

“Strict Fidelity to Nature”:
Scientific Taxidermy, U.S. Natural History Museums, and Craft Consensus, 1880s-1930s

Jonathan David Grunert

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Mark V. Barrow, Jr., Chair

Matthew R. Goodrum

Matthew Wisnioski

Eileen Crist Patzig

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ABSTRACT

As taxidermy increased in prominence in American natural history museums in the late nineteenth and early twentieth centuries, the idea of trying to replicate nature through mounts and displays became increasingly central. Crude practices of overstuffing skins gave way to a focus on the artistic modelling of animal skins over a sculpted plaster and papier-mâché form to create scientifically accurate and aesthetically pleasing mounts, a technique largely developed at Ward’s Natural Science Establishment in Rochester, New York. Many of Ward’s taxidermists utilized their authority in taxidermy practices as they formally organized into the short-lived Society of American Taxidermists (1880-1883) before moving into positions in natural history museums across the United States.

Through examinations of published and archival museum materials, as well as historic mounts, I argue that taxidermists at these museums reached an unspoken consensus concerning how their mounts would balance pleasing aesthetics with scientific accuracy, while adjusting their practices as they considered the priorities of numerous stakeholders. Taxidermists negotiated through administrative priorities, legacies of prominent craftsmen, and a battery of instructive materials, all claiming some authority as to what proper taxidermy could—and *should*—be. The shifts in taxidermy authority revealed truths about what taxidermy could mean, questions of how taxidermists identified

themselves within the profession and to outsiders, practices for presenting taxidermy to museum visitors, and techniques for representing nature.

This project traces the paths of consensus for developing techniques to construct museum taxidermy from the 1883 end of the S.A.T until the founding of the Technical Section of the American Association of Museums (AAM) in 1929. Two critics who book-end this project—Robert Wilson Shufeldt, an army doctor, naturalist, and museum critic, and Lawrence Vail Coleman, director of preparation and exhibition, American Museum of Natural History, and director of the American Association of Museums—identified similar characteristics that suggest a like-minded approach as to what constituted proper museum taxidermy among museum taxidermists. Museum taxidermy carried with it a set of characteristics: accuracy and a pleasing aesthetic for Shufeldt; feeling, unity, action, balance, reality, and size for Coleman. These two sets of criteria complemented each other as they reified consensus. What complicated this finding was that taxidermists themselves did not acknowledge them specifically, only relating to them in passing, if at all. Regardless, taxidermic practice seemed to be consistent across these decades.

This study complicates the nature of scientific representation, in that it focuses a great deal on its artistry. Museum taxidermy is supposed to be an instructional tool, guiding museum visitors in the way they approach nature, and especially how they see animals, and focusing on teaching the science of animal behavior, biodiversity, and habitat, to name a few. It is a scientific object, representing the most up-to-date research in the field, but consensus surrounding it is not scientifically measurable. Instead, taxidermy consensus happened in hallways and back rooms (both literal and metaphorical), with little written down, and the mounts as the most substantial evidence that is had been achieved.

Nevertheless, taxidermists negotiated the array of stakeholders present—museum administrators, naturalists, collectors, and the public—as they fashioned mounts that were both accurate and aesthetically pleasing representations of animal lives.

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GENERAL AUDIENCE ABSTRACT

In this project I look at museum taxidermy in United States natural history museums, from the 1880s to 1930s. In that 50-year span, taxidermy practices coalesced around a primary technique for mounting animal skins, using a wooden form and papier-mâché as the structure for stretching the skin over it. But there was more to this consensus than using the same techniques, as two critics who book-end this project—Robert Wilson Shufeldt, an army doctor, naturalist, museum critic, etc., and Lawrence Vail Coleman, director of preparation and exhibition, American Museum of Natural History, and director of the American Association of Museums—identified similar characteristics that suggest a like-minded approach as to what constituted proper museum taxidermy among museum taxidermists. I argue in this project that taxidermists reached an unspoken consensus around their craft that balanced scientific accuracy with a pleasing aesthetic, to achieve mounts that would be both scientifically meaningful and not off-putting to museum visitors.

Museum taxidermy carried with it a set of characteristics: accuracy and a pleasing aesthetic for Shufeldt; feeling, unity, action, balance, reality, and size for Coleman. And these two complement each other as they reify consensus. What complicated this finding was that taxidermists themselves did not acknowledge them specifically, only relating to

them in passing, if at all. Regardless, taxidermy seemed to be consistent across these decades.

This study complicates the nature of scientific representation, in that it focuses a great deal on its artistic nature. Museum taxidermy is supposed to be an instructional tool, guiding museum visitors in the way they approach nature, and especially how they see animals. Museum taxidermy generally shies away from terrifying visitors with animal size and ferocity, focusing instead on teaching the science of animal behavior, biodiversity, and habitat, to name a few. In this sense, it is a scientific object, representing the most up-to-date research in the field.

Consensus in the realm of taxidermy, and in scientific representation more broadly, is not scientific consensus, but more consistent with an artistic approach, like a posteriori recognitions of characteristics unique to artists or artistic movements. Taxidermy consensus happened in hallways and back rooms, with little written down, and the mounts as the most substantial evidence. Nevertheless, taxidermists negotiated the array of stakeholders present—museum administrators, naturalists, collectors, and the public—as they consistently made these mounts both accurate and aesthetically pleasing. And they still make sense when we see them, as they can be repurposed to tell new stories consistent with current understandings of animal lives.

DEDICATION

This project is dedicated to Lissa, for being a motivator, inquirer, and partner. This paper is as close as we'll get to having taxidermy in the house; I promise.

ACKNOWLEDGEMENTS

It would be disingenuous to take full credit for this project. At least, to take it without many caveats. A project of this scale is not something that one person can undertake alone. Indeed, many people contributed to the formation of this work, in innumerable ways.

Librarians get a lot of thanks in these acknowledgements, and not without due cause. As one trained in librarianship, I have appreciated the gratitude of researchers who have recognized the librarian's efforts in the process of a project. As one of those researchers, I appreciate the amount of work that librarians do, indeed, put into projects that are not their own. More, though, librarians get credit for helping find information, artifacts, and publications that elude even the craftiest researchers. However, their enthusiasm for projects is encouraging, and as important to the formation of ideas and finishing a project as is finding those bits of information. I'd especially like to extend my sincerest and most enthusiastic gratitude to three sets of librarians.

First, librarians at Virginia Tech, Colorado State University-Pueblo, and SUNY Geneseo were encouraging and helpful in different ways. Virginia Tech University Libraries gave me my first librarian experience, which is irreplaceable. Librarians there, especially Bruce Pencek and Scott Fralin, were instrumental in helping me form research ideas and figure out how best to pursue them in a way that was both manageable and interesting. CSU-Pueblo and SUNY Geneseo hired me despite my being ABD, and their Libraries gave me time and encouragement to finish this project. Interlibrary loan shark Kenny McKenzie,

in Pueblo, helped to retrieve materials, both historical and current; without these resources, this project would not have been possible.

Second, archivists and special collections librarians were indispensable to the completion of this project. Notably, Ellen Alers and Pam Henson at Smithsonian Institution Archives helped navigate the tremendous collection in Washington, D.C., as well as providing insight into other aspects of research for me to consider as continuing this project. Sam Schiller and René O’Connell at the Denver Museum of Nature & Science archives found many items that proved valuable to this project, as they tolerated shouts of joy as that material provided some important links in my narrative. Furthermore, thanks also to special collections librarians—Marc Brodsky and Kira Dietz at Virginia Tech, Lori Birrell, Melinda Wallington, and Melissa Mead at the University of Rochester’s River Campus Libraries, and Smithsonian Librarians at the Dibner Library of the History of Science and Technology as well as Leslie Overstreet at SIL’s Joseph Cullman 3rd Library of Natural History. Fragile books require special handling, and these librarians guided my using them.

Third, digital repositories saved many hours in archives. Especially, the folks at Biodiversity Heritage Library, HathiTrust, and Google Books provide invaluable platforms for researchers. Their existence has been more helpful than I could have imagined.

Researchers were more than generous in the hours they spent talking with me through some challenging aspects of doing this kind of research, as well as some tips for approaching sources. Greg Nobles and I chatted for hours at the American Antiquarian Society’s 2014 CHAViC Summer Seminar; Sally Gregory Kohlstedt, Karen Rader, and Victoria Cain spent time chatting during breaks at various HSS meetings, as well as

conversing over emails; other academics helped me out online, working through word choices and punctuation, as well as deciphering handwriting.

Additionally, people who work with museum taxidermy provided insights and motivation for completing the project. At the Field Museum of Natural History, Larry Heaney gave me some information about particular mounts that proved important to my study; Mark Alvey gave me a behind-the-walls tour of the museum, especially into the taxidermy labs, pointing out mounts that I might have otherwise ignored. Similarly, Darrin Lunde at the Smithsonian's National Museum of Natural History gave me views into the world of museum taxidermy I might not have seen, especially of Alexander, the tiger that guards the large squirrel collection in Washington. Moe Flannery at the California Academy of Sciences was away from the museum when I visited, but she provided a great deal of guidance to exploring the space on my own. Jeff Richardson at the Denver Museum of Nature and Science helped me contextualize the many mounts on display at the museum, as he showed me the first group of bison the museum collected from Edwin Carter. Tom Naione and Mae Reitmeyer at the American Museum of Natural History showed me some of the educational cases that were taken to schools across the City, and Lisa Bresloff showed me repaired mounts in the Museum's current education collection. The enthusiasm they all showed for natural history museums, taxidermy, and science education is an inspiration.

Perhaps the most significant source of academic support came at Virginia Tech. The Department of Science, Technology, and Society gave me the opportunities to pursue this project, and they were willing to grant the space to explore this outer region of STS. The Shut-Up-and-Write group got this project going, if not for their feedback, then for a space that mandated quiet and writing.

My advising committee has been similarly helpful. Eileen, Matt, Matthew, and Mark were each encouraging, supportive, challenging, and skeptical when needed. Mark, who saw more iterations of the project than the others, expanded my thinking in the project, and pushed me to complete by various deadlines. Without his encouragement, this project would not be complete.

But the most supportive group has, of course, been my family. My parents first took me to the Smithsonian two decades before this project started, and they endured trips back (but now with grandchildren). Doubtless, these trips provided the seeds for this project. Extended family members would send me photos of taxidermy they'd encountered, letting me know that they were thinking of my progress. Miles and Adele, ages 4 and 2 when the project started, and 10 and 7 when it's finished, learned a lot about museums and taxidermy. Their enthusiasm for natural history and science museums has increased in the course of this project, which has been helpful when a museum visit has been necessary for research, and when looking at things that are not taxidermy has been a necessary relief. Their patience was strong when mine was thin; their extended sleep was a blessing when I needed some extra time. Lissa, too, was encouraging, in all the same ways as librarians, museum workers, academic support, and my advising committee. Toward the end of the project, she pushed me to finish, setting, with me, a timeline for progress and asking me how looking at Twitter was helping me finish a chapter. Singularly, she helped me make progress with this project while earning a degree of her own, working a full-time job, and raising our two kids. She knows more about taxidermy than she wants to, so this dissertation is dedicated to her.

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LIST OF ABBREVIATIONS

AAM	American Association of Museums
AMNH	American Museum of Natural History (New York, N.Y.)
CAS	California Academy of Sciences (San Francisco, Calif.)
CMNH	Colorado Museum of Natural History (Denver, Colo.)
DMNS	Denver Museum of Nature and Science (Denver, Colo.)
FMNH	Field Museum of Natural History (Chicago, Ill.)
NMNH	National Museum of Natural History (Washington, D.C.)
SAT	Society of American Taxidermists
SI	Smithsonian Institution
SIA	Smithsonian Institution Archives
SIL	Smithsonian Institution Libraries
SMT	Society of Museum Taxidermists
USNM	United States National Museum (Washington, D.C.)
WCE	World's Columbian Exposition (1893)
WNSE	Ward's Natural Science Establishment (Rochester, N.Y.)
WTC	World Taxidermy Championships

We were collectors, dismantlers, and artisans. We pieced together life from the remnants of death. Animals that might have weathered into nothing got to live on indefinitely in our care.

Kristen Arnett
Mostly Dead Things (2019)

The display had the same testimonial weight as a photograph, the sense that it was an indisputable witness to reality, because when the photograph was taken the photographer necessarily had to *be there*, sharing the same reality. But the act of witness here had an added spatial dimension. That was the nature of the feat Henry was admitting: it was a three-dimensional photograph. In a second, the okapi would bolt, as an okapi in the wild would if it heard the click of a camera.

Yann Martel
Beatrice and Virgil (2010)

But we contend here, most emphatically, that the lesson it teaches is fully worthy of it, and these are the very kinds of objects that we should devote our very best pains to introduce, with a strict fidelity to nature, into our zoological museums.

Robert Wilson Shufeldt
Scientific Taxidermy for Museums (1894)

INTRODUCTION

REPRESENTING NATURE AS REAL



*Figure 1(left): Tiger in Chicago's Field Museum of Natural History
Photo by Zbigniew Bzdak, accompanying Johnson, Steve. "Unfrozen in
Time: New Life, and Crowdfunding, for Dioramas at Field Museum."
Chicago Tribune, 8 April 2015. (Used with permission.)*

*Figure 2 (right): Bengal tigers in Field Museum of Natural History
(photo by author, 2014)*

In the halls of the Field Museum of Natural History, located in the center of Chicago's Museum Campus, there are two displays of taxidermied tigers. One, in the "Animal Biology" hall, contains an individual tiger, open-mouthed; the other, in the "Mammals of Asia" hall, is a full diorama of two tigers, an adult female and her young. These displays reflect dramatic changes in taxidermy practices in the three decades between their creation. The lone tiger was mounted by Ward's Natural Science Establishment, a natural history artifact dealer located in Rochester, New York. It was initially presented at the 1893 World's Columbian Exposition, a World's Fair held in Chicago to celebrate the quadricentennial of Columbus' New World voyages, as part of the founding collection of the Field Columbian Museum. The pair of tigers was collected by Theodore, Jr., and Kermit Roosevelt on the 1925 James

Simpson-Roosevelts Asiatic Expedition, and they were mounted by taxidermist C. John Albrecht. They stand in a full diorama display, complete with a background mural, painted by Charles A. Corwin, and with plants in the foreground that reproduce the grassland habitat of the animal.

These two displays could not be more differently situated. The individual mount stands among other animals as a component of the museum's discussion of biodiversity. The tiger stands next to a wolf, a primate, and a bird against a yellow wall, and it appears to snarl and recoil at museum visitors. In the diorama, the tigers stand over a wild pig the adult tiger has just hunted, depicting a specific aspect of the tiger's behavior in the wild. The young tiger's closed mouth and lowered tail express submission to the adult female, who appears to pant over its recent kill.

The scientific knowledge contained within these displays provides additional contrast. The meaning of the pair of tigers is constructed through all aspects of the diorama space: the grasslands help demonstrate camouflage; the scene shows the animal's diet and behavior; an adult female juxtaposed against the young tiger's submissive attitude—a term often used by taxidermists to refer to the facial expression—reflects social structure. Absent the context of a diorama, all the extra information about the animal's behavior, diet, and social structure is hidden. But the individual tiger provides instruction on its own, showing something about the animal's anatomy, and how it differs from other related species.

These examples provide a useful beginning point for discussing museum taxidermy, in the tigers' physical similarities and differences, as well as their constructions and meanings. Though very different, all three tigers might be considered *scientific taxidermy*, a

term introduced in an 1894 discussion of U.S. government-held taxidermy collections.¹ In this project, I examine mounts such as these tigers, exploring the aesthetics, values and practices that made them particularly *scientific*—blending accuracy with aesthetics—as opposed to other contemporary mounts that exaggerated size or ferocity for those who hunted them, or that set animals in a decidedly human-like scene, such as a wedding or a classroom. I explore how Scientific Taxidermy could adequately describe such different mounts as the Field Museum’s tigers, and how this approach to mounting animals was used in museum instruction, from the era that produced work such as Ward’s through the era of massive changes in expanding museum wildlife halls—the golden age of taxidermy in the 1930s. This is not an indictment of the quality of earlier mounts; I am not telling a story that emphasizes progress in taxidermy techniques. Rather, I argue that museum taxidermists in these decades—the 1880s through the 1930s—reached an unspoken consensus concerning how their mounts and displays would balance scientific accuracy with pleasing aesthetics.

The idea of unspoken consensus is not specific to taxidermy or to craftsmanship more broadly. I use this concept to refer to instances where the precise terms of consensus are not specifically recorded. Instead, they are evident in the characteristics present among similar works, and revealed by comparing and analyzing the items—in this case, the mounts—for common traits. This kind of consensus also exists in such diverse areas as paleontological skeletal mounts, textbook creation, and online tagging practices. Designs of

¹ Robert W. Shufeldt, *Scientific Taxidermy for Museums: Based on a Study of the United States Government Collections*, Report of the U.S. National Museum for 1892 (Washington: G.P.O., 1894), 428.

paleontological mounts coalesced around examples of other animals, changing over time and according to the needs of museum administrators and financiers.² Similarly, handbooks and textbooks took on similar designs, structures, and content, as creators “cribbed” material for their own work, demonstrating a consistent textbook style across disciplines.³ Even more recently, online tagging practices reached an unspoken consensus, with disparate internet users converging on common tags as they classified information in ways specifically meaningful to their purposes.⁴

Museum taxidermists reached consensus to maintain an aesthetic of accuracy to nature in their work. This bundling was identified in 1894 as “Scientific Taxidermy,” an aesthetic of museum taxidermy that presented displays as accurate reflections of nature.⁵ These ideas together complicated the practice of taxidermy for museums. To remain accurate to nature, taxidermy needed to demonstrate an appropriate and concordant understanding of the terms *accurate* and *nature*. Determining accuracy depended a great deal on the context of the collectors, naturalists, and taxidermists, as where, when, and how they observed an animal influenced its representation in a museum exhibit. Additionally, the display had to fill a specific function within the museum. Museum halls presented some

² Lukas Rieppel, *Assembling the Dinosaur: Fossil Hunters, Tycoons, and the Making of a Spectacle* (Cambridge, Mass.: Harvard University Press, 2019).

³ Alan Sica, "Handbooks Past and Present" *Contemporary Sociology* 18, no. 4 (1989): 504-08.

⁴ Margaret E.I. Kipp and D. Grant Campbell, “Patterns and Inconsistencies in Collaborative Tagging Systems: An Examination of Tagging Practices” *Proceedings of the American Society for Information Science and Technology* 43, no. 1, (2006), 1-18.

⁵ Mary Anne Andrei, "Nature's Mirror: How the Taxidermists of Ward's Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species" (Dissertation, University of Minnesota, 2006).

scientific narratives through depictions of animals and animal behaviors in ways that collectors and naturalists may not have observed.⁶

This project traces the path toward consensus for scientific taxidermy. That is, I do not look at factions within the world of museum taxidermy, for no clearly-defined sides existed. Instead, taxidermists maintained an air of secrecy around certain aspects of their work. Certainly, many parts of their craft were openly shared: the sturdiest structures, best tanning and molding practices, and dealers who provided good glass eyes and plaster teeth, to name a few. But other aspects of taxidermy, such as maintaining a certain texture of an animal's fur or replicating a pose, became signature characteristics that individual taxidermists were often loath to share with potential competitors. The consensus for creating museum taxidermy began with identifying common characteristics in the government's collection of taxidermy. It then moved through publications on taxidermy techniques, and scientific taxidermy's usefulness for museums became clarified in critical examinations of museum mounts. Consensus became most salient as scientific taxidermy was replicated in new museums, following in the steps of museum taxidermists who had tested and honed its aesthetic over the decades.

However, consensus among taxidermists was not easily achieved. Challenging the status quo of preparing animals for display revealed deeply-rooted assumptions about the meanings and purposes of taxidermy, the nature of the work, and the identity of the

⁶ Some displays construct narratives that reinforce a popular misconception about the animal; for example, spotted hyenas are frequently portrayed as scavengers, in displays that ignore their inclination to hunt rather than scavenge. Anna Wilson, "Sexing the Hyena: Intraspecies Readings of the Female Phallus," *Signs: Journal of Women in Culture & Society* 28, no. 3 (2003).

taxidermists. Questions that arose in the process of consensus were broad in nature, examining parts of the craft that challenged the taxidermists who made it, museum administrators who purchased and displayed it, the public who viewed it, and naturalists who commissioned it.

Projects that delve into the history of scientific representation often address similar binaries that are emblematic of the field of study. Are the images—or, in this case, mounts—nature or art? Are they representative of typical nature, or reflective of specific observation? Should the focus of the image be the specimen or its environment? Is scientific representation, in any of its forms, art or craft, and are its practitioners professionals or hobbyists? Are representations supposed to be educational in nature, or can they be artistic, or even both? Navigating these dichotomies is an integral part of examining the underlying values for creators, administrators, naturalists, and viewers, and what was at stake for their larger decisions.

The array of binary questions posed in studies of scientific representation comes to several groupings in this investigation of museum taxidermy. Actors asked epistemological questions, examining the meanings of taxidermy for taxidermists, for the museum, for naturalists, and for museum visitors. They also wanted to know how taxidermy reflected nature—a phenomenological query into the role a technology defines a particular view or use. Taxidermists in particular asked questions of identity, in an effort to figure out their role—as well as the roles of their work—in museum administration, alongside naturalists, and in front of a museum audience. Finally—and this was almost exclusively a concern for taxidermists—questions of normativity arose, especially the formula for proper taxidermy. These four areas—epistemology, phenomenology, identity, and normativity—are the

locations around which museum taxidermy developed a consensus at the end of the nineteenth and the beginning of the twentieth centuries. Though taxidermists, as the central group of this study, did not consciously structure an examination of their aesthetics, values, and practices, they touched on all parts as they came together to represent a “strict fidelity to nature.”⁷

LITERATURE REVIEW

In recent years, taxidermy has become an object of cultural fascination.⁸ Coffee table books feature photography showcasing museum displays as well as particularly artistic mounts.⁹ Additionally, there has been wide-ranging interest in online communities in “crap taxidermy”—a reference to especially poor, unfortunately positioned, misshapen, and downright ugly mounts.¹⁰ Not only has there been interest in these popular publications on taxidermy; recent years have seen a resurgence of practicing taxidermic arts.¹¹ In new writings about creating taxidermy, the focus is less on the structure of the mount, and more on constructing taxidermy ethically, including using “found” animals such as roadkill, or

⁷ Shufeldt, *Scientific Taxidermy for Museums*, 428.

⁸ See especially Divya Anantharaman and Katie Innamorato, *Stuffed Animals: A Modern Guide to Taxidermy* (New York: Countryman Press, 2016).

⁹ Jane Eastoe, *The Art of Taxidermy* (London: Pavilion Books, 2012); Patrick A. Morris, *A History of Taxidermy: Art, Science and Bad Taste* (Ascot, Berkshire: P.A. Morris, 2010); *Walter Potter's Curious World of Taxidermy* (New York: Blue Rider Press, 2014); Stephen C. Quinn and American Museum of Natural History, *Windows on Nature: The Great Habitat Dioramas of the American Museum of Natural History* (New York: Harry N. Abrams, 2005); Robert Marbury, *Taxidermy Art: A Rogue's Guide to the Work, the Culture, and How to Do It Yourself* (New York: Artisan, 2014).

¹⁰ Adam R. S. Cornish, *Much Ado About Stuffing: The Best and Worst of @CrapTaxidermy* (Kansas City: Andrews McMeel Publishing, 2014).

¹¹ Marbury, *Taxidermy Art*; Anantharaman and Innamorato, *Stuffed Animals*.

non-animal components such as felt.¹² Journalistic approaches to taxidermy have pursued more narrative structures, leading the readers through the processes of mounting and viewing specimens, as well as introducing them to contemporary cultures of taxidermists.¹³

In many of these popular works, there is general agreement as to the qualities that make for poor taxidermy. However, there is little explicit discussion as to how these qualities came to signify inferior taxidermy or of the qualities that make for proper taxidermy, regardless of the taxidermy's context.

Studies of normativity in taxidermy are often couched in terms of specific qualities and how those qualities contributed to narratives that informed larger conventions of creating taxidermy mounts. For example, when Karen Wonders discusses the backdrop of dioramas, she extends her argument to address the ways the curved wall, the lighting, and the foreground informed the taxidermy mount itself, and the ways it was created and presented.¹⁴

Taxidermy contributed to natural history as a medium for biological and zoological study. One focus of the history of science is the communication of knowledge.¹⁵ Taxidermy functions as a tool in the communication of knowledge in that it conveys multiple meanings, and those meanings can differ by context. Indeed, the process of taxidermy

¹² Though a crafting book, *The Felt Taxidermist* (Bellevue, Wash.: beckery&mayer!, 2017) guides would-be taxidermists through the creation of small, vegan mounts.

¹³ Melissa Milgrom, *Still Life: Adventures in Taxidermy* (Boston: Houghton Mifflin Harcourt, 2010); Dave Madden, *The Authentic Animal: Inside the Odd and Obsessive World of Taxidermy* (New York: St. Martin's Press, 2011).

¹⁴ Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History* (Uppsala: Almqvist & Wiksell, 1993).

¹⁵ James A. Secord, "Knowledge in Transit," *Isis* 95, no. 4 (2004).

transforms the animal into an object, “one that must be interpreted by the taxidermist.”¹⁶ The wide variety of interpretations to recreate the animal in a permanent position echoes as the object—now frozen—is understood differently by those who see it.

Historic treatments of taxidermy often dissect the meanings tied up within the mounts. Karen Rader, Victoria Cain, and Rachel Poliquin engage with the idea that the taxidermy presented in museum displays can have different meanings and tell different stories. Rader and Cain’s treatment of educational, flexible displays within natural history museums is at the intersection of science and society in museums, where interpersonal and political dynamics of individual researchers and administrators met social improvement through public education.¹⁷ Poliquin extends these arguments about taxidermy in museums to look at the wider world of taxidermy, and how artists approached the craft.¹⁸ No longer strictly a pedagogical tool, taxidermy could be a wonder in itself.

But taxidermy also remained an example of scientific work and a key component of museums’ research programs. Those who worked in museums used taxidermy to bring field work into a laboratory setting, reflecting a larger transition from natural history to the study of biology. Robert Kohler has explored the borderlands of natural history and biology, looking at the researchers who existed both in the field and in the laboratory.¹⁹ In

¹⁶ Verity Darke, “Reading the Body-Object: Nineteenth-Century Taxidermy Manuals and *Our Mutual Friend*,” *19: Interdisciplinary Studies in the Long Nineteenth Century* 24 (2017): 2.

¹⁷ Karen A. Rader and Victoria E. M. Cain, *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century* (Chicago: University of Chicago Press, 2014).

¹⁸ Rachel Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park: Pennsylvania State University Press, 2012).

¹⁹ Robert E. Kohler, *Landscapes & Labscapes: Exploring the Lab-Field Border in Biology* (Chicago: University of Chicago Press, 2002); *All Creatures: Naturalists, Collectors, and Biodiversity, 1850-1950* (Princeton, N.J.: Princeton University Press, 2006).

the transitions between natural history and biology, between fieldwork and laboratories, museums changed, too, to become more active in building their collections. Through the knowledge gained in biology, networks of biologists, including museum-housed scientists, worked to improve American culture to become more liberal, secular, and humane.²⁰ Museums were the locations for the creation and dissemination of these knowledges.

Many actors are involved in the creation of meaning for taxidermy. Scholars have looked at taxidermists and museums, of course, but also natural history dealers. Important to natural history and museum development, dealers in natural history specimens—that is, those who sold and traded specimens of natural history, like meteorites, skins, and taxidermy mounts—burgeoned in the post-Civil War United States.²¹ From these networks of taxidermists, museums, and dealers, as well as the knowledge-makers in biology and natural history and the sportsmen who sought hunting trophies, emerged practices of taxidermy.

Nevertheless, taxidermy struggled to be recognized as a serious endeavor. Professionalization was a key component of this project. Susan Leigh Star's examination of the short-lived Society of American Taxidermists (S.A.T.) reveals the complexities of forming and maintaining a professional organization, including the struggles for acceptance

²⁰ Philip J. Pauly, *Biologists and the Promise of American Life: From Meriwether Lewis to Alfred Kinsey* (Princeton, N.J.: Princeton University Press, 2000).

²¹ Mark V. Barrow, Jr., "The Specimen Dealer: Entrepreneurial Natural History in America's Gilded Age," *Journal of the History of Biology* 33, no. 3 (2000); Sally Gregory Kohlstedt, "Henry A. Ward: The Merchant Naturalist and American Museum Development," *Journal of the Society for the Bibliography of Natural History* 9 (1980).

from outside its membership.²² Professional identity was important for taxidermists who wanted to be seen as more than hobbyists. Indeed, taxidermy was on the verge of becoming more than a hobby, with a cadre of taxidermists coming out of a private shop in Rochester, New York, and contributing to national conversations about species conservation.²³ Taxidermists were becoming more than sculptors and stuffers; their contributions extended their influence well beyond the museum, including to motion picture.²⁴

Taxidermy also shapes the way we see nature. When museum visitors look at taxidermy, it is often through glass, framed, and guided with explanatory placards. Phenomenology is a component of the philosophy of technology that critiques the manufacture of experience. In this project, scholarship from museum studies contributes to the larger conversation about the ways museums shape knowledge, and control the ways people can see information, to limit the interpretations of the specimens behind glass. More specifically, consensus around taxidermy was not only “a means of controlling nature, but of controlling the machine itself.”²⁵ It was controlling the way museum visitors saw and understood nature, and it was a way to control the proper construction of the mounts.

Finding and critiquing this communication fosters a kind of cultural history that “can reveal the ways in which the social and natural worlds give rise to their

²² Susan Leigh Star, "Craft Vs. Commodity, Mess Vs. Transcendence: How the Right Tool Became the Wrong One in the Case of Taxidermy and Natural History," in *The Right Tools for the Job: At Work in Twentieth-Century Life Sciences*, ed. Adele Clarke and Joan H. Fujimura (Princeton, N.J.: Princeton University Press, 1992).

²³ Andrei, "Nature's Mirror."

²⁴ See Mark Alvey, "The Cinema as Taxidermy: Carl Akeley and the Preservative Obsession," *Framework: The Journal of Cinema and Media* 48, no. 1 (2007).

²⁵ Bryan B. Rasmussen, "Technologies of Nature: The Natural History Diorama and the Preserve of Environmental Consciousness," *Victorian Studies* 60, no. 2 (2018). 257.

representations and are transformed by those representations.”²⁶ As public spaces, museums present ways to disseminate information, and displays and exhibits are fine subjects to examine as social constructions. Another body of scholarship examines this relationship between museums and the history of science, as museums were integral to developing and dispersing knowledge.²⁷ To this effect, William Walker and Steven Conn provide complementary histories about the mutual impacts of society and museums.²⁸ Where Conn looks at how museum administrators used the architecture of the museums to structure the ways Americans approached the knowledge the buildings held, Walker examines the development of the Smithsonian Institution’s museums and their many reinventions and restructurings as the American populace transformed. Similarly, and most closely related to a practical function of museum studies, Ivan Karp and Corinne Kratz offer an assessment of how museums can be interlocutors between knowledge and publics.²⁹

Absent from these historical conversations about taxidermy and museums is a discussion of scientific taxidermy. This is an odd omission, considering the value of

²⁶ Nicholas Jardine, James A. Secord, and E. C. Spary, eds., *Cultures of Natural History* (Cambridge: Cambridge University Press, 1996), 10.

²⁷ A special issue of *Isis* (December 2005) focuses on this relationship. It includes the following articles: Samuel J. M. M. Alberti, "Objects and the Museum," *Isis* 96, no. 4 (2005); Sophie Forgan, "Building the Museum: Knowledge, Conflict, and the Power of Place," *Isis* 96, no. 4 (2005); Sally Gregory Kohlstedt, "Thoughts in Things: Modernity, History, and North American Museums," *Isis* 96, no. 4 (2005); Jim Bennett, "Museums and the History of Science: Practitioner's Postscript," *Isis* 96, no. 4 (2005).

²⁸ Steven Conn, *Museums and American Intellectual Life, 1876-1926* (Chicago: The University of Chicago Press, 1998); William S. Walker, *A Living Exhibition: The Smithsonian and the Transformation of the Universal Museum, Public History in Historical Perspective* (Amherst: University of Massachusetts Press, 2013).

²⁹ Ivan Karp and Corinne A. Kratz, "Collecting, Exhibiting, and Interpreting: Museums as Mediators and Midwives of Meaning," *Museum Anthropology* 37, no. 1 (2014).

taxidermy for science education, since it opens up a space for examining how taxidermy fit into the larger schemes of museums and the educational opportunities those afforded the citizens of and visitors to their cities.

This project is positioned at the junctures of several fields of study, drawing from an intersection of science and technology studies, museum studies, and animal studies. It contributes to the history of science most broadly, and more specifically to histories of biology, natural history, museums, and taxidermy. This work also sits among cultural, institutional, and environmental histories. Drawing from these several contributing parts, this particular project is complementary to work done by historians and other scholars who have discussed the contributions of taxidermy to the knowledge developed and dispersed by museums. This project examines the taxidermists and their processes in making the mounts.

The three fields of inquiry where I locate this project contribute historical perspectives that are also valuable to this discussion. Science and technology studies offers critiques of science and science communication. Like other modes of communicating scientific knowledge, museum taxidermy developed out of specific cultures that contributed to its construction and the construction of scientific knowledge. In museum studies, the focus is on learning and exploring in a particular space. While scholars in this field seek to improve the museum visiting experience, a knowledge about museums' pasts is crucial for such adaptation. Finally, animal studies provides an arena for a study like this one, which complicates the nature of the relationship between humans and other-than-

human species.³⁰ These fields contain historical works that prove especially significant for this project, having done some of the contextualizing work that makes it practicable.

In taxidermy, the “animal-ness” of the mount is complex, in that the mount is in many senses an animal, with an animal’s skin, position, and semblance. But it is also a manufactured object for scientific study or artistic endeavor. Further complicating this relationship is the knowledge the object contains of the animal the taxidermy represents, and not necessarily of the specimen in particular.³¹ Taxidermy, Rachel Poliquin writes, “offers—or forces—intimacies between you and an animal-thing that is no longer quite an animal but could not be mistaken for anything other than an animal.”³² The human experience with taxidermy specimens extends the interaction with living animals, where humans project their own emotions onto the animals—emotions that developed through the construction of the scene and how people identify with the objects inside the cases.³³

SIGNIFICANCE OF THE STUDY

Museum taxidermy is a form of scientific representation. The mounts tell a story rooted in scientific research, and they aim to represent that research to a museum-going

³⁰ Paul Waldau, *Animal Studies: An Introduction* (New York: Oxford University Press, 2013).

³¹ The tension between specimen and type is central to discussions of representations—in any form—of nature. See especially Lorraine Daston and Peter Galison, *Objectivity* (Cambridge, Mass: MIT Press, 2007).

³² Poliquin, *The Breathless Zoo*, 39.

³³ Samuel J. M. M. Alberti, ed. *The Afterlives of Animals: A Museum Menagerie* (Charlottesville: University of Virginia Press, 2011); Eileen Crist, *Images of Animals: Anthropomorphism and Animal Mind*, Animals, Culture, and Society (Philadelphia: Temple University Press, 1999); Lorraine Daston and Gregg Mitman, *Thinking with Animals: New Perspectives on Anthropomorphism* (New York: Columbia University Press, 2005); Petra Tjitske Kalshoven, “Gestures of Taxidermy: Morphological Approximation as Interspecies Affinity,” *American Ethnologist* 45, no. 1 (2018).

public. But their construction—both literal and figurative—is problematic, as taxidermists brought with them biases, despite their efforts to remain objective in their fidelity to nature.

Taxidermy largely encountered the same problems as other forms of scientific representation, especially illustration. Natural history illustrations transformed as technologies developed and made more exquisite renderings reproduceable, as attitudes toward illustrations changed, and as aesthetic sensibilities shifted.³⁴ Additionally, “individual response and dissemination” of naturalist knowledge mattered a great deal to the social history of natural history, despite those individuals’ work within larger institutions.³⁵ And finally, the variety of technicians who worked on those forms of representation all contributed to its lasting aesthetic.³⁶

This project adds a dimension to Lorraine Daston and Peter Galison’s *Objectivity*.³⁷ Quite literally, this project focuses on three-dimensional taxidermy rather than the two dimensions of illustration and photography. But it also treats taxidermy as a practice that embodied objectivity in outward-facing objects instead of the inward-facing “scientific self” of Daston and Galison. The development of objectivity was important as scientists worked to coalesce their knowledge with their selves, thus creating the scientific self. Daston and

³⁴ Ann Shelby Blum, *Picturing Nature: American Nineteenth-Century Zoological Illustration* (Princeton, N.J.: Princeton University Press, 1993).

³⁵ Margaret Welch, *The Book of Nature: Natural History in the United States, 1825-1875*. (Boston: Northeastern University Press, 1998).

³⁶ Jonathan D. Grunert, "Aesthetics for Birds: Institutions, Artist-Naturalists, and Printmakers in American Ornithology, from Alexander Wilson to John Cassin." (M.A. Thesis, Virginia Polytechnic Institute and State University, 2014).

³⁷ Daston and Galison, *Objectivity*.

Galison identify the point where the knowing and knower converge as that point where scientists learn to see, and represent what they see in a fixed medium.³⁸

In *Objectivity*, Daston and Galison traced a change in visual representations of science, from truth-to-nature in illustrations, through mechanical objectivity, and onto trained judgment. Truth-to-nature was a virtue naturalists held in high esteem, as it was their attempt to focus their judgment to eliminate bias, an effort to make a typical or characteristic representation of the animal, plant, or object. Mechanical objectivity swung away from the idealized nature found in “truth-to-nature” images, aiming to represent nature through nature itself, especially in photography. Trained judgment became an important virtue to work alongside mechanical objectivity, as images could be manipulated to highlight a particular piece of data, so the image could be useful in helping the scientist to see scientifically.

Taxidermists worked to make museum taxidermy an amalgamation of these three kinds of objectivity. They measured and observed animals to maintain a truth to nature, sculpting from sketches to depict them in nature as it was in life. But the visible part of the animal itself was right there in the skin, a nod to the mechanical objectivity, and letting the animal show itself. And the position of the animal—whether on its hind legs to reach a leaf, or in a position of attack, or rolling in the dust—highlighted a particular behavior reflective of the values of trained judgment. I find that taxidermists were well aware that their work was a reflection of nature and not nature itself, and this, perhaps, drove them to a multifaceted form of objectivity. This project further extends the notion of objectivity into

³⁸ Daston and Galison, *Objectivity*, 40.

an outward-facing arena, where the created representation of objective nature necessarily means something to the large numbers of people who will see it. Contrasted against the “scientific self,” taxidermists were striving to anticipate interpretations as they molded the animal to fit a public expectation of nature.

This project examines that outward-facing construction of objectivity through the work done by taxidermists affiliated with major natural history museums in the United States. Specifically, it looks at the work done by taxidermists and museum administrators within their small world, as an internal discussion among colleagues. However, their work existed behind museum walls, in a social structure that sometimes privileged taxidermists over administrators.

In addressing these internal changes, this project also continues the work of revealing the often obscure workers who performed experiments, constructed apparatus, and took measurements.³⁹ Other scholars have done work to credit those who did unrecognized work. Carin Berkowitz and Caitlyn Wylie have taken up the mantle of identifying engravers and laboratory technicians, respectively, as those who worked unseen, and who were unlikely to receive public acknowledgement of their work.⁴⁰ In the instance of museums, these “invisible technicians,” to borrow Shapin’s term, were the ones who made scientific knowledge that became visible to a public.

³⁹ Steven Shapin has done some of the initial work in exposing historians’ blind spots when it comes to those who worked out of the spotlight in scientific fields. “The Invisible Technician,” *American Scientist* 77 (1989).

⁴⁰ Carin Berkowitz, “The Illustrious Anatomist: Authorship, Patronage, and Illustrative Style in Anatomy Folios, 1700–1840,” *Bulletin of the History of Medicine* 89, no. 2 (2015); Caitlin D. Wylie, “Trust in Technicians in Paleontology Laboratories,” *Science, Technology, & Human Values* 43, no. 2 (2018).

