond its expanded size, atmospheric effects enhance its ferocity. Sound cues such as footsteps and roars situate the creature even when it is unseen, and ultraviolet lights accentuate its eyes, horns and teeth. These strategies identify the *Carnotaurus* as a predator and an antagonist, rather than an inhabitant of an ecosystem. The deadliness of other carnivore species is similarly foregrounded, as Animal Kingdom's only explicit depiction of predation—an *Alioramus remotus* swallowing a crocodile—occurs in this attraction. These references to deadliness—or at the least hyper-activity and aggression—extend even to herbivorous species. Even these species—which are frequently

219Ibid., 98.

coded as sympathetic in media depictions—are engaged in performances that explicitly highlight their size, energy and power, which is a stark contrast to the human riders, whose fragility is emphasized.

Looking beyond the effects emblems themselves, Whissel notes that the origins of vital figures are often overtly linked with death—common examples of this are characters who have been brought back from death by magic or science, or those that mediate the life-death boundary in some other way.[220] *Dinosaur* is set in the moments preceding the Cretaceous-Paleogene Extinction Event, and this introduces the dinosaur characters in the context of both individual (organismal) and large-scale (species or ecosystem) death. Within the diegesis, this moment is a site for human intervention; the Dino Institute's time travel technology allows riders to observe extinction without consequence and to negate its effects by "rescuing" individuals thought to be especially valuable. Furthermore, the treatment of dinosaur bodies is a powerful invocation of vitality. By presenting prehistoric animals through animated figures, the attraction takes creatures that exist only as inanimate matter or images rooted in the imagination, and grants them corporeality. This corporeality is not without conditions, as the life of the figures is ultimately under human control; the attraction constitutes a human-made system, and its narrative structure dictates that extinction can be avoided if desired. Considering the park as a whole, we are also reminded that Disney's expertise in entertainment design operates alongside scientific research, which places the non-human world under the intellectual control of our species.

The topic of control is unavoidable when considering any media encounter between humans and prehistoric animals. Michael Fuchs argues that dinosaurs serve as figures of

220Ibid., 101-102.

excess, rather than lack, in a late 20th century setting. They are not disappearing or missing from any ecosystem, but manage to exceed any environment in which they are found or introduced. This spectacular nature encourages spectators to linger on their images for longer than is warranted by the narratives in which they appear.[221] While many of the vital figures considered by Whissel are, for lack of a better term, expected in the narrative universes they inhabit, Fuchs positions the recreated dinosaur of the *Jurassic Park* franchise as spectacular even by the standards of the films, and doubly so given their absence from all modern ecosystems.

Similarly, *Dinosaur* takes care to show off its titular animal bodies. While the attraction is designed to feel fast-paced and hectic, in spite of the impending danger the ride vehicle slows or stops at each encounter to allow the onboard computer to identify the prehistoric creature that has stopped panicking to pose for it. The other major lands at Animal Kingdom—Africa and Asia, especially—are comparatively grounded, in terms of their design. While they do not represent discrete real-world locations such as cities or countries, their design makes explicit references to regional styles in the built and natural environments. A recent addition, Pandora – The World of *Avatar*, follows in this pattern, even though its location is entirely fictional. All three lands offer (seemingly) fully-articulated ecosystems as platforms for encountering wildlife. By contrast, Dinoland U.S.A. offers few opportunities for the type of marginal encounters seen elsewhere in the park. Since it is oriented around creatures that have not been seen on Earth for tens of millions of years, the only contexts for encounters are by necessity framed entirely by modern humanity. While the land is given an explicit backstory, the implausibility of chance encounters

221Fuchs, Michael, "When Dinosaurs Ruled the Earth? Digital Animals, Simulation, and the Return of 'Real Nature' in the *Jurassic Park* Movies," *On Culture* 2 (2016): 13.

highlights the absence of prehistoric animals from the everyday diegetic experience of the place. This absence is filled by the offerings at each of the land's subsections: the kitschy roadside attractions of Chester and Hester's Din-O-Rama and the more austere experience of *Dinosaur*. Both offer their own form of spectacular encounter—these encounters are forced by the ride system in *Dinosaur*, while the carnivalesque theming of Din-O-Rama prompts visitors to follow similar patterns in their bodily movement—encouraging visitors to linger in wonder as compensation for the fact that these animals are not present in their lives.

The dinosaurs featured in the *Jurassic Park* franchise have no basis in material reality, as there are no living specimens on which to base their likenesses. Fuchs argues that they are therefore unconstrained by reality.[222] *Dinosaur* aims to surpass the aspirations of the *Jurassic Park* films in this respect. Within the diegesis, it brings humans into contact with genuine prehistoric animals, rather than engineering hybrid versions. Whereas (*Jurassic Park*'s) InGen short-circuits evolution, the Dino Institute manages to reverse both the flow of time and the forces of extinction. As an attraction, it re-materializes digital information derived in part from physical remains. Moving a step beyond the *Jurassic Park* films, *Dinosaur* executes this re-materialization without the aid of living species—filler DNA from frogs, and Ostrich eggs as surrogates. While these distinctions are of little consequence from the audience's perspective, as both film and attraction are clearly works of fiction, while undeniably distorting reality, the production and execution of the attraction are nevertheless constrained by materiality in a way that the films can never accomplish.