Compounding this invisibility are race, class, and gender, all of which are present at several points in this narrative. It would be disingenuous to suggest that external influences did not exist, as the white, male, and colonialist nature of taxidermy work is evident in the hegemony on display in museum halls. Donna Haraway's assessment of "Teddy Bear Patriarchy" critiques the masculine, colonial, and capitalist narratives of museum displays.⁴¹ The gendered division of labor, too, permeated taxidermy studios in museums, and the racism of collectors and taxidermists is clearly written into the travel narratives that returned from Africa alongside poached animals. These troubling attitudes and practices are inextricable from the history of taxidermy, though their presence is not highlighted in this story. Instead, this project focuses on how museums and taxidermists addressed internal change in the construction of taxidermy.

Nineteenth-century taxidermists saw their craft's history as a narrative of progress. Presenting their history in introductions to their taxidermy manuals, those taxidermists wrote about their field as a series of improvements in methods and techniques. Additionally, they wrote to clarify the purposes and practices of taxidermy, stabilizing the boundaries of their craft.

Though there was no consensus as to the precise beginning of taxidermy proper, Oliver Davie, writing in *Methods in the Art of Taxidermy* in 1900, distinguished between

⁴¹ Donna Haraway's "Teddy Bear Patriarchy" is the prominent work here. Her work in illuminating the colonial narratives present at the American Museum of Natural History is unparalleled. "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936," *Social Text* 11 (1984-1985). Also see works by Penelope Bodry-Sanders, *Carl Akeley: Africa's Collector, Africa's Savior* (Paragon House: St. Paul, Minn., 1991); *African Obsession: The Life and Legacy of Carl Akeley* (Jacksonville, Fla.: Batax Museum Publishing, 1998).

preservation and taxidermy in the preparation of gorilla skins in Roman Carthage.⁴² In another taxidermy manual from this era, Montagu Browne defined taxidermy through the Greek words that comprise it: an arrangement of skins.⁴³ This clarification was significant. While Egyptians had mummified humans and animals for centuries, their practices focused on embalming and preservation, not any specific, deliberate arrangement.

On their return from sixteenth- and seventeenth-century voyages to the American continents, Africa, and Australia, European naturalists sought ways to preserve the exotic specimens they had collected. Finding these means of preservation was critical to their efforts to study and showcase the animal life they had encountered. Their methods were crude, relying on local practices to dry out specimen skins and preserve them with materials at hand: salt, straw, and hemp for skins, and brandy for wet specimens.⁴⁴ These techniques were among the earliest forms of preservation of animal skins, predating taxidermy, especially as taxidermy mounts were impractical on ships, taking up significantly more of the naturalist's time and the ship's cargo space than skins and skeletons.

Preserving specimens remained important in natural history museums, even outside the voyages that brought them to Europe and the United States. Naturalists at eighteenth-century institutions, especially London's British Museum (established 1753)

⁴² Oliver Davie, *Methods in the Art of Taxidermy* (Philadelphia: McKay, 1894).

⁴³ Montagu Browne, *Practical Taxidermy; a Manual of Instruction to the Amateur in Collecting, Preserving, and Setting up Natural History Specimens of All Kinds* (London: L. Upcott Gill, 1879), 1.

⁴⁴ Stephen L. Williams and Catharine A. Hawks, "History of Preparation Materials Used for Recent Mammal Specimens," in *Mammal Collection Management*, ed. Hugh H. Genoways, Clyde Jones, and Olga L. Rossolimo (Lubbock, Tex.: Texas Tech University, 1987).

and Paris' Muséum National d'Histoire Naturelle (1793), developed procedures for preserving their collections.⁴⁵ Alcohol, especially brandy, kept the wet collections in good condition for study, as naturalists on expeditions had also experienced. For the dry collections, or the skins, they would use salt, alum, or lime to dry out the specimens, adding a substance for a strong scent, such as spices or camphor, as a deterrent to destructive insects such as dermestid beetles. By the 1830s, museum collections in Europe and the United States showed a preference for arsenical soap, following Charles Willson Peale's application on his taxidermy mounts at his Philadelphia museum in the early nineteenth century, though it had been introduced by Louis Dufresne at Muséum National d'Histoire Naturelle in the late eighteenth century.⁴⁶

In discussing early taxidermy, manual writers often addressed developments in its practice. Of special interest were the variety of techniques taxidermists would test as they pursued the best approach for creating a mount. Montagu Browne, author of multiple taxidermy manuals, offered several methods: "The system was tried of skinning birds in their fresh state, and also of cutting the skins longitudinally in two halves, and filling the one half with plaster; then the skin was fixed to a backboard, an eye was inserted, and the beak and legs were imitated by painting; and this was then fixed in a sort of framework of

⁴⁵ Andrei, "Nature's Mirror," xiv.

⁴⁶ Paul Lawrence Farber, "The Development of Taxidermy and the History of Ornithology," *Isis* 68, no. 4 (1977): 561.

glass.”⁴⁷ By the early nineteenth century, most taxidermists practiced a “school of rigid stuffing,” deplored by taxidermists at the end of the century⁴⁸

As collections grew, museums divided their focus on study skin collections and display mounts. The study skin collections were huge and drew the attention of systematists and anatomists. Research areas of museums housed these collections, which were much more compact than mounted specimens, as well as skeletons and wet collections. Skins that were fully intact and attractive became part of the public-facing rooms of the museum, where they were usually displayed in a mounted form.⁴⁹

This division also happened at the same time as circuses gained popularity in the United States, and as zoos were established. Americans became increasingly familiar with living, moving animals, and the old, stuffed forms in museums of natural history no longer seemed real. A new taxidermy moved sharply away from overstuffing specimens with cotton, hemp, or straw, and toward accuracy of the animals’ shape, colors, and anatomy, and it also emphasized an aesthetic that appealed to museum-goers.⁵⁰

One distinction between older taxidermy mounts and newer, better—in the eyes of taxidermy manual writers—mounts was in their embellishments. At London’s Great Exhibition of 1851, the vast array of taxidermy mounts included a number of anthropomorphic dioramas created by German taxidermist Hermann Ploucquet (1816-1878). These small dioramas set animal forms in human scenes, such as singing kittens, a

⁴⁷ Browne, *Practical Taxidermy*, 10-11.

⁴⁸ *Practical Taxidermy*, 14.

⁴⁹ Farber, "The Development of Taxidermy and the History of Ornithology."

⁵⁰ Andrei, "Nature's Mirror," xv.

classroom of rabbits, hedgehogs on ice, and a representation of the medieval folk tales of Reynard the Fox.⁵¹ Indeed, these animal tableaux captured the attention of taxidermists, as did other, more traditional mounts, with their “varied expressions of hope, fear, love, and rage... an immense step in advance of the old wooden school of taxidermy; specimens of which are still to be found in museums—stiff, gaunt, erect, and angular.”⁵² The high-quality taxidermy at the Great Exhibition “gave a considerable impetus to the more correct and artistic delineation of animals,” leading taxidermists in the nineteenth century to “embellish our taxidermic studies with natural grasses, ferns, &c., and with representations of scenery and rockwork, ...and also correctly model the heads and limbs of animals.”⁵³ For Browne, German taxidermy was the apex of mounting in nineteenth-century Europe.⁵⁴

Nineteenth-century taxidermists understood their work’s history to be a narrative of progress. They believed that the taxidermy at the Great Exhibition improved on work done for the British Museum in the eighteenth century, and that work was an improvement on the methods of Carthaginians. However, they also understood that the Great Exhibition was not an end point for the craft. Their work, too, would have to improve to propel taxidermy into the twentieth century.

⁵¹ Michelle Henning, “Anthropomorphic Taxidermy and the Death of Nature: The Curious Art of Hermann Ploucquet, Walter Potter, and Charles Waterton,” *Victorian Literature and Culture* 35.

⁵² Browne, *Practical Taxidermy*, 15.

⁵³ Browne, *Practical Taxidermy*, 15-16.

⁵⁴ A larger discussion of taxidermy and German perceptions of biology is presented in Lynn K. Nyhart, *Modern Nature: The Rise of the Biological Perspective in Germany* (Chicago: University of Chicago Press, 2009).

The emergence of scientific taxidermy and scientific taxidermists between the 1880s and 1930s revealed a broadening of thought in determining how taxidermy could be counted as scientific objects. In addressing taxidermy as a scientific object, this project contributes to larger discussions about animals and museums in the history of science. Several works on taxidermy and museum displays look at finished products and how they were incorporated into museums.⁵⁵ By looking at the social forces within the museum world—especially taxidermists and administrators—that produced taxidermy displays, I expand discussions of museums and taxidermy into more dynamic social arenas, where change could happen, before the relative permanence of installation had set it. This project offers a companion to Lukas Rieppel’s work with dinosaur displays, which approaches the skeletal sculptures as the products of a combination of social and scientific forces.⁵⁶

As taxidermy changed within museums, so, too, did taxidermy displays. Karen A. Rader and Victoria E. M. Cain discuss the many ways natural history and science museums changed at the hand of many diverse influences.⁵⁷ The dioramas of the early decades of the twentieth century attracted visitors, as they occupied the entire field of vision, transporting and immersing Americans in exotic lands. Rader and Cain continue their story through the rest of the twentieth century, examining the tensions between the interests of visitors, scientists, and corporate and individual sponsors as museums shaped understandings of

⁵⁵ See, for example, Andrei, "Nature's Mirror."; Victoria Cain, "Nature under Glass: Popular Science, Professional Illusion and the Transformation of American Natural History Museums, 1870-1940" (Dissertation, Columbia University, 2007); Wonders, *Habitat Dioramas*.

⁵⁶ Lukas Rieppel, "Bringing Dinosaurs Back to Life: Exhibiting Prehistory at the American Museum of Natural History," *Isis* 103, no. 3 (2012).

⁵⁷ Rader and Cain, *Life on Display*.

life sciences. Taxidermy was not exempt from these tensions, though taxidermy displays decreased in their appeal as the century progressed.

Museums may find some special interest in the uses and purposes of historical taxidermy. Though they may wish to remove some of their older specimens and dioramas due to their deterioration or efforts to modernize, mounts from an earlier era present both the scientific knowledge of the time as well as contemporary cultural values. Both are valuable to the history of the museum, the history of rather specific scientific knowledge, and practices in museum display technologies.

Studies as to why dioramas matter extend to a broader discussion of why taxidermy still matters to museums.⁵⁸ Rader and Cain suggest that dioramas have had their run, and that their significance in museums has undergone several shifts. In part, the changing nature of a museum is a necessity. George Brown Goode (1851-1896), the assistant secretary of the Smithsonian Institution, and head of the US National Museum, wrote, “A finished museum is a dead museum, and a dead museum is a useless museum.”⁵⁹ Yet museums still retain taxidermy “for the sake of nostalgia.”⁶⁰ This connection to the past is not unimportant. It is something that needs to be examined, so that the connectivity between museum visitors and the past remains strong, and so the vastness of work—both physical and academic—that contributed to the displays as pedagogical tools does not

⁵⁸ Garibay Group, “Habitat Dioramas and Sense of Place: OCMA Natural Sciences Gallery,” (National Science Foundation, 2014).

⁵⁹ George Brown Goode, “The Museums of the Future,” in *Report of the National Museum, 1888-89*, ed. Smithsonian Institution (Washington, D.C.: Government Printing Office, 1891), 445.

⁶⁰ Marjorie Schwarzer and Mary Jo Sutton, “The Diorama Dilemma,” (National Science Foundation, 2009-10).

become lost. Understanding the past purposes of taxidermy in museums can strengthen the arguments for keeping it, for using it to explain new and shifting ideas about the nature the displays represent, and our connections to those who encountered and studied the creatures and their habitats.

FRAMEWORK

Taxidermy, as an object of science, allows viewers to imagine a nature through a particular construction; it is not a technology through which one experiences nature directly.⁶¹ Objects of science, as representations of scientific knowledge, are imbued with some of that knowledge, which is reconstructed through research. Or, as Lorraine Daston puts it, they lie at “the intersection of their gritty physical selves and their metaphysical and anthropological personae.”⁶² Distinguishing an object of science from a technology does not mean that it cannot be used for a variety of purposes. Indeed, objects of science, whether created in a laboratory, co-opted from nature, or constructed to represent knowledge, can take on multiple meanings. For this project, I examine the ways that others have identified valuable qualities of taxidermy as characteristic of scientific objects. This practice is derived from traditions in art historiography that examined an artist’s body of work and extracted identifying traits that then became characteristic to that artist.⁶³ But instead of

⁶¹ Davis Baird applies a philosophy of instrumentation to orreries, as models of scientific knowledge, or pedagogical devices that demonstrate knowledge. Davis Baird, “Models: Representing Things,” in *Thing Knowledge: A Philosophy of Scientific Instruments* (Berkeley: University of California Press, 2004).

⁶² Lorraine Daston, ed. *Things That Talk: Object Lessons from Art and Science* (New York: Zone Books, 2004).

⁶³ See, for example, Michael Yonan. *Messerschmidt’s Character Heads: Maddening Sculpture and the Writing of Art History* (New York: Routledge, 2018).

looking at the traits of a taxidermist's oeuvre, I explore the work of taxidermy in U.S. natural history museums, examining what made for proper museum taxidermy mounts, and what made the taxidermy *scientific*.

This project borrows elements from Social Construction of Technology (SCOT) and phenomenology, without embracing either one entirely. As a methodology, Social Construction of Technology (or SCOT), discussed at length by Wiebe Bijker and Trevor Pinch, explores the multiplicity of directions and influences that guide the processes of technological development.⁶⁴ For this project, I see in museum taxidermy the interpretive flexibility of display meanings, the closure of disputes and deliberations among specific museum social groups and administrations, and the effects of those discussions in wider contexts. Individuals literally constructed taxidermy mounts in museum preparation laboratories, to be placed alone or in a diorama display. Also, museums purchased mounts or full displays, and curators then positioned them specifically within the museum building to convey a particular meaning.

During all parts of this process, social construction is at work. Between the 1880s and 1930s, most major museum taxidermists—those who were the official, on-site taxidermists—were apprenticed at Ward's Natural Science Establishment in Rochester, New York. Despite their common practical education, they developed different philosophies and practices of taxidermy that were largely coalesced as *scientific taxidermy*

⁶⁴ Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, ed. Wiebe E. Bijker, Thomas P. Hughes, and Trevor J. Pinch (Cambridge, Mass.: MIT Press, 1987).

by Shufeldt in 1893. In that same year, the curators at the U.S. National Museum had grown so dissatisfied with the quality of the taxidermy they had received from Ward's that they severed ties with the natural history dealer; the Museum would purchase no further mounts from Ward's. Social construction comes into this discussion through an examination of the different ideas of high-quality taxidermy. Taxidermy from Ward's shop was not good enough for the Washington museum, though it would form the core of the Field Museum's collection in Chicago. Local social groups took into consideration variations in taxidermy from Ward's when deciding which pieces of Ward's stock were good enough for their collections. Diverse museums also considered variations in perspective, and variations in museum displays as administrators in Chicago, New York, and Washington utilized different criteria to make decisions around their museum's taxidermy mounts. These institutions had different manifestations of the museum agenda to produce and promote scientific knowledge, resulting from differences in benefactors, administrators, locations, and collections.

One of SCOT's strengths is in mapping out groups that influence the technology that emerges. Similarly, I examine the development of the final product in taxidermy. Final products can be difficult to determine, especially as museums are constantly changing. Taxidermists were constantly improving on their own techniques, though they did not always write down their practices. In this way, consensus and the end of rhetorical debate is difficult to assess, as the debates most often occurred in the taxidermy labs and on museum floors, though some conversations occurred in professional organizations, especially the American Association of Museums and the short-lived Society of American Taxidermists. As museum taxidermy as a profession stabilized over this fifty-year period,

so too did taxidermy techniques stabilize, refocusing any conflict away from the structures of taxidermy forms and toward their meanings and uses.

Constructing meaning and experience is the centerpiece of phenomenology, an additional framework I adapt for this project. Launched in part by such philosophers as Edmund Husserl and Martin Heidegger, phenomenology is the study of experience; in the philosophy of technology, a phenomenological approach asks questions about how people experience reality through technological interfaces.⁶⁵ I take some license in using phenomenology, engaging with it as a framework that differs from philosophers of technology. Museum taxidermy and taxidermy displays are lenses that allow us to see animals and nature in a certain way. By extending phenomenology into an historical context, and shifting it from technology to science, I look at taxidermy displays as windows into nature, or into the way people idealized animals as representations of social and cultural views of nature. If phenomenological analyses examine the lenses of human experience, then the cases (or mounts) are the ways museum visitors experience nature. The curators, taxidermists, and painters who design each display, then, are the lensmakers.

With respect to this project, these two frameworks seem fundamentally at odds with each other in at least two ways. First, SCOT's interpretive flexibility collides against the firmness of a phenomenological lens. SCOT examines the vastness of social influences and decisions that contribute to the development of a technology, while phenomenology relates an object to its user, so that the object functions with some intentionality and helps

⁶⁵ Robert Rosenberger, "The Phenomenology of Slowly-Loading Webpages," *Ubiquity* (2007); Fritz Kaufmann, "The Phenomenological Approach to History," *Philosophy and Phenomenological Research* 2, no. 2 (1941).

determine the kind of experience the user will have. The tension between these frameworks similarly exists between the art of taxidermy and its scientific purpose. With regards to art, taxidermy had broad social meanings, but in science, taxidermy had a deliberate meaning, related to instructing museum visitors in animal biology. The art and science of taxidermy simultaneously co-exist, and the complexity of interactions reveals the different meanings of things for different people.⁶⁶ Furthermore, this tension exemplifies the messiness of the history of science as production and dissemination of knowledge.⁶⁷ As they worked toward a consensus—however deliberately—taxidermists engaged in a conversation that challenged the way that they and the museum-going public saw taxidermy, its knowledge, and their role in its production. In the tensions between these frameworks, consensus may only be visible in retrospect. Finding that consensus requires examining the way knowledge of the consensus disseminated, and how actors framed that consensus.

Second, SCOT's idea of stabilization relies on those multiple meanings and uses coalescing over time by the folks using them and preferences clarifying into a single design. Phenomenology relies on individual judgments as they decide which meaning or use wins out over others. I situate these frameworks by incorporating into the project an overarching conversation about authority, accuracy, and aesthetics. Authority, in this case, governs the practical application of accuracy and aesthetics; that is, a display was constructed within a specific framework of how it would accurately represent nature, and

⁶⁶ Daston, *Things That Talk*.

⁶⁷ Secord, "Knowledge in Transit."

to whom it would appeal. In the world of museum taxidermy, the authority appears to shift from the preferences of the individual taxidermist, whose work would be purchased or rejected by a museum administrator, to the museum as an entity, to a professional organization. What it meant for a mount to be accurate was intimately tied to its aesthetics; indeed, accuracy was an integral component to the mount's aesthetic. The shift in authority surrounding scientific taxidermy accompanied the surge toward consensus, and notions of accuracy and aesthetic consolidated, too.

This project takes these elements and teases them out through this example of taxidermy. Instead of examining the ways the public influenced taxidermy mounts, I look at the shifts in meanings that museum administrators and taxidermists projected onto the mounts, and how these shifts in meaning changed the ways they were literally constructed.

SCOPE

This project's scope has two significant components. First, its geographic scope is bifurcated, beginning with three major American natural history museums east of the Mississippi River: the Smithsonian Institution's U.S. National Museum (USNM; later, the National Museum of Natural History), New York City's American Museum of Natural History (AMNH), and the Columbian Museum of Chicago (later, the Field Museum of Natural History, or FMNH). In the time period covered in this study, these institutions were the largest and most influential natural history museums in the United States. All three received initial or sustaining funding from wealthy benefactors, and all contributed significantly to the increase of natural history knowledge in the United States. Their differences, however, make them particularly interesting subjects. The U.S. National Museum, founded in 1847, received government support and congressional oversight; the

President was also president of the Smithsonian, *ex officio*.⁶⁸ The American Museum of Natural History, founded in New York City in 1869, was located in a more prominent city, with equally prominent benefactors; its post-Civil War founding occurred in the middle of a national, widespread efforts to collect American specimens.⁶⁹ The Field Museum of Natural History, founded after the 1893 World's Columbian Exposition in Chicago, enjoyed a quick rise to eminence, where it has remained since.⁷⁰ These museums were also connected through personnel in charge of their taxidermy. In the later part of the nineteenth century, most of the taxidermists at these museums were apprenticed at Ward's Natural Science Establishment, yet they produced divergent animal displays at their respective museums. Furthermore, they were foundational to the Society of American Taxidermists, the most

⁶⁸ Histories of the Smithsonian Institution, and of the US National Museum in particular, include George Brown Goode, *The Smithsonian Institution, 1846-1896: The History of Its First Half Century* (Washington: Smithsonian Institution, 1897); Pamela M. Henson, "A National Science and a National Museum," in *Museums and Other Institutions of Natural History, Past, Present, and Future*, ed. Alan E. Leviton and Michele Aldrich (San Francisco, Calif.: California Academy of Sciences, 2004); Sally Gregory Kohlstedt, "History in a Natural History Museum: George Brown Goode and the Smithsonian Institution," *Public Historian* 10, no. 2 (1988); Walker, *A Living Exhibition: The Smithsonian and the Transformation of the Universal Museum*; Ellis L. Yochelson, *The National Museum of Natural History: 75 Years in the New National Museum* (Washington: Smithsonian Institution Press, 1985).

⁶⁹ Histories of the American Museum of Natural History include J. L. Clark, *Good Hunting: Fifty Years of Collecting and Preparing Habitat Groups for the American Museum* (Norman: University of Oklahoma Press, 1966); Geoffrey Hellman, *Bankers, Bones and Beetles: The First Century of the American Museum of Natural History* (New York: The Natural History Press, 1969); Lyle Rexer, Rachel Klein, and American Museum of Natural History., *American Museum of Natural History: 125 Years of Expedition and Discovery* (New York: H.N. Abrams in association with the American Museum of Natural History, 1995).

⁷⁰ The Field Museum of Natural History has very few comprehensive histories wherein the museum is the sole focus. Those that do exist are published by the museum, for sale in its gift shop, and include Bruce Hatton Boyer, *The Natural History of the Field Museum - Exploring the Earth and Its People* (Chicago: Field Museum, 1993); Sally Metzler, *Theatres of Nature: Dioramas at the Field Museum* (Chicago: The Field Museum, 2007); Patricia M. Williams, "The Museum 'Trademark'," *Bulletin of the Field Museum of Natural History* 39, no. 1 (1968).

significant, though short-lived, effort in the United States to develop professional standards for taxidermy practice in the 1880s. The museums that form the core of this study are of particular importance, due to their similarities as well as their significant differences. As the three most prominent natural history museums in the U.S. by the beginning of the 20th century, the U.S. National Museum, the American Museum of Natural History, and the Field Museum of Natural History produced exhibits and sponsored research that promoted studies of natural history in the country.

Though the museums were similar in terms of prominence—their locations in Washington, D.C., New York City, and Chicago gave a large portion of the American population access to seeing their collections—their differences also make them significant objects of study. All three received major donations from prominent benefactors, but these donations often supplemented other sources of funding. The U.S. National Museum, as an arm of the Smithsonian Institution, received taxpayer dollars, making its collection possible by the people it served.⁷¹ The American Museum of Natural History received some city money, but a large portion of its funding came from a small cadre of patrons who saw the museum as a way to bolster the prominence of New York as a cultural and intellectual center of the United States. The Field Museum emerged out of the 1893 World's Columbian Exposition, as the emblem of the White City, financed by a single benefactor.

Similarly, the specimens that would populate the museums came from different sources. To be clear, not all of these specimens arrived at the museums in their full

⁷¹ The Smithsonian Institution was founded from a large donation by benefactor James Smithson, though with continuing funding support from the U.S. government.

taxidermy form; many would arrive as skins to be mounted by museum taxidermists. The U.S. National Museum obtained its specimens largely through natural history expeditions that the Smithsonian and the U.S. government sent to diverse locales, whether in the American frontier or overseas. The American Museum got many mounts through hunting trips, arranged by and for sportsmen who saw the procurement of a specimen as game. Finally, the Field Museum relied on donations of specimens, living or dead, mounted or skinned, to a greater extent than USNM or AMNH had. These differences might also reflect the ways the taxidermists who worked at the museums saw their own places.

As museums expanded across the U.S., so does the geographic scope of this project. I examine the collections and practices at the California Academy of Sciences (or CAS) and the Denver Museum of Nature and Science (DMNS, founded as the Colorado Museum of Natural History, or CMNH). Though CAS was founded in the same decade as the Smithsonian Institution, it did not make its collection widely accessible until the twentieth century, when it was quickly destroyed by the San Francisco earthquake and subsequent fire in 1906. CMNH was founded in 1900, purchasing the wildlife collections of a Colorado collector, and opening its Denver City Park building shortly after. Both museums benefited from the migration of prominent taxidermists from the east coast, especially those coming from USNM, AMNH, and FMNH. As people moved, so did the networks of taxidermists, their practices and techniques gaining new audiences.

Similarly, this project has a chronological scope focused around the golden age of taxidermy.⁷² I have chosen to look at museum taxidermy from the earliest exhibition hall of the Smithsonian in 1858 until the 1933 opening of the Akeley Hall of African Mammals at the American Museum—notable in the naming of a museum hall not after a benefactor or a political leader, but after a taxidermist—as this is the period in which taxidermy in natural history museums shifted in meaning and significance. Especially from the later years of Ward’s Natural Science Establishment’s taxidermy projects through the late 1920s, taxidermy mounts were the iconic pieces that garnered the most attention from administrators and visitors.⁷³

SUMMARY OF CHAPTERS

In the first chapter, I argue that the professional ambitions of museum taxidermists whose efforts to organize the Society of American Taxidermists were short-lived, as well as the public responses to other taxidermists such as L. L. Dyche and Martha Maxwell. While neither was affiliated with a national museum, their work garnered attention in Chicago that challenged the status quo for museum displays while expanding the possibilities for future taxidermy work.

In the second chapter, I introduce the concept of *scientific taxidermy* as an appropriate term to identify taxidermy produced for museum displays at the turn of the twentieth century. The chapter focuses on the term’s initial use in the 1894 publication

⁷² Taxidermy displays were a major feature in natural history museums, and as museums improved and expanded, so did their departments—including taxidermy.

⁷³ Chapter two, “The Drama of the Diorama,” pays particular attention to the role of the dioramas in museum narratives. Rader and Cain, *Life on Display*.

Scientific Taxidermy for Museums, written by museologist Robert W. Shufeldt. Like Shufeldt, I pay specific attention to the U.S. Government's collection of taxidermy that the Smithsonian Institution used in its United States National Museum (later the National Museum of Natural History). In this examination of *scientific taxidermy*, I probe Shufeldt's exploration and the immediate reactions from taxidermists and museums.

As Shufeldt's notion of *scientific taxidermy* made its way through museum administrations and taxidermy laboratories, the ideas behind it spread through the dissemination of taxidermy manuals, the subject of the third chapter. The publication of scientific taxidermy methods validated Shufeldt's work, with the characteristics he defined as being particularly *scientific* becoming increasingly prominent in the early decades of the twentieth century. Indeed, taxidermy manuals published from the late nineteenth through the mid-twentieth century showed that practices became increasingly consistent, though some trade secrets remained hidden. That is, the *scientific* aspect of scientific taxidermy became apparent across museum taxidermy work, while the techniques of individual taxidermists, especially celebrity taxidermists like Carl Akeley, obscured artistic methods behind their celebrated museum displays. Communication between taxidermists clarified particulars that manuals left hidden.

As museums expanded the roles of administrators in the 1910s and 1920s, taxidermists became a lower priority within the museum hierarchy. Formal education and training for taxidermists waned, and museologists—a new class of administrator that examined museums in their effectiveness—raised expectations for the meanings of taxidermy displays. In chapter four, I examine the ways taxidermists were removed from conversations surrounding taxidermy's place in museums, and how taxidermists worked to

ensure that their taxidermy practices contributed to the larger purpose of the museum. By capitalizing on an informal professional network to create a new professional society, taxidermists were able to imitate scientific taxidermy mounts as a form of consensus, demonstrating that the practices Shufeldt identified in 1893 were valuable to museum communities.

As taxidermy's influence moved among such groups as museum administrations, taxidermists, educators, museologists, and formal societies, the work of constructing taxidermy mounts and displays remained unimpeded by change. The museums and exhibits remained open to the public. It is unlikely that anyone outside the museum world knew what was happening in the spaces not open to the public. But the happenings affected the whole museum, especially in the way taxidermy exhibits presented nature to the public, demonstrating the taxidermists' dedication to the craft, and their "fidelity to nature."

CHAPTER ONE

U.S. TAXIDERMY ON A WORLD STAGE



Figure 3: L.L. Dyche's "Panorama of North American Mammals" in the Kansas Pavilion at the 1893 World's Columbian Exposition in Chicago (Photo courtesy University of Kansas Natural History Museum; used by permission)

The 1893 World's Columbian Exposition in Chicago is remembered for many things: the Ferris wheel, Midway Plaza, the White City, H. H. Holmes, Shredded Wheat, and Pabst Blue Ribbon, to name just a few.¹ The Exposition was also the beginning of the collection that formed the Field Columbian Museum, which would become the Field Museum of Natural History. At the same time, this World's Fair signaled the beginning of an important transformation in the practice of taxidermy.

¹ Erik Larson discusses many notable firsts and persons affiliated with the Fair, especially following the development of the Fair itself and serial murderer H. H. Holmes. *The Devil in the White City: Murder, Magic, and Madness at the Fair That Changed America* (New York: Vintage, 2004).

This chapter discusses the state of U.S. taxidermy in the years leading up to the World's Columbian Exposition, as well as the taxidermy present at that World's Fair.² Robert Wilson Shufeldt (1850-1934), an army doctor, amateur naturalist, and museum critic, had identified the Fair as a significant transition point in the progress of taxidermy, having functioned as an informal judge of the mounts exhibited there.³ His was a complicated assertion, though, as the editors of *Natural Science* and writers of the Smithsonian's 1895 Annual Report of the U.S. National Museum pointed out. They saw that the Fair was a tipping point for change not just in taxidermy, but in many different fields, because it served as a location where different perspectives could be introduced and brought into conversation.⁴ With this mixing of perspectives and practices, taxidermy, too, would experience significant change.

Taxidermy arrived at that change as its professionalization waned. A decade before the World's Fair, the Society of American Taxidermists (S.A.T.) folded after its three-year lifespan, and the taxidermists who had created it moved to other institutions, such as the Smithsonian Institution's U.S. National Museum, the American Museum of Natural History, and the Carnegie Museum of Natural History. Their efforts to create a professional niche for

² I use "World's Fair" and "World's Columbian Exposition," as well as their derivatives ("Fair" and "Exposition") interchangeably.

³ His actual role in "adjudication," as he identified it, is unclear. Robert Wilson Shufeldt, "Complete List of My Published Writings, with Brief Biographical Notes," *Medical Review of Reviews* 26 (1920): 123.

Chapter Two of this work, "A Defense of Scientific Taxidermy," discusses Shufeldt's writings on museum taxidermy.

⁴ "Some New Books: The Art of Stuffing," *Natural Science: A Monthly Review of Scientific Progress* Vol. 5 (July 1894); "Taxidermy as Fine Art," *Natural Science: A Monthly Review of Scientific Progress* Vol. 5 (supplement to August 1894); Smithsonian Institution, "Taxidermy in the Museum," in *Report of the U.S. National Museum* (Washington, D.C.: Government Printing Office, 1895).

museum taxidermy largely succeeded, and some of their work was on display at the World's Fair, alongside work created at the workshop where many of them had trained: Ward's Natural Science Establishment.

Historians interested in its presentation of new technologies, studies of people, and revitalization of a destroyed city have covered the importance of the World's Fair at great length.⁵ But the Fair also gave rise to a new and significant museum as several natural history specimens displayed there would form the core collection of the Field Museum of Natural History. In this chapter I argue that the Fair signaled three major developments in the history of museum taxidermy in the United States. First, it marked the end of Ward's Natural Science Establishment as a significant actor in American taxidermy. The other two developments accompanied Ward's decline. The Fair, as mentioned above, was also the beginning of the Field Museum of Natural History, which would soon develop into a considerable actor in American taxidermy. Finally, the Fair also saw unaffiliated taxidermists gain national prominence without being attached to a major institution of natural history. These three groups—Ward's, FMNH, and taxidermists—are also locations of conflict for developing standards for scientific taxidermy. Ward's was a training ground

⁵ Curtis M. Hinsley and David R. Wilcox, eds., *Coming of Age in Chicago: The 1893 World's Fair and the Coalescence of American Anthropology* (Lincoln: University of Nebraska Press, 2016); Gail Lippincott, "'Something in Motion and Something to Eat Attract the Crowd': Cooking with Science at the 1893 World's Fair," *Journal of Technical Writing and Communication* 33, no. 2 (2003); David F. Burg, *Chicago's White City of 1893*, (Lexington, Kent.: University Press of Kentucky 2015); Neil Harris et al., *Grand Illusions: Chicago's World's Fair of 1893* (Chicago: Chicago Historical Society, 1993); Judith A. Adams, "The Promotion of New Technology through Fun and Spectacle: Electricity at the World's Columbian Exposition," *Journal of American Culture* 18, no. 2 (1995); Norm Bolotin and Christine Laing, *The World's Columbian Exposition: The Chicago World's Fair of 1893* (Champaign: University of Illinois Press, 2002).

for a significant group of taxidermists; museum administrators tried to impose meanings on taxidermy; and taxidermists worked to govern the aesthetics of their craft.

S.A.T. AND PROFESSIONALIZATION

At the end of the nineteenth century, taxidermists sought to formally organize around their professional goals. Though the Society of American Taxidermists only existed for a few years, from 1880 to 1884, it brought together a coalition of taxidermists who could benefit from seeing each other's work, comparing methods and practices, and otherwise improving their common craft.⁶

The Constitution to the Society of American Taxidermists did not specify a taxidermy practice it sought to correct, but it suggested a long-standing lack of quality in animal mounts. The core group of taxidermists in S.A.T. administration, most of whom came from Ward's, saw the organization of taxidermists as a way to professionalize taxidermy, elevating it as an art rather than a messy practice.

Regardless of its absence in the S.A.T. Constitution, the practices of taxidermy in nineteenth-century US and UK cultures loomed large in defining the organization's purpose. Early forms of taxidermy stretched skins that had prepared on naturalist voyages over forms as museum displays.⁷ The preparation of these skins was not initially for

⁶ For discussion of the S.A.T., see Susan Leigh Star, "Craft Vs. Commodity, Mess Vs. Transcendence: How the Right Tool Became the Wrong One in the Case of Taxidermy and Natural History," in *The Right Tools for the Job: At Work in Twentieth-Century Life Sciences*, ed. Adele Clarke and Joan H. Fujimura (Princeton, N.J.: Princeton University Press, 1992); and Mary Anne Andrei, "Breathing New Life into Stuffed Animals: The Society of American Taxidermists, 1880-1885," *Collections: A Journal for Museum and Archives Professionals* 1, no. 2 (2004).

⁷ Paul Lawrence Farber, "The Development of Taxidermy and the History of Ornithology," *Isis* 68, no. 4 (1977).

mounting as taxidermy, as the skins were to be studied on their own, without a form. However, some skins that were less useful to naturalists would be repurposed into displays for the public and other naturalists to observe.

Taxidermy in the Victorian era consisted largely of animals manufactured into objects.⁸ Animals were considered useful above all else, so even in death they were commodities. Taxidermy provided a way to preserve the memory of animals as objects to evoke memories and to serve as reminders of specific individual experiences. Mounts were remembrances of animals in the ways they connected to humans. Pets were the objects of human affection in life, and through taxidermy, in death they became reminders of that specific meaning. Mounted exotic animals, such as giraffes and elephants, provided examples of human triumph and colonialism.

Hunting trophies embodied the claim of human domination over nature.⁹ Indeed, their presence in a Victorian home lent the hunter an opportunity to tell the story of a particular triumph over nature, with trophy itself providing the end point. This narrative aspect of taxidermy was present in other animal forms as well, with common animals, such as roosters, mice, rabbits, and cats, positioned to tell stories such as “The Death and Burial of Cock Robin.”¹⁰ Though hunting was increasingly popular as a sport in the late

⁸ Information in these paragraphs about Victorian taxidermy is borrowed from Sarah Amato, *Beastly Possessions: Animals in Victorian Consumer Culture* (Toronto: University of Toronto Press, 2015).

⁹ Daniel Justin Herman, *Hunting and the American Imagination* (Washington D.C.: Smithsonian Institution Press, 2001).

¹⁰ Rachel Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park: Pennsylvania State University Press, 2012), 141-70.

nineteenth-century United States, museums obscured its practice in their halls by displaying animal mounts without specifying exactly how they got there.¹¹

In contrast to the taxidermy displayed in Victorian homes and businesses, museums displayed mounts that recreated the animal itself, without focusing on the relation of the animal to the human. Instead of explicitly narrating the hunt that brought the specimen to the museum, the visitor could admire and learn from the animal encased behind glass, inferring the presence of a hunter in procuring the specimen. In 1869, British naturalist Alfred Wallace remarked on the difference between these kinds of mounts in their aesthetic and instructive qualities. He wrote that some taxidermy would “represent the living animals in perfect health and vigour, and by their characteristic attitudes and accessories tell the history of the creature's life and habits; and compare this with the immature, ragged, mangy-looking specimens one often sees in museums, stuck up in stiff and unnatural attitudes, and resembling only mummies or scarecrows.”¹² Taxidermy in Victorian homes seemed to be of better quality than what he found in museums, and Wallace saw that the lower quality of museum mounts impeded the communication of information to museum visitors: “The one is both instructive and pleasing, and we return again and again to gaze upon it with delight. The other is positively repellent, and we feel that we never want to look upon it again.”¹³ Museum taxidermy not only would provide

¹¹ *The Breathless Zoo*, 96-97.

¹² Alfred Russel Wallace, "Museums for the People," *Macmillan's Magazine* 19 (1869): 247.

¹³ "Museums for the People," 247.

insufficient information about the animal; it would also impair the visitor's desire to see the animal—and perhaps the museum—again.¹⁴

In the United States, among the first museums to display taxidermy mounts in a scientific fashion was Charles Willson Peale's Philadelphia Museum (established in 1788).¹⁵ Though this museum also contained a collection of paintings, its importance to museums of natural history lies in its organization. Peale was among the early adopters of the Linnaean system of classification to present artifacts of nature, especially in his presentation of birds in the museum. In using this classification scheme, Peale focused on the birds' natural histories and not on their size or ferocity.

Peale's museum paid closer attention to the scientific meanings in its taxidermy mounts, distancing humans from the narrative they presented. Despite the museum's being founded in the eighteenth century, the taxidermy museum was different from much of nineteenth century culture around taxidermy, which had focused on the animal's place in a human-centered world. Animals were part of a human story, and taxidermy mounts served as reminders of that story.¹⁶ They were the physical objects stuck to a story, whether a narrative of human triumph, an allegory for human thought, or remembrance of a time past.

¹⁴ Wallace was not alone in his disdain for contemporary museum practices of displaying animals. Charles Darwin, too, wrote about his efforts to persuade museums to change their animal displays. Poliquin, *The Breathless Zoo*, 129-30.

¹⁵ Charles Coleman Sellers, *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art* (New York: Norton, 1980).

¹⁶ Note especially three of Poliquin's seven "Longings" in taxidermy: Narrative, Allegory, and Remembrance. These three, substantially more than the other four, relate directly to human interactions with the animals represented in mounts.

The Society of American Taxidermists formed out of this culture of taxidermy. These taxidermists sought to expand employment opportunities and carve out their own professional niche. They focused on mounting animals in artistic mounts, to recreate nature as it existed. To achieve this, S.A.T. members focused on animals and their interactions with other non-human animals, a significant change in the practice of taxidermy.

The taxidermists who formed the S.A.T., including Frederic S. Webster, Frederick A. Lucas, and William Temple Hornaday, all of whom trained at Ward's Natural Science Establishment, perceived a decline in the esteem of taxidermy among other art forms certainly, and perhaps extending into studies in natural history. The constitution of the S.A.T. identified its purpose to counter this trend: "The objects of this Society are to promote intercourse between those who are interested in the art of Taxidermy in various parts of America, to encourage and promote the development of that art, and to elevate it to a permanent and acknowledged position among the fine arts."¹⁷ Promotion of taxidermy at large and of the Society's members was its highest priority. The organizational statement suggested that taxidermy had been, prior to 1880, not respected as a form of art. Additionally, the Society reprinted letters it had received that supported this notion, including phrases such as "a great and permanent advance in the art of taxidermy,"¹⁸ and "I

¹⁷ Society of American Taxidermists., "First Annual Report of the Society of American Taxidermists, March 24th, 1880, to March 25, 1881," (Rochester, N.Y.: Daily Democrat & Chronicle Book & Job Print, 1881), 24.