The *Jurassic Park* franchise emphasizes that for many species, life is increasingly controlled by technology. Beyond the expanding presence of automation, organic structures

222Ibid., 15-16.

and processes are increasingly immaterialized and reduced to analog or digital code. This tethers control to the potential for transformation and preservation, as information can be stored and processed.[223] *Dinosaur* attraction demonstrates this point quite literally, by presenting technological re-creations of disappeared creatures. In addition to being customizable—their movements can be reprogrammed—the information signature of their development and operation is transferable and repeatable, as refurbishments and replacements are common at this and many other attractions. Interestingly, Animal Kingdom's themed lands are mostly presented as being low-tech. Many of the display strategies in Africa and Asia are aggressively analog—animals eat from feeding stations that are disguised to look like elements of the landscape, and certain species are kept separate by barriers that are hidden from visitors. Even Pandora – The World of *Avatar*, which is set after the events of that franchise's first film, reduces the visible human presence to ruins, and its two major attractions simulate basic forms of travel—in boats and on the backs of flying animals. While these lands appear to offer unmediated contact, the technological interventions they entail simply operate beyond the diegesis of attractions and even the park. Disney is notoriously aggressive in its collection and management of visitor data, and its various planning and reservation systems—from MyMagic+ (2008) to the current Genie+ (2021)—have special resonance at this park, as human visitors are abstracted into data for integration into the company's short- and long-term planning and development operations.

While much of Animal Kingdom's design and promotions imply some equality between human visitors and resident animals, the very act of observation produces an imbalance in status that can be difficult to overcome. Ron Broglio considers this imbalance

223Ibid., 18.

to be a site of productive disruption, and he argues that surface-level interactions are catalysts for expanding our understanding of ways to engage our world. Modes of aesthetic inquiry such as the pictorial arts have been critical to natural history research, and these traditions grant aesthetics a unique privilege in bringing the wilds into contact with culture. Classification is also central, and it is responsible for codifying animal traits that are captured in images, which are then schematized and projected back onto animal bodies. This looking relationship creates a conceptual distance between observer and observed, as the conception of the human eye as a window grants interiority to the human observer but denies it to the animal object, which is only perceived from without.[224] We have seen that *Dinosaur* threatens riders with the disruption their identities by forcing their submission to both ride vehicles and the dinosaur antagonists. This focus on bodily sensation, which is imparted directly by ride vehicles and implied by the suggestion of predation, resonates with the productive surface encounters discussed by Broglio.

Although it seems to be far removed from traditional paleontology illustration, *Dinosaur*, along with other popular media objects, constitutes a point of contact between the wilds and culture. Given that its subjects are completely removed from the everyday experiences of modern human audiences, and the professionalization of the field coincided with the appearance of public museums and entertainment media such as cinema, it is not surprising that our understanding of prehistoric animals is quite abstract. However, these extinct creatures lack the physical and conceptual surfaces present in living animals. While fossils represent interiority in a material sense, they present an incomplete surface upon which to base a visual encounter. In the attraction, skeletal fossils are translated into the

224Broglio, Ron, *Surface Encounters: Thinking With Animals and Art* (Minneapolis and London: University of Minnesota Press, 2011): 83.

moving armatures that support the robotic dinosaur figures, which constitutes a projection of a set of schematized traits back onto physical bodies; these bodies are not those of the creatures from which they were derived. The spacing that occurs between rider and fabricated figure, as a result of these layers of abstraction, is quite profound. This renders dinosaur bodies quite malleable, both in a physical and semiotic sense. The visceral reactions they inspire in riders grants them serious consideration as performers, and they join the park's other resident animals in obtaining a degree of interiority from Disney's intellectual property, which articulates in dramatic terms what we can not know directly.

Ultimately, Broglio argues that the apparent poverty of animals, with respect to interiority, offers a site of productivity in a different economy of meaning. This is based on consideration of shared physicality, with respect to a common environment. Although legitimate alignment with the perceptual landscapes of different animal bodies is impossible, engaging with corporeality and human animality can expand our understanding of the ways in which bodies exist in the world.[225] It has already been argued that Disney advertises Animal Kingdom as a venue for exploring interiority in the non-human world, which is facilitated through commentary in displays and live shows, as well as the ubiquitous presence of the company's intellectual property. However, the sort of commentary that exists in other areas of the park is not possible in *Dinosaur*. Rather than viewing a narrated show from a theater seat or peering through glass supported by text panels, riders share space with a group of animals and experience corporeality—through their movement in the vehicle, and their interaction with figures and effects—as a form of access to an other-world. Critically, while other attractions include extra-diegetic commentary and the presence of the live animals

225Ibid., 89.

themselves, there is nothing to frame *Dinosaur* beyond its aesthetic and semiotic framework, and the attraction presents a purely narrative environment, rather than a functioning ecosystem that can be understood in any meaningful way.

Above all, animals challenge human notions of language and representation, which purport to be disembodied thought. In opposition to concepts such as representation and interiority, which attempt to assimilate an other, thinking alongside animals means distributing the body of thinking; this creates plural centers for valuing, marking and making the world.[226] *Dinosaur* runs counter to other attractions at Animal Kingdom in this respect. *Kilimanjaro Safaris* and the various walk-through displays are oriented explicitly around organization and classification, even with the leveling of sensory and bodily experience they offer. On the other hand, *Dinosaur* offers only a heavily-mediated exploration of exteriority. Although its rescue mission proves successful, the attraction never fully assimilates or apprehends the other as represented by the dinosaur figures. Instead, it others its human riders. Interestingly, this attraction—though arguably the park's least intentional in this regard—offers a particularly compelling encounter with a non-human other. It embraces corporeality and mediation, distancing riders from their identity as part of a dominant species, and places them—if temporarily—alongside members of a doomed clade during a moment of apocalyptic chaos.

Conclusion

Dinosaur is framed in complex ways, and this framing begins before entering the Animal Kingdom Park. As part of its general program, the park presents prehistoric animals

226Ibid., 107-108.

as consumable commodities, blending real and simulated bodies with the Walt Disney Company's animated films and the narrative traditions on which they are based. Using the colonial adventure narrative as a framework, the attraction positions riders as explorers and conquerors, but soon complicates this by manipulating their sensing bodies to trouble the sense of identity implied by the genre. In addition to inserting rider bodies literally into the plot, the ride system works in combination with the animated figures and other effects to articulate a form of time that is highly malleable through the processes of storage, repetition and reversal. In this context, the performances of the robotic dinosaur bodies place human riders in a position of subservience, in which they are subject to both the physical action of the ride system and the aggressive attention of the dinosaur characters. This orientation toward the body as an interface with a surrounding environment allows riders to rethink their own materiality and animality.

Dinosaur is a unique attraction, by many standards. As an attraction at a major American theme park, it is the most explicitly entertainment-oriented of those considered for this project. In this capacity, it engages the concept of prehistory solely through the lens of modern popular culture. Furthermore, the action of ride vehicles exerts a powerful influence on audience physicality by reducing control in favor of enhancing bodily sensation. The attraction offers an intriguing technical and social configuration for engaging temporality. The ride system offers essentially nothing in the way of manipulation from the perspective of riders, but contains a great deal of potential from the perspective of the operators. While time is spatialized for the company through the production and maintenance of the ride system, animated figures and effects, from the perspective of riders the attraction and the park represent a zone set aside from everyday life, to which one travels to (seemingly)

experience time according to one's own desires.

Dinosaur is also oriented the most overtly around encounters that involve the surfaces of the body. While it shares the tactility associated with inhabiting a physical space with the reconstructions at *Lascaux IV* and *Caverne du Pont-d'Arc*, which is not a mater of great concern for traditional museum exhibits, cognition is confined to the brief moments of interaction with the robotic dinosaur figures and is not meant to exceed the plot of the attraction. Rider subjectivity is destabilized through its focus on surface encounters, which permits an expanded conception of the physical experience of a shared environment. Ultimately, this works to foster a more visceral ecological imagination.

Epilogue

This dissertation seeks to expand discussions in environmental media, popular science and the intersection between media and museum studies. It engages with the concept of Deep Time as it is associated with media studies through the fields of paleontology, evolutionary theory, archaeology and art history. An emphasis on the remote past permits a discussion of the relationship between mediation, temporality and spatiality, alongside the cultural and historical settings in which these relationships are articulated. The research sites for this project have provided opportunities for examining exhibitions and attractions as communicative spaces whose purview is the movement and transformation of information through and beyond screen media.

The discussion of Disney's *Dinosaur* attraction in chapter four serves as a representative example of the project as a whole. *Dinosaur* is thematically tied to the 2000 film of the same name, insofar as the two are marketed in tandem, and they share a setting, aesthetic and characters. The attraction also makes liberal use of moving images throughout and its institutional setting situates it firmly within the film industry. Since it is located inside a Disney theme park, *Dinosaur* is a 3-dimensional adaptation of the company's intellectual property. Furthermore, since it relies heavily upon moving images in its queue, scenic and special effects riders are prompted to approach the attraction through the framework of film narration. It establishes a dramatic setting for exploring important tensions related to scientific research—museum versus field-based practices, individual innovation versus institutional responsibility, and human technical prowess versus environmental forces—that are also relevant to larger discussions within media studies.

These are introduced explicitly throughout the queue area, and formal analysis of mise-en-scène, special effects and the motion of ride vehicles has proven helpful in interpreting the narrative strategies employed by the attraction.

Beyond aesthetic and structural analysis of its narration, key discussions in film theory illuminate important relationships between *Dinosaur*, the Animal Kingdom park and its visitors. The robotic dinosaur figures that populate the attraction are much more than simple representations of extinct animals. Kristen Whissel's theory of vital figures suggests that these mostly antagonistic animals also signal the attraction's central anxieties — in particular: the blurring of boundaries between death and life, and in reference to the latter, organic versus synthetic origin.[227] The attraction's unique combination of narrative strategies points toward a set of broader human anxieties, and imposes them on visitors through the bodily experience of riding on a vehicle inside the show building. The importance of physicality echoes Linda Williams's assertion that the depiction of bodily sensations on film prompts analogous reactions in viewers, thereby allowing for temporary shifts in identity.[228] In the case of *Dinosaur*, visitors as riders are dislodged from the top of the food chain and made to inhabit the animal world more fully. This moment of repositioning has the potential to expand riders' ecological imaginations, as the experience of being placed at the mercy of predators and a catastrophic event thwarts attempts to separate humanity fully from the animal bodies with which we engage our surroundings. Although such an awakening is by no means a necessary outcome of the experience of *Dinosaur*, the fluidity of identity that characterizes participation can be taken as evidence that analytical tools derived from film

227Kristen Whissel, *Spectacular Digital Effects: CGI and Contemporary Cinema* (Durham and London: Duke University Press, 2014): 6.
228Linda Williams, "Film Bodies: Gender, Genre, and Excess," *Film Quarterly* 44, no. 4 (Summer 1991): 5.

studies can be informative in reference to live experiences.