¹⁸ Letter from Henry A. Ward to William Temple Hornaday, June 24, 1880, in "First Annual Report of the Society of American Taxidermists," 18.

presume its dignity has been thus somewhat lowered.”¹⁹ The Society aimed to reverse that trend, focusing on the artistic characteristics of new forms of taxidermy instead of the crudeness of hastily constructed, overstuffed mounts, and moderating the dirty components of the job, such as skinning the animal and tanning its hide.

In order to achieve this primary goal, the S.A.T. emphasized the need for good taxidermy that had been presented through myriad taxidermy manuals. At each of the S.A.T.’s three annual meetings—1881, 1882, and 1883—a prominent Society member delivered an address to this effect. The contents of the addresses, as reprinted in the organization’s Annual Reports, reinforced the progress-based narrative of taxidermy’s history through denigrating taxidermy’s past.

In the first annual meeting of the Society, held in Rochester, New York, in 1881, President Frederic S. Webster, who had apprenticed at Ward’s Natural Science Establishment, delivered an address decrying the present state of American taxidermy while expressing hope for its imminent revival. At the center of his address was a call to kindle widespread interest in taxidermy and admiration for taxidermists:

Years hence when all naturalists, and the admirers of the beautiful forms in animated nature generally, shall accredit this Society with having wrought a great change for the better in the taxidermic art, then I believe that every one whose name stands on the roll to-day will be proud of the fact that he or she was one of the first members, a willing and a working pioneer.²⁰

¹⁹ Letter from G. E. Manigault to William Temple Hornaday, June 27, 1880 "First Annual Report of the Society of American Taxidermists," 18.

²⁰ "First Annual Report of the Society of American Taxidermists," 35.

The S.A.T. would be integral to the success of American taxidermy, and all those present would play a significant role in attaining that success.

By 1883, the S.A.T. had achieved its primary goal, according to Dr. Joseph Bassett Holder (1824-1888), co-founder of the American Museum of Natural History and a member of the S.A.T., who delivered the keynote address at the organization's second annual meeting: "Taxidermy is now accorded its legitimate rank; we now realize a consummation of hopes and desired that is the natural outcome of an enlightened conception of its possibilities; and—let us be just—this greatly through the genius of a few art-inspired and earnest laborers in the field."²¹ Though self-congratulatory, this sentiment carried throughout the S.A.T.'s meeting. Frederic A. Lucas further elevated the practice of taxidermy with an allusion to *Hamlet*: "If, then, the aim of the taxidermist is to hold the mirror up to nature, and faithfully reproduce the forms and expressions of animals, his art should not be treated as an easy one, or one of but little value."²² With *Hamlet*, Lucas placed taxidermy—good taxidermy—equal in artistry to Shakespeare's plays. And by clarifying the aim of taxidermy—"to hold the mirror up to nature"—he set accuracy as a key component in the artistic aesthetic that would become characteristic of proper taxidermy.

In addition to spotlighting good taxidermy, the S.A.T. used its annual meeting to strengthen the relationships between taxidermists and institutions that would purchase their work. At the Society's third annual meeting, J. B. Holder said, "The Smithsonian

²¹ "Third Annual Report of the Society of American Taxidermists, March 25th, 1882, to July 1, 1883," (Washington, D.C.: Gibson Brothers, Printers, 1883), 39.

²² "Third Annual Report of the Society of American Taxidermists," 52. "Mirror up to nature" comes from Shakespeare's *Hamlet*, III.ii.

Institution now became a sort of patron of the art on a large scale, both through the publication of directions for the preservation of specimens, and by furnishing ways and means by which parties going out could successfully explore the regions likely to furnish desired material.”²³ Or, more broadly, they sought to bolster the relationship between taxidermy and natural history museums: “The relations of the art of taxidermy to museums of natural history are of the greatest importance. While formerly museum collections languished as poorly sustained, now, through the great advance of the art and its contributions of tasteful and natural material, much more interest is awakened and exercised.”²⁴ Holder was most familiar with the collections at the American Museum of Natural History which, by 1882, had been open to the public at its permanent Central Park West location for five years. In those years, the Museum had noted a “very marked increase in the number of our visitors.”²⁵ Though few other museums occupied permanent sites, those that did, such as the Smithsonian’s U.S. National Museum, saw similar increases. As the public use of museums increased, so too improved the public’s view of taxidermy.

Keynote speakers at the S.A.T.’s meetings also celebrated improvements in taxidermy. They tied the influence of taxidermy to the progress of museums, identifying taxidermy as a “good art” with “a mighty power.”²⁶ Many of the Society’ members were

²³ Holder, J. B., "Address of Dr. J.B. Holder." "Third Annual Report of the Society of American Taxidermists," 44.

²⁴ "Third Annual Report of the Society of American Taxidermists," 49.

²⁵ American Museum of Natural History, "American Museum of Natural History Annual Report for the Year 1882," (New York: American Museum of Natural History, 1882) 5.

²⁶ Holder, J.B. Society of American Taxidermists., "Third Annual Report of the Society of American Taxidermists," 49-50.

affiliated with natural history institutions, either in an official capacity or as a supplier of many of those institutions' mounts.²⁷ By linking their progress with that of natural history museums, taxidermists worked to ensure their future relevance, while distancing themselves from hobbyist taxidermists and those whose output favored quantity of mounts over quality of resembling nature.

Though securing the future of the profession as “a permanent and acknowledged position among the fine arts” was another part of the S.A.T.'s objective, the Society itself did not endure. Beset by financial woes, the organization began to collapse under the costs of organizing its third competition in 1883.²⁸ A fourth exhibition was subsumed by the World's Industrial and Cotton Centennial Exposition in New Orleans in 1884, and the members lost interest in continuing a formal society, perhaps seeing that their goal of increasing the visibility and elevation of taxidermy among the arts had been met.²⁹

WARD'S NATURAL SCIENCE ESTABLISHMENT

In 1883, Carl Akeley (1864-1926) joined a cadre of taxidermy apprentices at Ward's Natural Science Establishment in Rochester, New York, which he described as the “leading

²⁷ Mark V. Barrow, Jr., "The Specimen Dealer: Entrepreneurial Natural History in America's Gilded Age," *Journal of the History of Biology* 33, no. 3 (2000); Sally Gregory Kohlstedt, "Henry A. Ward: The Merchant Naturalist and American Museum Development," *Journal of the Society for the Bibliography of Natural History* 9 (1980).

²⁸ The Constitution of the S.A.T. makes clear that an underlying purpose of the Society was to host annual competitive exhibitions. Articles 11-15 are exclusively about meetings, exhibitions, and judges, and they comprise two of the constitution's four pages.

²⁹ Star, "Craft Vs. Commodity;" Andrei, "Breathing New Life into Stuffed Animals: The Society of American Taxidermists, 1880-1885."

institution of taxidermy.”³⁰ Ward’s was a dealership for taxidermy and otherwise preserved animal specimens, a training ground for professional taxidermists, and a large distributor for meteorites, which were a personal fascination of founder Henry Augustus Ward (1834-1906).³¹ Individual collectors purchased mounts from Ward’s, as did museums, who returned to the enterprise as a reliable source of taxidermy. Akeley, writing decades after his apprenticeship, critiqued the taxidermy he saw at Ward’s as some of the simplest work done in the field, with “very little science and no art at all.”³² This was not without reason, though. For Ward, taxidermy was a component of his business, and more sales meant more profits.³³ By increasing the number of mounts it could manufacture, Ward’s could increase its sales and profits. But without a similar increase in the number of skilled taxidermists, whether professionals or apprentices, the quality of those mounts would decrease. And indeed, it did.

This decline in quality did not go unnoticed by others in the taxidermy business. In preparation for the 1893 World’s Columbian Exposition, a World’s Fair held in Chicago to celebrate the quadricentennial of Columbus’s New World voyages, taxidermy shops and

³⁰ Carl Ethan Akeley, *In Brightest Africa*, Memorial ed. (Garden City, N.Y.: Garden City Publishing Co., 1923), 7.

³¹ Mary Anne Andrei’s dissertation is a discussion of the many museum taxidermists that emerged from Ward’s Natural Science Establishment; Mark Barrow and Sally Kohlstedt examine the roles of Ward’s in distributing natural history objects. Mary Anne Andrei, “Nature’s Mirror: How the Taxidermists of Ward’s Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species” (Dissertation, University of Minnesota, 2006); Mark V. Barrow, Jr., “The Specimen Dealer;” Sally Gregory Kohlstedt, “Henry A. Ward: The Merchant Naturalist and American Museum Development.”

³² Akeley, *In Brightest Africa*, 5.

³³ Akeley discussed the relationship between the economics of specimen-dealing and artistic quality of taxidermy later in this chapter of *In Brightest Africa*.

naturalist collectors worked diligently to assemble their collections for exhibition. The specimens displayed in the White City's many pavilions were meant to reflect the splendor and majesty of each of the United States, as well as the diversity of creatures worldwide. For its exhibit, the Smithsonian Institution sent specimen skins to Ward's, where they were mounted, as had been done for many years.

However, by early 1893, Smithsonian curators expressed dissatisfaction with the quality of the mounts prepared by Ward's. Robert Ridgeway, curator of birds at the Smithsonian, wrote to R. Edward Earll, Special Agent in Charge Exhibit of the Smithsonian Institution and National Museum, detailing the poor quality of the specimens:

The birds received from Ward's Natural Science Establishment have been unpacked and examined, and I am very sorry to have to make an unfavorable report concerning them. None of the work is equal to what I had a right to expect, and some of the specimens are absolutely unfit for exhibition. They will not even stand remounting, but will have to be made into skins again. It seems to me obviously unfair that we should pay for such work; in fact, I do not see why they should not rather pay us for spoiling our specimens.³⁴

Coming from the Smithsonian Institution, this unexpected assessment about the poor quality of these specimens was of special importance. William Temple Hornaday, the U.S. National Museum's first Chief Taxidermist and former apprentice at Ward's, had resigned from his taxidermy position in 1890, leaving a space that was uneasily filled by several people, including Ridgeway. Using Ward's to supplement work that could not be done in Smithsonian facilities was economically prudent, especially as Ward's had earned a reputation as a high-class dealer in taxidermy mounts. William S. Kimball, a wealthy

³⁴ Robert Ridgeway to R. Edward Earll, January 3, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Dept. of Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

tobacconist from Rochester, warned Henry Ward about what problematic mounts could do to his establishment: "It takes years to attain a reputation but only an instant to destroy one. An investigation should be made at once and apply a remedy or the Establishment will soon be without."³⁵ Another graduate of Ward's, Frederic A. Lucas (1852-1929), then Osteologist and Curator of Division of Comparative Anatomy at the Smithsonian's U.S. National Museum, also informed Ward of potential damages to the Establishment's reputation: "The worst thing I have heard was a suggestion that they be placed in a case by themselves and that this be conspicuously labelled Mounted at Ward's Natural Science Establishment for the Chicago Ex."³⁶

The most damning criticism of this decline in quality came from George Brown Goode, Assistant Secretary of the Smithsonian Institution in charge of the U.S. National Museum. Repeating much of what had been offered by Ridgeway a month earlier, Goode extended his criticism to the effect of the poor work:

I regret that matters have assumed this form, as it is not unlikely that we might wish to send you specimens to mount in the future, as we have already done many times in the past. Furthermore, as you furnish specimens to so many museums besides our own, it seems to me most unfortunate that you should be content to send out low-grade, inaccurate and unsubstantial work. Relying on the past reputation of your Establishment for good work, many persons will doubtless be led to accept and exhibit to students and others, specimens which are inaccurate and misleading. Thus your Establishment, instead of aiding in the diffusion of correct ideas regarding animals, will tend in the other

³⁵ William S. Kimball to F.A. Ward, March 3, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

³⁶ F.A. Lucas to H.A. Ward, January 4, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

direction. It cannot fail to forfeit thereby the sympathy of zoologists, which, I am sure, it has always had in the past.³⁷

The “low-grade, inaccurate and unsubstantial work” would no longer be accepted by the Smithsonian, and it would not appear in the U.S. National Museum. Goode’s belief that poor taxidermy would mislead those who went to the museum to study zoological specimens spoke to his larger vision of museums as places of learning, where one could study natural history without the cost of travel.

Criticism of Ward’s work did not stop at the Smithsonian. From Henry Nehrling (1853-1929), Custodian of the Milwaukee Public Museum, Ward received this cautionary letter: “I do not want to be understood that we do not desire these specimens in the future, in the contrary, whenever you can get first class specimens, send them, and we will gladly take them.³⁸ The Milwaukee Public Museum, which would go on to house the first habitat diorama featuring an animal group, was another client to be lost. Nehrling’s letter came with this warning: “But remember the dreadful woeed [sic] ‘First class’.”³⁹

The apparent decline in the quality of Ward’s output coincided with the Establishment’s financial crisis.⁴⁰ Taxidermy represented a relatively small part of the organization’s business. It spent a great deal of capital taking many specimens to Chicago—

³⁷ George Brown Goode to F.A. Ward, February 28, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

³⁸ H. Nehrling to F.A. Ward, [n.d.] 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

³⁹ H. Nehrling to F.A. Ward, [n.d.] 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁴⁰ Financial woes beset many businesses across the U.S. in the Panic of 1893. See especially Elmus Wicker, “The Banking Panic of 1893,” in *Banking Panics of the Gilded Age* (New York: Cambridge University Press, 2006).

not just taxidermy mounts, but also meteorites and other natural history artifacts. Once at the World's Fair, Ward's found that it could not finance a return trip to Rochester with all the specimens. James Sibley Watson, a financier, wrote to Ward in Chicago, "Our sole hope lies in selling part or the whole of the Chicago Exhibit at any price. We simply can not bring the exhibit back here—sooner than do so I would be in favor of selling at half price or leaving it at the Chicago University in the hopes of selling it to them some time in the future when times are easier."⁴¹ The irony of the situation was that Ward's could only afford to return the specimens to Rochester if it sold them—at which point there would be no specimens to return. Of course, this was a troubling development for the Establishment, which had worked hard to get a good showing at the Fair, and which saw the Fair as an opportunity to salvage its reputation.

Attendance at the World Columbian Exposition of 1893 was lower than expected, an indicator of the panic that resulted in a national depression that would last for several years.⁴² Ward's financial situation was undoubtedly related to this depression, especially when considered in conjunction with the perceived decline in the quality of mounts from Ward's, as claimed by Smithsonian officials, and as taxidermists from Ward's moved to other museums. Other specimen dealers limited their business practices at this time, owing

⁴¹ James Sibley Watson to H.A. Ward, August 2, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁴² Albert C. Stevens, "Analysis of the Phenomena of Panic in the United States in 1893," *The Quarterly Journal of Economics* 8, no. 2 (1894); Samuel Rezneck, "Unemployment, Unrest, and Relief in the United States During the Depression of 1893-97," *Journal of Political Economy* 61, no. 4 (1953).

to the depression, and perhaps anticipating widespread animal protection similar to the bird protection movements of the 1890s.⁴³

Ward discussed his financial difficulties with many influential persons in Rochester. To Dr. Augustus Hopkins Strong, he wrote of the value his many specimens would have for scientists: "Any one seeing the collections and observing the interest and enthusiasm of scores of Scientists and thousands of Teachers who linger for hours before the cases, must see what a powerful accession they will be to the scientific appointment at any Institution which secures them. To the Chicago University this would be immense, with their strong corps of scientific professions to use the collections."⁴⁴ The University of Chicago was an early favorite for the potential sale of the collection, and the strongest candidate for its purchase. However, as Ward complained to Watson, the University had difficulty finding money to purchase the collection, despite having the space and interest.⁴⁵ And to William R. Harper, the University's president, Ward was openly hopeful that a large donation that had been made to the University would be used to purchase of Ward's collection, especially as the Columbian Exposition was to close in three weeks.⁴⁶

For Ward, the possible loss of this large collection represented a threat to his life's work. Ward described the emotional nature of this loss to Dr. Strong: "To me, success

⁴³ Barrow, "The Specimen Dealer," 139.

⁴⁴ H.A. Ward to A.H. Strong, August 8, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁴⁵ H.A. Ward to J.S. Watson, October 2, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁴⁶ H.A. Ward to J.S. Watson, October 6, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

means the placing where it shall forever be kept together my greatest life-work,—the acme and culmination of all of this kind which I have ever done before. Failure seems to me like personal death, both scientifically and financially.”⁴⁷ Ward tied his life’s meaning to his work, and he needed to see both validated by others. Though this loss was about more than the Establishment’s finances, that particular burden remained important: “It is enough that I say that unless this sale is effected, our Rochester Establishment goes under with such a weight of debt that it can never emerge. For myself this is terrible to contemplate.”⁴⁸ It was clear what needed to happen. Either the whole collection needed to be sold, or the Establishment would be at a loss and perhaps its end. Ward wrote, “We must sell all the Cabinet to come out whole in the matter.”⁴⁹ However, time was expiring as the Fair wound down, and the most promising buyer was looking decreasingly likely to commit to it purchase. Writing of the possible sale of the collection to the University of Chicago, Ward thought there was “little hope.”⁵⁰

The World’s Columbian Exposition was set to close on October 30. The deal with the University of Chicago had apparently fallen through, and no other buyer had come forward. In a final effort to preserve his institution, Ward wrote to the Trustees of the Columbian Museum of the City of Chicago, a committee convened to preserve the memory of the

⁴⁷ H.A. Ward to A.H. Strong, October 21, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁴⁸ H.A. Ward to A.H. Strong, October 21, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁴⁹ H.A. Ward to A.H. Strong, October 21, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁵⁰ H.A. Ward to A.H. Strong, October 21, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

World's Fair at a single, public location. He offered the entire collection at a 25% discount, with 40% discounted cases.⁵¹ Eleven days later, and nearly three weeks after the Fair's formal closing, a negotiated contract was finalized between Ward's Natural Science Establishment and the Columbian Museum of the City of Chicago, and signed by Edward Ayer, who had convinced merchant Marshall Field to fund the museum, and Ward.⁵² The reputation of Ward's Natural Science Establishment would be preserved in the Columbian Museum of Chicago, later the Field Museum of Natural History, where items from Ward's formed the foundation of the museum's massive collection. A permanent site for Ward's collection placed those mounts firmly in the history of museum taxidermy as a demonstration of high-quality taxidermy at the end of the nineteenth century, despite the Smithsonian's claims that it had received subpar mounts. The work done at Ward's, though it had declined from its heyday, served to instruct a generation of museum taxidermists in proper taxidermy.

SIGNIFICANT TAXIDERMISTS IN CHICAGO

Despite Ward's prominence at the SI exhibit and others, individual taxidermists, unaffiliated with any museums also garnered national attention at the Fair. Neither Martha Maxwell (1831-1881) nor Lewis Lindsay Dyche (1857-1915) was formally affiliated with any museum, though Dyche had a connection to the University of Kansas in Lawrence.

⁵¹ H.A. Ward to the Trustees of the Columbian Museum of the City of Chicago. November 7, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁵² Contract between Ward's Natural Science Establishment and the Columbian Museum of the City of Chicago. November 18, 1893, Henry Augustus Ward Papers, 1840-1933, A.W23, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

However, both Maxwell and Dyche were celebrated for their taxidermy achievements, which echoed beyond the Exposition and into the greater taxidermy world.

Martha Maxwell, one of very few women taxidermists whose work received accolades before the late twentieth century, created most of the wildlife displays in the Colorado building. In a profession dominated by men, Maxwell's taxidermy made great strides in the development of scientific taxidermy.⁵³ Her method for mounting animals was quite similar to the method of manikin and papier-mâché that Akeley would later make famous. Though she did not explicitly write about these taxidermy techniques, Maxwell's secrets escaped through her sister, who later charged that Akeley adopted Maxwell's method and claimed it as his own.⁵⁴ Maxwell's mounts gained her limited notoriety, though it is difficult to separate the novelty of her being a woman in the profession from the high quality of her work.

It was nevertheless the fact that Maxwell was a woman that brought her work to Chicago in 1893. Though she had died in 1881, several of her mounts were solicited to form part of the Woman's Exhibit at the Chicago World's Fair.⁵⁵ Maxwell's work had made quite an impression at the Centennial Exposition in Philadelphia in 1876, and though Spencer Fullerton Baird of the Smithsonian Institution thought her theatrical display—which contained an embattled lion and eagle as a component, along with a running waterfall—was too much for the Centennial Exposition's Women's Pavilion, the Colorado-Kansas

⁵³ Maxine Benson, *Martha Maxwell, Rocky Mountain Naturalist* (Lincoln: University of Nebraska Press, 1986); James McVey, *Martha Maxwell: Natural History Pioneer* (Palmer Lake, Colo.: Filter Press, 2005).

⁵⁴ Such is the case mentioned in Benson, *Martha Maxwell, Rocky Mountain Naturalist*, 89-92.

⁵⁵ *Martha Maxwell, Rocky Mountain Naturalist*, 197-98.

Building had room for it. The exhibit was wildly popular, and visitors were impressed not only with the quality of the taxidermy work, but with her ability to collect such a variety of specimens.⁵⁶

More discussion of the quality of Maxwell's taxidermy appeared at the American Association of Museum's 1915 proceedings. In it, Junius Henderson, Curator of the University of Colorado Museum of Natural History in Boulder, characterized Maxwell's work through a comparison to taxidermy displays of the early twentieth century: "The exhibit would doubtless look crude indeed if it could be directly compared now with some of the magnificent habitat groups in the best modern museums of America, groups which are the result of accumulated knowledge of generations of skilled preparators and made possible by large scientific and financial resources."⁵⁷ Regardless of this unflattering assessment of Maxwell's work, Henderson suggested that she was an early scientific taxidermist: "She early discovered that the only way to understand the habits and poses of animals was to observe them in their natural environment."⁵⁸ She used the skills that would later be celebrated by Shufeldt as necessary characteristics of scientific taxidermy. Focused observation and understanding of animal habits were key to scientific taxidermy, and Maxwell was able to recreate her observations in ways that made the animals seem real.

⁵⁶ See chapter three, "'Women's Work' at the Centennial," in *Martha Maxwell, Rocky Mountain Naturalist*, 128-49.

⁵⁷ Junius Henderson, "A Pioneer Venture in Habitat Grouping," *Proceedings of the American Association of Museums* 9 (1915): 88.

⁵⁸ "A Pioneer Venture in Habitat Grouping," 91.

Another popular attraction at the World's Columbian Exposition was a massive wildlife display in the Kansas Pavilion. Lewis Lindsay Dyche, a naturalist from the University of Kansas in Lawrence, developed a display that would occupy nearly a third of the Kansas exhibit space. Dyche learned taxidermy largely on his own, though he spent some time working with William Temple Hornaday on a bison group.⁵⁹ He became so well-versed in taxidermy methods that at the University of Kansas that he quickly ascended to chair of anatomy and physiology, as well as a curatorship of birds, mammals, and taxidermy, all of which accompanied his teaching in animal history and zoology.⁶⁰ While preparing his display for Chicago, he invited Robert Wilson Shufeldt to look at the taxidermy, which Dyche thought was unique because "I make comparative anatomy the basis of my work."⁶¹ His several expeditions across North America took him from Alaska to Greenland and Mexico, and many specimens he procured on those journeys traveled with him again to Chicago.⁶²

Dyche's display of North American wildlife, covering more than 5,000 square feet and featuring more than 120 specimens, was a spectacle. Many features of this display were marvels in their own right: visitors could walk through a variety of ecosystems; Dyche

⁵⁹ Clarence E. Edwards, *Camp-Fires of a Naturalist: The Story of Fourteen Expeditions after North American Mammals: From the Field Notes of Lewis Lindsay Dyche* (New York: Appleton, 1893), 119.

⁶⁰ *Camp-Fires of a Naturalist: The Story of Fourteen Expeditions after North American Mammals: From the Field Notes of Lewis Lindsay Dyche* 4.

⁶¹ L. L. Dyche to R. W. Shufeldt, 3 June 1893, SIA. Record Unit 189, Smithsonian Institution, Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1860-1908.

⁶² Frank Wilson Blackmar, *Kansas: A Cyclopedia of State History, Embracing Events, Institutions, Industries, Counties, Cities, Towns, Prominent Persons, Etc.*, 2 vols., vol. 1 (Chicago: Standard Publishing Company, 1912), 556.

was responsible for all the mounts (though with help from his taxidermy laboratory); and he built a living quarters for himself and his pregnant wife behind some rocks where mountain lion cubs were playing, so he could keep watch over the mounts.

The taxidermy itself was a feature to behold. Dyche's mounts drew attention from William Temple Hornaday, as well as from Alexander Wetmore, who, fifty years later and as Assistant Secretary of the Smithsonian Institution, remembered that he "marveled at Professor Dyche's specimens at the Fair in Chicago."⁶³ *Scientific American* called the display "one of the most remarkable exhibits to be seen at the great Fair," continuing its celebration of Dyche's work with, "Artists and professional men from all over the world who have seen it say this is the finest group of mounted animals they have seen, and that there is nothing like it in the world."⁶⁴ The Fair itself acknowledged its contribution to the Exposition, giving Dyche's exhibit a special award and citing its uniqueness among state building displays.⁶⁵

The popularity of Dyche's exhibit in the Kansas building was just one marker of its significance in the world of taxidermy. Certainly, it was an extraordinary effort that Dyche put forth in order to present the spectacle. But his work also propelled taxidermy into a realm beyond the presentation of animals for entertainment into a larger movement in taxidermy. The *Kansas City Star* promoted the exhibit as "scientific taxidermy"—one of the

⁶³ Alexander Wetmore, "The Dyche Museum at the University of Kansas," *Science* 94, no. 2452: 594.

⁶⁴ F. D. Palmer, "The Kansas Exhibit of Mounted Specimens of the Animals of the State," *Scientific American* 69, no. 3.

⁶⁵ William Sharp and Peggy Sullivan, *The Dashing Kansan: Lewis Lindsay Dyche: The Amazing Adventures of a Nineteenth-Century Naturalist and Explorer* (Kansas City, Mo.: Harrow Books in association with the Museum of Natural History the University of Kansas, 1990), 78.

few places the term would be used. “A number of Kansas editors ... are complaining because ... certain of the animals mounted are not indigenous to Kansas. [They] fail to recognize that the collection is valuable, not as an assortment of ‘dead animals stuffed,’ but as an exhibition of *scientific taxidermy*.”⁶⁶ Though critics initially viewed it with skepticism, the large display soon came to be identified as exemplary work, something that would elevate the reputation of American craftsmanship among world taxidermists. *The Leavenworth Times* suggested that proximity to the University biased some reporting in favor of Dyche’s work: “The Lawrence papers defend the Dyche collection. ...Does it require fifteen carloads of these defunct relics to show Prof. Dyche’s skill?”⁶⁷ Though minor, this spat among newspapers revealed underlying tensions that questioned the value of taxidermy mounts.

The use of the term “scientific taxidermy” in the *Kansas City Star* and the *Leavenworth Times* is important. By calling out the scientific nature of Dyche’s taxidermy, these newspapers distinguished his work from the other taxidermy that newspaper readers might have seen. Furthermore, this separation seemed to place more value on the work of scientific taxidermists, from something purely aesthetic into something that had intellectual value.

Although unaffiliated with Ward’s, Dyche remained a significant player in the taxidermy world. Hornaday, an early apprentice at Ward’s, praised Dyche’s work, describing the exhibited collection at the World’s Fair “a superb collection [for] science and

⁶⁶ *Kansas City Star*, 14 December, 4 (emphasis added).

⁶⁷ "Editorial," *Leavenworth Times*, 17 December, 3.

the public.”⁶⁸ Hornaday included Dyche’s contributions to taxidermy alongside the work of John Rowley and Carl Akeley, taxidermists whose work elevated public opinion of taxidermy displays to heights the craft had not seen before.⁶⁹ But what distinguished Dyche’s work was his holistic approach. He was the one who observed, collected, and mounted the animals, and he did it by himself, without the help of a large taxidermy studio.

Dyche hesitated to talk in strong terms about the quality of his own work. He did write about the process of making good taxidermy, but his strongest statement was simply, “It is very important that a skin should reach the museum in good condition.”⁷⁰ Similarly, his praise for other taxidermists lacked specific identification of characteristics that made for good taxidermy. Wanting to learn taxidermy from William Temple Hornaday, he wrote a request, mentioning in passing, “There is a taxidermist (not a good one) at Kansas City but he works by *magic* and *secrets known to no one but himself* and I cannot learn anything from him.”⁷¹ Taxidermy for Dyche was a precise craft, filled with technical details and techniques that required a great deal of practice. His humility in the craft spoke volumes

⁶⁸ William T. Hornaday, “America Leads the World in the Taxidermist’s Art,” *New York Herald*, 21 March, 16.

⁶⁹ Rowley and Akeley’s contributions to U.S. museum taxidermy are discussed in chapter three of this work.

⁷⁰ Lewis Lindsay Dyche, “On the Care of Mammal Skins Kept for Museum Purposes,” *Transactions of the Kansas Academy of Science* 22 (1909): 363.

⁷¹ Lewis Lindsay Dyche to William T. Hornaday, March 29, 1887 (draft), Lewis L. Dyche Papers, PP 66, Kenneth Spencer Research Library, University of Kansas. It is unclear if Dyche ever sent the letter, or what version of this letter he did send.

about the respect he had for others, especially Hornaday, whose work he admired greatly, and would try to emulate.⁷²

The World's Columbian Exposition exposed individual, unaffiliated taxidermists to a wider audience, as more than 27 million visitors attended the Fair. Martha Maxwell made good mounts, and she taught herself how to do it in the frontier of Colorado, far from any place like Ward's Natural Science Establishment. Contributing to scientific knowledge was one of her aspirations, and producing scientific taxidermy fulfilled those aspirations. L.L. Dyche, too, was less formally taught than many of the taxidermists at the U.S. National Museum, yet his large display dwarfed the others and awed the crowds in a way that Ward's mounts did not.

Ward's Natural Science Establishment survived the Panic of 1893 and still operates in Rochester more than a century later. But events leading up to the World's Fair had damaged Ward's business practices to the point that Ward's no longer trained new taxidermists. While taxidermists remained on staff, so the Establishment could mount specimens for smaller displays, it would no longer be an authoritative hub for taxidermy in U.S. natural history museums.

It became clear in 1893 that the old system of localized apprenticeships, as had happened at Ward's, were untenable, and a new source of authority in taxidermy was rising. Ward's Establishment was no longer the center of authority in taxidermy methods

⁷² More about Dyche's taxidermy practices can be found in Chapter Four, "In a Taxidermy Shop," in Sharp and Sullivan, *The Dashing Kansan*, 33-41.

and techniques. Instead, individuals—including those who had trained at Ward's—were becoming authorities in their own rights. Perhaps the location of authority would shift again, but it was clear: taxidermists were creating their mounts in their own ways, outside of formal apprenticeships and institutional affiliation.

CHAPTER TWO

A DEFENSE OF SCIENTIFIC TAXIDERMISTRY



Figure 4: William Temple Hornaday's "A Fight in the Tree-Tops," SAT Annual Report 1880-81, facing page 21

The 1881 exposition of the Society of American Taxidermists, held in Rochester, New York, invigorated the art of taxidermy in the United States. More precisely, one piece in particular attracted enough attention to effect a sizeable shift in how animals would be stuffed and sculpted. William Temple Hornaday (1854-1937), later Chief Taxidermist at the Smithsonian Institution's U.S. National Museum, presented a new work he called "A Fight in the Tree-Tops."¹ This unique taxidermy display depicted a group of five apes—orang-utans and gibbons—that Hornaday had collected during his 1878 journey to the jungles of

¹ Hornaday also developed the Smithsonian's Department of Living Animals, which became the formative unit for the National Zoological Park, where he acted as director. Upon leaving Washington, D.C., Hornaday became the founding director of the New York Zoological Society, or Bronx Zoo.

Borneo. But instead of the five specimens in static poses, or each specimen alone on its own stand, Hornaday's apes revealed a dynamic scene: The viewer interrupts a spat between two adult males—one biting at the finger of the other—while a young ape watches with an adult female, as she clutches her baby at her breast.

Hornaday, along with other prominent contemporary taxidermists, honed his skills at Ward's Natural Science Establishment, in Rochester, New York, starting in 1873.

Following the 1881 S.A.T. Exposition, Henry Augustus Ward (1831-1906), founder and director of the Establishment, attempted to persuade the Smithsonian Institution's U. S. National Museum to purchase Hornaday's display, describing it:

Two adult Orangs—Monsieur + Madame—are together in the tree-tops, she with an 18 month babe which clings around her body and another six months old youngster. Another adult male appears with designs on Madame. Husband attacks him and they are having a furious fight, biting each other's fingers as is their wont. Madame, with the little one clinging to her, has left her nest, which (empty) shows its structure, and holds off to one side, watching anxiously the outcome. Baby now had gotten high up on a branch, and watches the fray eagerly, but apparently does not care who whips, his Father or the other one! Now here are three fine adult Orangs,—they were the 1st choice of all which Hornaday brought home,—and two ages of young ones. They are beautifully mounted in various attitudes as the action of the piece demands, and their countenances are as expressive as those of five human beings. The nest, too, is quite a feature, while the foliage of the trees is perfectly worked—orchids and all.²

Hornaday's display was remarkable for several reasons, any of which might have earned it the top award at the Society's exposition. First, "A Fight in the Tree-Tops" depicted a

² Henry Augustus Ward to Spencer Fullerton Baird, 17 June 1882. SIA. Record Unit 189, Smithsonian Institution, Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1860-1908.

dynamic scene of several specimens, instead of a posed, static individual.³ Other prominent pieces at the exposition and its successors in 1882 and 1883 were almost exclusively single specimens: a pointer dog, a hairless terrier, and a horned owl all received notable mention from the Society's judges.⁴ Only the 1883 entry by Frederic A. Lucas (1852-1929), titled "An Interrupted Dinner," depicts a scene as active as Hornaday's apes: "A Red tailed Hawk has just killed a partridge and has scarcely begun to devour it when a Goshawk swoops down upon him with outstretched talons to seize the quarry."⁵ While Hornaday's apes showcase the action taxidermy could display, Lucas' incorporation of several species demonstrated the breadth of skill attained by the taxidermist.

In addition to the complex animal actions depicted in the scene, Hornaday also incorporated habitat into his display. Though these scenes are artistically distant from the dioramas that would appear in the early decades of the twentieth century, they represented a distinct shift in the presentation of taxidermy to a museum-going public.⁶

³ In many museum cases, a single specimen would stand in as a representative of the species, regardless of sexual dimorphism or geographical variation. An example of this is the Fénykövi elephant in the rotunda of the Smithsonian Institution's National Museum of Natural History, where the mount—as a pedagogical tool—instructs on the natural history of the African bush elephant.

⁴ The Annual Reports from the Society's three years of existence are largely discussions of the happenings at the three expositions, in Rochester, Boston, and New York. Society of American Taxidermists., *First Annual Report of the Society of American Taxidermists, March 24th, 1880, to March 25th, 1881* (Rochester, N.Y.: Daily Democrat & Chronicle Book & Job Print, 1881); *Second Annual Report of the Society of American Taxidermists. March 25th, 1881, to March 24th, 1882* (Rochester, N.Y.: Judson J. Withall, Book and Job Printer, 1882); *Third Annual Report of the Society of American Taxidermists. March 24th, 1882, to July 1, 1883* (Washington, D. C.: Gibson Brothers, Printers, 1883).

⁵ Oliver Davie, *Methods in the Art of Taxidermy* (Philadelphia: D. McKay, 1900), 72.

⁶ See chapter four of this work, "Standards of Museum Work," for the shifting roles of taxidermy for natural history museums. Karen Rader and Victoria Cain address developments of dioramas in "The Drama of the Diorama, 1910-1935," chapter two in Karen A. Rader and Victoria E. M. Cain, *Life on*

The animals were situated among branches, within the canopy of tree leaves, their fight in the tree-tops a re-creation of Hornaday's observations in the forests of Borneo.

"A Fight in the Tree-Tops" was a remarkably innovative example of taxidermy.

While it signified a transformation in the art of taxidermy itself, it also clarified a path for a new type of taxidermy—scientific taxidermy. In order to construct his display, Hornaday had to observe, sketch, and, when possible, photograph the animals as a reference.

Measuring them, too, was critical, for an accurate re-creation.⁷ Hornaday's meticulous measurements and his descriptions made it possible for him to re-create the scene in a way that they would instruct viewers on the natural history of the animals he depicted.

Scientific taxidermy was that medium.

Though Hornaday did not use the term "scientific taxidermy" to describe his craft or his product, his work was of such a high quality that it distinguished a form of taxidermy that would be so named a decade later. Usage of the term "scientific taxidermy" is relatively limited, mostly to Robert Wilson Shufeldt (1850-1934), an army surgeon whose fascination with natural history connected him to prominent naturalists, as well as gaining him affiliation with the Smithsonian Institution and the American Ornithologists' Union. His work *Scientific Taxidermy for Museums*, which was commissioned in 1893 and published in 1894, laid the foundations for a new way of looking at taxidermy in museums.⁸

Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century (Chicago: University of Chicago Press, 2014), 51-90.

⁷ Hornaday's measurements of those apes appear in his field notes. SIL. SIL-DL.MSS 001756 A, Hornaday, William Temple, Notes and correspondence of William Temple Hornaday, 1878-1934.

⁸ Robert W. Shufeldt, *Scientific Taxidermy for Museums: Based on a Study of the United States Government Collections*, Report of the U.S. National Museum for 1892 (Washington: G.P.O., 1894).

Scholarly attention to Shufeldt, especially to his writing, are similarly scant. Part of this inattention was due to Shufeldt's indiscretions, especially in his treatment of his first two wives—that is, sending his first wife to an asylum, and writing rather candidly about his second wife's sexuality, publishing pictures, and sending the article through professionally inappropriate channels.⁹ Though Shufeldt has remained a character on the periphery of academic discussion, he had achieved contemporary renown as a significant figure in his own academic fields.

This chapter examines Shufeldt's usage of the term "scientific taxidermy" in the context of nineteenth-century taxidermy. Scientific taxidermy offered a new way of looking at the aesthetic and purpose of taxidermy, not just as a means of preserving nature, but of recreating it. This was a direct contrast to the ways writers of taxidermy manuals discussed the history of taxidermy during this period, which followed a progressive model—tracing improvements in the practice of taxidermy as it related to preparing the skins of animals for mounting.

Shufeldt evaluated scientific taxidermy as the craft approached a golden age. Taxidermy manuals enjoyed a relative popularity, addressing a variety of groups who could engage in its practice. Taxidermists joined together in a new professional society, the Society of American Taxidermists (S.A.T.), though it would only last for a few years.¹⁰

⁹ Mark V. Barrow, Jr., *A Passion for Birds: American Ornithology after Audubon* (Princeton, N.J.: Princeton University Press, 1998), 63-67.

¹⁰ Susan Leigh Star, "Craft Vs. Commodity, Mess Vs. Transcendence: How the Right Tool Became the Wrong One in the Case of Taxidermy and Natural History," in *The Right Tools for the Job: At Work in Twentieth-Century Life Sciences*, ed. Adele Clarke and Joan H. Fujimura (Princeton, N.J.: Princeton University Press, 1992); Mary Anne Andrei, "Nature's Mirror: How the Taxidermists of Ward's

Distinctions among types of taxidermy also developed in this time, clearing a way for Shufeldt's characterizing museum taxidermy as "scientific." In examining Shufeldt's "scientific taxidermy," this chapter traces developments in taxidermy over the course of the latter decades of the nineteenth century, through manuals, the S.A.T., and the U. S. National Museum.

Scholarly accounts of taxidermy tend to focus on the mounts' contexts in museums as components of outreach, education, and research.¹¹ Arguments about mounts and displays on their own, and not as a component of a museum's collection for research and outreach, tend to focus more on the process of creation and what they meant to their creators and audiences, and not the potential scientific value of taxidermy.¹²

In this chapter, I argue for the re-evaluation of Scientific Taxidermy as a meaningful term to describe a particular approach to the presentation of preserved wild animals in museums. Focusing on accuracy and aesthetics as a means to recreate nature, Scientific Taxidermy clarified a genre of taxidermy with a specific purpose. Despite being used for a short span of time and by only a few people, the term's emergence at the end of the nineteenth century provided museums and taxidermists with a new way to describe their own work without relying on comparing the work to styles of taxidermy that had preceded them.

Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species" (Dissertation, University of Minnesota, 2006).

¹¹ Rader and Cain, *Life on Display*; Melissa Milgrom, *Still Life: Adventures in Taxidermy* (Boston: Houghton Mifflin Harcourt, 2010).

¹² Rachel Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park: Pennsylvania State University Press, 2012).

SCIENTIFIC TAXIDERMISTRY FOR MUSEUMS

In 1892, nearly a decade after the Society of American Taxidermists folded, the Smithsonian Institution commissioned a discussion of the taxidermy collections in the U.S. government's possession.¹³ Written by American osteologist and museologist Robert Wilson Shufeldt, *Scientific Taxidermy for Museums: Based on a Study of the United States Government Collections* defined and evaluated scientific taxidermy while elaborating on the qualifications for becoming a scientific taxidermist. The purpose of the study, as Shufeldt saw it, was to review the field of scientific taxidermy, especially at the U.S. National Museum and the Smithsonian Institution's collections. It had little to do with mechanics, techniques, and chemistry of taxidermy, but "rather deal with it from the standpoint of the art student and biologist."¹⁴

Circumstances surrounding this commission are ambiguous. Shufeldt was known to Smithsonian officials through his several donations of specimens to the Institution's collections; many of them were rocks and small animals he procured while in the American West, earning him an honorary curatorship at SI in 1882.¹⁵ By the 1890s, Shufeldt had become interested in writing about taxidermy in the United States. He had authored a

¹³ The commission came from Frederick True, curator of mammals at the Smithsonian's United States National Museum: "I have read with much pleasure your article on 'Scientific Taxidermy' in the Great Divide, and am gratified that you can find so much to praise in the taxidermic work of the Museum. Mr. Goode also noticed the article, and in conversation suggested that you might be willing to give us a fuller article on the same subject for publication in our own Report." Frederick True to Robert Wilson Shufeldt, 16 January 1893. SIA. Record Unit 112, Smithsonian Institution Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1879-1907.

¹⁴ Shufeldt, *Scientific Taxidermy for Museums*, 370.

¹⁵ David W. Johnston, *The History of Ornithology in Virginia* (Charlottesville: University of Virginia, 2003), 73.

short, page-long article in the Denver publication *Great Divide* in December 1892, discussing broad developments in taxidermy, especially focusing on the collection available at the U. S. National Museum in Washington, D.C. ¹⁶ In January 1893, Frederick True, the Smithsonian's Curator of Mammals, wrote to Shufeldt upon reading the article that he was "gratified that you can find so much to praise in the taxidermic work of the Museum. Mr. [George Brown] Goode also notices the article, and in conversation suggested that you might be willing to give us a fuller article on the same subject for publication in our own Report."¹⁷ The next day, Shufeldt promised Smithsonian officials that he would furnish a more robust rendition of an article he had written on "Scientific Taxidermy."¹⁸

Despite an increased prominence that accompanied his affiliation with a prestigious scientific body, Shufeldt experienced numerous personal hardships around the same time as his new publication. Medical conditions pushed Shufeldt into retirement from the military in 1891, at the rank of Captain.¹⁹ His wife Catherine Babcock (m. 1876) died by suicide in an asylum in 1892.²⁰ That same year, his son Robert (b. 1877) died on an expedition collecting specimens for Marietta College.²¹ Nevertheless, Shufeldt travelled to

¹⁶ Robert Wilson Shufeldt, "Scientific Taxidermy," *The Great Divide*, December 1892.

¹⁷F. W. True to R. W. Shufeldt, 16 January 1893, SIA. Record Unit 112, Smithsonian Institution Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1879-1907.

¹⁸ R. W. Shufeldt to F. W. True, 17 January 1893SIA. Record Unit 210, United States National Museum, Taxidermist, Correspondence, 1883-1889.

¹⁹ Kalman Lambrecht, "In Memorium, Robert Wilson Shufeldt," *The Auk* 52, no. 4 (1935).

²⁰ Barrow, *A Passion for Birds*, 63-67.

²¹ Henry Woodward Hulbert, "Correspondence," *The Auk* 9, no. 4 (1892).

Chicago in 1893 for the World's Columbian Exposition, where "The world's taxidermy fell to my adjudication."²²

Shufeldt first reviewed the USNM collections in the 1870s, and this initial encounter left him unimpressed: "Taken as a whole, they were a sorry lot of mummified effigies that peered out with their unnatural eyes from without the glass cases that contained them. Many of these original, taxidermical phantasmagoria are still to be seen lurking in the old museum cases, which they have taunted for over a quarter of a century or more."²³ Certainly, this was an echo of the sentiment expressed by Holder at the 1883 S.A.T. meeting.²⁴

Shufeldt began his essay in *The Great Divide* with a narrative detailing the shortcomings of taxidermy in the past, with "specimens almost unrecognizable" and the improvements found in the current state of taxidermy.²⁵ As funding increased for taxidermical work, including the hiring of William Temple Hornaday as Chief Taxidermist, "improvements became evident by slow degrees."²⁶ Shufeldt's discussion of Scientific Taxidermy focused on USNM and not another collection in large part because "the specimens of scientific taxidermy, to be seen in nearly every case in those collections ... to represent the very best that has anywhere been effected along such lines."²⁷

²² Robert Wilson Shufeldt, "Complete List of My Published Writings, with Brief Biographical Notes," *Medical Review of Reviews* 26 (1920).

²³ "Scientific Taxidermy," *The Great Divide* 1892 (1892): 197.

²⁴ J. B. Holder said, "The old museums of natural history failed to hold the interest of the public." "Address of J.B. Holder." *Third Annual Report of the S.A.T.*, 49.

²⁵ Shufeldt, "Scientific Taxidermy," 197.

²⁶ Shufeldt, "Scientific Taxidermy," 197.

²⁷ Shufeldt, "Scientific Taxidermy," *The Great Divide*, December 1892, 197.

One difficulty with Shufeldt's discussion is the absence of any clear definition of "scientific taxidermy." Nowhere is this clearer than in the tension between the art student and biologist, which is at the heart of Shufeldt's analysis. Indeed, in *Scientific Taxidermy for Museums*, he failed to land squarely on a singular term for the craftsmen of scientific taxidermy. "Scientific taxidermist" fits well as an identifying term for this individual, as it matches Shufeldt's title.²⁸ However, he also used "taxidermic artist" to describe the taxidermist, a shift more toward the artist's standpoint than the biologist's.²⁹ But then he also combined the viewpoints into the more confusing—and perhaps more convoluted—"scientific taxidermic artist."³⁰ This frequent shifting among terms for taxidermists betrayed Shufeldt's lack of fixed definition for a central term for his report. Perhaps the nearest Shufeldt arrived at a definition was in his first attempt addressing scientific taxidermy: "Intended as objects to instruct and broaden the roads to knowledge, and *not* to amuse or satisfy in the vulgar mind a too common taste for the ludicrous and extraordinary."³¹ Instead of entertainment, *Scientific Taxidermy* was to be educational or instructive.³² In this regard, then, *Scientific Taxidermy's* place was in a museum collection, where it would "instruct and broaden the roads to knowledge."

²⁸ Shufeldt, *Scientific Taxidermy for Museums*, 380.

²⁹ Shufeldt, *Scientific Taxidermy for Museums*, 406.

³⁰ Shufeldt, *Scientific Taxidermy for Museums*, 381.

³¹ Shufeldt, "Scientific Taxidermy," 198.

³² Here, Shufeldt is likely reacting against the dime museums that had become popular in the United States in the nineteenth century, which would showcase spectacles such as Fiji mermaids and jackalopes. Andrea Stulman Dennett. *Weird & Wonderful: The Dime Museum in America* (New York: New York University Press, 1997).

In place of a central definition telling his readers what, with utmost precision, scientific taxidermy *is*, Shufeldt provided examples of proper scientific taxidermy. On a particularly good example, a solo swallow-tailed gull, Shufeldt wrote, "It is nature and simplicity itself, and, with its neat stand, leaves nothing to be denied in the way of mounting a single individual in an attitude of rest."³³ His succinct description of the gull ("nature and simplicity itself") was close to a definition of scientific taxidermy. But still, this is unsatisfactory. To say that a bird on a stand "is nature" is misleading, for the bird is dead, portrayed as alive, an entirely unnatural arrangement.³⁴ The gull has no frills about it, and it is not artistically rendered. Instead, the taxidermist chose the simplest position to situate the gull, and that position was true to nature.

Scientific taxidermy balanced artistic capability with scientific accuracy. The highest order of scientific taxidermy was to achieve accuracy, "a perfect reproduction of the original."³⁵ In order to accomplish this, scientific taxidermy had to be "truthfully rendered" with "an attitude so natural to it."³⁶ Precise measurements were necessary for good scientific taxidermy, so the skin, when mounted, would fit the form created by the taxidermist. Additionally, the colors on the taxidermy had to be the "exact natural tints of the animal as it is seen in nature."³⁷ Regarding the scene of the piece, as in habitat dioramas that would later adorn Akeley Hall of African Mammals at New York's American Museum of

³³ Shufeldt, *Scientific Taxidermy for Museums*, 407.illustrated on plate XXXIX

³⁴ Poliquin, *The Breathless Zoo*, 6-7.

³⁵ Shufeldt, *Scientific Taxidermy for Museums*, 426.

³⁶ Shufeldt, *Scientific Taxidermy for Museums*, 416, 19.

³⁷ Shufeldt, *Scientific Taxidermy for Museums*, 420.

Natural History, "the foreground should be merged with the background by a skillful artist, so as to carry with it great depth, and offer the opportunity to show peculiarities of the sky perhaps, and the effect of distance."³⁸ Colors, attitude, and habitat needed to reflect nature as it had been scientifically observed, yet they needed to meet museum visitors' expectations of museum displays. Shufeldt understood this delicate balance: "If refinement, knowledge, science, and art are wholesomely combined in such efforts [of scientific taxidermy], there is not one bit of danger of either producing a cheap museum effort, much less anything that savors of the scenery of the theatrical stage."³⁹ Scientific taxidermy, if done in this manner, would *be* nature to those who visited the museums where it was housed. And this, for Shufeldt, was a fulfillment of the primary purpose of scientific taxidermy and of zoology departments in natural history museums: "It is the business of the museum to bring whole living sections of nature within its walls, where it can be studied."⁴⁰ Scientific taxidermy, above all, was an integral component of studying nature.

Shufeldt saw taxidermy as having two significant strains of practitioners: those who were of lower classes and who wanted to keep practices secret, except when they could earn a high salary for their work, and those who were of upper classes, apologetic for their curious hobby of taxidermy or who would write about it.⁴¹ Outside of museums, taxidermists would frequently create hunting trophies, as Hungarian brothers Coloman, John, Guy, and Louis-Paul Jonas, would at the beginning of the twentieth century, in their

³⁸ Shufeldt, *Scientific Taxidermy for Museums*, 430.

³⁹ Shufeldt, *Scientific Taxidermy for Museums*, 430.

⁴⁰ Shufeldt, *Scientific Taxidermy for Museums*, 430.

⁴¹ Shufeldt, *Scientific Taxidermy for Museums*, 370.

taxidermy studios in Denver, Colorado.⁴² As for members of upper classes, President Theodore Roosevelt practiced taxidermy on occasion, mounting specimens as he had learned from noted taxidermist John Graham Bell.⁴³ Scientific taxidermists, on the other hand, were not primarily interested in how much money they would earn from their mounts. Shufeldt described the character of these men as such: "Not mere plodders for pay, but men thoroughly in love with their work and possessing talents fully capable of improvement and desirous of seizing upon each and every advance made in the art."⁴⁴ They contributed to taxidermy by developing better techniques and using those developed by others.

Taxidermy was an object of Shufeldt's fancy for some time, an attitude he betrayed with language elevating the craft. He wrote, "Taxidermy itself has only recently been raised from the plane of mere cheap jobbery to the place it long ago should have occupied—that is, to a school of living art."⁴⁵ The juxtaposition of "cheap jobbery" with language of "living art" falls in line with Shufeldt's discussion of "plodders for pay," a denigration of the craft and those who practiced it. One purpose of Shufeldt's present writing was to continue in the elevation of taxidermists, laying out their professionalism, their artistry, and their

⁴² Stephen T. Asma, *Stuffed Animals & Pickled Heads: The Culture and Evolution of Natural History Museums* (New York: Oxford University Press, 2001). 11-12.

⁴³ Theodore Roosevelt, "My Life as a Naturalist," *The American Museum Journal*, Vol. XVIII, No. 5 (May 1918), 322-23; Douglas Brinkley, *The Wilderness Warrior: Theodore Roosevelt and the Crusade for America* (New York: Harper Perennial, 2009).

⁴⁴ Shufeldt, *Scientific Taxidermy for Museums*, 434-35.

⁴⁵ Shufeldt, *Scientific Taxidermy for Museums*, 406.

dedication to accurate representations of animals, in a manner not dissimilar to the S.A.T.'s efforts in the 1880s.

Proper scientific taxidermists were qualified in sciences and the arts, having scientific knowledge of nature and artistic sensibilities to recreate it. The foremost formal qualification, as Shufeldt saw it, was a thorough education in biology, morphology, anatomy, and physics. Second, he identified knowledge in the use of a camera, and possessing some ability to sketch. Additionally, and obviously, taxidermic techniques were important as was currency in the field, "to become familiar through current literature of all advances made from time to time in his art."⁴⁶ But the most important qualification for a scientific taxidermist was skilled observation, the ability to see an animal as it existed in nature.

These qualifications for a scientific taxidermist combined science and art in the craft of mounting animals. The artistry of painters and sculptors coalesced with the knowledge of biologists and anatomists to create what Shufeldt called "strict fidelity to nature."⁴⁷ Use of the word "fidelity" here is key. Scientific taxidermy is more than a faithful recreation of an animal or of nature. It is an aesthetic that presents the scientific knowledge in a taxidermy mount into an object of artistic beauty. The mount reflects the expectations of its viewers, offering both meaning and awe.

The aesthetic of Scientific Taxidermy included simplicity and accuracy. Simplicity was the lack of adornment, or recreating nature without excess. Accuracy referred to

⁴⁶ Shufeldt, *Scientific Taxidermy for Museums*, 380.

⁴⁷ Shufeldt, *Scientific Taxidermy for Museums*, 428.

measurements as discussed above, but also coloring parts of a taxidermic display appropriately. To this end, the ability to recognize colors in nature, differentiate hues of the same color, and replicating them were all important artistic parts of scientific taxidermy. Shufeldt recognized its importance, as a tool that “can secure subjects that the unaided eye and pencil can never give him, and these are all kinds of animals in rapid motion, and they may be obtained after a due amount of practice, by the use of the photographic camera.”⁴⁸ The artistry of sketching and the technical know-how of camera use combined with scientific education to produce scientific taxidermy.

The question remains: What is scientific taxidermy? Shufeldt’s various descriptions, while dissatisfyingly evasive, remain the closest to a limited definition. His nearest hit comes when drawing a boundary, however permeable, around the topic for discussion: “all kinds of animals for museum exhibition.”⁴⁹ Scientific taxidermy reflects nature as it attempts to recreate an animal as it existed in nature. It combines scientific observations with artistic representation to make nature discoverable in a museum. This is, perhaps, the closest we can come to a succinct definition of scientific taxidermy: It is an accurate and meaningful replication of nature for use in a museum.⁵⁰

Museums played an important role in Shufeldt’s *Scientific Taxidermy*; indeed, the U.S. National Museum was the impetus for the study. The U. S. National Museum building

⁴⁸ Shufeldt, *Scientific Taxidermy for Museums*, 383.

⁴⁹ Shufeldt, *Scientific Taxidermy for Museums*, 369.

⁵⁰ John Herron argues that large taxidermy displays such as Dyche’s 1893 “Panorama of North American Plants and Animals” instruct us on how to better see nature. “Stuffed: Nature and Science on Display,” in *Rendering Nature: Animals, Bodies, Places, Politics*, ed. Marguerite S. Shaffer and Phoebe S. K. Young (Philadelphia: University of Pennsylvania Press, 2015).

that opened in 1881 included a wing for natural history collections, but westward expeditions that brought large dinosaur skeletons to Washington, D. C., increased the collections to the point where the Smithsonian Institution needed a new museum building with the purpose of housing, displaying, and researching the government's natural history collection. With the 1893 World's Columbian Exposition in Chicago, Smithsonian taxidermists worked long hours on preparing specimens for display. The large amount of taxidermy prepared specially for the Exposition became a part of the government's permanent collection. Schufeldt's appraisal of that collection would demonstrate improvements made in taxidermic techniques, for the benefit of USNM and other museums' taxidermists. For Shufeldt, the World's Columbian Exposition marked a turning point in taxidermy art.⁵¹ Realistic displays, as well as marked improvements in representing marine invertebrates through taxidermy, showcased the best taxidermy the United States had to offer, and it was all present in Chicago.

Because of the promise shown in specimens to be displayed in Chicago, Shufeldt was optimistic as to the state of taxidermy in the government's collection. After his stint as a judge for the Fair's taxidermy, he wrote, "The museum of the future has a fine field to look forward to, for such an art as this is capable of classifying in cases, according to natural taxonomical schemes, while groups of animals, that heretofore have been studied only from the specimens and from plates and drawings."⁵² Museums were places for zoology to be

⁵¹ More on taxidermy at the World's Columbian Exposition is in the second chapter, "Taxidermy at the World's Columbian Exposition."

⁵² Shufeldt, *Scientific Taxidermy for Museums*, 392.

studied and, as Shufeldt mentioned, places to demonstrate a normative practice for the investigation of nature and “how it ought to be studied.”⁵³

Museums, then, in part due to the existence of scientific taxidermy, were interdisciplinary hubs. Requiring artistry and scientific knowledge, displays could only accurately reflect nature with eyes toward natural occurrences, natural colors, natural attitudes, and natural measurements. In short, in order to make a good display for a museum, the scientific taxidermist had to see nature in a way that made it replicable and had to create a replica that would allow museum goers to see the same nature.

Interdisciplinarity came into play in the combination of skills required by scientific taxidermy. Shufeldt described this conflation of roles when writing of the new group display trends in taxidermy:

Frequently some of the best group pieces of mounted mammals, birds, and others, have resulted from the combined knowledge and skill of the capable zoölogist, on the one hand and trained taxidermist upon the other... Very often, it will be seen, then, in the future, I think, that fine, realistic groups of mounted animals will be produced that will be composites; in other words, will be the resultant of the combined labors of the biologist, the taxidermist, the modeler, and the designer and artist.⁵⁴

Training in the arts and in the sciences, with artistic know-how and scientific discipline, would result in new museum displays that could teach visitors not only the scientific habits of animals, but the habits of good scientists. Or, as Shufeldt wrote, “where [nature] can be studied and ... how it ought to be studied.”

⁵³ Shufeldt, *Scientific Taxidermy for Museums*, 430.

⁵⁴ Shufeldt, *Scientific Taxidermy for Museums*, 379.

Shufeldt's discussion of scientific taxidermy was one in a long line of essays and articles on scientific topics. Indeed, during his six decades of writing, his publications numbered greater than 1,500.⁵⁵ Despite his contributions to scientific literature and the Smithsonian Institution, his affiliation with that scientific body fell under scrutiny only a few years after *Scientific Taxidermy*.

In 1895, only a month or so after meeting her, Shufeldt married Florence Audubon, the granddaughter of artist-naturalist John James Audubon. This marriage united two prominent naturalist families, lifting Audubon out of her social status as a spinster, and cementing Shufeldt as a valuable contributor to the American Ornithologists' Union (AOU), which he had helped to found.⁵⁶

Shortly after their marriage, Audubon accused Shufeldt of an affair with a Norwegian woman, Alfhild Dagny Lowum, whom he later married. In the meantime, Shufeldt had published an article, "On the Medico-Legal Aspect of Impotency in Women."⁵⁷ Included in this article were photographs of a nude woman whom Shufeldt disparagingly described as a "mulatto," though others believed them to be photographs of his wife Florence. This, however, was only the beginning of Shufeldt's difficulties.

Upon publishing "Impotency in Women," Shufeldt distributed several copies to fellow researchers and others who might be interested in such work. On each of these

⁵⁵ Per the list he published in Shufeldt, "Complete List of My Published Writings, with Brief Biographical Notes."

⁵⁶ A larger discussion of the "Shufeldt Affair" and its ramifications among affiliates at the Smithsonian and American Ornithological Union appears in Barrow, *A Passion for Birds*, 63-67.

⁵⁷ Robert Wilson Shufeldt, "On the Medico-Legal Aspect of Impotency in Women," *The Medico-Legal Journal* 14 (1896).

copies, however, was a stamp that read, “Compliments of Dr. R. W. Shufeldt, Smithsonian Institution, Washington, D.C.” Samuel Pierpont Langley, Secretary of the Smithsonian Institution, believed this a violation of Smithsonian rules, as it promoted Shufeldt’s work through his Smithsonian affiliation, though the research done for the essay was not done at the Smithsonian or with Smithsonian resources.⁵⁸

The stamp became the catalyst for Shufeldt’s disaffiliation with the Smithsonian Institution, though Langley dissolved the relationship quietly. Shufeldt insisted that the Institution compensate him for a collection of birds he had given it. Though Shufeldt had donated the birds, administrators settled, in a move that preserved the name of the Institution and prevented it from being dragged through any additional difficulties effected by Shufeldt. At the AOU, however, Shufeldt also lost his membership and affiliation, though much less quietly than at SI.⁵⁹

Despite Shufeldt’s problematic qualities—his pushiness to publish his own work, his racist biology and anthropology, his poor treatment of women, and his self-promotion—his discussion of scientific taxidermy draws nothing from them.⁶⁰ That is, his characterization of Scientific Taxidermy proved a useful distinction within the larger realm of taxidermy, in

⁵⁸ S. P. Langley to R. W. Shufeldt, 8 February 1897. SIA. Record Unit 112, Smithsonian Institution Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1879-1907.

⁵⁹ See Barrow, *A Passion for Birds*, 65 and 232, n. 125.

⁶⁰ The way Shufeldt promoted his own image and treated his wife were problematic in his own time, and a large part of the reason for his dismissal from SI and from the AOU. His racist biology and anthropology—evident from his characterization of his wife as a “mulatto” and from his books *The Negro, a Menace to American Civilization* (1907) and *America’s Greatest Problem: The Negro* (1915)—were not uncommon views in his time, but they make it difficult to wholeheartedly celebrate another aspect of Shufeldt’s work in the present.

spite of how Shufeldt considered people. More specifically, as *Scientific Taxidermy* does not concern people but dead animals, the characteristics that made Shufeldt personally distasteful to members of the AOU and the Smithsonian are less relevant than they might have been were Shufeldt to have published an article on mounting humans as taxidermy.⁶¹

In the years after the publication of *Scientific Taxidermy*, Shufeldt was less inclined to use the term “scientific taxidermy,” having used it repeatedly from 1892 to 1894. In 1895, he published a pair of articles for *The American Field* extolling new techniques in taxidermy, especially in gelatin casts for reptiles and fishes.⁶² These articles eschewed the phrase “scientific taxidermy,” trading it in for “modern taxidermy.” Insofar as Shufeldt was concerned, taxidermy had “grown to become a science.”⁶³ Other writers started using his terminology to describe the current state of taxidermy, demonstrating that the scientific aspects of *Scientific Taxidermy* were intrinsic characteristics to taxidermy itself.

POST-SCIENTIFIC TAXIDERMY

In the years after Shufeldt’s work, taxidermy manuals saw a slight shift in the ways in which they approached discussions of different types of taxidermy, exemplified in British

⁶¹ Shufeldt claimed to have found a great deal of material on human taxidermy while writing *Scientific Taxidermy*, but he also found it too much to incorporate into his present essay. He considered writing a separate article for the Smithsonian in a letter to G. Brown Goode, 13 June 1894. SIA. Record Unit 210, United States National Museum, Taxidermist, Correspondence, 1883-1889.

⁶² Robert Wilson Shufeldt, “Modern Taxidermy,” *The American Field* (18 May 1895); “Modern Taxidermy,” *The American Field* (25 May 1895).”

⁶³ Shufeldt, “Modern Taxidermy,” (25 May 1895).

zoologist Montagu Browne's 1896 work, *Artistic and Scientific Taxidermy*.⁶⁴ Notably, this work included Scientific Taxidermy alongside Artistic Taxidermy, a moniker that had been used by taxidermists for decades; for example, Frederic Webster used the phrase to identify his particular expertise on his professional letterhead.⁶⁵

In the seventeen years since he had written *Practical Taxidermy*, Browne saw “the gratifying strides made by taxidermists towards a better understanding of their art, and by museum authorities toward a more scientific exposition of natural objects.”⁶⁶ Still, taxidermy manuals wrote history as a narrative of progress, marching toward the ideal form of a taxidermy mount.

Browne's *Artistic and Scientific Taxidermy* devoted a section of the history of taxidermy to Shufeldt and the potential that existed in Scientific Taxidermy:

Probably the future and hope of taxidermy will be the welding of the educated artist, designer, modeller, sculptor, biologist, and naturalist; and the two last are by no means synonymous terms, as some might suppose. When this happens—and there is no reason why all these attributes should not be combined in one individual—taxidermy will become an exact science relieved, as painting is at present, by poetic inspirations.⁶⁷

In coalescing these diverse occupations into the needs for a taxidermist, Browne identified the intersections that reflected the core of Shufeldt's discussion. Further, Browne quoted, in *Artistic and Scientific Taxidermy*, his earlier entry in the *Encyclopedia Britannica* that

⁶⁴ Montagu Browne, *Artistic and Scientific Taxidermy and Modelling. A Manual of Instruction in the Methods of Preserving and Reproducing the Correct Form of All Natural Objects, Including a Chapter on the Modelling of Foliage, Etc* (London, 1896).

⁶⁵ Frederic S. Webster to William Temple Hornaday, 9 May 1884. SIA. Record Unit 210, United States National Museum, Taxidermist, Correspondence, 1883-1889.

⁶⁶ Browne, *Artistic and Scientific Taxidermy*, vii.

⁶⁷ Browne, *Artistic and Scientific Taxidermy*, 17.

similarly showed Shufeldt's influence: "A new school of taxidermy, with new methods, whose aim is to combine knowledge of anatomy and modelling with taxidermic technique, is now coming to the front, and the next generation will discard all processes of 'stuffing' in favour of modelling. ... This ... indicates the future of the art, the hope of which lies in the better education of taxidermists as designers, artists, and modellers."⁶⁸ Though Browne's entry does not explicitly cite Shufeldt, the chronology and description suggest that this "new school of taxidermy" is scientific taxidermy.

U.S. taxidermists did not latch onto Shufeldt's ideas as readily as their British counterparts. Likely, this was in large part due to the difficulties around the Smithsonian Institution's disassociation with Shufeldt. Nevertheless, a prominent discussion of Shufeldt's work appeared a year after its publication—in the pages of *Natural Science: A Monthly Review of Scientific Progress* and the Smithsonian's Annual Report from 1894.⁶⁹ This discussion was less an argument over the proper place of scientific taxidermy or of taxidermy in museums, and more a conversation acknowledging the longer history of taxidermy and improvements in the craft.

In July and August of 1894, *Natural Science: A Monthly Review of Scientific Progress* published a pair of reviews of *Scientific Taxidermy*.⁷⁰ The initial review summed up Shufeldt's paper nicely, as promoting for the taxidermist the "advantages of a liberal

⁶⁸ Encyclopedia Britannica (vol. xxiii. pp. 89, 90), in *Artistic and Scientific Taxidermy*, 7.

⁶⁹ "Some New Books: The Art of Stuffing," *Natural Science: A Monthly Review of Scientific Progress* V (1894); Smithsonian Institution., "Taxidermy in the Museum," in *Report of the U.S. National Museum* (Washington, D.C.: Government Printing Office, 1895).

⁷⁰ "The Art of Stuffing"; "Taxidermy as Fine Art," *Natural Science: A Monthly Review of Scientific Progress* (1894).

education and the importance of a first-rate knowledge of general biology and anatomy. The taxidermist should be, besides, a good field naturalist, a careful observer of nature and of the habits of animals, a botanist, a topographer, and an artist.”⁷¹ The review extended its compliments to Shufeldt himself, lauding his contributions to taxidermy writ large: “Dr. Shufeldt has earned the gratitude of every true student of nature, he has done the taxidermist an incalculable service in elevating his work from that of a mere stuffer to that of an artist.”⁷² Elevating taxidermy to artistry was not a primary concern of Shufeldt’s in *Scientific Taxidermy*. *Natural Science* corrected this later that same year in a supplementary article to their July 1894 review, when the publication had been able to obtain and print photographs that Shufeldt had used to illustrate good taxidermy. They wrote of his argument, nearer the mark, “Dr. Shufeldt’s plea is throughout for a more artistic rendering of the stuffed and modelled animals and groups in our museums; and when we inquire how this desirable result is to be attained, we find that it is solely by holding the mirror up to Nature herself.”⁷³ Indeed, accuracy in representation was, for Shufeldt, the primary criterion for higher-quality taxidermy in natural history museums.

However, the editor at *Natural Science* challenged the feasibility of developing and displaying a taxidermy collection within a museum:

We cannot, however, go so far with Dr. Shufeldt as to look forward to a time when museums shall display in monster cases, picturesquely arranged, the faunas of entire regions or the animal and plant life of various geographical areas. Such a method of exhibition leads, almost certainly, to hopeless incongruities and prevents a proper inspection of

⁷¹ "The Art of Stuffing," 58-59.

⁷² "The Art of Stuffing," 60.

⁷³ "Taxidermy as Fine Art," i.

the specimens exhibited. The scene-painter must not interfere with the scientist. A museum is a palace of truth before it is a palace of art.⁷⁴

Though Shufeldt advocated scientific displays of individual specimens, larger cases filled with depictions of the diversity of life within a given geographic region would have been difficult to maintain, both in their physical arrangements and in their intellectual consistency. That is, a variety of animals does not always exist in a single geographic region; migratory species, for example, complicate the notion of a single geographic distribution of biological life. The truth of the scene in nature would be difficult to achieve, though the dioramas of the early twentieth century would succeed in situating mounts in specified locales and seasons.

A challenge to the practicability of scientific taxidermy displays, however, was not the only critique *Natural Science* had for Shufeldt. More prominent was a challenge as to the starting point for the marked improvements in mounting animals that Shufeldt claimed. Shufeldt placed the 1893 World's Columbian Exposition in Chicago at the epicenter of change in taxidermy; *Natural Science* vehemently disagreed:

This is due, in Dr. Shufeldt's opinion, to the stimulating influence that the World's Columbian Exhibition had upon every art and industry, an influence, one may add, that extended far beyond the limits of the great republic. It was not, however, merely the desire to rival other institutions and countries that gave so great an impetus to the art, but the fact that a sufficient appropriation of the needful dollars enabled their true strength and best work to be put forth.⁷⁵

To be clearer, *Natural Science* challenged Shufeldt's claim that the World's Fair was, in itself, a catalyst for change in the wide worlds of art, technology, and science. The editor

⁷⁴ "Taxidermy as Fine Art," iv.

⁷⁵ "Taxidermy as Fine Art," iv.

claimed instead that the spirit of competition—to be the best exhibit or display in Chicago—spurred dramatic changes among the variety of creative opportunities at the 1893 World’s Fair. Accepting the correctness of the editor’s position, the Smithsonian Institution wrote in the following year’s Annual Report, “Very important advances had been made before the Chicago Exposition was organized, and there was scarcely a group among those shown by the National Museum which had not been partially executed before preparation for the Exposition began.”⁷⁶

Instead of claiming that the World’s Columbian Exposition changed taxidermy, the Smithsonian pointed to its relationship with the Society of American Taxidermists as an indicator of the craft’s dramatic improvement: “The true explanation of our advance in taxidermy lies in a happy relationship which was established in 1882 between the authorities of the Museum and the representatives of the Society of Taxidermists.”⁷⁷ Perhaps the key word in the Smithsonian’s description is “our,” as Shufeldt’s discussion of scientific taxidermy was solely in regard to the collections of taxidermy held by the United States’ government.

But the Smithsonian’s claims ran deeper. Instead of stopping to refocus on the relationship between its U.S. National Museum and the S.A.T., it suggested that taxidermy at the museum had long practiced exactly what Shufeldt prescribed, thereby arguing, implicitly, that Shufeldt’s version of scientific taxidermy was a description of the kind of taxidermy already held at the Museum. The Museum taxidermists was “recognized either

⁷⁶ Smithsonian Institution., "Taxidermy in the Museum," 47.

⁷⁷ Smithsonian Institution, "Taxidermy in the Museum," 47.

as an artist or as an expert artisan, and his individual capacities as might merit, and he was encouraged to do every part of the work with his own hands, trusting nothing to laborers or ordinary mechanics.”⁷⁸ In addition to being exceptionally skilled at crafting a mounted specimen, the taxidermist at the U.S. National Museum would “study a living model or the best attainable pictures or sculptures of similar subjects before beginning his work,” as he was primarily concerned with attaining a direct semblance of nature.⁷⁹ Finally, the Smithsonian emphasized the near-universality of taxidermy practices among naturalists, that “some of the most successful groups of mammals and birds in the museum have been done by workmen not possessed of artistic skill though excellent in technique, whose work has been designed and directed by the curators of the several departments.”⁸⁰ The Museum only collected excellent taxidermy; therefore, a study of excellent taxidermy would, of course, have the Museum as its primary subject.

The Smithsonian’s decision to approach Shufeldt to write this essay, then, stemmed first from his essays on “Scientific Taxidermy” in *The Great Divide*. Its goal was to expand upon the “development of ideals of the higher taxidermy.”⁸¹ Shufeldt would be, for the Smithsonian, the ideal author of the piece, “not being attached to any museum, would be able to examine critically and discuss the subject without prejudice, taking the consideration all that has been done elsewhere as well as in Washington, and this he

⁷⁸ Smithsonian Institution, “Taxidermy in the Museum,” 47.

⁷⁹ Smithsonian Institution, “Taxidermy in the Museum,” 48.

⁸⁰ Smithsonian Institution, “Taxidermy in the Museum,” 48.

⁸¹ Smithsonian Institution, “Taxidermy in the Museum,” 45.

endeavored to do.”⁸² The attention gained by the article promoted taxidermic work within the museum, as well as within the United States more broadly.

This conversation, which took place over the course of nearly two years between the Smithsonian Institution and *Natural Science*, demonstrated that Shufeldt’s *Scientific Taxidermy* had left an impression on scientific and museum communities. But on its own, the conversation did not demonstrate the lasting impact of Shufeldt’s essay. To be clear, explicit discussion of Shufeldt in a positive light would be unexpected from an institution such as the Smithsonian, given the difficulties Shufeldt caused in the years immediately after *Scientific Taxidermy*’s publication.

Nevertheless, Richard Rathburn, Director of the U. S. National Museum, channeled some of Shufeldt’s ideas concerning scientific taxidermy in his search for a new chief taxidermist in 1901: "He must have not only mechanical ability to execute first-class taxidermic work, but possess the qualifications of an artist and a knowledge of the life-history of animals."⁸³ Scientific knowledge and artistic sensibilities had become essential qualifications for a museum taxidermist, and *Scientific Taxidermy* would continue on a trajectory through American natural history museums.

Though usage of Shufeldt’s terminology did not catch on in a way that has made it historically prominent, “scientific taxidermy” remains a valuable categorization within

⁸² Smithsonian Institution, "Taxidermy in the Museum," 46.

⁸³ Job Posting from Richard Rathburn, 11 June 1901 SIA. Record Unit 210, Smithsonian Institution Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1875-1902.

taxidermy as a whole. Scientific Taxidermy does not necessarily exist alongside artistic, decorative, or trophy taxidermy as an exclusive subcategory of taxidermy. That is, a taxidermy mount might be considered both artistic *and* scientific. The term is also valuable in that it can be applied to a variety of examples, mostly found in natural history museums.

The value of “Scientific Taxidermy” is threefold. First, it has a specific period of relevance: 1892-1894. Shufeldt identified dramatic changes in the aesthetic of taxidermy, as well as in its execution, focusing on the 1893 World Columbian Exposition in Chicago as an event of historical significance, that also aligns to the formation of the Field Museum of Natural History, the decline of Ward’s Natural Science Establishment, and the beginning of Carl Akeley’s career. Without a formal professional society, taxidermists would gain distinction through their affiliations with natural history museums, mostly the Smithsonian’s U.S. National Museum, the Field Museum, and the American Museum of Natural History, with some relative prominence given to taxidermists at the California Academy of Sciences, the Carnegie Museum of Natural History, and the Milwaukee Public Museum.

Second, Scientific Taxidermy was significant in its unique characteristics. Shufeldt laid out several specific characteristics of Scientific Taxidermy—accurate and pleasing—differentiating the process from taxidermy that might not be identified as “scientific.” The notable changes in process that Shufeldt discussed focused on the observation of nature, and using the taxidermy to tell specific scientific stories. Nevertheless, he also included discussions of the artistic nature of taxidermy.

Finally, the discrete set of taxidermists involved in developing changes in the taxidermy processes provides additional legitimacy for the reclaimed use of the term

Scientific Taxidermy. Shufeldt did not provide a complete list of taxidermists or examples of taxidermy that he found to be particularly scientific. However, his correspondence with taxidermists is limited to a particular set, largely focused around the Smithsonian, and his examples of good taxidermy are limited to those created by those same individuals.

In the realm of Scientific Taxidermy, then, there exist two possibilities: Shufeldt is descriptive, or he is prescriptive. If descriptive, Scientific Taxidermy was an existing subset of taxidermy—mounts deliberately created for a scientific purpose or in a scientific manner. In this case, Shufeldt's assessment identifies and names a category of taxidermy practices and methods that had existed for, perhaps, decades. If prescriptive, Scientific Taxidermy was a subset of taxidermy clarified by Shufeldt, later influential in the development of future taxidermy practices. Shufeldt, then, would have identified patterns in valuable taxidermy mounts that came to natural history museums. With those patterns, he created a schema for taxidermists to use, were they to intentionally create Scientific Taxidermy.

Perhaps most compelling is a third possibility—that Shufeldt's Scientific Taxidermy was both descriptive and prescriptive. Yes, the characteristics he identified as Scientific Taxidermy were well-practiced among taxidermists in their creation of mounts for relaying scientific knowledge. But Scientific Taxidermy was also a clear set of characteristics that taxidermists could follow in order to construct mounts imbued with scientific knowledge. In being both prescriptive and descriptive, Scientific Taxidermy can exist outside of Shufeldt's limited usage. It can apply to mounts created in the decades before, as Shufeldt identified relevant characteristics of existing taxidermy, and it can be applied to taxidermy today, created with the intent of being Scientific.

Regardless of the intent behind Scientific Taxidermy, Shufeldt clarified a term that is ripe for reclamation. Scientific Taxidermy is a term that can be applied to existing creations, as Shufeldt did in 1893. That is, a mount can be created with a variety of intention, and it can be purposed and repurposed in such a way that is instructive and with scientific value. And that, then, becomes its primary value—as a scientific, instructive object.⁸⁴

⁸⁴ "Taxidermy as Fine Art," 34.

CHAPTER THREE

COMMUNICATING SCIENTIFIC TAXIDERMISTRY



Figure 5: Virginia Deer in Winter. Akeley's The Four Seasons, FCM Annual Report 1901-02

At the end of the nineteenth century, Carl Akeley (1864-1926) presented curators at the Field Columbian Museum with a complex idea for several groups of Virginia Deer (*Odocoileus virginianus*), and they were unsure how to proceed.¹ The *Four Seasons* would be costly and time-consuming, and its value to the museum and its visitors were still in question.

¹ The museum was founded in 1893 as The Columbian Museum of Chicago. The name changed to Field Columbian Museum in 1894, then to the Field Museum of Natural History in 1905.

The Virginia Deer is more commonly known as the "White-tailed deer," though the subspecies *O. v. virginianus* may be the deer Akeley displayed.

Four Seasons was a huge exhibit, by contemporary standards, a four-part diorama covering just over 300 square feet. Certainly, there were larger dioramas—Lewis Lindsay Dyche’s depiction of an African watering hole covered more than 5,000 square feet and contained roughly 120 species.² But Akeley’s exhibit was different in other ways, and size was not the most important factor in its grandeur. The Virginia deer was not an uncommon animal. However, deer startle easily, so seeing them as they walked quietly through nature would be a treat for Chicago’s museum visitors. Additionally, the display showed four seasons in sequence, so viewers could observe the deer’s habits at different times of the year.