It is also true that *Dinosaur*—and themed entertainment, more broadly—offers important points of expansion for the field of media studies. The institutional framing of Animal Kingdom and the Disney parks dictates that visitors participate from within the diegesis of the attraction or site they are visiting. That is: the attraction makes few overt references to the fact that is an attraction, and it positions riders as participants in the plot. Nevertheless, the underlying logic of the themed entertainment industry guarantees that the apparatus of the attraction never recedes completely from view. It is somewhat obvious that no visitor to this or any other attraction would believe in the literal truth of the experience, and the propositions implied by Tom Gunning's "Cinema of Attractions" (2006) suggest that contemporary themed entertainment audiences find value not in succumbing to an illusion, but rather by appreciating a medium's capacity for illusionistic representation.

This knowing engagement with artifice is seen most vividly in the discussions of *Lascaux IV* and *Caverne du Pont-d'Arc* in chapter three, which rely on informed interaction by visitors with simulations of genuine spaces. At the exhibition complexes for Lascaux and Chauvet caves, it is made apparent that the original sites have closed due to damage caused by modern researchers and visitors; the replicas have therefore been created in order to enable public access while preserving the sensitive cave environments. This fact illuminates the unique purpose served by *Lascaux IV* and *Caverne du Pont-d'Arc*, since high quality images of the original paintings are widely available at little to no cost, and it would seem that any conscientious observer would seek out these images as an alternative to traveling to remote destinations in France. We must instead conclude that visitors to *Lascaux IV* and *Caverne du Pont-d'Arc* are not solely interested in seeing the paintings, but are also deeply

appreciative of the ambiance of the cave spaces. At *Lascaux IV* and *Caverne du Pont-d'Arc*, the ability of designers to recreate the original paintings is forever tied to their ability to suggest the spaces in which they are found, and as a result both sites celebrate modern creators alongside ancient ones. Since the physical experience of the reproductions is said to resemble that of the original inhabitants, the sites also make a powerful argument for reckoning with time at a large scale.

Mary Ann Doane has considered cinematic time in depth, although her focus is often diegetic, durational or historical. The principle of continuity in classical film dictates that elements of the plot be combined so as to suggest preexisting relationships based on space, time and causality. *Lascaux IV* and *Caverne du Pont-d'Arc* have a complex relationship to continuity, as both are based on sites that are already composites; the original paintings at each site were created and added to over thousands of years, and often by unconnected communities. *Caverne du Pont-d'Arc* carries this further by shifting the size and shape of the original cave, and re-arranging the images within. However, both reproductions are encountered by visitors as singular, coherent experiences. This manipulation of the source material, combined with full knowledge of the time elapsed since their occupancy during the Paleolithic Age (36,000 – 17,000 YBP) prompts visitors to consider time beyond any individual image or object. The research sites under discussion in this dissertation engage temporality outside the boundaries of a single text or historical sequence, and furthermore each provides a unique example for how different techniques of mediation manipulate temporality in distinct ways. Each makes use of a variety of interconnected media objects and systems to define and shape time, rather than simply depicting its passage, and in doing so each offers a way to bridge time at the human scale with time at the geologic scale.

The combination of different media systems offers another important point of expansion for Film and Media Studies scholarship. The last two chapters consider sites which do this for aesthetic and narrative purposes; *Lascaux IV* and *Caverne du Pont-d'Arc* employ detailed painting and sculptural work, as well as theatrical staging and lighting, in environments that are suggestive of the caves on which they are based. As we have seen, Disney's *Dinosaur* attraction makes significant use of robotics, moving image projections, live effects and sound design to create a setting in which riders can participate in a colonial adventure narrative. While the illusionistic combination of media formats is quite common in other themed attractions—especially those located at Disney theme parks—we must resist the temptation of regarding individual media objects exclusively as storytelling devices. The use of Deep Time as a theme at each site helps us to look beyond the diegetic purpose of these and other display elements.

All of this project's research sites carefully and deliberately integrate a variety of display objects. The discussion in chapter four concerns a plotted theme park attraction that functions as a film tie-in, and all of its visible aesthetic and structural elements function diegetically. Chapter three considers reproductions of significant art historical and archaeological sites, and while they share some illusionistic design strategies which dictate that the spaces be considered as a whole, the emphasis placed on the processes of research and reproduction prompts visitors to consider acts of mediation alongside the aesthetic experience of the attractions.

Chapter two offers a clear example: the *Evolving Planet* exhibit uses the widest variety of media formats of any of the research sites, and it works the hardest to maintain the distinct identity of each of its components. Although the exhibit is unquestionably a coherent

experience, it relies upon an array of display elements that includes fossil specimens, interactive props, dioramas, theatrical lighting and moving image presentations. It is somewhat obvious that illustrating a theory requiring 3,800,000,000 years of evidence can not be accomplished using a single medium, and this apparent lack of unity is critical to *Evolving Planet*'s effectiveness. The factual basis of Deep Time dictates that when it is used as a theme, more attention must be paid to the processes of mediation than in the fiction-oriented attractions seen at other venues. That is: visitors to these sites will always be aware of the physical reality of what they represent, and as a result the (seemingly greater) conceptual distance that separates modern representations from inaccessible prehistoric realities must be overcome by processes of mediation that can never be fully ignored. In the case of *Evolving Planet*, the obvious absence of living organisms stands in tension with the many varied representations of the deceased. This disconnect enables visitors to leverage the imaginary status of prehistoric creatures in service of the theoretical exploration the exhibition presents.