Completed in 1901, *Four Seasons* proved a success. Other taxidermists celebrated it, and it even attracted the attention of President Theodore Roosevelt, who invited Akeley to the White House after seeing the mounted group of deer.³ In many ways, *Four Seasons* represented the epitome of Akeley’s practice of taxidermy. In it, he showcased his attentiveness to detail in the sheer number of more than 15,000 handcrafted leaves, all molded by his wife Delia, the presentation of an animal in a group rather than as a solitary mount, and the depiction of the animal in its natural habitat. Akeley’s skill was highly visible in this display, and it still is, as *Four Seasons* remains prominent in the Field Museum’s permanent exhibit space. In sum, the display cemented Akeley’s celebrity within

² William Sharp and Peggy Sullivan, *The Dashing Kansan: Lewis Lindsay Dyche: The Amazing Adventures of a Nineteenth-Century Naturalist and Explorer* (Kansas City, Mo.: Harrow Books in association with the Museum of Natural History the University of Kansas, 1990), 83-86.

³ Darrin P. Lunde, *The Naturalist: Theodore Roosevelt, a Lifetime of Exploration, and the Triumph of American Natural History* (New York: Broadway Books, 2017), 183.

the taxidermy profession, though that status also extended to museums at large, and even beyond the museum world.⁴

When the American Museum of Natural History named its Hall of African mammals after Akeley, it was due to his role as a museum taxidermist and artistic designer of the Hall, not as a museum benefactor.⁵ As he advocated for his own styles and techniques of taxidermy, he also promoted taxidermy more generally. In a practice that had become relatively common among taxidermists, Akeley published a work detailing his technique, as a way to solidify his influence and authority and to communicate it broadly.

This chapter discusses the proliferation of scientific taxidermy through publications. Carl Akeley's presence as a creator of wildly popular taxidermy and taxidermy displays did a great deal to elevate taxidermy in the minds of the public. His adventure-filled narratives

⁴ Akeley was well-known outside the museum world, especially through his patents, which included a new kind of motion camera and a cement gun, and his conservation effort. He designed the camera for field observations, though it would also prove useful to capture footage in war arenas. The cement gun became important in the repair of the Field Museum's original building, and became known as "Shotcrete." Finally, one of Akeley's enduring legacies was the establishment of Albert National Park in Belgian Congo (now Virunga National Park), founded as a preserve for mountain gorillas. Mark Alvey, "The Cinema as Taxidermy: Carl Akeley and the Preservative Obsession," *Framework: The Journal of Cinema and Media* 48, no. 1 (2007); Jay Kirk, *Kingdom under Glass: A Tale of Obsession, Adventure, and One Man's Quest to Preserve the World's Great Animals* (New York: Henry Holt, 2010); Alison Griffiths, "Life Groups and the Modern Museum Spectator," in *Wondrous Difference: Cinema, Anthropology, and Turn-of-the-Century Visual Culture* (New York: Columbia University Press, 2002); Pietro Tiechert, "Carl Akeley: A Tribute to the Founder of Shotcrete," *Shotcrete Magazine* (2002); Henry R. Carey, "Saving the Animal Life of Africa: A New Method and a Last Chance," *Journal of Mammalogy* 7, no. 2 (1926); Penelope Bodry-Sanders, *Carl Akeley: Africa's Collector, Africa's Savior* (Paragon House: St. Paul, Minn., 1991); *African Obsession: The Life and Legacy of Carl Akeley* (Jacksonville, Fla.: Batax Museum Publishing, 1998).

⁵ Mary Anne Andrei discusses this at greater length in her dissertation. "Nature's Mirror: How the Taxidermists of Ward's Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species" (Dissertation, University of Minnesota, 2006).

of journeys to collect specimens made for popular publications, and readers of those stories could travel to a museum to see the specimens that starred in those stories.

But popularization is larger than a single person's efforts, regardless of their celebrity. I contend that while Akeley's celebrity did indeed promote the taxidermy profession, it did not, on its own, make scientific taxidermy an ideal to be replicated in museums across the United States. Instead, manuals on the creation of taxidermy took a turn toward Robert Wilson Shufeldt's descriptions as a standard to be upheld, beginning soon after the publication of *Scientific Taxidermy for Museums*.⁶ In the decades that followed Shufeldt's work on museum taxidermy, manuals emphasized the scientific skills and craftsmanship that could bolster the quality of the final mount, while continuing to discuss its artistic value. A focus on accuracy still reigned supreme in the post-Shufeldt taxidermy scene. Communicating that aesthetic was paramount to its proliferation across museums. Significant to this discussion are three modes of communicating aesthetic, which vary in degree of directness. First, taxidermy manuals instructed on practical taxidermy construction as well as the preferred characteristics of mounts. Between 1861 (two decades before the founding of the S.A.T.) and the World's Columbian Exposition in 1893, thirty-nine manuals were published in the United States and Great Britain; none of them contained *science* or *scientific* in the title. By comparison, the thirty-two-year period after the Exposition (1894-1926, when Carl Akeley died), fifty-four manuals were published, and two had a variation of the word *science* in the title, reflecting the prominent influence of

⁶ Robert W. Shufeldt, *Scientific Taxidermy for Museums: Based on a Study of the United States Government Collections*, Report of the U.S. National Museum for 1892 (Washington: G.P.O., 1894).

scientific taxidermy on the craft as a whole.⁷ Second, writings by and about Carl Akeley reveal a culture of celebrity around this particular taxidermist, and they suggest that other taxidermists would seize opportunities to imitate his techniques. Third, communication between taxidermists, both in-person and through correspondence, were perhaps the clearest way to share technique without risking large-scale imitation and fraudulently-attributed mounts.

Taxidermists communicated with each other; this might seem obvious. However, there is a great deal to the craftsmanship of taxidermy that was left unsaid. No taxidermist wanted to direct another in a way that could compromise the originality of their work. In this respect, no manual was a complete guide to doing a full taxidermy mount. Instead, we are left with many manuals that get at the general idea of how to create good scientific taxidermy. The rest came through direct communication with another craftsman.

I argue that taxidermy manuals functioned as a space for taxidermists to place their mark on the craft in a permanent, public manner. They used publications to promote their own techniques, as well as to extend the reach of their particular approach to constructing taxidermy mounts. As the number of taxidermy manuals increased at the turn of the twentieth century, so did the influence of individual taxidermists. Evidence of this influence came about in the form of imitation and discussion of particular taxidermists, direct communication with taxidermists that revealed the scope of their prominence and renown,

⁷ These numbers came from a combination of searching the OCLC records in WorldCat for books published in the United States and the United Kingdom containing the descriptor “taxidermy” and published within these years, as well as consultation with several taxidermy manuals’ bibliographies (when present), to check for duplicate and absent titles.

and apparent acceptance from large museum organizations surrounding the construction of museum taxidermy. In these ways, individual taxidermists became an authority in the profession, outside of their affiliation with museums and shops.

PROMOTING SCIENTIFIC TAXIDERMISTRY

Taxidermy manuals are their own genre of writing, communicating similar information through similar conventions.⁸ Looking at the manuals published in the US between 1893 and 1926, I compare the descriptions of taxidermy and its uses from the few decades before Shufeldt with those published after Shufeldt, looking specifically for evidence of shifting values regarding the presentation of animals in museums.

Taxidermy manuals were quite popular in the late-nineteenth and early-twentieth centuries.⁹ More than ninety of them were published in the United States and the United Kingdom in these decades, and the number vastly increases when factoring in additional editions—some of the more popular works went through four or five editions. In addition to these widely popular books, several articles in a variety of magazines specifically discussed taxidermy methods.¹⁰ Regardless of the presence of taxidermy instruction in periodicals, manuals contained the most detail information for mounting animals and thus remained the most thorough medium for writings about taxidermy methods.

⁸ See Verity Darke's take on the ways writers of taxidermy manuals saw the complicated relationship between the animal's body and its becoming an object. "Reading the Body-Object: Nineteenth-Century Taxidermy Manuals and *Our Mutual Friend*," *19: Interdisciplinary Studies in the Long Nineteenth Century* 24 (2017).

⁹ I use the term "taxidermy manual" to refer to the many books that aimed to provide a guide to the practice of creating taxidermy mounts.

¹⁰ Robert W. Shufeldt, "The Exhibition Series of Birds and Mammals in the United States National Museum," *Museum Work* 3, no. 6 (1921): 178.

Many of the taxidermy manuals published in the United States and the United Kingdom followed a simple rubric: 1) Tell why taxidermy is important and interesting; 2) Discuss the failings of past taxidermy; and 3) Differentiate methods for mounting small mammals, birds, and large mammals. The central argument of most taxidermy manuals was: Taxidermy as it had been done was poor; new techniques vastly improve the quality of mounting animals. For taxidermists who authored manuals, the history of taxidermy was a progressive narrative, with the present always being the peak of craftsmanship.

Among the early manuals published in English was Captain Thomas Brown's *The Taxidermist's Manual; or the Art of Collecting, Preparing, and Preserving Objects of Natural History, Designed for the Use of Travellers, Conservators of Museums, and Private Collectors*. Published in 1840, Brown's Manual established a tone and structure for other taxidermy instruction to follow. Captain Brown's contribution to early taxidermy manuals consisted primarily of justifying the practice of taxidermy as knowledge making. He compared taxidermy to other forms of representing nature, namely illustrations: "Although good drawings and engravings will give us a perfect knowledge of the general appearance of animals, still they are deficient in many particulars; for by them we cannot be made acquainted with the texture of the skin, nor the structure of the hair or feathers."¹¹ For Brown, the primary value of taxidermy lay in its presenting the whole animal to the viewer. It was not a flat rendering—not a rendering at all, but the real object itself. Taxidermy was

¹¹ Thomas Brown, *The Taxidermist's Manual, or, the Art of Collecting, Preparing, and Preserving Objects of Natural History*, 5th ed. (London: Simpkin Marshall & Co., 1840), 1.

thus a valuable resource for educating naturalists who could not experience animals in the field, but who wanted to see exotic creatures in a way that seemed real.

Indeed, such realness became the goal of taxidermy, as it was the preference of naturalists. Brown wrote, “The naturalist, on all occasions, prefers a reference to the stuffed animal to that of a pictorial representation, as by this means he is enabled to trace, compare, and decide, on the creature in its several characters and relations.”¹² The taxidermy mount allowed naturalists to study nature in new ways, as a means of capturing aspects of an animal that illustrations never could. Taxidermy offered a new reference for identifying animals, and creating good reference sources was essential to creating proper taxidermy.

Between Captain Brown’s *Manual* and the World’s Columbian Exposition, taxidermy manuals narrowed their focus from general discussions of collecting and preserving animals through taxidermy to descriptions of the practice of taxidermy on its own. Works like Joseph Batty’s *Practical Taxidermy and Home Decoration* (1880) and Montagu Browne’s *Practical Taxidermy* (1884) examined the breadth of experiences within taxidermy arts, as well as the importance of trying to achieve accuracy to nature. It is important to note here that these works existed contemporary to the Society of American Taxidermists, though few were written by formal members of the Society. Instead, manual-writers drew upon their own experiences with taxidermy, presenting techniques they had practiced and had seen in taxidermy laboratories.

¹² Brown, *The Taxidermist’s Manual*, 1.

Joseph H. Batty, a professional taxidermist and author of several manuals on hunting, offered a how-to guide to taxidermy for those who collected specimens as hunting trophies, fully titled *Practical Taxidermy and Home Decoration, Together with General Information for Sportsmen*. His discussions of taxidermy included proper hunting attire, types of armament and ammunition, field preservation, cleaning and dressing of specimens, and recipes for home-made solutions and decorative accessories, such as arsenical soap, artificial snow, and papier-mâché.

Despite the focus on hunting trophies, *Practical Taxidermy and Home Decoration* contained advice for creating artistic taxidermy. Batty offered some general guidance for taxidermists wishing to develop their skills: “Taste must be cultivated and exhibited in modelling and molding, and Nature’s beauties should be imitated as closely as possible.”¹³ The principles of taxidermy that Captain Brown had presented nearly forty years earlier were still relevant: its purpose was to reflect nature, and to do so artistically. Indeed, the skills necessary for creating effective taxidermy mounts aligned closely to those found in art.

Batty discussed taxidermy with a focus similar to Shufeldt’s, describing parts of the naturalist’s skill set related to achieving accurate mounts. He specified the importance of close observation in preparing a skin in the field, especially taking “notes of dimensions.”¹⁴ For Batty, the most important component of observation was careful measurement, which provided the most crucial factor for recreating the animal accurately. Nowhere in Batty’s

¹³ Joseph H. Batty, *Practical Taxidermy, and Home Decoration; Together with General Information for Sportsmen* (New York: Orange Judd Company, 1880), xii.

¹⁴ Batty, *Practical Taxidermy and Home Decoration*, 59.

manual did he explicitly advocate for observation of living animals to inform the mount. Indeed, the closest he came to such advocacy was in discussion of managing the placement of animals in a display: “The grouping of animals, like other arts, requires much experience and study. The taxidermist should arrange in the ‘mind’s eye’ before mounting the first mammal, then the attitude of each one can be made to harmonize with the others.”¹⁵ Even in instructions on imagining the proper positioning of animals, Batty emphasized the experience necessary for high quality work. Arguing that “too much action” was not achievable, Batty focused less on arranging specimens in ways that would be accurate to nature, and more on positioning them in a way that was most aesthetically pleasing, sensible, and exciting.¹⁶ Accurate representation of nature seemed to be of less importance than aesthetic presentation of nature’s image.

The “Practical” component of *Practical Taxidermy and Home Decoration* promoted no single technique of mounting specimens over others. Instead, Batty recognized the variety of technique among taxidermists and generally did not fault taxidermists for their different styles. His sole critique was that “the exclusive use of soft stuffing is an error.”¹⁷ There were many right ways to mount an animal, so long as it achieved an aesthetic representation of the animal. However, there was a clear wrong method: stuffing animals with a soft material would cause the skin to stretch over lumps of material, making the animal appear unnatural.

¹⁵ Batty, *Practical Taxidermy and Home Decoration*, 147.

¹⁶ Batty, *Practical Taxidermy and Home Decoration*, 147.

¹⁷ Batty, *Practical Taxidermy and Home Decoration*, 76.

Highlighting the incorrect technique of overstuffing was important and relatively consistent across most taxidermy manuals. Batty extended his critique, though, finding that “mammals can be well mounted in but two ways. One is to form a body complete, and place the skin over it; the other plan is to model the head and neck, make the legs and insert them separately, fastening each one to the artificial back-bone, and then build out the body.”¹⁸ The focus of both these techniques was to ensure that “the anatomy is perfect,” another reference to the aesthetic of accuracy that Batty and others sought to cultivate.¹⁹ But in identifying only two techniques, Batty excluded other approaches to creating animal mounts. He offered no hard and fast rule for creating taxidermy mounts, but instead he allowed for flexibility.²⁰ Consistency in what was acceptable—or even good—taxidermy was clearly absent, though it was clear what made for bad taxidermy.

Appearing within a year of Batty’s guide, Montagu Browne’s *Practical Taxidermy: A Manual of Instruction to the Amateur in Collecting, Preserving, and Setting Up Natural History Specimens of All Kinds* is a manual for practicing taxidermy, though with a different tone. Browne’s manual instructed readers on “modelling animals in an artistic manner.”²¹ In contrast to Batty’s focus on hunting trophies, the focus of this work was on the artistic methods of preserving and displaying animals. Also unlike Batty, Browne had a scientific

¹⁸ Batty, *Practical Taxidermy and Home Decoration*, 76. Emphasis added.

¹⁹ Batty, *Practical Taxidermy and Home Decoration*, 76. Emphasis added.

²⁰ Batty, *Practical Taxidermy and Home Decoration*, 85.

²¹ Montagu Browne, *Practical Taxidermy; a Manual of Instruction to the Amateur in Collecting, Preserving, and Setting up Natural History Specimens of All Kinds* (London: L. Upcott Gill, 1879), vii.

background. In addition to being a Fellow of the Zoological Society of London, Browne served as curator of the town museum in Leicester.²²

Like Batty, Browne provided instructions on the practice of taxidermy, focusing on precise cutting, removing, and mounting of the skin, without a substantive discussion of the importance of observation or measurements. In part, this may have been due to the changes in the past four decades, which Browne summarized, “The subject to be now treated of is of so varied a nature, requiring so great a knowledge of anatomy, and so much experience and aptitude.”²³ Indeed, taxidermy had become less about stuffing a preserved skin simply for the sake of preserving it, and more about representing knowledge about the animal. Also like Batty, Browne linked the artistic knowledge required for good sculpting in taxidermy with the knowledge of anatomy: “This art ... is not teachable unless the pupil is well grounded in anatomy, and is also a clever draughtsman and modeller—in fine, an artist—with all an artist's perception of beauty of line and of form.”²⁴ Only when artistic skill and anatomical knowledge were combined would the taxidermist be able to imprint the aesthetic of accuracy onto the animal's mount.

Browne considered taxidermy essential to the study of natural history, and he embraced its inclusion in museums. When discussing the progress of taxidermy displays in museums of natural history, he dismissed the “old wooden school of taxidermy” as “stiff, gaunt, erect, and angular,” while celebrating “the modelling and varied expression of hope,

²² Browne, *Practical Taxidermy*, Title page.

²³ Browne, *Practical Taxidermy*, 151.

²⁴ Browne, *Practical Taxidermy*, 151.

fear, love, and rage” in contemporary mounts as “an immense step in advance.”²⁵ This narrative of progress was common in taxidermy manuals, which Browne emphasized as he wrote of the improvements in taxidermy made after Chicago’s 1893 World’s Fair.

After the World’s Columbian Exposition, taxidermy manuals turned toward using scientific practices to improve the craft. The titles themselves reflected this turn, with William Temple Hornaday writing *Taxidermy and Zoological Collecting* (1894) and Montagu Browne re-examining taxidermy practices in *Artistic and Scientific Taxidermy* (1896). Like the manuals of the previous decades, improvements in practices drove these new manuals. This was especially the case with Browne’s *Artistic and Scientific Taxidermy*, which took a second look at the taxidermy practices developed in the decades since Browne’s *Practical Taxidermy*.

William Temple Hornaday, an early student at Ward’s Natural Science Establishment, as well as the first Chief Taxidermist at the Smithsonian Institution’s U. S. National Museum, wrote *Taxidermy and Zoological Collecting* to provide details missing from earlier writings on the subject. His intended audience was not the amateur hobbyist taxidermist, but the professional taxidermist, whose craftsmanship earned his livelihood: “In these pages I have sought to give, in clear language, the detailed information which I have found deplorably lacking in all ‘manuals’ on the subject that I have ever seen [and

²⁵ Browne, *Practical Taxidermy*, 15.

which] are precisely what the practical worker wants.”²⁶ This manual was a new way for taxidermists to learn the craft, presented as authoritative thoughts on the topic.

Similarly, Montagu Browne’s *Artistic and Scientific Taxidermy and Modelling: A Manual of Instruction in the Methods of Preserving and Reproducing the Correct Form of All Natural Objects Including a Chapter on the Modelling of Foliage* reflected the progress made since his 1879 manual, *Practical Taxidermy*. Simply, “the gratifying strides made by taxidermists towards a better understanding of their art, and by museum authorities toward a more scientific exposition of natural objects, have emboldened me to describe methods of taxidermy and modelling not yet published.”²⁷ Though the present manual would contain many of the same practices, methods, and techniques, Browne included “a consideration of the aims of the scientific museum of the future.”²⁸ Specifically, Browne incorporated discussion of scientific taxidermy alongside the new descriptions and corrections of “the old methods of work.”²⁹

Browne’s discussions of scientific taxidermy appeared within the relatively new context of Shufeldt’s *Scientific Taxidermy for Museums* (1893).³⁰ Prior to the World’s Columbia Exposition, “taxidermic representation of objects [stood] upon a level with

²⁶ William Temple Hornaday. *Taxidermy and Zoological Collecting: A Complete Handbook for the Amateur Taxidermist, Collector, Osteologist, Museum-builder, Sportsman, and Traveller* (New York: Charles Scribner’s Sons, 1891), vii.

²⁷ Montagu Browne, *Artistic and Scientific Taxidermy and Modelling. A Manual of Instruction in the Methods of Preserving and Reproducing the Correct Form of All Natural Objects, Including a Chapter on the Modelling of Foliage, Etc* (London, 1896), vii.

²⁸ Browne, *Artistic and Scientific Taxidermy*, viii.

²⁹ Browne, *Artistic and Scientific Taxidermy*, vii.

³⁰ Chapter two, “A Defense of Scientific Taxidermy,” provides more information about Shufeldt’s work.

pictorial art.”³¹ A comparison of taxidermy to art was important for Browne, as he hoped that “taxidermy will become an exact science relieved ... by poetic inspirations.”³² The future of taxidermy, for Browne, necessarily included “the welding of the educated artist, designer, modeller, sculptor, biologist, and naturalist.”³³ The most successful taxidermist might be a single person who embodied all these qualities, but they would mostly be found in museums, where this range of skills necessarily existed.

More importantly in Browne’s discussion was taxidermy training, which Shufeldt had also stressed. In order to make “real progress” in the craft of taxidermy, the studio or laboratory needed to cultivate a breadth of skills, especially those skills held by “artists and cultured men of wide knowledge.”³⁴ With the knowledge of the nature they were to represent, taxidermists could portray animals in a way that achieved the aesthetic of accuracy Shufeldt so earnestly promoted. Indeed, this knowledge was necessary for taxidermists, as it would coalesce “an accurate perception of form and colour, a sound grounding in anatomy, a great love of order, and, lastly, a familiarity, gained in the field, of the habits of animals.”³⁵ And with this balance, Browne saw the way in which taxidermy would improve.

Also writing after the World’s Columbian Exposition and in the shadow of Shufeldt’s work, was John Rowley, a taxidermist at the American Museum of Natural History, the

³¹ Browne, *Artistic and Scientific Taxidermy*, 11.

³² Browne, *Artistic and Scientific Taxidermy*, 17.

³³ Browne, *Artistic and Scientific Taxidermy*, 17.

³⁴ Browne, *Artistic and Scientific Taxidermy*, 13.

³⁵ Browne, *Artistic and Scientific Taxidermy*, 12.

California Academy of Sciences, the Oakland Museum of Natural History, and the Museum of History, Science, and Art in Los Angeles. His prominence in the world of taxidermy came about through his work in these museums, as well as the publication of two manuals: *The Art of Taxidermy* (1898) and *Taxidermy for Museum Exhibition* (1925).

The Art of Taxidermy was different from other taxidermy manuals in that it described the process of creating a mount firsthand, and it was a narrative written in the style of a travelogue. However, as was the case for many taxidermy manuals, Rowley's discussion began with the craft's "enormous strides toward perfection."³⁶ That improvement had resulted from communication between taxidermists, who generally avoided explicit conversation about specific techniques. Indeed, taxidermists were loath to advance others ahead of themselves. Now, because of "increase in number of scientific museums," taxidermy had advanced, and "the few works on the subject" focused on the craft's progress.³⁷

Unlike manuals of previous decades, *The Art of Taxidermy* addressed the importance of observation, which was consistent with Shufeldt's enthusiasm for proper observation as the key component to creating a scientifically significant mount. Rowley keenly promoted the use of a camera to procure accurate "views of heads, and parts of large mammals...which, when enlarged, will afterward be of great service in mounting."³⁸ Sketches and notes were also important, and the notes needed to include, per Rowley's instruction, various measurements of the animal, including, among others, its total length

³⁶ John Rowley, *The Art of Taxidermy* (New York: D. Appleton and Co., 1898), v.

³⁷ Rowley, *The Art of Taxidermy*, v.

³⁸ Rowley, *The Art of Taxidermy*, 7.

and height at shoulder.³⁹ Sharp observation skills were important tools for the taxidermist, as Rowley identified: “Common sense and ingenuity, coupled with energy, patience, and an artistic eye, are the tools which are found to require the most frequent sharpening.”⁴⁰ Without these, there would be no accurate portrayal of the animal, and the taxidermy would not be fit for museum display.

Whereas other manuals had discussed examples of poor taxidermy techniques and argued against them, Rowley only identified the best method for creating animal mounts. He preferred to exhort taxidermists in the way of “adopting a more perfect method of mounting larger animals.”⁴¹ His method relied on using a frame and a manikin, which produced “a much finer and more permanent result.”⁴² This same technique had been used by Martha Maxwell, Lewis Lindsay Dyche, William Temple Hornaday, and others, but Rowley’s explication of it here was novel. Those other taxidermists had practiced it, but Rowley was here promoting it, publishing a specific, detailed explanation of the technique for other taxidermists to replicate. Rowley recognized that an alternative to sculpting a manikin was “to stuff the skin,” and, as others had noted, such a practice resulted in “most unsatisfactory specimen results.”⁴³ His preferred method would better recreate a specimen that would retain shape and value for years to come, and the mount would make the animal appear “as it does in Nature.”⁴⁴

³⁹ Rowley, *The Art of Taxidermy*, 17.

⁴⁰ Rowley, *The Art of Taxidermy*, 60.

⁴¹ Rowley, *The Art of Taxidermy*, 146.

⁴² Rowley, *The Art of Taxidermy*, 145.

⁴³ Rowley, *The Art of Taxidermy*, 145.

⁴⁴ Rowley, *The Art of Taxidermy*, 233.

More than two decades later, Rowley revisited taxidermy instruction in *Taxidermy for Museum Exhibition*, which retained much of the same information as *The Art of Taxidermy*. He once again reviewed the former secrecy of the profession, though he also credited the increase of museums for fostering a culture that created “the demand for men of both education and genius in preparatory work...and the world to-day has a far better understanding of the taxidermist’s art and its possibilities.”⁴⁵ Indeed, the increase in museums promoted a great deal of taxidermy, according to Rowley, as taxidermy was to be a strong central component in “the advancement of museums and museum work.”⁴⁶

Rowley was not the only person to identify the change taxidermy brought to museums. In the late 1930s, Laurence Coleman, of the American Association of Museums, noted that taxidermists and other preparators wanted desperately to improve the displays in museums. One important way they achieved this goal was through habitat groups that began to dominate exhibits in natural history museums.⁴⁷ They were, in Coleman’s view, “a product of technical advances in taxidermy and kindred arts that made preparators itch to replace mounted specimens with something much more lifelike.”⁴⁸ Taxidermy manuals were partly responsible for this itch, pointing out the failures of past techniques while offering new methods for recreating a more perfect nature. The authority of these manuals

⁴⁵ John Rowley, *Taxidermy and Museum Exhibition* (New York: D. Appleton and Company, 1925), xv.

⁴⁶ Rowley, *Taxidermy and Museum Exhibition*, xv.

⁴⁷ Karen Rader and Victoria Cain address developments of dioramas in “The Drama of the Diorama, 1910-1935,” chapter two in *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century* (Chicago: University of Chicago Press, 2014), 51-90.

⁴⁸ Laurence Vail Coleman, *The Museum in America*, 3 vols. (Washington, D.C.: The American Association of Museums, 1939), vol 2, 260.

came through the reputations of the individuals who wrote them, and the success that taxidermists found in their methods.

The Art of Taxidermy put Rowley in contact with other renowned taxidermists. In efforts to understand other methods of mounting animals, Rowley wrote to Carl Akeley in 1904, "I am much interested in your methods + consider many of them far in advance of those used by any other preparator."⁴⁹ Rowley was not alone in his recognition of Akeley's success in taxidermy, evident through the eminent work at the Milwaukee Public Museum, the Field Museum in Chicago, and the American Museum of Natural History, where his impact on museum taxidermy was celebrated in the naming of the Akeley Hall of African Mammals.

The methods that Akeley used to create animal mounts were not significantly different from those Rowley advocated in *The Art of Taxidermy*. Both taxidermists recommended the use of manikins as a structure for a papier-mâché shell, as clay was too heavy and water-retaining to be used successfully⁵⁰ The specific methods Rowley wanted to learn from Akeley are unclear, though they are likely some details pertaining to a specific mount Rowley admired. Certainly, taxidermy manuals could not include every detail of creating a proper mount; specifics of how to condition hooves and fur types or to construct glass eyes, for example, are often absent. In an additional letter to Akeley, Rowley asked about one of the specific techniques that had piqued his interest: "I noticed the velvet on

⁴⁹ John Rowley to C.E. Akeley, November 27, 1904, Carl Ethan Akeley Papers, 1895-1925, A.A31, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁵⁰ Carl Ethan Akeley, *In Brightest Africa*, Memorial ed. (Garden City, N.Y.: Garden City Publishing Co., 1923), 11-14; Rowley, *The Art of Taxidermy*, 146.

the buck in your deer group was well preserved, but neglected to ask how you treated them. Do you mind giving me the information?"⁵¹ The interest in the velvet is more importantly a question of how taxidermists communicated with each other and their willingness to divulge techniques that, perhaps, would improve others' work. It is unclear if Akeley revealed to Rowley how he had preserved the deer velvet, but the fact that the two men discussed best practices of new museum taxidermy warrants further discussion of the proliferation of scientific taxidermy among museum taxidermists.

The deer group Rowley mentioned was Akeley's *The Four Seasons*, which Field Museum administrators quickly recognized as an important innovation in museums and in taxidermy. In writing about the taxidermy department and the importance of the new taxidermist-in-chief, a position first listed in the museum's 1901 Annual Report, museum administrators recognized the novelty of Akeley's mounting techniques: "New methods in mounting specimens have been adopted and in consequence a perfection of work never before attained has been secured. ...The Virginia deer in spring, summer, autumn and winter, this last distinguished by a wealth of accessories and detail never before attempted in this class of work."⁵² Akeley brought with him an abundance of artistic talent to recreate nature in ways few taxidermists could. Rowley aimed to learn from the best.

Rowley also knew that Akeley's techniques had evolved over the years. During his tenure at the American Museum of Natural History, Rowley had worked alongside such

⁵¹ John Rowley to C.E. Akeley, March 3, 1905, Carl Ethan Akeley Papers, 1895-1925, A.A31, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁵² Field Columbian Museum, *Annual Report 1900-1901*, ed. Field Columbian Museum, vol. II, Field Columbian Museum Report Series (Chicago: Field Columbian Museum, 1901), 24.

taxidermists as Frederic Lucas and Henry Carey Denslow, who had both learned how to mount animals at Ward's, as had Akeley. However, Rowley understood that the mounting practices in Rochester were not the same as those he had seen in Chicago or in New York. Writing to Akeley again, Rowley said, "If you had 'Jumbo' to mount now, I think you would hardly go at it in the way you were taught at Ward's."⁵³ By no means was Ward's subpar in its training, but it was an outlet for naturalists to bolster their collections, so quantity of output and profits were stressed over the quality of the work.⁵⁴ But Rowley saw in Akeley's newer work something that he wanted to imitate: a closer reflection of nature.

CARL AKELEY'S *IN BRIGHTEST AFRICA*

In 1920, Carl Akeley published the most thorough account of his process in creating taxidermy. *In Brightest Africa*, though written as an adventurous travel narrative, also presented the method Akeley used to craft his well-regarded creations. Instead of a gradational progression through the steps of tanning and mounting a skin, Akeley provided a narrative that allowed his technique to unfold alongside his journeys. In this way, he not only reflected the style of his contemporary Ernest Hemingway, with short sentences and undisguised machismo, but he also distinguished his taxidermy writings from others through the narrative form.

⁵³ Jumbo was the large elephant that toured as part of P.T. Barnum's circus. Killed when hit by a train in 1885, Jumbo's skin went to Ward's where Akeley mounted it, and the mount then continued to tour with Barnum. The elephant's skeleton went to the American Museum of Natural History. Paul Chambers, *Jumbo: The Greatest Elephant in the World*, (Hanover, N.H.: Steerforth Press, 2008).

John Rowley to C.E. Akeley, April 17, 1905, Carl Ethan Akeley Papers, 1895-1925, A.A31, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁵⁴ Mark V. Barrow, Jr., "The Specimen Dealer: Entrepreneurial Natural History in America's Gilded Age," *Journal of the History of Biology* 33, no. 3 (2000).

While not a tightly-guarded secret, Akeley's technique of taxidermy was not publicly available. The small cadre of taxidermists who worked with Akeley at the Milwaukee Public Museum, the Field Museum of Natural History, or the American Museum of Natural History were familiar with Akeley's practices, but their influence did not reach far beyond their locales. *In Brightest Africa* provided many more taxidermists with a knowledge of the Akeley method beyond Milwaukee, Chicago, and New York. And for the wider reading audience, *In Brightest Africa* romanticized Africa and Akeley's adventures there, introducing them to a place they could see through his mounts at museums.

The foreword of *In Brightest Africa* revealed that Akeley was not a typical taxidermist and that this was not a typical taxidermy manual. Henry Fairfield Osborn, president of the American Museum of Natural History during Akeley's tenure there, fawned over Akeley's character and work, especially his artistry: "I have always maintained that he was a sculptor, that sculpture was his real vocation, in which taxidermy was an incidental element."⁵⁵ For Osborn, Akeley centered taxidermy as an artistic endeavor, wherein the artist created a wildlife sculpture.

Regardless of his narrow view of taxidermy-as-art, Osborn touched upon a particular aspect of taxidermy that Shufeldt had identified as critical to the success of the scientific taxidermist: observation. In his foreword, Osborn discussed the twofold nature of observation vis-a-vis taxidermy. First, the naturalist observed nature, taking pains to note the animal's living attitude, to measure the animal immediately after death, and to

⁵⁵ Akeley, *In Brightest Africa*, ix.

photograph or sketch it in its habitat. In Osborn's experience, Akeley had done these things with utmost integrity:

Akeley has come into closest touch with all these animals in turn, even at great personal risk, always leaving with increased rather than diminished admiration for them. This quality of truthfulness, combined with his love of beauty of the animal form—beauty of hide, of muscle, of bone, of facial expressions—will give permanence to Akeley's work, and permanence will be the sure test of its greatness.⁵⁶

Highlighting the risks Akeley took above his adherence to truthfulness and beauty, Osborn celebrated Akeley as an adventurer before his roles as a naturalist or an artist.

The second kind of observation happened at the museums: visitors observed specimens and dioramas of animals they might not otherwise have opportunity to see. Osborn said of Akeley's mounts, "whose observations we hope may be preserved in imperishable form, so that when the animal life of Africa has vanished, future generations may realize in some degree the beauty and grandeur which the world has lost."⁵⁷ The natural world in Africa may become lost, he feared, but the recreated Africa in American museums of natural history would preserve their memory, and create new memory and new knowledge in museum visitors.

Osborn was not alone in his celebration of Akeley's achievements. Newspaper stories written by and about Akeley highlighted the peril he faced when hunting African animals.⁵⁸ Magazines published longer stories by Akeley's second wife, Mary Lo Jobe

⁵⁶ Akeley, *In Brightest Africa*, xii.

⁵⁷ Akeley, *In Brightest Africa*, ix.

⁵⁸ "Choked a Leopard to Death," *Columbus Enquirer-Sun*, 19 December 1896; "Mounting Animals. An Interesting Chat with a Field Columbian Museum Taxidermist," *The Biloxi Daily Herald*, 2 January 1902; "Museum Honors Akeley," *Evening Star*, 18 July 1927; Carl Ethan Akeley, "Hunter Ventures

Akeley, who also touted her husband's adventures.⁵⁹ In "Into the Mountain Gorilla's Paradise," she made sure to include the specific height and weight of the large gorilla that Akeley had collected, including measurements of the chest, upper arm, reach, and calf.⁶⁰ Carl Akeley's celebrity extended along the same lines for decades after his death. Comic books like *True Stories* illustrated Akeley's escapades, showcasing the danger the taxidermist regularly faced.⁶¹

Akeley's adventures were the main feature of *In Brightest Africa*. Indeed, those are the most compelling and entertaining portions of the book. But his discussion of taxidermy practices and techniques for creating mounts warrant discussion, since *In Brightest Africa* cemented Akeley's celebrity in taxidermy, positioning him as the singular authority on how proper taxidermy might be done.⁶²

Like other taxidermy texts, Akeley characterized the methods of taxidermy practiced before him as "very simple."⁶³ Craftsmanship in the mount was limited to the shaping of the legs; no effort was given to sculpting the body. Akeley lamented this absence, recognizing that his perception of taxidermy was vastly different from its actual practice at the time he launched his career: "The profession I had chosen as the most satisfying and

into Herd of Seven Hundred Wild Elephants," *Evening Star*, 7 October 1923; Madge Arthur, "New York Learning Joy of Sculpture," *Richmond Times Dispatch*, 3 June 1923.

⁵⁹ Mary L. Jobe Akeley, "Playing with Lions and Death in Africa," *Evening Star*, 25 May 1930.

⁶⁰ "Into the Mountain Gorilla's Paradise," *Evening Star*, 8 June 1930.

⁶¹ "Carl Akeley: Jungle Adventurer," *Real Heroes*, Summer 1941; Dennis Neville, "Carl Akeley...He Brought Us Africa," *Comic Cavalcade*, 20 November 1942; Wally Wood, "Carl Akeley!," *Two-Fisted Tales*, March 1955.

⁶² Jay Kirk, *Kingdom under Glass: A Tale of Obsession, Adventure, and One Man's Quest to Preserve the World's Great Animals*. (New York: Henry Holt and Co., 2010), 339-42

⁶³ Akeley, *In Brightest Africa*, 4.

stimulating to a man's soul turned out at that time to have very little science and no art at all.”⁶⁴ The absence of art was clear—sculpting and crafting were not part of the craftsmanship that went into creating these mounts. The reference to “very little science,” though, was prompted by the observation that most of the taxidermists in Akeley’s experience had “no knowledge of the animal's anatomy or of anything else about it.”⁶⁵

In addition to craftsmanship, the context of each piece of taxidermy was important to Akeley. He sought to place specimens into very specific environments, reflecting the observations made in the field. In earlier days of taxidermy, “there was but little attempt to put the animals in natural attitudes; no attempt at grouping, and no accessories in the shape of trees or other surroundings.”⁶⁶ In large part, this was due to the lack of demand for such components to taxidermy displays. Naturalist who developed collections of taxidermy, primarily in museums, “were interested almost exclusively in the collection of purely scientific data and cared little for exhibitions that would appeal to the public.”⁶⁷ As such, taxidermists were not encouraged in improvement, working under the managerial attitude of “Here is the skin of an animal. Stuff this thing and make it look like a live animal.”⁶⁸ In this discussion, Akeley revealed his cynicism about the state of taxidermy. Scientific studies of anatomy and artistic training in sculpture to replicate muscles met a similar critical response. His earlier attempts to mount an animal in a way that matched his

⁶⁴ Akeley, *In Brightest Africa*, 4.

⁶⁵ Akeley, *In Brightest Africa*, 4.

⁶⁶ Akeley, *In Brightest Africa*, 4.

⁶⁷ Akeley, *In Brightest Africa*, 5.

⁶⁸ Akeley, *In Brightest Africa*, 6.

observations were dismissed; “the zebra was handed out to be mounted in the old way and my casts were thrown on the dump.”⁶⁹ In his critique of the old ways of making taxidermy, Akeley also attempted to aggrandize his own contributions to the profession.

However, Akeley was allowed, at Ward’s, to mount with a new technique P. T. Barnum’s famous elephant Jumbo, whose 1885 death after being struck by a train left the famed showman without his signature attraction. Prior to Jumbo’s death, Barnum planned to have the elephant mounted, so the taxidermied Jumbo would continue to travel with Barnum, as much a sensation after death as in life.⁷⁰ The large size of the elephant made stuffing with straw impractical, as the hide itself weighed nearly a ton, and circus workers needed to be able to move the elephant easily. Instead of using straw or other filler, Akeley stretched the elephant skin over a steel and wooden frame, rigid and sturdy enough to be “carted around the country with the circus.”⁷¹

The newer method of taxidermy worked so well for Jumbo that Akeley began to use it for other specimens. He described his process, known as the “Akeley Method,” briefly in *In Brightest Africa*.⁷² That method consisted of mounting the skin of an animal on a “papier-mache manikin reënforced by wire cloth and coated with shellac.”⁷³ A mold created in this

⁶⁹ Akeley, *In Brightest Africa*, 6-7.

⁷⁰ Susan Nance, *Animal Modernity: Jumbo the Elephant and the Human Dilemma* (London: Palgrave MacMillan, 2015); Ronald B. Tobias, *Behemoth: The History of the Elephant in America*, (New York: Harper Centennial, 2013); National Geographic Society (U.S.), “Elephant, Exploited by Barnum Is Still Top-Ranking Attraction,” *Cleveland Gazette*, 25 March 1939.

⁷¹ Akeley, *In Brightest Africa*, 7.

⁷² Akeley, *In Brightest Africa*, 11-14.

⁷³ Akeley, *In Brightest Africa*, 12.

manner was strong, yet lightweight. Akeley wrote, “I have sat on the back of an antelope mounted in this manner and done it no harm.”⁷⁴

However, the creation of the mount itself is of less concern to scientific taxidermy than the preparations undertaken prior to the mount. Akeley promoted the practices of intense observation, scrupulous documentation, and presentation of the animal as it existed in nature:

For each animal a rough armature was made, on which a life-sized clay model was shaped just like a clay model made for casting in bronze except that to facilitate accuracy the skull and leg bones of the animal were used. This model was checked by measurements made of the dead animal in the field, by photographs, and frequently by anatomical casts made in the field. The final result was a model not only of the species but of the actual animal whose skin we were going to use.⁷⁵

There are two components of this excerpt that are particularly noteworthy in a discussion of scientific taxidermy. First, Akeley used language reminiscent of the artist or craftsman to describe the recreation of the animal; that is, he used terminology more common in artistic contexts than in scientific ones. Second, the dual focus of the taxidermy mount offers a complexity that scientific taxidermy broadly raises—the paradox that scientific taxidermy is both representative of the species as a whole and of the individual animal in particular.

Henry Fairfield Osborn praised Akeley’s artistic talents in the Foreword to *In Brightest Africa*, placing sculpting above taxidermy.⁷⁶ Furthermore, Akeley identified sculpting as a talent necessary to successful taxidermy, devoting an entire chapter of the

⁷⁴ Akeley, *In Brightest Africa*, 13.

⁷⁵ Akeley, *In Brightest Africa*, 11-12.

⁷⁶ Akeley, *In Brightest Africa*, ix.

book to it: “A Taxidermist as a Sculptor.”⁷⁷ Use of the word “armature” in a discussion that included bronze casts was not the only place where Akeley invoked artistry to talk about taxidermy. His vision of an African Hall containing scores of animal groups, at the American Museum of Natural History in New York City, would only meet his expectations if it had “all the art the country could boast of.”⁷⁸ Taxidermy was an art form, argued Akely, related more to sculpting, an artistic practice, than to scientifically-oriented animal representation:

By that time I had come to feel that taxidermy could be a great art. I felt that a beautifully modelled animal required at least as much knowledge, taste, skill, and technique as a bronze or stone animal. But I knew that this conception was not common. A taxidermist couldn't talk art. Especially he couldn't talk art convincingly to the kind of men who supported great museum ventures. It was a recognized thing to support art. Taxidermy had no such tradition. The only way out of the dilemma that I could see was to prove that whether or not taxidermy was an art at least a taxidermist could be an artist.⁷⁹

For Akeley, taxidermists should primarily be sculptors, and through their sculptures they would transport viewers to plains and jungles where they could experience seeing exotic nature.

At the fore of Akeley's normative vision of taxidermists was artistry. He firmly believed that the taxidermist “should have something of the artistic sense to make his groups pleasing as well as accurate.”⁸⁰ With accuracy being second to aesthetics, it was clear that Akeley wanted taxidermy to be reflective of nature in a way that would transport

⁷⁷ Akeley, *In Brightest Africa*, 175-87.

⁷⁸ Akeley, *In Brightest Africa*, 176.

⁷⁹ Akeley, *In Brightest Africa*, 176.

⁸⁰ Akeley, *In Brightest Africa*, 15.

the viewer to the locales where the animal lived. The mount would reflect nature, but only in a way that would be pleasing to its viewers.

Akeley's innovations in taxidermy were an effort to replace the old techniques of doing taxidermy, making the work of animal displays both stronger and lighter.⁸¹ Akeley did not shy away from how his work differed from what preceded it: "I believe that there has not yet been devised a better method of taxidermy than that described here and its use has become almost universal. Although it does not take much time to tell about it, the mounting of an animal in this way is a long and tedious process."⁸² His improved method of taxidermy was, indeed, more difficult and time-consuming, but it was the same practice that earned him accolades among museums and taxidermists alike.

In his own examination of taxidermy, Akeley touched on the complexity of taxidermy as a form of scientific representation. He identified a mount as "a model not only of the species but of the actual animal whose skin we were going to use."⁸³ Yes, the particular object reflected an individual specimen, but it was also supposed to be representative of the entire species. Conflicting ideals of objectivity, in the forms of type and specimen, detach the presentation of nature from realistic expectation of what nature ought to be.⁸⁴ Representation of a taxidermied creature as an object of science placed it at the nexus of its mundane physical being and its place as personification of metaphysical

⁸¹ Akeley, *In Brightest Africa*, 11-14.

⁸² Akeley, *In Brightest Africa*, 14.

⁸³ Akeley, *In Brightest Africa*, 11-12.

⁸⁴ Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007).

ideal.⁸⁵ Akeley sought to resolve this paradox by creating a mount that would, on its own, fit as a type for the species, but when placed in a diorama, would reflect the singular specimen it was. His attention to detail, his observations, and his talent for sculpting all contributed to these celebrated mounts.

Another important component of this type or specimen paradox is the presence of viewers experiencing the animals. The mounts are always situated in a particular context, even if we could look at the animals and displays on their own. Taxidermy captured a story at a particular moment, paused so the viewers could see nature in a particular way, reframe their own existence in a hierarchy of nature, accept truths about nature, and figure out “our strange existence of being both within and apart from the animal kingdom.”⁸⁶ In this way, taxidermy functioned as a form of storytelling, with “animals in motion, even if only dead and stuffed.”⁸⁷ The mounts always existed within a larger story, but that was for visitors to experience, and Akeley could only control a small piece of that experience.

A third context for this paradox exists, apart from the naturalists who argue about type and specimen and the viewers who (re)create a story for the taxidermy. Displays exist within natural history museums at the intersection of science and society in museums, where interpersonal and political dynamics of individual researchers and administrators met social improvement through public education.⁸⁸ Expectations that displays would meet

⁸⁵ Lorraine Daston, ed. *Things That Talk: Object Lessons from Art and Science* (New York: Zone Books, 2004), 10.

⁸⁶ Rachel Poliquin, *The Breathless Zoo: Taxidermy and the Cultures of Longing* (University Park: Pennsylvania State University Press, 2012), 10.

⁸⁷ Poliquin, *The Breathless Zoo*, 82.

⁸⁸ Rader and Cain, *Life on Display*.

museum standards could change the display's appearance, changing the way the taxidermist approached his technique.

The Akeley Method coalesced science, art, and nature in museum taxidermy. Furthermore, it took measures to “insure the future care and preservation of these preparations.”⁸⁹ New practices in preparing taxidermy mounts would allow an historical collection to survive for decades, if not centuries, with adequate maintenance. Most significantly in his work, though, Akeley addressed the new form of the taxidermist that would ensure the continuation of the practice. Instead of relying on networks of hunters, naturalists, and tanners to collect the skin, observe and measure the animal, and prepare its skin, the taxidermist could embody the whole process: “The men who study the animal and who shoot him must come back and mount him, and the men who make the accessories and who paint the background must go and make their studies on the spot.”⁹⁰ Of course, Akeley embodied all necessary characteristics to be his own ideal taxidermist, but his methods for preparing a specimen for museum presentation made him an independent authority in standardizing taxidermy and presenting it to the museum-going public.

Advancements in taxidermy techniques demonstrated the relationship between individuals at museums—in this case, taxidermists—and the AAM at large. Under the masthead of the AAM, and not as individual authors, the Association's leadership wrote a short piece in each of the published proceedings, often highlighting a specific exhibit or

⁸⁹ Akeley, *In Brightest Africa*, 258-60.

⁹⁰ Akeley, *In Brightest Africa*, 263-64.

technique used in a particular exhibit. In the first volume of proceedings, AAM promoted Carl Akeley's technique of modelling taxidermy mounts, though not as a fawning celebration: "Mr. Akeley's recently developed system of direct modeling, in which the musculature and the folds and wrinkles on the skin are modelled upon its outer surface while it is supported on a bed of soft clay overlying a rough form."⁹¹ By creating such a lifelike creation, museums that use Akeley's methods were ahead of the others. His status as an individual authority in taxidermy had come through, though AAM was slyly pushing authority toward its own body through these proceedings.

In one recorded paper, Remi Satens discussed the progress of taxidermy in his taxidermic laboratory in the Carnegie Museum of Natural History. Like the taxidermy manuals mentioned above, Satens focused on the way contemporary taxidermy was "endeavoring to proceed toward perfection."⁹² Of course, his comparison was to the practice of stuffing animals, "in many cases in the literal meaning and full extent of the word," a technique museum taxidermists had shied away from in the decade or two prior to his writing this paper.⁹³ Satens focused on a specific aspect in the progress in taxidermy at his museum, where he was chief curator. In an effort to replicate the Akeley method for mounting animals, taxidermists at the Carnegie Museum developed an adjustable wire modeling frame—buckles could expand or contract the body size, and the quadruped's legs and skull could be fastened to the frame to creating a mount of a variety of sizes—to which

⁹¹ The American Association of Museums, "Science," *Museum Work* 1, no. 8 (1919): vol 1, 228.

⁹² Remi H. Satens, "Progress in Taxidermy," *Proceedings of the American Association of Museums* 9 (1915): 104.

⁹³ Satens, "Progress in Taxidermy," 104.

sculptors could affix clay.⁹⁴ Then, as Akeley did, they would apply papier-mache and stretch the animal's skin over the dried product. By using this method, Satens created lifelike mounts that were durable yet lightweight—desirable qualities for permanent mounts.

This frame had a secondary effect, though. Certainly it simplified construction of new mounts with reusable tools, also saving leg bones and the animal's skull for use in the mount.⁹⁵ However, the existence of such a tool reflected a larger tendency in museums to create their own techniques for taxidermy mounts, re-centering authority for taxidermy methods in museum taxidermy laboratories rather than in the individuals who wrote for taxidermy manuals, or the apprentice shop at Ward's. Insofar as is clear, this Carnegie mount was never intended for sale or spread to other museums; it remained in practice in Pittsburgh, and there alone.

Modes of communicating scientific taxidermy ranged from formal instructional monographs instructing to informal conversations in the back hallways of natural history museums or elsewhere. Taxidermists utilized this entire range to communicate their techniques of creating taxidermy mounts. They, as well as museums, were taking the idea of scientific taxidermy seriously, and they were passing it along to others in the profession.

Where the medium of conversation matters is in determining the locations of authority in taxidermy circles. In many cases, authority lay in the individual taxidermist for

⁹⁴ Satens, "Progress in Taxidermy," 105.

⁹⁵ Satens, "Progress in Taxidermy," 105.

determining what made a particular practice relevant to scientific taxidermy. Celebrity taxidermists like Carl Akeley and John Rowley wrote of their experiences mounting animals, and these narratives increased their visibility and the visibility of the profession at large. But before them, individuals who wrote taxidermy manuals had no specific affiliation with a scientific institution, yet their works sold well enough for subsequent editions. If the subject, rather than the writers, drew a readership, then amateur taxidermists acknowledged professional taxidermists' authority without specific concern as to scientific affiliation.

In their several communications, museum taxidermists passed on their own practices of taxidermy. Several manuals presented common elements of proper taxidermy in a way that suggests a common sense of what constituted quality in their work. Though several manual writers worked in museums, they wrote broadly to increase their potential readership. Nevertheless, those common characteristics revealed that many taxidermists valued similar qualities in their mounts, and those qualities also resembled what Shufeldt had identified as Scientific Taxidermy.

Established taxidermists—that is, those who had prior publications or scientific affiliations—had begun to dominate the market for taxidermy manuals. Authority for evaluating taxidermy and instructing on the principles and techniques became more about this establishment, and affiliation with a scientific institution was key to promotion of scientific taxidermy. Individual taxidermists were still the arbiters of craftsmanship, as it had moved away from centers like Ward's. But this shift also signaled a new place that would hold authority for proper displays: museum administrators.

CHAPTER FOUR

STANDARDS OF MUSEUM WORK



Figure 6: "On the Trail, Timber Wolves in Colorado," at the American Museum of Natural History (frontispiece, Museum Work vol 2, no. 1, 1919)

At the same time that taxidermists, in their creation of new taxidermy manuals, drummed up support and interest in their practices, museum administrators met to secure their own professional niche in the form of a new professional organization. In December 1905, William Jacob Holland (1848-1932), director of the Carnegie Museum in Pittsburgh, met informally with other museums' representatives in Washington, D.C., "to establish an

association of the museums of America.”¹ By the end of the year, an invitation had been extended to directors and curators from the U. S. National Museum, the American Museum of Natural History, the Field Museum of Natural History, and others, to meet—formally this time—as the American Association of Museums. AAM’s intent was to promote excellence among museums.

Taxidermy enjoyed some prominence at Association meetings. At the 1907 meeting, the second formal gathering of AAM, three of the seventy-four attendees were current museum taxidermists: Carl Akeley of the Field Museum, as well as Remi Santens and Frederick Webster, both of the Carnegie Museum. In addition to those whose immediate work was in museum taxidermy, additional prominent members of the Association, Frederick Lucas and Henry L. Ward, had been practicing taxidermists prior to their directorships at Museum of Brooklyn Institute of Arts & Sciences and the Public Museums of the City of Milwaukee, respectively. Though comprising less than 10% of all attendees at the meeting, these taxidermists provided a strong representation for museums of natural history among museums of art, technology, national history, and botanical gardens.

The primary role of the organization was not to develop an overarching set of practices and expected outcomes for American museums. Instead, it was to expand the reach of museum practices through the organization’s proceedings. Laurence Vail Coleman, president of AAM in the 1930s, clarified a difference between the AAM’s duty as a professional organization of museum personnel and its responsibility to museums as institutions:

¹*Proceedings of the American Association of Museums*, vol. 1 (Pittsburgh, Penn.), 1.

It has the duty of being helpful to museum people by keeping them abreast of the museum world through publications. ...But the association's chief responsibility...consists of shaping broadly the course of museum development by discovering strengths that are not widely recognized and giving them full play, by pointing out weaknesses in the hope of removing them, and by seeking improved methods of museum work through surveys and research.²

AAM was a marketplace for museums to exchange ideas; it was not a unit for dictating how museums should function. The centers of authority for practices and techniques were located in the individual museums themselves; their cultures directed them to create exhibits and displays in ways that were most meaningful in the context of their collections and their clientele.

The relationship between individual museums and AAM could have become contentious. Autonomy was important to museums, who wanted to direct their own research and educational programming, and AAM might have been perceived as a threat to that autonomy. AAM avoided such controversy, however, by presenting its proceedings as a series of discussions among members who hailed from specific museums. In doing so, AAM maintained the autonomy of each museum through their personnel, all while recommending ways of improving museums writ large.

In natural history museums during these years, a tension developed between museum administrators and taxidermists. In the bureaucracy of museums, museologists—administrators specifically tasked with the interpretation of museum exhibits—instructed museum visitors with new meanings of taxidermy mounts, sometimes extending those meanings outside the realm of natural history. At the same time, museologists and other

² Coleman, *The Museum in America*, vol 1, 42.

museum administrators, with the help of local colleges and universities as well as the newly-formed American Association of Museums, formalized the education of museum workers, though they seemed to ignore museum taxidermists. Instead, taxidermists improved their craft through various means, including visiting other museums and training through apprenticeships as Ward's Natural Science Establishment had offered in the later decades of the nineteenth century. Since Ward's had effectively closed its doors to taxidermy instruction by 1900, individuals seeking taxidermy apprenticeships had to rely on a variety of lesser-known museums and trophy-mounting shops to learn how to mount specimens. Hobbyist taxidermists could also learn the craft through correspondence courses, and the more enthusiastic among them could hone their skills in local museums.

In this chapter, I argue that the separation between museum administrators and taxidermists effected a significant change in the ways taxidermists related to museums and to other taxidermists. More specifically, these episodes moved the authority of constructing proper museum taxidermy to those mounting the specimens, a shift away from the critics and texts, both of which had become influential. The early 1920s saw museum administrations reinterpreting mounts and displays, demonstrating a top-down approach to museums, imposing specific meanings on exhibits and suggesting that taxidermists create mounts to reflect those meanings. Taxidermists' responses to what they viewed as administrative overreach included establishing independent instruction on museum taxidermy techniques and capitalizing on their own extended professional network to create a community of practice.

RISE OF MUSEOLOGISTS

Museology became formalized at the beginning of the twentieth century, as professional museum associations began publishing magazines dedicated to the museum field. In London, *Museums Journal* appeared in 1901, followed by Germany's *Museumskunde* in 1905 and the American Association of Museums' *Museum Work* in 1919.³ These magazines focused on museum organizations, procedures, policies, collections, and exhibitions, and museum administrators tasked with these operational duties became the museologists. In 1919, Robert Wilson Shufeldt defined the role of the museologist as: "An expert in the matter of teaching, that is, teaching through the medium of a scientific arrangement and exhibition of a series of objects, fully illustrating the acquired knowledge of the science to which they refer."⁴

Hermon C. Bumpus (1862-1943), consulting director of the Buffalo (N.Y.) Society of Natural Sciences, Lewis Mumford (1895-1990), and other museologists and museum critics examined the museum collections as they contributed to museums' purposes of research and display. Similarly, George Brown Goode, of the Smithsonian Institution, wrote extensively on topics related to museology, especially on the aims and purposes of museums and museum exhibits, always with an eye toward the future of museum work.⁵ Museums, Goode acknowledged, housed vast collections of artifacts to be used by

³ Anthony Shelton, "Critical Museology: A Manifesto," *Museum Worlds*, vol. 1, iss 1 (2013).

⁴ Robert Wilson Shufeldt, "Value of the Army Medical Museum as a Teaching Factor," *Museum Work* 1, no. 7 (1919): 208.

⁵ See especially George Brown Goode, "The Principles of Museum Administration," in *Report of the United States National Museum for the Year Ending June 30, 1897* (Washington, D.C., 1897).

researchers, but those same artifacts could—and should—be central to the educational purposes of a museum, changing as understandings of science and nature changed.

There was a tension in museums concerning museologists as museum administrators and the museum's taxidermists. The realism taxidermists achieved in their displays confronted the interpretations administrators sought to present through exhibit halls. One museum worker at AMNH, writing in 1919, observed a scene that reflected this tension. At the display of timber wolves (*Canis lupus*) in Colorado's Rocky Mountains, this museum worker observed a child saying to his mother about the display, "The man says they're not alive—only 'mounted,' mother. But just the same, I'm glad the glass is there—aren't you?"⁶ The man—likely a docent or other museum educator—allayed the boy's fear that a wolf attack was imminent. "The man" was an interpreter of nature, relying on the taxidermist's work as a teaching object. But he also relied on the glass as a barrier between the taxidermy and the public, and a lens for focusing the educational content of the timber wolves display, existing between the artifacts of nature and museum visitors.

As an important piece of the museologist's duties was to educate through museum work, they worked to interpret taxidermy displays for museum visitors, both through placards and through training docents to present appropriate information to those visitors. Ostensibly, their intent was to use the museum collection to explain scientific ideas in a way that advanced public knowledge as scientific knowledge also increased. But they also took liberties with their interpretations, suggesting qualities present in the displays that the human visitors to museums ought to emulate.

⁶ The American Association of Museums, "Timber Wolf Group," *Museum Work* 2, no. 1 (1919).

The diorama was an imitation of the nature that existed outside museum halls. Though, as Hermon Bumpus noted, habitat dioramas were “wonderful perfection” in their reflection of nature, they would always be inadequate, as “their chief value is inspirational rather than educational.”⁷ The primary purpose of those dioramas, according to Bumpus, was to fill visitors with the desire to go outside to learn about nature from the plants and animals themselves, fulfilling some of the ways museums could operate in the context of the contemporary Nature Study movement.

Led by educators and natural scientists, such as Louis Agassiz, Liberty Hyde Bailey, Anna Botsford Comstock, and Wilbur S. Jackman, Nature Study was one component of the progressive education movements transforming American schools in the early twentieth century.⁸ As explicated by Anna Botsford Comstock, Nature Study was an effort to move young students into nature for their education, lauding the values of observation as the primary objective of instruction, and nature as the vehicle of education. And it did not exclude museums. Indeed, Comstock wrote, “Wherever the museum is a help to the study of life in the field, it is well and good. Some teachers may give a live lesson from a stuffed specimen, and other teachers may stuff their pupils with facts about a live specimen; of the

⁷ Hermon C. Bumpus, “Relations of Museums to the Out-of-Doors,” in *Papers and Reports read at the Twenty-First Annual Meeting of the American Association of Museums* (New York City: American Association of Museums, 1926), 8.

⁸ Sally Gregory Kohlstedt, “Nature Not Books: Scientists and the Origins of the Nature Study Movement in the 1890s,” *Isis* 96 (2005); *Teaching Children Science: Hands-on Nature Study in North America, 1890-1930* (Chicago: University of Chicago Press, 2010); Kevin C. Armitage, *The Nature Study Movement: The Forgotten Popularizer of America’s Conservation Ethic* (Lawrence: University Press of Kansas, 2009); Kim Tolley, *The Science Education of American Girls* (New York: Routledge, 2003).

two, the former is preferable.”⁹ The focus on Nature Study was on the observation of living nature, an experience taxidermy certainly could not provide. But those who taught with the pedagogy of Nature Study used taxidermy, along with other museum objects, to allow their students to examine objects closely, in a way that they could not when observing living nature. Comstock wrote that when using a mounted specimen, it was “not the study of a dead thing, but of a successful and wonderful life.”¹⁰

Museum displays provided museum visitors an opportunity to experience nature, to observe it, and to make deductions based on those experiences and observations. In 1918, Lewis Mumford praised the transformation of education in museums, “from a passive ‘showing off’ to an active education, from the uninformed miserly tradition of an earlier day to the directed socialized spirit of the opening age.”¹¹ Museums still had work to do to ensure that the displays were more than “showing off,” and the exciting taxidermy displays were engaging visitors in a way that reflected some of the values of the Nature Study movement.

The museologist’s role in interpreting museum displays centered around using those displays as instructional tools. In this use, there was a two-fold purpose concerning the instruction natural history museums offer: “To educate and uplift the students of our

⁹ Anna Botsford Comstock, *Handbook of Nature-Study for Teachers and Parents, Based on the Cornell Nature-Study Leaflets, with Much Additional Material and Many New Illustrations* (Ithaca, N.Y.: Comstock Publishing Company, 1911), 8.

¹⁰ Comstock, *Handbook of Nature-Study*, 9.

¹¹ Lewis Mumford, “The Marriage of Museums,” *Scientific Monthly* 7, no. 3 (1918): 252.

community.”¹² Explicit instruction was in a subject matter relevant to the museum—in this case, zoology. Natural history museums focused on teaching their visitors zoology, along with geology, anatomy, biology, paleontology, anthropology, and astronomy. Bumpus’ critique of taxidermy displays further explained their purpose: “There is a vast difference between knowing the *imitation* of something and knowing the thing itself. We pride ourselves on knowing, on being personally acquainted with certain individuals because the fact of actual contacts makes an impression—a pressing in, a dent—that stays.”¹³ Museum displays could use taxidermy mounts as markers, pointing to the living nature that existed outside museum walls.

Second was a moral component, implicit instruction in the social expectations for good citizens. The cooperative relationship between schools and museums reflected the pedagogical value of museums, and it suggested that museums *should* emphasize formal instruction alongside research. William H. Maxwell, superintendent of New York City Schools from 1898 to 1917, believed that museums and schools had a natural relationship that would benefit the students, the city, and science. Museums could be instrumental in developing good citizens, which would enhance their contributions to the city’s and nation’s economy: “The study of nature is the foundation of that knowledge which leads to increased productivity in industry and of those ideals of life that make for improved

¹² Inez Addie Howe, "Habitat Groups at the Fairbanks Museums," *Museum Work* 4, no. 1 (1921): 125.

¹³ Hermon C. Bumpus, "Relations of Museums to the out-of-Doors," in *Papers and Reports read at the Twenty-First Annual Meeting of the American Association of Museums* (New York City: American Association of Museums, 1926), 8.

conditions of living.”¹⁴ Or, more pointedly, “The Museum's present cooperation in their education will bear fruit a few years hence in citizens more fitted to deal wisely with large questions on which depend health and moral well-being.”¹⁵ For museums, the study of nature and development of a moral compass were intimately linked.

In looking toward future roles the museum might fill, American Museum of Natural History director Henry Fairfield Osborn (1887-1969) wrote, “We are interpreters; we are trying to tell in a very simple way the laws which the greatest minds have wrestled with from the earliest times, and we are also trying to add to these laws, for it is part of the genius of the institution to create new knowledge as well as to spread it.”¹⁶ The stories that displays would tell were constructed scenes, but they also had constructed meanings, as Osborn also discussed, specifically referring to a taxidermy display of birds at AMNH: “The moral lessons, much needed for our day and generation, to be learned in the Habitat Groups of Birds are endless—the maternal and paternal love, the happy family life of the young, the joy of living, the beauty of their homes.”¹⁷ The displays’ meanings became inextricable from culture, reinforced through what Lawrence Vail Coleman said two decades later: “Exhibits are familiar.”¹⁸ Displays became representative of American families, reflecting the imprint museums had on American culture.

¹⁴ William H. Maxwell, “Coöperation in Education,” *American Museum Journal* 11, no. 7 (1911): 219.

¹⁵ Maxwell, “Coöperation in Education,” 219.

¹⁶ Henry Fairfield Osborn, “The Museum of the Future,” *American Museum Journal* 11, no. 7 (1911): 223-24.

¹⁷ Osborn, “The Museum of the Future,” 224.

¹⁸ Laurence Vail Coleman, *The Museum in America*, 3 vols. (Washington, D.C.: The American Association of Museums, 1939), Vol. 2, 257.

Though displays throughout a museum contained multiple interpretations, the focus of an individual display would depend on the subject of the particular exhibit within the museum. As Coleman stated, “It is customary to speak of exhibits as though there were two distinct kinds—didactic and aesthetic. As a matter of fact there is a didactic and an aesthetic element, and these two enter in different proportions into exhibits, whether they be of science or art or history.”¹⁹ Regardless of how the balance showed up in an exhibit, both parts were certainly present, and also reflective of differentiation in museum instruction and different interpretations from museologists. Communicating those interpretations to museum visitors, though, would require some training of other museum workers.

MUSEUM ADMINISTRATORS TAKING CONTROL

Museum administrations were indeed aware of the increased presence of the progressive Nature Study movement in the United States education system. By 1914, the American Museum of Natural History’s department of public instruction formally identified its “circulating collections” as “nature study collections,” and a decade later, the department was referring to all its previous circulating collections—dating back to 1904—as “nature study collections.”²⁰ The 1924 Annual Report also revealed the dramatic increase in the

¹⁹ Coleman, *The Museum in America*, Vol. 2, 257.

²⁰ AMNH may have retroactively called the collections “nature study collections,” but the 1904 report contains no mention of “nature study.” “American Museum of Natural History Annual Report for the Year 1904,” (New York: American Museum of Natural History, 1905); “American Museum of Natural History Annual Report for the Year 1914,” (New York: American Museum of Natural History, 1915); “American Museum of Natural History Annual Report for the Year 1924,” (New York: American Museum of Natural History, 1925), 128.

production and circulation of those Nature Study collections, with 120 collections in 1904 increasing to 1,327 by 1924.²¹ Of course, these circulating collections were the exhibits that traveled to schools, only one part of the museum's service to those institutions, which also included lecture courses, lantern slides, instruction on visits to exhibition halls, and loans the museum provided to public libraries.²² As Nature Study persisted throughout the 1920s, the museum continued to develop new exhibits and revise existing exhibits "to conform to the syllabus in nature study."²³ As they sought to change their displays to reflect Nature Study, administrators relied on the work of exhibit preparators, including taxidermists. And as they directed taxidermists to present mounts in a way that supported this new relationship between museums and schools, administrators underscored their authority within the museum and over its displays.

Through this relationship with public schools, museum administrators sought to increase control over the construction of displays—not only their meaning, but also their literal construction. These two pieces were, of course, intimately tied together, and control over one meant control over the other. As museum administrators sought to bolster their relationship with public schools, their efforts to present a unified meaning—closely tied to Nature Study—resulted in a shift in authority for the taxidermy displays, where museum administrators possessed more clout than museum taxidermists did.

²¹ "American Museum of Natural History Annual Report for the Year 1924," 128.

²² "American Museum of Natural History Annual Report for the Year 1925," (New York: American Museum of Natural History, 1926), 78.

²³ "American Museum of Natural History Annual Report for the Year 1929," (New York: American Museum of Natural History, 1930), 83.

Instructors worked to ensure a consistency of education between schools and museums. Or, as Rossiter Howard, curator of educational work at the Cleveland Museum of Art, wrote in 1923, the educational relationship between museums and classrooms worked best with “the continuance in the class room of the experience initiated for the child at the museum.”²⁴ The museum was part of a certain path of instruction, which would begin in classrooms and hopefully never end. Communication between museums and schools, though, was crucial to the success of this instruction. Howard continues, “A museum educational program which does not allow the instructors time for research, consultation, and follow-up work is doomed to superficiality.”²⁵ Without planning and assessment, the instruction program was doomed, and if only one party planned well, the program was trivial at best. In order to avoid such an empty program, museums sometimes lent out specimens for classroom use.²⁶

Cooperation between school and museum administrators led to improved planning and increased the meaningfulness of museum instruction. Teachers and museum personnel both had their strengths—the teacher needed educational training to do the job well; museum personnel needed specific subject knowledge. But there was a third party involved, someone whose position required both training in education and knowledge of the subject area of the museum: “The museum instructor has need of both.”²⁷ To sum up

²⁴ Rossiter Howard, "Principles of Museum Education," *Museum Work* 6, no. 4 (1923): 123.

²⁵ Howard, "Principles of Museum Education," 123.

²⁶ Wallace W. Atwood and Mary N. Flewelling, "Museum Extension Work in Cambridge, Massachusetts," *Museum Work* 1, no. 5 (1919): 154; John Rowley, *Taxidermy and Museum Exhibition* (New York: D. Appleton and Company, 1925), 310.

²⁷ Howard, "Principles of Museum Education."

the museum's argument about pedagogical training and deliberate exhibit and display design, there were two primary points. First, "the proper subject matter for museum instruction is museum collections ... supplemented by information needful to the understanding of the matter in hand."²⁸ Second, a successful cooperation relied "upon the preparation of a program desirable from the school viewpoint and the following up of the results to insure genuine value in public education."²⁹ When the two cooperated, local science education could improve.

In addition to training instructors, museums encouraged collaboration between collectors and educators to increase pedagogical efficiency, with a focus on collecting good educational material. After all, as stated in some form by many museologists, "the strength of a museum is its collections."³⁰ Though the cooperation between museum instructors and schools informed the presentation of objects within the collections, collectors themselves were a critical component of museum education. "The museum naturally develops a staff of instructors more closely in touch with the realities of science ... than the school teacher is likely to be, and these museum instructors may furnish inspiration and sometimes leadership for the presentation of these subjects in schools."³¹ Curators, the administrative personnel charged with arranging museum objects for display, had the most intimate understanding of the pieces that would be most pedagogically valuable. Their collaboration with naturalists and instructors improved the collection for both research and instruction.

²⁸ Howard, "Principles of Museum Education," 124.

²⁹ Howard, "Principles of Museum Education," 124.

³⁰ Howard, "Principles of Museum Education," 122.

³¹ Howard, "Principles of Museum Education," 122.

Finally, preparators—a group that included taxidermists along with other museum workers who conserved artifacts and created displays—were trained to make exhibits that could be meaningful to a large and diverse group of museum visitors. These museum workers, too, cooperated with instructors and, by proxy, schools, to create an experience that would adequately supplement formal education. Peter Mortenson, superintendent of Chicago schools in 1920, wrote that museum preparators “have rearranged their collections so as to ... carry home their purpose, and ... to supplement the instruction of the schools.”³² As collections became more deliberately curated and arranged, they enhanced the instruction offered by museums, though the planning came from administrative offices.

In addition to the efforts to exert control through connections with public schools, museum administrators also used professional channels to subvert the authority of museum taxidermists. By 1920, the American Association of Museums had identified two kinds of habitat groups in its official publication, *Museum Work*: “the one emphasizing the life of a single species in relation to its own particular habitat; the other emphasizing the habitat occupied by several, often many, different species.”³³ AAM described the single species type of grouping as “usually artistic” and useful to few museum visitors, but the other kind, with multiple species existing and interacting in the same locale, would pique the interest of museum visitors “because of the many species which occupy it and the consequent evidence of the struggle going on therein.”³⁴ Though both kinds of groupings

³² Peter Mortenson, “Contribution of Museums to Public School Education,” *Museum Work* 2, no. 8 (1920): 243.

³³ The American Association of Museums, “The Habitat Group,” *Museum Work* 3, no. 3 (1920): Vol III, 68.

³⁴ The American Association of Museums, “The Habitat Group,” Vol III, 68.

had pedagogical utility, the latter type fulfilled the primary function of a habitat group, “to show relationship of a species to its habitat and to associated species.”³⁵ AAM questioned the efficacy of these groups, though, as the educational responsibility lay with the museum visitors and not with the museum itself—at least, as far as the Association was concerned. “It is a question whether such an exhibit actually realizes the end desired, since there is always danger of a misunderstanding on the part of the visitor as to the relation between the species and the background.”³⁶ Though AAM itself was not an authoritative agency over individual museums, its influence came through the several directors and head curators that comprised its leadership. And in taking a fairly direct role in asserting the role of displays in museums, AAM suggested the kinds of meanings that museum workers should emphasize as they created new displays.

MUSEUM METHODS COURSES

By the 1920s, the American Association of Museums had taken steps to ensure that new museum workers had formal training in their professional responsibilities. Teaching museum workers in museum instruction practices had already occurred, and it focused more on instructing within disciplines than in formal pedagogy. At a 1919 meeting of the American Association of Museums, the question of training museum preparators in pedagogy came up. The immediate answer, from Roy Miner, associate curator at AMNH,

³⁵ The American Association of Museums, "The Habitat Group," Vol III, 68.

³⁶ The American Association of Museums, "The Habitat Group," Vol III, 68.

was simply, "It is not necessary."³⁷ Instead, this kind of instruction was secondary to a knowledge of the subject matter.

But other museum directors saw that the matter of training museum preparators still needed to be addressed. Yes, they were not instructors in museums, but they also needed some training, especially as museums needed reliable workers for their collections and displays. Homer Dill, director of the University Museum at the State University of Iowa in Iowa City, identified this deficit in 1917 and suggested a way to repair it "Each year shows a marked increase in the number of students who take the work, as well as a greater demand for trained men to fill museum positions. Once more, our argument is that such training, while it is indispensable to the man who is starting at the bottom, remains of service to him throughout the degrees of his advancement through the various stages leading to directorship."³⁸ This work was not only an immediate help to the museums who needed technicians; it also looked to the future of museums and prepared those technicians to become directors.

A decade later, at an AAM meeting in 1926, Samuel Alfred Barret, director of the Milwaukee Public Museum, identified this specific need: "The training of *preparators* (artists, modelers, taxidermists and others) can be greatly improved and should receive

³⁷ Roy W. Miner, et al., "Educational Training of Museum Instructors: How Far Is Pedagogical Training or Teaching Experience Necessary for Museum Instructors?" *Museum Work* 1, no. 4 (1919): 114.

³⁸ Homer R. Dill, "Training Museum Workers," in *Proceedings of the American Association of Museums, Twelfth Annual Meeting* (New York City: American Association of Museums, 1917), 45.

special and separate consideration.”³⁹ Any movement surrounding this issue had reached a head in this year. For the next several years, AAM, through *Museum Work*, advertised courses at various museums and universities, focusing on the ways to train museum workers in administration, curation, and preparation.

A leader in these museum methods courses, Homer Dill, announced in 1927 three classes in museum preparation instruction, focused on museum technique (“instruction in collecting and mounting birds and mammals, including group work, and planning and construction of exhibition rooms”), methods of making group accessories, and anatomical modeling and casting mammals and birds.⁴⁰ He offered the same, or slightly modified, courses annually at least through 1930, each time advertising it in *Museum Work*.⁴¹ Most of the courses offered in museum techniques covered the same content, though Dill’s course specifically mentioned “anatomic modelling” among the topics addressed, as one of few places for museum workers to learn a bit of taxidermy in the breadth of the course.⁴² Of the nine museums and universities offering museum coursework, Dill’s course was the only one to specifically mention taxidermy work as a significant component of the course, and an important part of museum displays.⁴³

³⁹ S.A. Barret, "Training for Museum Work," in *Papers and Reports read at the Twenty-First Annual Meeting of the American Association of Museums* (New York City: American Association of Museums, 1926).

⁴⁰ "University Announces Course for Museum Workers," *The Museum News*, 1 April 1927, 1.

⁴¹ "Museum Training Course Is Again Offered by University of Iowa," *The Museum News*, 15 April 1928; "Training for Museum Work," *The Museum News*, 1 June 1930.

⁴² "Training for Museum Work," *The Museum News*, 1 June 1930.

⁴³ "Training for Museum Work," *The Museum News*, 1 June 1930.

Included in that list of nine museums and universities was the University of Rochester, which had been affiliated with Ward's Natural Science Establishment since the 1860s, and which would acquire Ward's in 1928. The Spring 1928 course in museum methods would focus on the "technique of preparing and labelling museum exhibits, the use of museum material in teaching, and the public service functions of museums."⁴⁴ The instructor of the course, Edward John Foyles, who also directed the University Museum, specifically addressed the ways he approached teaching students how to work in museums: "The course is not technical, as popularly supposed; it approaches the museum field from a philosophic point of view. In general, it aims to create an appreciation of the educational functions of museums and makes no attempt to train skilled preparators."⁴⁵ Indeed, the focus on his course made use of materials from Ward's as objects to examine, critique, and arrange as displays, but not much more. Most of his students were geologists and biologists, but Foyles hoped to appeal to students in art and history so they could "learn to appreciate museums as helpful media to their education and as helpful tools if they later go into teaching."⁴⁶ At Rochester, the practice of creating museum displays had waned, as it had with Ward's.

⁴⁴"Course in Museum Methods Is Now Offered by University of Rochester," *The Museum News*, 15 October 1927, 1.

⁴⁵ John Edward Foyles, April 25, 1932. Faculty report 1931/1932. College of Arts and Science, Personnel Folders of Terminated Faculty, UA730, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

⁴⁶ John Edward Foyles, April 20, 1929. Faculty report 1928/1929. College of Arts and Science, Personnel Folders of Terminated Faculty, UA730, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester

Broad coursework like Foyles was the normal expectation in these museum methods courses. In 1927, the American Association of Museums supported—through soliciting students and emphasizing universally meaningful content—broad coursework in museum work in Buffalo, Milwaukee, Cleveland, Chicago, New York City, Philadelphia, and Washington. This instruction was offered by museums with cooperation from universities, with individual attention given to students, to meet the needs of the kind of museum work that interested them.⁴⁷ Some of these were replications of courses taught by other colleges, like Wellesley College Art Museum had offered from 1911 to 1917. Wellesley offered the course again in 1928, in conjunction with AAM's initiative and with the aim "to afford women graduates the opportunity to fit themselves for a variety of posts—those of instructor, assistant, librarian, curator, and director being emphasized."⁴⁸ Breadth of instruction better served the AAM as an organization that served a wide variety of museums, but it also ignored taxidermy as a specific need for the many museums of science and natural history in larger cities and at universities.

A COMMUNITY OF TAXIDERMISTS

In the early 1920s, museum taxidermists found themselves distanced from the purposes of the museum. Education had become a new focus of museum administrators, and taxidermy became the passive object to be observed, with little attention paid—by museum administrations, at least—to the creation of those objects. While taxidermist

⁴⁷ "Training Course for Museum Work Offered in Fall," *The Museum News*, 15 June 1927, 1.

⁴⁸ "Wellesley Offers Training Course in Museum Work," *The Museum News*, 1 March 1928, 1.

training was ignored and administrations refocused on education, taxidermists worked on their own to develop a community of support for their profession.