The rich environments found at each site create context for mediating our understanding of the remote past, and they also rely upon robust narrative frameworks. Martin J.S. Rudwick has demonstrated that paleontology illustration has historically been informed by disciplines such as heraldry and Biblical illustration; pictorial representations of the remote past were thus situated within a tradition of other text-based scholarship. By incorporating some of these conventions, artists prompted audiences to regard the geological and fossil records as texts to be interpreted. Furthermore, these records were thought to become clearer and more accurate with the appearance of more advanced methods of visualization. Biblical references leveraged an existing narrative framework for the remote

past, such that while the pre-human period oscillated between Edenic and infernal, it was always doomed to failure to make way for modernity.[229] Additionally, illustrators in the 19th century gave visual expression to an interpretation of evolutionary theory which was heavily informed by progressivist notions of history; from this perspective, human civilization was the culmination of a series of successive developments which approached perfection by necessity as a function of time. By focusing on teleological trajectory, artists helped to characterize Deep Time as a discrete and self-evident designation that could be clearly separated from contemporary humanity. A version of prehistory that prefigured and prepared the Earth for the arrival of modern human civilization was thus a literary endeavor as much as a scientific one.

Marie-Laure Ryan offers further insight into the literary basis of immersive storytelling, which illuminates the unique modes of interaction seen at the research sites. Ryan views simulation not as a technical or aesthetic process but rather as a mode of interacting with a particular text.[230] This definition shifts attention toward audience agency, and in the context of this dissertation it suggests an intriguing possibility for the deployment of Deep Time as a leisure industry theme. Each research site engages a different aspect of the remote past, and serves different goals, but all propose that the human body is a medium through which the theme of Deep Time can be performed. By enacting this theme, we become aware of our bodies as an interface between ourselves and our physical surroundings, and this relational understanding of beings and environments can potentially prompt us to consider more carefully our collective future.

229Martin J.S. Rudwick, *Scenes From Deep Time: Early Pictorial Representations of the Prehistoric World* (Chicago and London: The University of Chicago Press, 1992): 80-81.

230Marie-Laure Ryan, *Narrative as Virtual Reality* (Baltimore and London: The Johns Hopkins University Press, 2001): 113.

It may seem that contemplating a collective future carries the risk of teleology, but thinking in terms of relationships, patterns and consequences can also be informative. David Christian argues for the importance of examining Deep Time as a coherent narrative, however provisional such a conception may ultimately prove to be. For Christian, creation myths of all types satisfy a deep-seated human need for determining one's sense of place and belonging in an incomprehensibly vast reality,[231] this project's research sites attempt to orient modern visitors toward the remote past through fields such as evolutionary biology, paleontology and art history. As the scope of our investigation grows, we become aware of elements of the past that may not have been apparent at the small scale.[232] Since the fossil and geological records lack the resolution which we have come to expect from the present and even the recent past—in that they compress dynamic and complex systems into static and highly selective traces—we must by necessity approach the remote past through the lens of systems and processes. Therefore, it can be argued that studying the remote past is inherently ecological. That is, an understanding of Deep Time that is system- and process-oriented allows the leisure industries to acquaint a largely non-specialist population with contemporary origin myths.

The research sites considered for this project represent media- and entertainment-oriented approaches to the concept of Deep Time, and each mythologizes this theme in distinct ways. This practice has a long history, and Adrienne Mayor has argued that in the Classical world the remote past was frequently approached through the lens of myth. Since evolutionary biology was not yet part of the scientific framework, thinkers of this period

231David Christian, *Maps of Time: An Introduction to Big History* (Berkeley and Los Angeles: University of California Press, 2011): 2.
232Ibid., 8.

described fossil discoveries in poetic terms. However, the language of myth should not be seen as lacking in rigor. Mayor describes detailed and systematic examination on the part of Greek and Roman naturalists,[233] and she points to historical and archaeological records of the presentation of fossils in order to argue that references to shared mytho-historical heritage served to contextualize specimens, rather than the opposite.[234] This argument has important implications for the project; first: mythology provides context for fact, and second: myth does not imply a lack of intention or reason.

Myth can provide a robust intellectual framework for approaching specimens from the fossil and geological records, however there are known blind spots. While the remote past was viewed as foundational to the experiences of the Greek and Roman myth-tellers—in that the destruction of spectacular ancient creatures, which fossils were said to represent, was seen as a prerequisite for the emergence of human civilization—it seems to have lacked a fixed chronology. Rudwick situates the appearance of this feature in the 18th and 19th centuries, as Long-Earth chronology was taking shape alongside Darwinian evolutionary theory. While this is in obvious tension with Biblical chronology—which proposed an Earth age on the order of thousands of years, rather than billions—under the influence of text-based scholarship the remote past came to be expressed as a discrete record with a fixed chronology that simply required proper interpretation.[235] The character of the interpretation, which is specific to historical and cultural setting, ultimately determines the relationship between contemporary—at any point in human history—observers and pre-human past.

The research sites described in this dissertation represent a shift from a past that is

233Adrienne Mayor, *The First Fossil Hunters: Dinosaurs, Mammoths, and Myth in Greek and Roman Times* (Princeton and Oxford: Princeton University Press, 2011): 4.
234Ibid., 140.
235Rudwick, 24-26.

told, written and observed to one that is experienced; this transition corresponds to a shift from the mythic, to the historical and ultimately the scientific gazes. Whereas naturalists in the ancient world viewed the geological and fossil records through the lens of received wisdom that accounted for the condition of the world as they knew it, illustrators in the 18th and 19th centuries endeavored to interpret and then acquaint mass audiences with the universal principles which the geological record preserved. While observers of this period retained narrative and mythic frameworks, the language of Deep Time became more explicit and repeatable. Finally, contemporary exhibition designers attempt to situate leisure industry customers in meaningful relationships with the remote past. Interestingly, though each of these strategies focuses on the past as its source material, the actual temporal orientation of various encounters has shifted since Antiquity. It can be argued that myth-tellers of the Classical world were largely concerned with the remote past as a distant category, while post-Enlightenment scientists and illustrators were concerned above all with how the past prepared the way for the present. The sites examined for this project are in many ways oriented toward the future; all make use of the remote past in order to build an argument for our species' continuing relationship with the rest of the living world.