Taxidermists who did not work in the same museum often met each other through exchanges of knowledge and practice. Examining work exhibited at other museums was a valuable exercise for taxidermists to evaluate their own techniques in comparison to the practices adopted by their counterparts. This was especially important for new or remodeled museums, seeking to fit in with the general aesthetic of museums while filling a gap those museum collections lacked. A clear example of this tour of museums is that trip that Frank Tose, a curator at the California Academy of Sciences (CAS) took in 1926 and 1927. His travels in the eastern United States came at the time when CAS was rebuilding its collection along with a physical museum building in Golden Gate Park, as the initial collection had been almost entirely destroyed in the earthquake and subsequent fire of 1906. In the years following the Great Disaster, CAS borrowed more than ideas from East Coast museums. By 1909, the Academy had lured away the chief of the department of taxidermy at the American Museum of Natural History in New York, John Rowley.⁴⁹

Tose's firsthand experiences at museums across the U.S. were valuable to the process of museum taxidermy in that it resulted in an informal standard practice of scientific taxidermy across museums. In his *Compact Step by Step Guide to Taxidermy*, Tose acknowledged the importance of other museums in his own work ("Many museums have discarded this method [of stuffing] in favor of the more exact and scientific mode of

⁴⁹ Though the evidence is unclear, I suspect that Rowley's departure from AMNH was also due to the museum's hiring of Carl Akeley in 1909. A museum can only retain so many celebrity taxidermists at once.

reproduction in plaster, papiermache [sic], etc.”⁵⁰) Formalization of standards would never fully develop in this way, as taxidermists worked in relative isolation and many considered themselves artists, hesitant to embrace standards imposed on their craftsmanship.

Frank Tose’s journey across the U.S. had one particularly notable stop: Denver’s museum, Colorado Museum of Natural History (CMNH).⁵¹ CMNH director Jesse Dade Figgins (1867-1944) had worked with John Rowley at the American Museum of Natural History, and he supported the work of other taxidermists through professional favors as they moved to new institutions. Figgins wrote to Leverett M. Loomis, director of the California Academy of Sciences, “Please consider anything here [in Denver] entirely at your and Mr. Rowley’s disposal at any time. I have known of you for many years, and Mr. Rowley is a man to whom I owe much for assistance during my early struggles with museum work, so you need not hesitate if there is anything I can do to push the good work along.”⁵² Figgins and Rowley had worked together in New York, and Figgins realized that Rowley’s work, which he knew well, would greatly benefit Loomis and CAS. This sort of communal support was an important component to the development of consensus among taxidermists, as it built and strengthened trust among them as colleagues.

Loomis’ communication with Figgins directly addressed the impact the style of taxidermy display the Denver museum had on the California Academy. After a visit to

⁵⁰ Frank Tose, *Trapping, Tanning, and Taxidermy* (Columbus, Oh.: The Hunter-trader-trapper co., 1928), 34.

⁵¹ In 1948, the museum changed its name to the Denver Museum of Natural History, and again in 2000, to the Denver Museum of Nature and Science.

⁵² J.D. Figgins to L.M. Loomis, October 23, 1910. Jesse D. Figgins Papers, Bailey Library & Archives, DMNS.

CMNH, Loomis noted, “Your small groups with the transparent background have no equal in the museums of the United States. You have certainly carried the standard forward in this department of museum exhibition.”⁵³ The flattery at the open was a fairly typical response to having visited a museum, but use of the word “standard” is notable. By claiming that the Denver museum had changed the standard, Loomis acknowledged that such a standard did, indeed, exist. Though there is no written record of this standard’s specifications, its characteristics likely aligned with those presented as *scientific taxidermy* in 1893, given the similarities in taxidermy style across these three institutions’ display.

In addition to praising the quality of Denver’s exhibits, Loomis explicitly revealed that museums copy each other in their design of exhibits for display. He wrote that when Figgins visits San Francisco, he “will find bird groups of the same style in the Academy’s new museum.”⁵⁴ Imitating displays in other museums was not new to the Colorado Museum. Figgins placed a great deal of value on the displays in the museum, much to the chagrin of curator of birds and mammals Frederick Charles Lincoln, whose commitment to research created conflict between the two men.⁵⁵ Figgins asserted to Lincoln his vision for the museum, that there should be more focus in Denver on display and exhibition than on research and publication: “The primary object and item of vital importance to this institution is exhibition. ... Each of us must be prepared at all times to sacrifice our personal

⁵³ L.M. Loomis to J.D. Figgins, December 9, 1910. Jesse D. Figgins Papers, Bailey Library & Archives, DMNS.

⁵⁴ L.M. Loomis to JD Figgins, December 9, 1910. Jesse D. Figgins Papers, Bailey Library & Archives, DMNS.

⁵⁵ See Karen A. Rader and Victoria E. M. Cain, *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century* (Chicago: University of Chicago Press, 2014), 87-89.

preferences to this.”⁵⁶ Lincoln seemed to have heard this direction, having traveled to natural history museums to learn from the displays of CMNH’s “sister institutions.”⁵⁷ Though the indication that museums in the American east are noted as “sister institutions” is interesting, of greater significance is the characterization of the data collected at the museums. By calling out “storage, exhibition and educational work,” Lincoln identified the key areas where his museum could improve.⁵⁸ Certainly, as he mentioned several times, the museum was doing good work in exhibition and education. The rationale behind this mention, then, likely related to a goal of creating an experience in museum education not unlike that which visitors might experience in the eastern United States.

Visiting other museums was of such value that CMNH director Figgins wrote to the museum’s taxidermist, Rogers, that he would “recommend that you [Rogers] be send East for that purpose. I recognise fully that you could not be expected to maintain a high standard of work without such an opportunity and you may be assured it will have my support.”⁵⁹ The standard of work Rogers had presented in Denver was of high quality. To prevent stagnation of craftsmanship, Figgins sent Rogers east to see the kinds of work that had been done in museums in Chicago, New York, and Washington, perhaps to inspire Rogers to try new techniques.

⁵⁶ J.D. Figgins to F.C. Lincoln, August 23, 1917. Jesse D. Figgins Papers, Bailey Library & Archives, DMNS.

⁵⁷ F.C. Lincoln to J.D. Figgins, December 30, 1916. Jesse D. Figgins Papers, Bailey Library & Archives, DMNS.

⁵⁸ F.C. Lincoln to J.D. Figgins, December 30, 1916. Jesse D. Figgins Papers, Bailey Library & Archives, DMNS.

⁵⁹ J.D. Figgins to A.C. Rogers, December 12, 1928. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

As CMNH taxidermists visited other museums, so did their colleagues at other institutions. When Frank Tose visited museum in the eastern United States in 1927, he aimed to “get in touch with the most modern and up to date methods used in the preparation of museum exhibits.”⁶⁰ That he would visit other museums is not surprising, but an expected manner of maintaining museum and display relevance. Part of Tose’s responsibility came through a request from his museum director, Dr. Evermann, that “I give a lecture on the work that was being accomplished in the various museums that I visited.”⁶¹ Homer Dill, of the State University of Iowa Museum of Natural History, also visited the eastern American museums: “I had a good visit at the American Museum while I was in the East. I saw all of the taxidermists. [James L.] Clark was just getting ready to go to Asia.”⁶² These eastward visits also revealed taxidermists’ eagerness to learn new methods and to hone their skills. In visiting other museums, taxidermists spread practices and ideas to their home museum, and in this way, developed a consistent approach to creating scientific taxidermy.

As taxidermists visited other museums, connecting and reconnecting with colleagues, a disparate community formed. Certainly, such a community already existed, as Mary Andrei suggests, through the cohort of taxidermists trained at Ward’s Natural Science Establishment and the cooperative professional spirit that had existed through the Society

⁶⁰ Frank Tose to Albert C. Rogers, August 15, 1927. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

⁶¹ Frank Tose to Albert C. Rogers, November 4, 1926. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

⁶² Homer R. Dill (director of the State University of Iowa Museum of Natural History, Iowa City) to A.C. Rogers, January 25, 1926. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

of American Taxidermists and continuing correspondence.⁶³ But there was something different about this new community, forming decades later. Unlike the Ward's community, whose members had worked together for years, this new group connected through intellectual forgings of standards in taxidermy practices. They read the same books and corresponded, seeing each other's mounts only on special occasions.

The American Association of Museums similarly acknowledged the existence of standards in museum display practices. In discussions of arranging museum collections, Peter A. Mortenson, superintendent of Chicago Public Schools, had written about the improvement in museum pedagogy by simply moving the collections into more meaningful arrangements: "Only in so far as museums have rearranged their collections so as to conform to the standards ... have they been able to carry home their purpose."⁶⁴ His allusion to "standards" referred to standards of pedagogy, where habitat groups were more meaningful displays of animal specimens than a linear taxonomical arrangement—animals positioned row upon row—could be, at least for younger students. Standards for taxidermy, whether pedagogical or otherwise, were clearly important for AAM, especially as they promoted a consistency of displays across museums. AAM's tacit endorsement of creating standards suggests a broader implication for museum displays in general.

By 1921, formal standards for taxidermy displays emerged from the American Association of Museums. Laurence Vail Coleman, who worked on exhibits at the American

⁶³ Mary Anne Andrei, "Nature's Mirror: How the Taxidermists of Ward's Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species" (Dissertation, University of Minnesota, 2006).

⁶⁴ Peter Mortenson, "Contribution of Museums to Public School Education," *Museum Work* 2, no. 8 (1920): 243.

Museum of Natural History and became director of AAM in 1927, identified six standards in “Some Principles of Group Construction.”⁶⁵ Though not enforced, these standards served as guidelines for evaluating taxidermy work prepared at museums. Though these principles do not mirror the characteristics Shufeldt presented in *Scientific Taxidermy for Museums*, they complement Shufeldt’s notion of Scientific Taxidermy, clarifying its acceptance and perpetuation in museums.⁶⁶ Despite the scant usage of the term *scientific taxidermy*, mounts and displays remained, as Mortenson observed, “scientifically put together.”⁶⁷

The six standards that Coleman identified were feeling, unity, action, balance, reality, and size.⁶⁸ Coleman explained the purpose for each term in taxidermy displays, as well as how that characteristic looked when successfully achieved in the display. Though not a taxidermist, Coleman’s evaluation of display aesthetics is relevant in that in his position as a museum administrator at AMNH, he assessed exhibits and identified characteristics that would make a museum successful. By paying close attention to the details that made taxidermy groups good, Coleman had identified the principles that could become standard across US museums. Coleman’s standards would remain significant as he ascended to the directorship of the American Association of Museums in 1927.

⁶⁵ Laurence Vail Coleman, “Some Principles of Group Construction,” *Museum Work* 3, no. 4 (1921): 121.

⁶⁶ Coleman’s “Principles” focus on the construction of an entire display, while Shufeldt wrote about the mount itself. Though these are different entities, their connection is clear, in that a group display cannot exist without taxidermy mounts.

⁶⁷ Mortenson, “Contribution of Museums to Public School Education,” 243.

⁶⁸ Coleman, “Some Principles of Group Construction,” 121.

For Coleman, a habitat display was to evoke the sensation of being present in a particular environment, as a witness to a specific event. In order to elicit the response of wonder—at the lifelike nature of the scene—taxidermists and dioramists worked to create feeling within the display. Coleman associated this feeling with “a great many activities which appeal to the visitor at once.”⁶⁹ The entire scene had to appeal to the visitors’ senses, drawing them to awe in front of the display. The ways the animals stood, their apparent motion, and the subtleties of communication all contributed to the visitors’ experience of nature, as they conjectured what had happened immediately before the frozen scene, and as they anticipate the ensuing minutes.

The unity of a scene helped the viewer connect the relationships within nature. Each display had a single overarching concept as its intended meaning, and every part of the display reflected “a perfectly evident relationship to the central idea.”⁷⁰ Certainly, this was related to the pedagogical purpose of the display, which was often to show interactions in nature. As such, every component of the display had to contribute to a singular idea, and all preparators involved with the display’s creation had to work to make it so.

Related to unity was balance, which Coleman described as “very near to what the artist calls composition.”⁷¹ Taxidermy, as Carl Akeley and others believed, could be an artistic craft, and skills, such as observing, sketching, and sculpting, were necessary to the successful mount. The balance of a display was the way in which no part of the display

⁶⁹ Coleman, "Some Principles of Group Construction," 121.

⁷⁰ Coleman, "Some Principles of Group Construction," 122.

⁷¹ Coleman, "Some Principles of Group Construction," 122.

overpowered the rest, and it was also a balance between accuracy and pleasing aesthetic, as Shufeldt had identified decades earlier.

Few habitat displays show animals at complete rest; instead, most illustrate a very active part of the animals' lives. Many displays show animals foraging or scavenging for food, hunting or evading a predator, or putting on a show of strength for a potential mate or rival. The action of a scene was not something taxidermists typically shied from, so Coleman's description was a warning: "The implied activity need not be excessive, but the notion that intense action or even violence is inconsistent with scientific dignity is obsolescent."⁷² Indeed, the "scientific dignity" might be synonymous with accuracy, as the action of a scene had to reflect observations made by a naturalist, were the display to retain its scientific value. In addition to the warning against excess action in a display, Coleman exhorted taxidermists to pay close attention to all parts of the display in presenting action: "The value of details in producing action should not be underestimated. ...A running beast may be brought to a perpetual halt in mid-air if the foliage which it brushed is not bent aside."⁷³ Every action needed to be accounted for, with the reaction of the rest of the display appropriately represented, thus uniting the scene into a single, meaningful display.

The accurate depiction of nature's reality relied on good observation as well as "good workmanship."⁷⁴ Indeed, without good work, the display could not come to life for museum visitors. This principle for taxidermy display groups was echoed by John Rowley in his book on museum taxidermy: "In taxidermy the preparator deals with the animal

⁷² Coleman, "Some Principles of Group Construction," 122.

⁷³ Coleman, "Some Principles of Group Construction," 122.

⁷⁴ Coleman, "Some Principles of Group Construction," 122.

itself, not a picture nor a model of one, and attempts to portray that animal as in life.”⁷⁵ Using normative language, Rowley suggested that the taxidermist, as a preparator, was constructing an animal. Truth to the animal’s life was paramount for display, and distortion of that reality, whether through a picture or model, would render the mount less than a truthful representation.

The final principle of group displays that Coleman discussed was the size of the group. This principle was closest related to maintaining visitor interest in the exhibit and in the museum. He wrote, “One large group will usually be remembered longer than many small ones.”⁷⁶ A group that combined many specimens, interacting in ways that adhered to the other five principles, would capture the interest of many museum visitors, and was likely to entice their return at a later time.

Formalizing these principles was important, and something only meaningfully achieved by a museum association like AAM. As Coleman stated in his 1939 assessment of American museums, “The association’s chief responsibility...consists of shaping broadly the course of museum development by discovering strengths that are not widely recognized and giving them full play, by pointing out weaknesses in the hope of removing them, and by seeking improved methods of museum work through surveys and research.”⁷⁷ Principles of taxidermy display were important strengths that AAM had now publicized, tacitly endorsing and moving them closer in status to standards. This was a significant achievement, merging the aesthetics museums had developed on their own into an

⁷⁵ Rowley, *Taxidermy and Museum Exhibition*, 313.

⁷⁶ Coleman, "Some Principles of Group Construction," 122.

⁷⁷ Coleman, *The Museum in America*, Vol. I, 42.

overarching American museum aesthetic, one that combined artistic craftsmanship with scientific accuracy. And in doing so, “a unified museum movement will work to the end that the splendid service now being rendered by a limited number of museums to a limited number of American cities may be extended ultimately to all communities,” as Paul Marshall Rea identified nearly a decade earlier.⁷⁸ This was the fulfillment of AAM’s “duty of being helpful to museum people by keeping them abreast of the museum world through publications.”⁷⁹ And part of keeping museum people abreast of museum work was identifying characteristics of museum displays that worked, and disseminating them.

The publication of these principles was more than just an acknowledgment that these characteristics existed in displays from a variety of US museums. Instead, their publication was directly influential in the museum world. These principles echoed the taxidermy practices praised in the expositions of the Society of American Taxidermists, presented by Shufeldt in *Scientific Taxidermy for Museums*, used by individual taxidermists at the World’s Columbian Exposition and various museums; promoted through taxidermy manuals, adopted by museum taxidermy shops, and finally, codified into museum principles. These principles embodied the narrative of scientific taxidermy and reflected its purpose, while pointing museums in a clear way forward. New guidelines for museums united a museum aesthetic rooted in scientific accuracy, while allowing individual taxidermists and museums room to experiment and develop different practices for displays.

⁷⁸ Paul Marshall Rea, “The March of Museum Progress,” *Museum Work* 6, no. 1 (1923): 5.

⁷⁹ Coleman, *The Museum in America*, Vol. I, 42.

Between 1921 and 1939, Coleman himself saw museum taxidermy change, corroborated by John Rowley in *Taxidermy and Museum Exhibition* (1925). Coleman recognized that museum taxidermists wanted a change; they specifically wanted “to replace [older] mounted specimens with something much more lifelike.”⁸⁰ For Coleman, more lifelike mounts would reflect the characteristics he identified as specifically important in reconstructing nature behind glass. Rowley echoed this idea, writing, “A successful museum exhibit, like a book, should, as far as possible, tell a complete story.”⁸¹ For Rowley, the “complete story” included all the attributes Coleman mentioned. The display should show one whole, connected environment, composing an interesting and active scene. Though he did not use the same words to describe the Coleman’s “Principles,” the idea behind them remained the same, constructing a display that would accurately and interestingly represent nature.

TRAINING TAXIDERMISTS

As taxidermists had navigated their separation from the rest of the museum insofar as education and standards were concerned, they did the same with training new craftsmen. Though Ward’s Natural Science Establishment once served as a training facility for a generation of American taxidermists, many of those taxidermists had moved on to positions as curators and chief taxidermists at several major natural history museums.⁸²

⁸⁰ Laurence Vail Coleman, *The Museum in America*, 3 vols. (Washington, D.C.: The American Association of Museums, 1939), vol 2, 260.

⁸¹ Rowley, *Taxidermy and Museum Exhibition*, 305.

⁸² Mary Anne Andrei, "Nature's Mirror: How the Taxidermists of Ward's Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species" (Dissertation, University of Minnesota, 2006).

However, Ward's had fallen out of fashion as a taxidermist training ground by the early twentieth century, and many museums themselves became the centers for teaching taxidermists how to mount and display animals in ways to serve that particular institution. By the 1920s, Museum Methods courses largely ignored taxidermy creation, repair, and display, amateur taxidermists who wanted to affiliate with a museum's taxidermy department needed to find alternative ways to learn techniques and best practices.

One notable example of such a determined amateur taxidermist is Henry Wichers Inchumuk, a taxidermist at the Colorado Museum of Natural History from 1940 to his retirement in 1990.⁸³ His training in taxidermy was unconventional for a museum taxidermist, though typical for many amateur taxidermists in the early decades of the twentieth century. He learned how to mount animals through the Northwestern School of Taxidermy, a correspondence course developed in 1903 by J. W. Elwood of Omaha, Nebraska.⁸⁴ As a correspondence course, amateur taxidermists would learn taxidermy one small lesson at a time, working at their own pace to complete the forty-lesson course.

Elwood's course was adequate training for amateur taxidermists who found taxidermy manuals to contain more details than they needed. Furthermore, the Northwestern School of Taxidermy modified instruction through different editions, with different lists of parts dealers who could sell the best glass eyes or tools. But the central aim of the School was always the same: "Our students fully understand that the following

⁸³ Larry Blomquist, Henry Wichers Inchumuk: A Lifetime of Achievement (Hammond, La.: Breakthrough Magazine, 2007), DVD.

⁸⁴ Northwestern School of Taxidermy, *The Fascinating Art of Taxidermy: How You Can Learn Its Secrets in Your Own Home* (Omaha, Neb.: Northwestern School of Taxidermy, ca. 1960).

lessons are written for the purpose of teaching them how to correctly mount natural specimens.”⁸⁵ That was the extent of instruction; the Northwestern School of Taxidermy avoided instruction in zoology or any form of natural history, and the school dealt with all sorts of taxidermy, including trophies, decorative mounts, and novelty mounts, though the aim of the course was to teach “Scientific Taxidermy.”⁸⁶ Elwood clarified the rationale behind this decision: “The few works that have been published on Taxidermy make the mistake of attempting to combine the teaching of the actual operations necessary in mounting specimen, with the scientific knowledge, to such an extent that the average student loses sight of the object sought and becomes entangled in a maze of Latin words and scientific terms.”⁸⁷ Immediate practicality was at the fore, with a focus on knowing the craft and not any specific details about the meaning behind the craft.

Despite the focus on practical craftsmanship, Elwood demonstrated a limited knowledge of scientific taxidermy as Shufeldt had described it in 1893. If the taxidermist needed to focus on accuracy and aesthetics as the primary components of scientific taxidermy for museums, Elwood certainly focused on the accuracy of a mount: “Nothing is more important in mounting mammals than correct and detailed measurements. These must be taken systematically and carefully from the natural body. They should be recorded in your note book, together with such drawings, sketches, etc., as you think will prove

⁸⁵ J. W. Elwood, *A Comprehensive Treatise on Collecting and Preserving All Subjects of Natural History* (Omaha, Neb.: The Northwestern School of Taxidermy, 1905), 1.

⁸⁶ Northwestern School of Taxidermy, *The Fascinating Art of Taxidermy: How You Can Learn Its Secrets in Your Own Home*, 1.

⁸⁷ Elwood, *A Comprehensive Treatise on Collecting and Preserving All Subjects of Natural History*, 1.

helpful when you come to the actual mounting.”⁸⁸ Field measurements, drawings, and sketches, when photography was unavailable, were the key parts of making a good, accurate mount. Aesthetics could come later.

Taxidermists also learned from each other through correspondence. Though museums had become the central nodes for a vast network of taxidermists who aspired to this kind of taxidermy, museum methods courses had pushed taxidermists to learn from each other’s expertise. Authority for making proper taxidermy shifted from the formal training similar to what other museum preparators had received through AAM to informal apprenticeships, reinforced through correspondence.

In developing displays, taxidermists, naturalists, and other museum preparators looked to taxidermists as the authorities in the field. E.J. Sawyer, park naturalist at Yellowstone National Park, wrote to A.C. Rogers, chief taxidermist at CMNH, “Will you please advise me as to the best present day practice for preserving large skins for the purpose of mounting at some indefinite time.”⁸⁹ Through his acknowledgment and recognition of the taxidermist’s knowledge, rather than looking to instructors of museum methods courses or schools like Elwood’s Northwestern School of Taxidermy, he identified that the source of authority was with the taxidermist. Rogers’ response is also worth noting here. In addition to descriptive instructions on preparing the skin in the field he also promised to “enclose a diagram for the measurements for large animals.”⁹⁰ By

⁸⁸ Elwood, *A Comprehensive Treatise on Collecting and Preserving All Subjects of Natural History*, 33.

⁸⁹ E. J. Sawyer to Albert C. Rogers, February 9, 1924. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

⁹⁰ Albert C. Rogers to E. J. Sawyer, February 25, 1924. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

supplementing instructive methods, Rogers ensured that his reader learned the best practices for skin preparation. It mattered to him the way nature would be preserved and presented to the public.

Similarly, museum workers asked taxidermists to be the authority in addressing concerns over larger displays. When developing a new polar bear exhibit at the Nebraska State Museum, curator of vertebrate paleontology Henry P. Reider asked Rogers, “Would you be so good as to tell us what you used in your exhibit for snow?” and “What method would you suggest using to stretch the skin in order to sew it [to mend an opened seam]?”⁹¹ These questions acknowledged the museum taxidermist’s authority in the craft, and expanded that authority to broader, though related, areas of museum work, such as creating background materials for habitat dioramas.

A SOCIETY OF MUSEUM TAXIDERMISTS AND THE TECHNICAL SECTION

The development of a community of taxidermists strengthened the development of taxidermy standards for museums. This community became increasingly formal with the formation of a section within AAM of museum preparators, initially identified as a Society of Museum Taxidermists. The creation of this specialized group was in many ways a return to the pre-history of scientific taxidermy. The 1880s saw the formation of the Society of American Taxidermists, which, though short-lived, had promoted the craft of taxidermy through its annual expositions in 1881-1883. Taxidermists in the S.A.T. were not formally specialized in museum work, though the most prominent members found careers at

⁹¹ Henry P. Reider to A.C. Rogers, March 2, 1939. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

museums as preparators in zoology and ornithology departments, working on mounts as well as other components of museum display, such as creating models of rocks and plants. This new Society of Museum Taxidermists would be more than a reconstitution of the Society of American Taxidermists, in that it was formed out of a perceived need for such a division within a broader museum professional organization. The Society of American Taxidermists formed out of a cadre of taxidermists who apprenticed at Ward's Natural Science Establishment, its members largely unaffiliated with professional taxidermy workshops.⁹² By contrast, SMT formed exclusively from museum taxidermists, or taxidermists whose primary affiliation was with a museum or similar institution. The preparator and curator group within the AAM was a group of specialized taxidermists and other museum workers who worked in developing and constructing exhibits. Taxidermy was the most prominent of these groups, though all the work done in the creation of dioramas was recognized as especially significant within the group's charter.

SMT was a way of promoting a consensus around standards to museums across the United States. In his travels to natural history museums across the United States, Frank Tose found that "several Taxidermists and Preparators have spoken about the advisability of forming of Society of Museum Taxidermists for the exchange of Ideas and mutual benefit."⁹³ His tour was of US natural history museums, the "principal museums of the

⁹² Andrei, "Nature's Mirror."; Susan Leigh Star, "Craft Vs. Commodity, Mess Vs. Transcendence: How the Right Tool Became the Wrong One in the Case of Taxidermy and Natural History," in *The Right Tools for the Job: At Work in Twentieth-Century Life Sciences*, ed. Adele Clarke and Joan H. Fujimura (Princeton, N.J.: Princeton University Press, 1992).

⁹³ Frank Tose to Albert C. Rogers, November 27, 1926. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

United States,” and he wrote how impressed he had been with museum preparators and the work they did: “I derived so much good from contact with others employed in similar work that I was impressed with the idea that there ought to be some means for those engaged in museum preparation to get together and exchange views on the many and varied subjects pertaining to our profession.”⁹⁴ In Tose’s estimation, “the time was ripe for the formation of a society of taxidermists, artists and museum preparators generally.”⁹⁵ What he wanted was the formation of a Society of Museum Taxidermists, Artists, and Preparators, an entity that would function cooperatively with the American Association of Museums. In his letter, which he sent to AC Rogers and other preparators who might have been interested in such a group, he included a questionnaire, which included the question, “Do you think that the name, Taxidermist, properly designates our calling, in view of the many and diverse arts connected with museum preparation?”⁹⁶ Initially, the scope of the group would be around the practice of taxidermy in museums, and taxidermists would be the core constituency. However, the group ended up being formed around preparators more generally, including all museum workers who contributed to the display of wildlife in exhibit spaces.

In communication with Tose about the SMT, Rogers addressed one of the key reasons for the creation of the group. He wrote, “In going through such work in the

⁹⁴ Frank Tose to Albert C. Rogers, August 15, 1927. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

⁹⁵ Frank Tose to Albert C. Rogers, August 15, 1927. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

⁹⁶ Frank Tose to Albert C. Rogers, August 15, 1927. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

different Museums, I find all have different methods of doing the same thing. Where some Museums can stand the expence [sic] of one method the other resorts to less expence although the result of course being to the same end.”⁹⁷ Certainly, expense was no small obstacle for museum displays. Time, staffing, and resources (in the form of animal skins and construction material) were limited, and museums had to work around their circumstances. But the central phrase in Rogers’ letter is “to the same end,” related to “doing the same thing” as other museums. In these phrases, Rogers suggests that the museums he had visited exhibited similar quality of specimens, constructed by equally talented taxidermists. To achieve the same kind of mount was a significant step in demonstrating a consensus among taxidermists.

Writing again to Rogers, Tose said, “We would like very much to have you contribute an article on some form of museum technique for publication, and also to have you send some examples of your work to our exhibit in Buffalo next year.”⁹⁸ The exhibit and publication were part of a new section of AAM Tose was developing, which would “be devoted to the exchange of knowledge pertaining to museum technique for the benefit of museums and those engaged in the making and installation of museum exhibits.”⁹⁹ Remarkably, Rogers did not respond in any way that would indicate his actual interest in the Society. Instead, Rogers (and later Figgins) responded to invitations to contribute to the

⁹⁷ Albert C. Rogers to Frank Tose, 1928?. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

⁹⁸ Frank Tose to AC Rogers, August 3, 1929. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

⁹⁹ Frank Tose to AC Rogers, August 3, 1929. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

Section with claims of too much work and “I can not at this time.”¹⁰⁰ The correspondence seems to be largely unidirectional, from Tose to Rogers.¹⁰¹ Though this is not an indictment of the character of the taxidermists in Denver, it is a revelation of the doggedness of Frank Tose, who wanted desperately to establish a unity among museum preparators, especially taxidermists.¹⁰²

Tose’s efforts paid off by 1929. Ahead of the annual meeting in Philadelphia, AAM published a notice that preparators were considering organization.¹⁰³ The Technical Section, as it became known, formed in 1929 after Frank Tose’s three-year-long effort “by means of correspondence and personal contact to organize museum technicians in order to create channels for the diffusion of knowledge concerning museum technique for the benefit of museums and preparators.”¹⁰⁴ AAM recognized Tose for his work, and the Technical Section enjoyed great success, expanding its membership and programs within AAM, and even spawning a related section for art museums, focused on conservation and restoration of artwork.

¹⁰⁰ Albert C. Rogers to Frank Tose, 1928?. Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

¹⁰¹ The papers of Albert Rogers at DMNS contain copies of his outgoing correspondence in addition to what he received. At the time Tose solicited taxidermist feedback on his ideas for the new Society, Rogers was busy visiting other museums and working on filling displays in Denver, both at Figgins’ direction. The few replies he sent Tose were similar in content: “I can not at this time.”

¹⁰² Angele Braren argues that Tose’s managerial style was built on “cleanliness, control, and discipline,” as well as a strong sense of competition, as he sought to make the Simson Africal Hall better than similar halls at other natural history museums. Certainly this style contributed to his efforts to create the Technical Section, where he might stand in front of other taxidermists as the guide to improving the profession. “Curating Himself: The Simson/Tose Dioramas at the California Academy of Sciences,” *Sightlines*, 2012, 86-107

¹⁰³ “Preparators May Organize,” *The Museum News*, 1 May 1929, 1.

¹⁰⁴ “Meeting Elects Kimball, Technical Section Is Formed,” *The Museum News*, 1 June 1929, 1.

Though the Technical Section was explicitly a general organization for “museum preparators either within the Association or independently,” its beginnings were rather exclusively focused on taxidermy and taxidermists.¹⁰⁵ In its first year at AAM’s annual meeting—1930—the Technical Section offered nine events. Of those nine, seven related to taxidermy and taxidermy displays.¹⁰⁶ This trend continued at AAM’s annual meetings in 1931, with four of five prepared papers catering to the needs of taxidermists within the Section.¹⁰⁷ Leadership of the Section recognized this narrow focus as a potential problem for its longevity. They solicited new membership from preparators outside museums of natural history, writing, “The fact that the major portion of what has appeared relates to museums of natural history indicates only that section members have been most active in that field. The section is desirous of enlisting the support of workers in other fields.”¹⁰⁸ Their efforts did not succeed in 1932, when three of the four prepared papers were focused on taxidermy.¹⁰⁹

In 1933, however, there was an abrupt shift in the makeup of the programs sponsored under the Technical Section. Only one of the nine prepared papers was on museum taxidermy and taxidermy displays.¹¹⁰ This trend continued in 1934 and 1935,

¹⁰⁵ "Preparators May Organize," *The Museum News*, 1 May 1929 1.

¹⁰⁶ "Annual Meeting Program," *The Museum News*, 1 May 1930, 6.

¹⁰⁷ In 1931, AAM changed the Section’s “Events” to “Prepared Papers.” "Annual Meeting of the A. A. M.," *The Museum News*, 1 May 1931.

¹⁰⁸ "Annual Meeting of the A. A. M.," *The Museum News*, 1 May 1931 8.

¹⁰⁹ "Annual Meeting," *The Museum News*, 15 April 1932.

¹¹⁰ "Annual Meeting," *The Museum News*, 15 May 1933.

with other kinds of museums, such as history museums and art museums, rising to prominence in this Section.

The American Association of Museums and the newly formed Society of Museum Taxidermists and Technical Section had developed some standards between 1921 and 1927. At the same time, museum methods courses were teaching preparators how to work in museums with a special focus on museum administration, and museologists were constructing meanings for taxidermy mounts. This tension between AAM and taxidermists was not insignificant. Though museum preparators could learn taxidermy in a number of arenas, such as correspondence courses, specific museum coursework, and correspondence with professional taxidermists, the route to taxidermy instruction was not streamlined, nor did AAM provide guidance. Instead, taxidermists were left on their own to create instructive methods for their techniques and to develop standards they could pass to future taxidermists.

Coleman's principles expanded on Shufeldt's criteria for Scientific Taxidermy, and they served a similar function. Instead of offering a schema for creating proper museum taxidermy, they identified characteristics that taxidermists had worked to incorporate into their mounts. And in this way, the principles were a marker that taxidermy had seen some form of consensus, and Coleman's writing indicated that something significant had happened.

The principles were a set of expectations a museum visitor might have in seeing taxidermy that populated the cases; it was not a set of guidelines for taxidermists who worked in museums. That is, they showed future taxidermists the end result, but they

allowed for creativity in how to get there. In this way, museum taxidermists preserved their own unique craftsmanship, and encouraged new craftsmen to create work in a similar vein.

Furthermore, the recreation of formal organization among museum taxidermists reflected a new camaraderie among those professionals. Though its membership was not exclusively taxidermists but all manner of museum preparators, the Technical Section acknowledged the value of the work done by those who remained hidden behind museum walls, repairing and restoring artifacts, and constructing displays and their meanings. Consensus around taxidermy principles, though not built out of this new organization, contributed to its success.

CONCLUSION

A PROFESSION IN TRANSITION

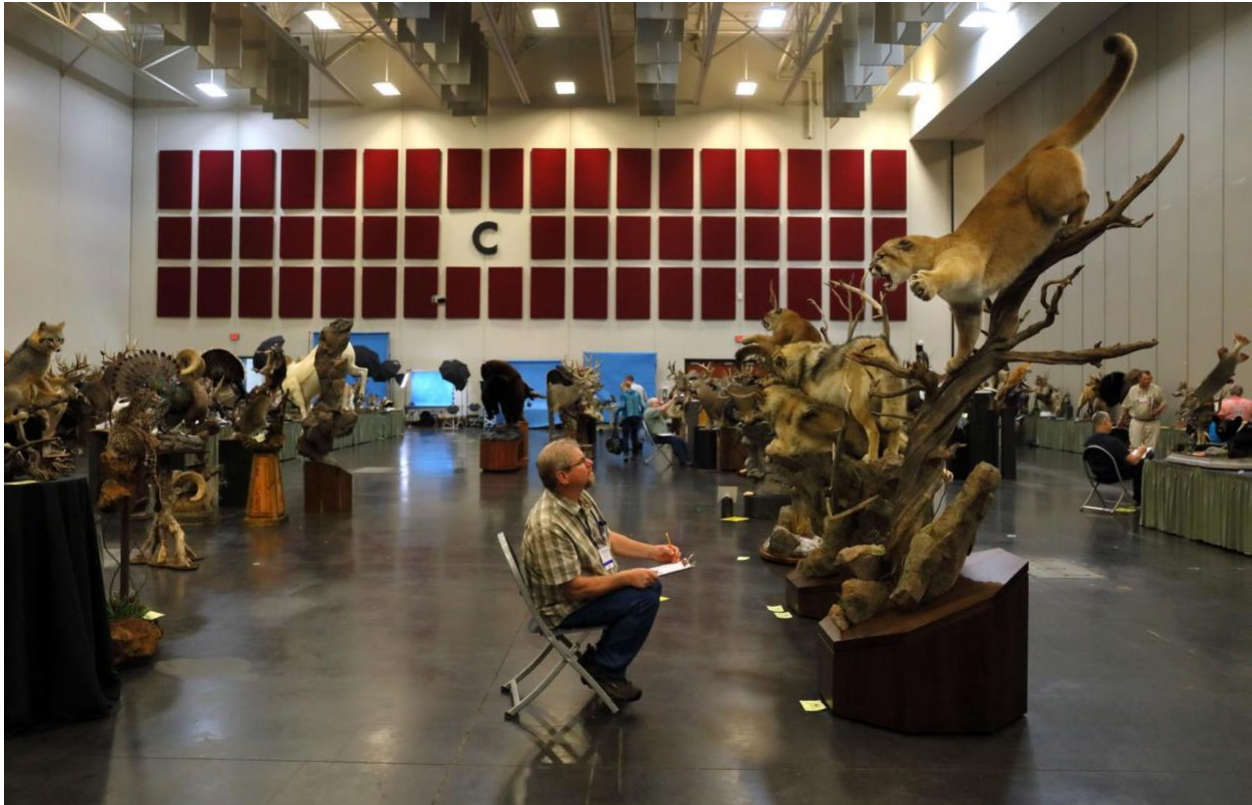


Figure 7: A judge examines details of mounts at the 2019 World Taxidermy & Fish Carving Championships in Springfield, Missouri (photo by David Carson, St. Louis Post-Dispatch; used with permission)

In the process of reaching consensus, museum taxidermy found itself under the direction of several forms of authority before it came to a rest in perhaps the most democratic finale: among the taxidermists themselves. United States museum taxidermists, from the 1880s to the 1930s, navigated the authorities of museum affiliation, museum administrations, published manuals, and individual claims, before they united under the auspices of the Technical Section of the American Association of Museums in 1929. In many

ways, the formation of the Technical Section was a reconstitution of the Society of American Taxidermists, which disbanded in 1883 after a short, three-year lifespan. Like S.A.T., the Technical Section joined taxidermists in a common goal to create museum taxidermy that would accurately represent nature in an aesthetically pleasing manner, and it would maintain the professionalism of museum taxidermists. But unlike S.A.T., the Technical Section operated within a larger body—the AAM—and remained exclusive to *museum* taxidermists and preparators, without room for commercial taxidermists.

Consensus among taxidermists was always going to be tenuous at best. The process of crafting taxidermy mounts was secretive, in large part to protect the creative work that went into their construction. Individuals built forms and stretched skins in private studios and workshops, innovating methods for their artistic mounts to earn them renown. As taxidermy construction moved into museum spaces, though, that secrecy diminished, as the number of individuals working on and near a mount increased. And as methods became known to greater numbers of people, museums began to make claims to authority over a style or interpretation of a mount.

Characteristics of proper museum taxidermy became the crux of this consensus, though taxidermists themselves did not identify them, probably to maintain claims of originality in their own craftings of nature. Outside observers of museum taxidermy—most significantly Robert Wilson Shufeldt and Laurence Vail Coleman—identified traits common to what they viewed as high-quality museum taxidermy. Whether taxidermists themselves followed these characteristics as guiding standards in the field is irrelevant in this case, as the Shufeldt and Coleman evaluated existing mounts. Instead, the similarities in taxidermy across U.S. natural history museums revealed that museum taxidermists had agreed, more

or less, on the characteristics of good, proper museum taxidermy, without specific discussions as to how to construct that taxidermy. Studies like Shufeldt's and Coleman's clarified what those characteristics were, perhaps guiding novice taxidermists who aspired to work in museums.

This project has examined the path for consensus in the world of museum taxidermy, but it may be useful to expand to scientific representation more generally. Taxidermy is a relatively niche practice, though it encompasses many moving parts when in a museum. Collectors, naturalists, hunters, administrators, taxidermists, other preparators, artists, and museum visitors all contribute to meanings of taxidermy mounts, and all have some stake in the final product. Those most directly responsible for the mount—the taxidermists—negotiated their own priorities in creating the displays, with the end result being a fairly consistent style of taxidermy in museum displays across the United States.