I have considered how the concept of Deep Time functions as a theme for several distinct exhibition contexts. The first chapter focused on the George C. Page Museum at the La Brea Tar Pits in Los Angeles, and the second on the *Evolving Planet* exhibit at the Field Museum of Natural History in Chicago; these chapters explore sites that have been developed within a paradigm that originated in modern public museums from the late 19th and early 20th centuries. Visitors to these sites are not expected to have devoted substantial thought to the central role attributed to Deep Time, and yet it provides a critical temporal

framework for the objects and media on display. At the Page Museum, specimens and other display pieces are used to argue that contemporary climate change can be understood by examining evidence of ecological and geological processes that occurred during the Pleistocene epoch (2,580,000 – 11,700 YBP). Here, Deep Time is linked to the idea of continuity; the tar pits preserve a record of an ecosystem that is distinct, but still recognizable to contemporary visitors, and which was shaped by processes that still operate today. Even though many of the more spectacular mammal species—such as the Columbian Mammoth (*Mammuthus columbi*) and the Sabre-Toothed Cat (*Smilodon fatalis*)—are now extinct, the specimens discovered at the site largely represent familiar taxonomic groups. Furthermore, pollen and other organic material preserved in the tar pits offers a record of temperature fluctuations and other indicators of prehistoric climate change, and while its pace is quite slow when compared to the rapid shifts that have been observed following the large-scale adoption of fossil fuels, the modern period largely produces accelerated and synthesized versions of existing processes.

At the *Evolving Planet* exhibit at the Field Museum, Deep Time is brought to bear on Darwinian evolutionary theory, and it is ultimately used to ground discussions of the Anthropocene. Long-Earth chronology is seen as a necessity in Charles Darwin's *Origin of Species* (1859); the processes of evolutionary change are not generally observable in real time, so it is only when we examine life on the scale of thousands of years or more that its cumulative effects become apparent. Furthermore, the concept of the Anthropocene is also reliant upon a geological understanding of time. Scholars in the sciences and humanities typically focus on the last five centuries at the most, whereas I argue that because it relies upon discrepancies in scale between human and Earth histories, the Anthropocene is a

construct that necessitates long duration.

Whereas the sites examined in chapters one and two used Deep Time to argue for a reconsideration of our future—in that they provide empirical evidence of ecological and evolutionary processes that our species has proven itself capable of affecting, to the detriment of all others—the sites discussed in chapters three and four make appeals that are far more visceral, and that attempt to place humanity more fully into longer chronologies. My discussion of the recreated parietal art at *Caverne du Pont-d'Arc* and *Lascaux IV* in France concerns their transitional position between the museum and themed entertainment contexts. I am particularly interested in the fact that exhibiting institutions have been reimagined as immersive representations of the original caves that draw upon elements of museum exhibitions and theme park attractions, and this reimagining is situated in close proximity to the existing heritage sites. At these venues, Deep Time serves as a point of origin for human aesthetic production, which is often conflated with species identity. At the same time, the spectacle of the simulated cave environments offers dramatic settings for encountering significant art historical works. There is an awkward attempt at each of these sites to merge early human history with the more general category of prehistory. Earlier researchers such as Georges Bataille (1897-1962) claim that the original artists saw less of a division between themselves and their surrounding environments than do modern humans.[236] This assertion problematizes the sentiment that the emergence of aesthetic production serves as a cultural or species boundary, to the effect that the integration of humanity and prehistory is not especially well executed. Perhaps as compensation, tour guides stress physical and intellectual kinship as a way to connect contemporary visitors with their Paleolithic

236Georges Bataille, *Prehistoric Painting: Lascaux, or the Birth of Art*, trans. Austryn Wainhouse (Milan: Skira, 1955): 121.

counterparts. While it does not offer explicit commentary on the future of humanity, this strategy does implicate our species in cycles of destruction whose effects reach beyond the present. Since *Lascaux II-IV* and *Caverne du Pont-d'Arc* were created to protect the original sites from damage caused by lay visitors and researchers, all are forced to consider that our capacity for manipulating our environment has carried both great risk and great promise.

Chapter four moves beyond the museum complex altogether by discussing the *Dinosaur* attraction at Disney's Animal Kingdom Theme Park in Orlando, Florida. In this wholly entertainment-based attraction, Deep Time serves as the backdrop for a colonial adventure narrative. Similar to its predecessors in Victorian literature, the attraction's plot sends riders into an unknown and hostile territory to be explored and, eventually, conquered and incorporated into an extractive economy. However, *Dinosaur* makes a critical intervention by proposing a time period—rather than a geographical area—as the site of exploration. This shift from spatial to temporal conquest also echoes important transitions between the temporalization and spatialization of information that the ride system imposes upon audiences.

The attraction's most compelling deployment of Deep Time concerns the transportation of visitors into a fiction of the remote past by means of a complex ride system that includes dynamic vehicles, special effects and robotic dinosaur figures. These reprogrammable electro-mechanical devices are based on observations of fossil specimens, representing once-living organisms; the fossil data provide measurements for the construction of figures whose movements are synchronized to a digital soundtrack and can be altered in any way that their mechanics allow. As a whole, the attraction relies upon a collection of overlapping transformations between information that is preserved spatially or

transmitted temporally. This assemblage of transformations dictates that processes of mediation are central to our relationship to temporality at any scale, and since our only access to the remote past is through its material traces acts of mediation are the basis on which our understanding of Deep Time. Furthermore: by orienting its plot around time travel, the attraction suggests a substantial break between human and geologic chronologies, as humans can control time while other organisms are subject to it. However, as we have seen in chapter three, the *Dinosaur* attraction seems to demonstrate some ambiguity regarding human ingenuity. Its plot suggests that while humanity on the whole is capable of mastering time and space, individual humans are still very much vulnerable. Riders are reduced to the status of prey animals, and perhaps above all else, they are placed physically at the mercy of the ride system. In this way we are constantly reminded of our own creaturehood, and in combination with the conservation-orientation of the Animal Kingdom park, this reminder suggests some small lack of certainty concerning our continued existence on this planet.

The historian of science, Hartmut Winkler, claims that a trade-off between spatiality and temporality is critical to all media systems; that is: media systems spatialize information by storing it, or temporalize information by transmitting it.[237] Chapters one and two discuss exhibits that facilitate the temporalization of spatial information. In chapters three and four, discussions are mostly concerned with the reverse: the spatialization of temporal information. Through the Page Museum, the La Brea Tar Pits are configured as a site that instantiates death and burial. This moment, which is common to prehistoric inhabitants of the region, is presented as a collection of snapshots that possesses great relevance for contemporary visitors. At the *Evolving Planet* exhibit, displays linearize a group of fossil specimens to

237Hartmut Winkler, "Geometry of Time: Media, Spatialization, and Reversibility," presentation at the conference *Media Theory on the Move* (2009): 7-9.

fashion them into a single trajectory that can be traversed by exhibition visitors, and in doing so it links temporality to causality. By contrast, the recreated parietal art at *Lascaux IV* and *Caverne du Pont-d'Arc*, along with Disney's *Dinosaur* attraction, reverses the current of this logic. While all are in some way derived from spatial information, the basic elements of their physical systems begin as streams of information. At *Lascaux IV* and *Caverne du Pont-d'Arc*, two- and three-dimensional images of the original paintings and the caves that house them are composited; paintings that were produced over periods of thousands of years are combined and presented to visitors as singular, coherent experiences. At *Dinosaur*, all of the physical components of the attraction—from the ride vehicles to the robotic dinosaur figures—are driven by electromagnetic mechanisms that are synchronized to a digital soundtrack, and both movements and timing can be reprogrammed. Taken together, they articulate the attraction's narrative trajectory while also adding the possibility of repeatability and even reversibility through the programmable nature of the individual elements.

Siegfried Zielinski comments on the political economy of oscillations between spatiality and temporality in media practice. For Aleksei Kapitanovich Gastev (1882-1939) and other advocates of machinism in pre-revolutionary Russia, techno-scientific management offered an ideology-free method for improving worker productivity, as well as a reform tool for integrating humans into the complex mechanisms presented by industrial societies.[238] To this end—building off of research conducted by Marey and his contemporaries, which was discussed in chapter three—film production permitted the precise analysis of complex movements that could be transformed into data and made universally legible.[239] Whereas

238Siegrfried Zielinski, *Deep Time of the Media: Toward an Archaeology of Hearing and Seeing by Technical Means*, trans. Gloria Custance (Cambridge and London: The MIT Press, 2008): 237.
239Ibid., 245.

Gastev connected the idea of legibility to universality and ultimately productivity, *Lascaux IV*, *Caverne du Pont-d'Arc* and *Dinosaur*, expand the scope of the leisure industries to include Deep Time. While this is not unheard of, the oscillations between temporal and spatial information that characterize each site seem intended to draw the remote past into modern economies, rather than abstracting human actions into data sets for the purpose of perfect integration. By exploring Deep Time as a theme that reaches deliberately outside everyday experience, the sites discussed in chapters three and four allow a new array of industries to capitalize on the remote past.

While all of this dissertation's research sites use the concept of Deep Time to prompt visitors to consider the future of humanity—or at the least its interactions with its co-inhabitants—there are important differences in the ways that they offer access to the remote past. We have seen that the first two chapters examine sites that operate within the Natural History museum context, and to that end the Page Museum and the *Evolving Planet* exhibit are overwhelmingly concerned with the presentation and interpretation of objects. The replicated cave paintings at *Lascaux IV* and *Caverne du Pont-d'Arc* are apprehended through the use of theatrical staging techniques, which links them additionally to public visual spectacles, and the *Dinosaur* attraction completes this transition by abandoning any pretense of education to focus on dramatic action in a fantastic prehistoric setting. In contrast to the first and second chapters, the more entertainment-focused sites discussed in the third and fourth chapters rely upon simulation and reproduction as their primary attractions. The authenticity of display objects is thus critical to discussions in the first half of the dissertation, while those of the second half are overwhelmingly concerned with the authenticity of the visitor experience. This distinction is not meant to imply that the research

sites differ in relation to the concepts factuality and truth, nor does it necessitate an opposition between sensation and cognition. It suggests instead that each site uses a distinct set of media strategies to produce a different relationship between audiences and the remote past. Above all, this helps us to understand differences in the communicative function of individual objects and the visibility of institutional frames.

The change in emphasis from the apprehension of objects to immersive experience suggests that whereas the Page Museum and the *Evolving Planet* exhibit are primarily concerned with abstract principles such as Pleistocene ecology, climate change and evolutionary theory, the discussions of *Lascaux IV*, *Caverne du Pont-d'Arc* and *Dinosaur* are engaged with tangible material experiences. This recalls André Leroi-Gourhan's (1911-1986) discussion of graphic versus figurative representation, which states that abstract images—specifically those found in Paleolithic art—preceded the development of explicitly figurative ones.[240] More significantly, an apparent disinterest in figurative representation may suggest a greater reliance upon a shared linguistic framework that preceded the production of images. In the context of this dissertation, this means that when compared to the illusionistic scenic elements used at *Lascaux IV* and *Caverne du Pont-d'Arc*, individual objects and displays found at the Page Museum and *Evolving Planet* are less legible on their own terms. Instead, their importance lies in their relationships to the narrative and theoretical content of the exhibitions on the whole.

Variations in the codes of realism at play between the first and second halves of the dissertation concern fixing the meaning of objects in the first two chapters, and an emphasis on established conventions of representation thereafter. This is especially apparent in a

240André Leroi-Gourhan, *Gesture and Speech*, trans. Anna Bostock Berger (Cambridge and London: The MIT Press, 1993): 190.

significant display in the *Evolving Planet* exhibit, which is centered on a sculptural reconstruction of the Triassic dinosaur *Herrerasaurus ischigualastensis*. This reconstruction serves as a speculative supplement to a mounted skeleton of the same species, with which it shares a pedestal. Since it is a relatively obscure species, *Herrerasaurus* is of interest mainly to those engaged in paleontology research, and its shifting classification suggests that its significance continues to be understood in new terms. In contrast, by depicting the late-Cretaceous *Carnotaurus sastrei* using robotic figures, the designers of Disney's *Dinosaur* attraction introduce the species as an antagonist in an exclusively dramatic storyline which lacks scientific context. The physical design of the attraction presents the dinosaur as a threat during a fantastic journey into the past, and riders are prevented from encountering it as anything other than an aggressor.

The comparison between these figures is not as straightforward as it may seem at first glance. While the *Herrerasaurus* display does indeed rely upon shared conceptual and linguistic frameworks for comprehension—which suggests identification with the graphic—the pairing of a mounted skeleton with a sculptural reconstruction represents an attempt to fix meaning between the species as an abstract concept and an organism with a tangible physical presence, and this aligns the display with the figurative. Similarly, the robotic *Carnotaurus* figures are fully articulated and dynamic representations whose physical characteristics—their prominent teeth, claws and horns, alongside their large size relative to riders—emphasize deadliness. However, its presentation as an antagonist comes at the expense of biological or ecological knowledge of the species. This brief comparison suggests that rather than attempting to classify every single display element at each site as wholly graphic or wholly figurative, it is more informative to consider the relationship between the two. Leroi-

Gourhan connects graphic images to a mode of engagement that is concerned with rhythm, and ultimately temporality, and while it is not made explicit, this suggests that figurative images may be inclined toward spatial relationships. Since they transition between the spatialization and temporalization of information, the sites examined for this dissertation are best understood as also making strategic use of both graphic and figurative modes of representation; by examining how and when these transitions are made, we can come to comprehend our own personal relationships to the exhibits and the topics they explore.

We can plainly see that each site relies upon different combinations of media technologies and objects, although it can be said that all use largely speculative visualization techniques in order to engage visitors. Each therefore offers different access to the invisible through illustrative and narrative means. The techno-scientific gaze at work in the Natural History Museum context often entails meticulous and distanced observation of display objects that facilitate understanding of an abstract principle. At the Page Museum and the *Evolving Planet* exhibit, each presumes the existence of a fact that must be interpreted through specimens and other display elements. The visitor's gaze shifts to the historical at *Lascaux IV* and *Caverne du Pont-d'Arc*, which is characterized as subjective, but still grounded in a universal experience. Here, the embodied presence of the visitor in a discrete environment implies a shift from observation to experience. While a colonial gaze is implied in the ideology of the *Dinosaur* attraction, it favors immersive experience over distanced observation. Visitors participate directly in a narrative event through multimedia storytelling techniques that include both visualization and bodily performance. While the gaze may shift from site to site, in each case the mode of addressing visitors relies heavily upon myth. By invoking origin narratives that situate humanity within an ordered worldview, these sites

present Deep Time is integral to our past, present and future as a species and a society.

While each of this dissertation's research sites is based on expansive material evidence, Deep Time is a theoretical construct, and its apprehension by visitors requires a spatio-temporal context which each site articulates in distinct ways. By incorporating frameworks such as Big History—as presented by David Christian—I have explored how leisure sites have leveraged scale in order to orient visitors toward a much larger universe with greater relevance for their day-to-day existence. My inquiry is derived from spatial and temporal discussions within film theory, which moves beyond the application of film language and narrative logic to physical experiences by incorporating issues of spectatorship and embodiment that are grounded in the work of scholars such as Linda Williams. Similarly, the media archaeology of Siegfried Zielinski and Erkki Huhtamo calls for greater attention to the mechanisms and processes of communication that result from each site's distinct configuration, as well as the institutional and cultural frameworks that guide how visitors engage them. My primary concern has been examining object-oriented and themed entertainment attractions as spaces that attempt to reconstruct surfaces and experiences associated with the remote past. These effects enable new forms of engagement at the intersection of media and environment, as well as with broader discussions that concern the Anthropocene. As the research sites operate within the tourism and leisure industries, this dissertation provides a starting point for examining how theming influences scientific and aesthetic imaginations in a variety of regional and national contexts.

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