Similar patterns may emerge in other forms of scientific representation, with several stakeholders vying for influence in animal photography or models. When the artistry of representation meets the rigor (and sometimes rigidity) of scientific study, the values of art and science become exposed, and the purpose of representation becomes clearer.¹ For museum taxidermy, the ideal of accuracy in mounts—that is, presenting the animal as it existed in nature—faced the artistic merit of a pleasing aesthetic, and displays

¹ See Ann Shelby Blum, *Picturing Nature: American Nineteenth-Century Zoological Illustration* (Princeton, N.J.: Princeton University Press, 1993); Lorraine Daston and Peter Galison, *Objectivity* (Cambridge, Mass: MIT Press, 2007); Bernard Lightman and Ann Shteir, eds. *Figuring it Out: Science, Gender and Visual Culture* (Hanover, N. H.: Dartmouth College Press, 2006). These works discuss the larger social concerns brought out in scientific representation.

would preferably have both. But what became clearer was that museum taxidermy should reflect a nature that museum visitors recognized and that could be instructive to those who saw it.

By the end of the 1930s, most American natural history museums seemed to embrace scientific taxidermy as the convention for their exhibits, especially evident in AMNH's Akeley Hall of African Mammals, which, though conceived of and begun by Akeley, was populated with specimens prepared in the decade after his death. The similarities in the mounts support the scrutiny of others in the profession, who identified the characteristics of feeling, unity, action, balance, reality, and size as essential components in scientific taxidermy. The popularity of taxidermy in museums held steady or increased, as evidenced by the popularity of Akeley Hall in the 1930s and the extensive dioramas in Denver throughout the next half-century.

In thinking about consensus among taxidermists, it remains important that many taxidermists saw—and see—taxidermy as an art. This project has focused on museum taxidermists, but that was a small subset of the larger collection of taxidermists, including hobbyists and those who sell their work commercially. These groups did interact, though, notably with the Jonas brothers in Denver, who grew into a large taxidermy studio while also contributing mounts to the Colorado Museum of Natural History and to the American Museum of Natural History. Similarly, many museums contracted work to taxidermists, in a manner similar to Ward's, though on a smaller scale during this time period.

ARTISTIC TAXIDERMY

But in the 21st century, taxidermy has gained a new following, one that has been building since the 1980s. The World Taxidermy Championships (WTC) began in 1983 by

Breakthrough, a magazine for nature artists. At its annual competition, WTC gives out its top prizes—aptly named the Akeley awards—based on three criteria: Taxidermy skill, Artistic impact, and Creativity. In the naming of the awards and in the specific qualifications for winning, WTC reveals what it owes to scientific taxidermy and museum work.

In these criteria for judging taxidermy quality, the WTC seems to have taken the helm on renewing interest in the characteristics that make for proper taxidermy.² The high standards at WTC rely on the mount demonstrating artistic beauty, taste, and dignity, though it also values, perhaps more highly, “anatomical accuracy and skillful techniques required in world-class taxidermy.”³ Judges who evaluate in this category look for, among other things, a translucent nasal septum as a marker of the taxidermist’s skill, and not specifically as a reflection of the structure’s appearance in nature.

But the focus at WTC is exclusively on the craftsmanship and artistry of taxidermy, a step away from the scientific taxidermy that began to dominate museum collections. Indeed, WTC specifies that each mount “should be a work of art.”⁴ Semblance to the animal is not paramount, but the prize could be given strictly due to “visual balance, color coordination, line, shape, form and artistic appeal.”⁵ In the specification for “Creativity,” WTC rules enforce the notion of a story as critical to the execution of a successful taxidermy mount. The mount cannot tell any story, though; the story must be reinforced by the

² Matt Blitz, “Why Taxidermy Is Being Revived for the 21st Century,” *Smithsonian Magazine*, 19 June 2015.

³ World Taxidermy & Fish Carving Championships, “WTC 2019,” <https://www.taxidermy.net/wtc/>.

⁴ “WTC 2019”.

⁵ “WTC 2019”.

competition, meaning that the story has to make sense to the judges, and reflective of nature.

In the WTC rules, then, exist the six characteristics that SMT and AAM had developed. Feeling, action, and reality became the story and artistic appeal of the mount. Unity and balance became components of the artistic qualities of the mount, as color coordination, shape, and visual balance. And size became unimportant for WTC, as long as it reflected nature.

In addition to its emergence in international competition, taxidermy has become a hobby among San Francisco's and Brooklyn's hipsters, who wait for months to enroll in a workshop where they can learn to mount a mouse or a squirrel.⁶ Workshops hosted by independent taxidermists and small shops, such as Greenwich Village's Evolution or Haight-Ashbury's Loved to Death, have attracted novice taxidermists, as did workshops at Brooklyn's Morbid Anatomy Museum.⁷ But this interest in practical taxidermy focused on the craft as a hobby and not a profession, and its artistic characteristics and not science.

These realms of taxidermy—as a hobby and as a commercial endeavor—are ripe for additional study as to how they agree (or disagree) about the characteristics of a proper taxidermy mount. With the publications of *Taxidermy Review* and *Breakthrough* in the 1970s, commercial taxidermy saw consensus appear in a fashion similar to museum taxidermy. That is, authority in what made for proper taxidermy mounts shifted among

⁶ Annie Vainshtein, "This California 'Rogue Taxidermist' Turns Dead Animals into Teddy Bears," *SFGate*, 10 January 2019; Alex Wieckowski, "Only in Brooklyn: A Taxidermy Studio Thrives in Greenpoint," *Brooklyn Daily Eagle*, 4 January 2019.

⁷ Jennifer Schuessler, "The Dark Side Gets Its Due," *The New York Times*, 26 June 2014; "Morbid Anatomy Closes Its Doors," *The New York Times*, 20 December 2016.

several entities until one group—in this case, the WTC—wrote the criteria, making them more or less permanent.

TAKING TAXIDERMY AND TAXIDERMISTS OUT OF MUSEUMS

While taxidermy was on the rise in popularity among younger hobbyists, museums shifted their approaches to the craft. By the end of the twentieth century, wide-ranging change was in the air. First, the Smithsonian's National Museum of Natural History removed its wildlife dioramas in favor of a different sort of pedagogy. The large amount of taxidermy presented in their Kenneth E. Behring Family Hall of Mammals (opened 2003) teaches about mammals and what it means to be a mammal. The museum accomplishes this through pairings of dissimilar mammals, so visitors examine common traits of mammals as they move through the Hall.⁸

In 2008 and 2013—nearly a century after the Technical Section's founding—the Garibay Group, a consulting firm, conducted research to identify museumgoers' attitudes toward and perspectives on dioramas that adorned the halls of several US museums.⁹ Concerns over the fate of dioramas prompted the question, "Should museums dismantle [habitat dioramas], maintain them for the sake of nostalgia, or repurpose them for contemporary audiences?"¹⁰ (The answer to this question was a resounding "No," since

⁸ Jacqueline Trescott, "Look Alive!," *The Washington Post*, 17 July 2003.

⁹ Marjorie Schwarzer and Mary Jo Sutton, "The Diorama Dilemma," (National Science Foundation, 2009-10); Garibay Group, "Habitat Dioramas and Sense of Place: Factors Linked to Visitors' Feelings about the Natural Places Portrayed in Dioramas," (Oakland, Calif.: Oakland Museum of California, 2013); "Habitat Dioramas and Sense of Place: OCMA Natural Sciences Gallery," (National Science Foundation, 2014).

¹⁰ Schwarzer and Sutton, "The Diorama Dilemma," 2.

dioramas are cultural artefacts, museum icons, and effective pedagogical tools, among other things.) Nevertheless, taxidermy displays persist in museums, despite docents describing taxidermy as an antiquated method of conveying scientific information.¹¹

The Group's studies as to why dioramas matter extends to a broader discussion of why taxidermy still matters to museums. Museums are forever incomplete, as George Brown Goode (1851-1896), the assistant secretary of the Smithsonian Institution, and head of the US National Museum, wrote: "A finished museum is a dead museum, and a dead museum is a useless museum."¹²

Yet museums still retain the taxidermy "for the sake of nostalgia."¹³ This connection to the past is not unimportant. Understanding the past purposes of taxidermy in museums strengthens the arguments for keeping it, for using it to explain new and shifting ideas about the nature the displays represent, and our connections to those who encountered and studied the creatures and their habitats.

Despite the expectation that museums will house taxidermy and dioramas, most museums stopped employing museum taxidermists full-time in the twenty-first century. Wendy Christiansen, former taxidermist at the Milwaukee Public Museum, estimated there were fewer than ten museum-employed taxidermists in the U.S.¹⁴ And indeed, Christiansen stopped working at MPM in Spring 2019, leaving Tim Bovard, at the Natural History

¹¹ In my many visits to US natural history museums in the course of researching this project, docents have said something to this effect.

¹² George Brown Goode, "The Museums of the Future," in *Report of the National Museum, 1888-89*, ed. Smithsonian Institution (Washington, D.C.: Government Printing Office, 1891), 445.

¹³ Schwarzer and Sutton, "The Diorama Dilemma," 2.

¹⁴ Emily Graslie, "The World Taxidermy Championships!," in *The Brain Scoop* (YouTube, 2017).

Museum of Los Angeles County, the last museum taxidermist in the United States as of September 2019. Of course, this trend began in 1927, as the Los Angeles County Museum of History, Science and Art dismissed its chief preparator, John Rowley. Rowley had arrived in Los Angeles in 1921, after working as director of the Oakland Museum of Natural History (1917-1920) and curator of mammals at San Francisco's California Academy of Sciences (1909-1917). Prior to California, Rowley worked at the American Museum of Natural History, where he mounted animals alongside Jesse Dade Figgins, though he had become well regarded in his own right as a taxidermist and author of *The Art of Taxidermy* (1898).

While at the Los Angeles County Museum, Rowley fought a lawsuit that alleged mismanagement, dissension, and insubordination, and further suggested that Rowley inflated the cost of mounting animal groups. But the core of the charges was in Rowley's authorship of a book while he was employed at the museum, which Rowley claimed to be a culmination of the experiences he had gained during his lifetime as a taxidermist. The result of this suit was the threat of removing taxidermy production from the Los Angeles institution. The judge's recommendation was simple: "That Mr. Rowley and Mr. Herring be discharged, the positions of taxidermist and assistants being abolished, all future taxidermists' work be done on a per diem of contract basis by competent experts whose employment shall cease on completion of the work in hand."¹⁵ The recommendation suggested that museum taxidermy would no longer be the responsibility of the museum, but of outside contractors whose work might be less careful than the work done by

¹⁵ "Shaking up at Museum Urged," *Los Angeles Times*, 28 September 1927, clipping in Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

taxidermists who could converse with taxidermists at other museums to improve their practice.

Now, on the cusp of a new millennium, the trend that began in Los Angeles has become widespread. The Smithsonian Institution did not hire a new taxidermist once Paul Rhymer, a third-generation Smithsonian taxidermist, retired from the position in 2010.¹⁶ The American Museum of Natural History did the same, as did the California Academy of Sciences and Denver Museum of Nature and Science. No longer would taxidermy be done in the museum buildings; the work would go to contractors who could return the best taxidermy at the lowest cost.

But this last part is not entirely new; most U.S. natural history museums contracted with dealers such as Ward's for their mounts throughout the nineteenth century. The part worth noting is what happens to a museum's taxidermy collection when a museum's taxidermist is removed, a topic deserving further study.

Once the taxidermy construction is distanced from the museums, so is the museum's control over the mount. Now, museums rely on imposing meaning on outsourced mounts, rather than having the mounts go on display with a meaning imbued in them from underneath the museum's direct purview. But taxidermists, without direct connections to museums, no longer have their identity tied to museums, or a scientific institution.

¹⁶ Neda Ulaby, "Smithsonian Taxidermist: A Dying Job Title," *NPR*, 26 April 2010.

The historical relevance of dioramas relies on their replicating a particular moment at a specific place. Dioramas teach the natural history of the region at the time; many of the dioramas at FMNH and AMNH act as snapshots of nature at the end of the nineteenth century. Recreating specific places, the many parts of a diorama—the painted, curved background, the rocks, plants, and floor of the foreground, in addition to the taxidermied animals—are intended to make the place more real.

Humans connect with nature through dioramas by identifying the story and being part of it. People are a part of nature, and life exists everywhere. By looking at the reproduction of nature in a way that replicates an experience, humans can see their place with the animals, identifying the scene in front of them as an extension of themselves and their own lives.

Museums make permanent not only the diorama they display, but also the ideas that went into developing that display. That is, taxidermy preserves the pelts and the form as the taxidermist molded them. But it also preserves a certain way of thinking, regarding how museums considered animals, and the purposes of studying nature. Both are worth the permanence.

Museum taxidermy acts as a subset within the larger museum itself, and the taxidermy continues to reflect the consensus-building among taxidermists. Their mounts continue to teach about nature, while embodying the phenomenological, epistemological, normative, and identity struggles that occurred outside of the museums' public spaces. Current, non-historic mounts benefit from these struggles, too. Though many see taxidermy as an art, given the prominence of the World Taxidermy Championship, the scientific value

of mounts remains at the forefront of museum work and of mounts created specifically for museum display. Scientific taxidermy may not have ever been popular, and it may never become popular, but it is an instructional tool, influential beyond science, science museums, and scientific instruction.

BIBLIOGRAPHY

ARCHIVAL MATERIAL

Denver Museum of Nature & Science Archives (DMNS)

Jesse D. Figgins Papers, Bailey Library & Archives, DMNS.

Albert C. Rogers Papers, Alfred M. Bailey Library & Archives, DMNS.

Smithsonian Institution Archives (SIA)

SIA, Record Unit 201, G. Brown Goode's internal correspondence (incoming), 1875–1902.

SIA, Record Unit 189, Smithsonian Institution, Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1860-1908.

SIA, Record Unit 112, Smithsonian Institution, Assistant Secretary in charge of the United States National Museum, Correspondence and Memoranda, 1879-1907.

SIA, Record Unit 210, United States National Museum, Taxidermist, Correspondence, 1883-1889.

Smithsonian Libraries

Smithsonian Libraries, Notes and Correspondence of William Temple Hornaday, 1878-1934, SIL-DL.MSS001756A

University of Kansas Archives

University of Kansas Archives: Lewis L. Dyche Papers, PP 66, Kenneth Spencer Research Library, University of Kansas.

University of Rochester Archives

Carl Ethan Akeley Papers, 1895-1925, A.A31, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

College of Arts and Science, Personnel Folders of Terminated Faculty, UA730, Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

Henry Augustus Ward Papers, 1840-1933, A.W23, Dept. of Rare Books, Special Collections & Preservation, River Campus Libraries, University of Rochester.

PUBLISHED PRIMARY SOURCES

- "Annual Meeting of the A. A. M." *The Museum News*, 1 May 1931, 7-8.
- "Annual Meeting Program." *The Museum News*, 1 May 1930, 5-6.
- "Annual Meeting." *The Museum News*, 15 April 1932, 3-5.
- "Annual Meeting." *The Museum News*, 15 May 1933, 3-5.
- "Carl Akeley: Jungle Adventurer." *Real Heroes*, Summer 1941, 10-15.
- "Choked a Leopard to Death." *Columbus Enquirer-Sun*, 19 December 1896.
- "Course in Museum Methods Is Now Offered by University of Rochester." *The Museum News*, 15 October 1927, 1.
- "Editorial." *Leavenworth Times*, 17 December 1892, 3.
- "Meeting Elects Kimball, Technical Section Is Formed." *The Museum News*, 1 June 1929, 1, 3.
- "Mounting Animals. An Interesting Chat with a Field Columbian Museum Taxidermist." *The Biloxi Daily Herald*, 2 January 1902, 6.
- "Museum Honors Akeley." *Evening Star*, 18 July 1927, 17.
- "Museum Training Course Is Again Offered by University of Iowa." *The Museum News*, 15 April 1928, 1.
- "Preparators May Organize." *The Museum News*, 1 May 1929, 1.
- "Shaking up at Museum Urged." *Los Angeles Times*, 28 September 1927.
- "Some New Books: The Art of Stuffing." *Natural Science: A Monthly Review of Scientific Progress* Vol 5 (July 1894): 58-60.
- "Taxidermy as Fine Art." *Natural Science: A Monthly Review of Scientific Progress* Vol. 5, (supplement to August 1894).
- "Training Course for Museum Work Offered in Fall." *The Museum News*, 15 June 1927, 1.
- "Training for Museum Work." *The Museum News*, 1 June 1930, 9-10.
- "University Announces Course for Museum Workers." *The Museum News*, 1 April 1927, 1.
- "Wellesley Offers Training Course in Museum Work." *The Museum News*, 1 March 1928, 1.
- Akeley, Carl Ethan. "Hunter Ventures into Herd of Seven Hundred Wild Elephants." *Evening Star*, 7 October 1923, 2.
- . *In Brightest Africa*. Memorial ed. Garden City, N.Y.: Garden City Publishing Co., 1923.
- Akeley, Mary L. Jobe. "Into the Mountain Gorilla's Paradise." *Evening Star*, 8 June 1930, 20-21.
- . "Playing with Lions and Death in Africa." *Evening Star*, 25 May 1930, 20, 22.

- American Association of Museums. *Proceedings of the American Association of Museums*. Vol. 1, Pittsburgh, Penn.: American Association of Museums, 1908.
- American Museum of Natural History. "American Museum of Natural History Annual Report for the Year 1904." New York: American Museum of Natural History, 1905.
- . "American Museum of Natural History Annual Report for the Year 1914." New York: American Museum of Natural History, 1915.
- . "American Museum of Natural History Annual Report for the Year 1924." New York: American Museum of Natural History, 1925.
- . "American Museum of Natural History Annual Report for the Year 1925." New York: American Museum of Natural History, 1926.
- . "American Museum of Natural History Annual Report for the Year 1929." New York: American Museum of Natural History, 1930.
- Anon. *Kansas City Star*, 14 December 1892, 4.
- Arthur, Madge. "New York Learning Joy of Sculpture." *Richmond Times Dispatch*, 3 June 1923, 22.
- Atwood, Wallace W., and Mary N. Flewelling. "Museum Extension Work in Cambridge, Massachusetts." *Museum Work* 1, no. 5 (February 1919): 152-54.
- Barret, S.A. "Training for Museum Work." In *Papers and Reports read at the Twenty-First Annual Meeting of the American Association of Museums*, 49-50. New York City: American Association of Museums, 1926.
- Batty, Joseph H. *Practical Taxidermy, and Home Decoration; Together with General Information for Sportsmen*. New York: Orange Judd Company, 1880.
- Blackmar, Frank Wilson. *Kansas: A Cyclopaedia of State History, Embracing Events, Institutions, Industries, Counties, Cities, Towns, Prominent Persons, Etc.* 2 vols. Vol. 1, Chicago: Standard Publishing Company, 1912.
- Brown, Thomas. *The Taxidermist's Manual, or, the Art of Collecting, Preparing, and Preserving Objects of Natural History*. 5th ed. London: Simpkin Marshall & Co., 1840.
- Browne, Montagu. *Practical Taxidermy; a Manual of Instruction to the Amateur in Collecting, Preserving, and Setting up Natural History Specimens of All Kinds*. London: L. Upcott Gill, 1879.
- . *Artistic and Scientific Taxidermy and Modelling. A Manual of Instruction in the Methods of Preserving and Reproducing the Correct Form of All Natural Objects, Including a Chapter on the Modelling of Foliage, Etc.* London, 1896.
- Bumpus, Hermon C. "Relations of Museums to the Out-of-Doors." In *Papers and Reports read at the Twenty-First Annual Meeting of the American Association of Museums*, 8. New York City: American Association of Museums, 1926.
- Carey, Henry R. "Saving the Animal Life of Africa: A New Method and a Last Chance." *Journal of Mammalogy* 7, no. 2 (1926): 73-85.

- Coleman, Laurence Vail. "Some Principles of Group Construction." *Museum Work* 3, no. 4 (January 1921): 121-25.
- . *The Museum in America*. 3 vols. Washington, D.C.: The American Association of Museums, 1939.
- Comstock, Anna Botsford. *Handbook of Nature-Study for Teachers and Parents, Based on the Cornell Nature-Study Leaflets, with Much Additional Material and Many New Illustrations*. Ithaca, N.Y.: Comstock Publishing Company, 1911.
- Davie, Oliver. *Methods in the Art of Taxidermy*. Philadelphia: D. McKay, 1894.
- . *Methods in the Art of Taxidermy*. Philadelphia: D. McKay, 1900.
- Dill, Homer R. "Training Museum Workers." In *Proceedings of the American Association of Museums, Twelfth Annual Meeting*, 41-46. New York City: American Association of Museums, 1917.
- Dyche, Lewis Lindsay. "On the Care of Mammal Skins Kept for Museum Purposes." *Transactions of the Kansas Academy of Science* 22 (December 31, 1908-Jan. 2, 1909 1909): 363-68.
- Edwards, Clarence E. *Camp-Fires of a Naturalist: The Story of Fourteen Expeditions after North American Mammals: From the Field Notes of Lewis Lindsay Dyche*. New York: Appleton, 1893.
- Elwood, J. W. *A Comprehensive Treatise on Collecting and Preserving All Subjects of Natural History*. Omaha, Neb.: The Northwestern School of Taxidermy, 1905.
- Field Columbian Museum. *Annual Report 1898-1899*. Field Columbian Museum Report Series. Edited by Field Columbian Museum Vol. 1, Chicago: Field Columbian Museum, 1899.
- . *Annual Report 1900-1901*. Field Columbian Museum Report Series. Edited by Field Columbian Museum Vol. II, Chicago: Field Columbian Museum, 1901.
- Goode, George Brown. "The Museums of the Future." In *Report of the National Museum, 1888-89*, edited by Smithsonian Institution, 427-45. Washington, D.C.: Government Printing Office, 1891.
- . "The Principles of Museum Administration." In *Report of the United States National Museum for the Year Ending June 30, 1897*, 193-240: Washington, D.C., 1897.
- . *The Smithsonian Institution, 1846-1896: The History of Its First Half Century*. Washington: Smithsonian Institution, 1897.
- Henderson, Junius. "A Pioneer Venture in Habitat Grouping." *Proceedings of the American Association of Museums* 9 (1915): 87-91.
- Hornaday, William T. *Taxidermy and Zoological Collecting: A Complete Handbook for the Amateur Taxidermist, Collector, Osteologist, Museum-builder, Sportsman, and Traveller*. New York: Charles Scribner's Sons, 1891.
- . "America Leads the World in the Taxidermist's Art." *New York Herald*, 21 March 1901, 9-16.

- Howard, Rossiter. "Principles of Museum Education." *Museum Work* 6, no. 4 (November-December 1923): 121-24.
- Howe, Inez Addie. "Habitat Groups at the Fairbanks Museums." *Museum Work* 4, no. 1 (January 1921): 125-27.
- Hulbert, Henry Woodward. "Correspondence." *The Auk* 9, no. 4 (October 1892): 398-99.
- Lambrecht, Kalman. "In Memorium, Robert Wilson Shufeldt." *The Auk* 52, no. 4 (1935): 359-61.
- Maxwell, William H. "Coöperation in Education." *American Museum Journal* 11, no. 7 (November 1911): 219.
- Miner, Roy W., Alice W. Kendall, Louise Connolly, and Gertrude Underhill. "Educational Training of Museum Instructors: How Far Is Pedagogical Training or Teaching Experience Necessary for Museum Instructors?" *Museum Work* 1, no. 4 (January 1919): 114-17.
- Mortenson, Peter. "Contribution of Museums to Public School Education." *Museum Work* 2, no. 8 (May 1920): 242-46.
- Mumford, Lewis. "The Marriage of Museums." *Scientific Monthly* 7, no. 3 (1918): 252-60.
- National Geographic Society (U.S.). "Elephant, Exploited by Barnum Is Still Top-Ranking Attraction." *Cleveland Gazette*, 25 March 1939, 4.
- Neville, Dennis. "Carl Akeley... He Brought Us Africa." *Comic Cavalcade*, 20 November 1942, 38-45.
- Osborn, Henry Fairfield. "The Museum of the Future." *American Museum Journal* 11, no. 7 (November 1911): 223-26.
- Palmer, F. D. "The Kansas Exhibit of Mounted Specimens of the Animals of the State." *Scientific American* 69, no. 3 (15 July 1893): 41-42.
- Rea, Paul Marshall. "The March of Museum Progress." *Museum Work* 6, no. 1 (May-June 1923): 3-6.
- Roosevelt, Theodore. "My Life as a Naturalist," *The American Museum Journal*, Vol. XVIII, No. 5 (May 1918), 321-50.
- Rowley, John. *The Art of Taxidermy*. New York: D. Appleton and Co., 1898.
- . *Taxidermy and Museum Exhibition*. New York: D. Appleton and Company, 1925.
- Satens, Remi H. "Progress in Taxidermy." *Proceedings of the American Association of Museums* 9 (July 6-9 1915): 104-06.
- Shufeldt, Robert W. "Scientific Taxidermy." *The Great Divide* 1892 (December 1892): 197-98.
- . *Scientific Taxidermy for Museums: Based on a Study of the United States Government Collections*. Report of the U.S. National Museum for 1892. Washington: G.P.O., 1894.
- . "Modern Taxidermy." *The American Field* (18 May 1895): 463-64.

- . "Modern Taxidermy." *The American Field* (25 May 1895): 489-90.
- . "On the Medico-Legal Aspect of Impotency in Women." *The Medico-Legal Journal* 14 (December 1896): 289-96.
- . "Value of the Army Medical Museum as a Teaching Factor." *Museum Work* 1, no. 7 (April 1919): 207-13.
- . "Complete List of My Published Writings, with Brief Biographical Notes." *Medical Review of Reviews* 26 (1920): 17-24, 70-75, 123-30, 200-06, 51-57, 314-20, 68-77, 437-47, 95-98.
- . "The Exhibition Series of Birds and Mammals in the United States National Museum." *Museum Work* 3, no. 6 (March 1921): 178-85.
- Smithsonian Institution. "Taxidermy in the Museum." In *Report of the U.S. National Museum*, 41-52. Washington, D.C.: Government Printing Office, 1895.
- Society of American Taxidermists. "First Annual Report of the Society of American Taxidermists, March 24th, 1880, to March 25, 1881." Rochester, N.Y.: Daily Democrat & Chronicle Book & Job Print, 1881.
- . "Third Annual Report of the Society of American Taxidermists, March 25th, 1882, to July 1, 1883." Washington, D.C.: Gibson Brothers, Printers, 1883.
- Stevens, Albert C. "Analysis of the Phenomena of Panic in the United States in 1893." *The Quarterly Journal of Economics* 8, no. 2 (1894): 117-48.
- The American Association of Museums. "Science." *Museum Work* 1, no. 8 (May 1919): 227-31.
- . "The Habitat Group." *Museum Work* 3, no. 3 (December 1920): 68.
- Tose, Frank. *Trapping, Tanning and Taxidermy*. Columbus, Oh.: The Hunter-trader-trapper co., 1928.
- Wallace, Alfred Russel. "Museums for the People." *Macmillan's Magazine* 19 (1869): 247-62.
- Wood, Wally. "Carl Akeley!" *Two-Fisted Tales*, March 1955, 14-19.

SECONDARY SOURCES

- The Felt Taxidermist*. Bellevue, Wash.: becker&mayer!, 2017.
- Adams, Judith A. "The Promotion of New Technology through Fun and Spectacle: Electricity at the World's Columbian Exposition." *Journal of American Culture* 18, no. 2 (1995): 45-55.
- Alberti, Samuel J. M. M. "Objects and the Museum." *Isis* 96, no. 4 (December 2005): 559-71.
- , ed. *The Afterlives of Animals: A Museum Menagerie*. Charlottesville: University of Virginia Press, 2011.

- Alvey, Mark. "The Cinema as Taxidermy: Carl Akeley and the Preservative Obsession." *Framework: The Journal of Cinema and Media* 48, no. 1 (2007): 23-45.
- Amato, Sarah. *Beastly Possessions: Animals in Victorian Consumer Culture*. Toronto: University of Toronto Press, 2015.
- Anantharaman, Divya, and Katie Innamorato. *Stuffed Animals: A Modern Guide to Taxidermy*. New York: Countryman Press, 2016.
- Andrei, Mary Anne. "Breathing New Life into Stuffed Animals: The Society of American Taxidermists, 1880-1885." *Collections: A Journal for Museum and Archives Professionals* 1, no. 2 (November 2004): 155-201.
- . "Nature's Mirror: How the Taxidermists of Ward's Natural Science Establishment Transformed Wildlife Display in American Natural History Museums and Fought to Save Endangered Species." Dissertation, University of Minnesota, 2006.
- Armitage, Kevin C. *The Nature Study Movement: The Forgotten Popularizer of America's Conservation Ethic*. Lawrence: University Press of Kansas, 2009.
- Asma, Stephen T. *Stuffed Animals & Pickled Heads: The Culture and Evolution of Natural History Museums*. New York: Oxford University Press, 2001.
- Baird, Davis. "Models: Representing Things." Chap. 2 In *Thing Knowledge: A Philosophy of Scientific Instruments*, 21-40. Berkeley: University of California Press, 2004.
- Barrow, Mark V., Jr. *A Passion for Birds: American Ornithology after Audubon*. Princeton, N.J.: Princeton University Press, 1998.
- . "The Specimen Dealer: Entrepreneurial Natural History in America's Gilded Age." *Journal of the History of Biology* 33, no. 3 (Winter 2000): 493-534.
- Bennett, Jim. "Museums and the History of Science: Practitioner's Postscript." *Isis* 96, no. 4 (December 2005): 602-08.
- Benson, Maxine. *Martha Maxwell, Rocky Mountain Naturalist*. Lincoln: University of Nebraska Press, 1986.
- Berkowitz, Carin. "The Illustrious Anatomist: Authorship, Patronage, and Illustrative Style in Anatomy Folios, 1700-1840." *Bulletin of the History of Medicine* 89, no. 2 (2015): 171-208.
- Blitz, Matt. "Why Taxidermy Is Being Revived for the 21st Century." *Smithsonian Magazine*, 19 June 2015.
- Blomquist, Larry. *Henry Wichers Inchumuk: A Lifetime of Achievement*. 2007, Hammond, La.: *Breakthrough Magazine*. DVD.
- Blum, Ann Shelby. *Picturing Nature: American Nineteenth-Century Zoological Illustration*. Princeton, N.J.: Princeton University Press, 1993.
- Bodry-Sanders, Penelope. *Carl Akeley: Africa's Collector, Africa's Savior*. Paragon House: St. Paul, Minn., 1991.

- . *African Obsession: The Life and Legacy of Carl Akeley*. Jacksonville, Fla.: Batax Museum Publishing, 1998.
- Bolotin, Norm, and Christine Laing. *The World's Columbian Exposition: The Chicago World's Fair of 1893*. Champaign: University of Illinois Press, 2002.
- Boyer, Bruce Hatton. *The Natural History of the Field Museum—Exploring the Earth and Its People*. Chicago: Field Museum, 1993.
- Braren, Angela. "Curating Himself: The Simson/ Tose Dioramas of the California Academy of Sciences." *Sightlines* (2012): 86-107.
- Brinkley, Douglas. *The Wilderness Warrior: Theodore Roosevelt and the Crusade for America*. New York: Harper Perennial, 2009.
- Burg, David F. *Chicago's White City of 1893*. Lexington: University Press of Kentucky, 2015.
- Cain, Victoria. "Nature under Glass: Popular Science, Professional Illusion and the Transformation of American Natural History Museums, 1870-1940." Dissertation, Columbia University, 2007.
- Chambers, Paul. *Jumbo: The Greatest Elephant in the World*. Hanover, N.H.: Steerforth Press, 2008.
- Clark, J. L. *Good Hunting: Fifty Years of Collecting and Preparing Habitat Groups for the American Museum*. Norman: University of Oklahoma Press, 1966.
- Conn, Steven. *Museums and American Intellectual Life, 1876-1926*. Chicago: The University of Chicago Press, 1998.
- Cornish, Adam R. S. *Much Ado About Stuffing: The Best and Worst of @Craptaxidermy*. Kansas City: Andrews McMeel Publishing, 2014.
- Crist, Eileen. *Images of Animals: Anthropomorphism and Animal Mind*. Animals, Culture, and Society. Philadelphia: Temple University Press, 1999.
- Darke, Verity. "Reading the Body-Object: Nineteenth-Century Taxidermy Manuals and *Our Mutual Friend*." *19: Interdisciplinary Studies in the Long Nineteenth Century* 24 (2017).
- Daston, Lorraine, ed. *Things That Talk: Object Lessons from Art and Science*. New York: Zone Books, 2004.
- Daston, Lorraine, and Peter Galison. *Objectivity*. Cambridge, Mass: MIT Press, 2007.
- Daston, Lorraine, and Gregg Mitman. *Thinking with Animals: New Perspectives on Anthropomorphism*. New York: Columbia University Press, 2005.
- Dennett, Andrea Stulman. *Weird & Wonderful: The Dime Museum in America*. New York: New York University Press, 1997.
- Eastoe, Jane. *The Art of Taxidermy*. London: Pavilion Books, 2012.
- Farber, Paul Lawrence. "The Development of Taxidermy and the History of Ornithology." *Isis* 68, no. 4 (December 1977): 550-66.

- Forgan, Sophie. "Building the Museum: Knowledge, Conflict, and the Power of Place." *Isis* 96, no. 4 (2005): 572-85.
- Garibay Group. "Habitat Dioramas and Sense of Place: Factors Linked to Visitors' Feelings about the Natural Places Portrayed in Dioramas." Oakland, Calif.: Oakland Museum of California, 2013.
- . "Habitat Dioramas and Sense of Place: OCMA Natural Sciences Gallery." National Science Foundation, 2014.
- Graslie, Emily. "The World Taxidermy Championships!" In *The Brain Scoop*: YouTube, 2017.
- Griffiths, Alison. "Life Groups and the Modern Museum Spectator." Chap. 1 In *Wondrous Difference: Cinema, Anthropology, and Turn-of-the-Century Visual Culture*, 3-45. New York: Columbia University Press, 2002.
- Grunert, Jonathan D. "Aesthetics for Birds: Institutions, Artist-Naturalists, and Printmakers in American Ornithology, from Alexander Wilson to John Cassin." M.A. Thesis, Virginia Polytechnic Institute and State University, 2014.
- Haraway, Donna Jeanne. "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908-1936." *Social Text* 11 (Winter 1984-1985): 20-64.
- Harris, Neil, William De Wit, James Gilbert, and Robert W. Rydell. *Grand Illusions: Chicago's World's Fair of 1893*. Chicago: Chicago Historical Society (1993).
- Hellman, Geoffrey. *Bankers, Bones and Beetles: The First Century of the American Museum of Natural History*. New York: The Natural History Press, 1969.
- Henning, Michelle. "Anthropomorphic Taxidermy and the Death of Nature: The Curious Art of Hermann Ploucquet, Walter Potter, and Charles Waterton." *Victorian Literature and Culture* 35 (2007): 663-78.
- Henson, Pamela M. "A National Science and a National Museum." In *Museums and Other Institutions of Natural History, Past, Present, and Future*, edited by Alan E. Leviton and Michele Aldrich, 34-57. San Francisco, Calif.: California Academy of Sciences, 2004.
- Herman, Daniel Justin. *Hunting and the American Imagination*. Washington D.C.: Smithsonian Institution Press, 2001.
- Herron, John. "Stuffed: Nature and Science on Display." Chap. 3 In *Rendering Nature: Animals, Bodies, Places, Politics*, edited by Marguerite S. Shaffer and Phoebe S. K. Young, 48-69. Philadelphia: University of Pennsylvania Press, 2015.
- Hinsley, Curtis M., and David R. Wilcox, eds. *Coming of Age in Chicago: The 1893 World's Fair and the Coalescence of American Anthropology*. Lincoln: University of Nebraska Press, 2016.
- Jardine, Nicholas, James A. Secord, and E. C. Spary, eds. *Cultures of Natural History*. Cambridge: Cambridge University Press, 1996.
- Johnson, Steve. "Unfrozen in Time: New Life, and Crowdfunding, for Dioramas at Field Museum." *Chicago Tribune*, 8 April 2015.

- Johnston, David W. *The History of Ornithology in Virginia*. Charlottesville: University of Virginia, 2003.
- Kalshoven, Petra Tjitske. "Gestures of Taxidermy: Morphological Approximation as Interspecies Affinity." *American Ethnologist* 45, no. 1 (2018): 34-47.
- Karp, Ivan, and Corinne A. Kratz. "Collecting, Exhibiting, and Interpreting: Museums as Mediators and Midwives of Meaning." *Museum Anthropology* 37, no. 1 (2014): 51-65.
- Kaufmann, Fritz. "The Phenomenological Approach to History." *Philosophy and Phenomenological Research* 2, no. 2 (December 1941): 159-72.
- Kipp, Margaret E. I., and D. Grant Campbell. "Patterns and Inconsistencies in Collaborative Tagging Systems: An Examination of Tagging Practices" *Proceedings of the American Society for Information Science and Technology* 43, no. 1, (2006): 1-18.
- Kirk, Jay. *Kingdom under Glass: A Tale of Obsession, Adventure, and One Man's Quest to Preserve the World's Great Animals*. New York: Henry Holt, 2010.
- Kohler, Robert E. *Landscapes & Labscapes: Exploring the Lab-Field Border in Biology*. Chicago: University of Chicago Press, 2002.
- . *All Creatures: Naturalists, Collectors, and Biodiversity, 1850-1950*. Princeton, N.J.: Princeton University Press, 2006.
- Kohlstedt, Sally Gregory. "Henry A. Ward: The Merchant Naturalist and American Museum Development." *Journal of the Society for the Bibliography of Natural History* 9 (1980): 647-61.
- . "History in a Natural History Museum: George Brown Goode and the Smithsonian Institution." *Public Historian* 10, no. 2 (1988): 7-26.
- . "Nature Not Books: Scientists and the Origins of the Nature Study Movement in the 1890s." *Isis* 96 (September 2005): 324-52.
- . "Thoughts in Things: Modernity, History, and North American Museums." *Isis* 96, no. 4 (December 2005): 586-601.
- . *Teaching Children Science: Hands-on Nature Study in North America, 1890-1930*. Chicago: University of Chicago Press, 2010.
- Larson, Erik. *The Devil in the White City: Murder, Magic, and Madness at the Fair That Changed America*. New York: Vintage, 2004.
- Lightman, Bernard, and Ann Shteir, eds. *Figuring it Out: Science, Gender and Visual Culture*. Hanover, N. H.: Dartmouth College Press, 2006.
- Lippincott, Gail. "'Something in Motion and Something to Eat Attract the Crowd': Cooking with Science at the 1893 World's Fair." *Journal of Technical Writing and Communication* 33, no. 2 (2003): 141-64.
- Lunde, Darrin P. *The Naturalist: Theodore Roosevelt, a Lifetime of Exploration, and the Triumph of American Natural History*. New York: Broadway Books, 2017.

- Madden, Dave. *The Authentic Animal: Inside the Odd and Obsessive World of Taxidermy*. New York: St. Martin's Press, 2011.
- Marbury, Robert. *Taxidermy Art: A Rogue's Guide to the Work, the Culture, and How to Do It Yourself*. New York: Artisan, 2014.
- McVey, James. *Martha Maxwell: Natural History Pioneer*. Palmer Lake, Colo.: Filter Press, 2005.
- Metzler, Sally. *Theatres of Nature: Dioramas at the Field Museum*. Chicago: The Field Museum, 2007.
- Milgrom, Melissa. *Still Life: Adventures in Taxidermy*. Boston: Houghton Mifflin Harcourt, 2010.
- Morris, Patrick A. *A History of Taxidermy: Art, Science and Bad Taste*. Ascot, Berkshire: P.A. Morris, 2010.
- . *Walter Potter's Curious World of Taxidermy*. New York: Blue Rider Press, 2014.
- Nance, Susan. *Animal Modernity: Jumbo the Elephant and the Human Dilemma*. London: Palgrave MacMillan, 2015.
- Northwestern School of Taxidermy. *The Fascinating Art of Taxidermy: How You Can Learn Its Secrets in Your Own Home*. Omaha, Neb.: Northwestern School of Taxidermy,, ca. 1960.
- Nyhart, Lynn K. *Modern Nature: The Rise of the Biological Perspective in Germany*. Chicago: University of Chicago Press, 2009.
- Pauly, Philip J. *Biologists and the Promise of American Life: From Meriwether Lewis to Alfred Kinsey*. Princeton, N.J.: Princeton University Press, 2000.
- Pinch, Trevor J., and Wiebe E. Bijker. "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." In *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, edited by Wiebe E. Bijker, Thomas P. Hughes and Trevor J. Pinch, 18-50. Cambridge, Mass.: MIT Press, 1987.
- Poliquin, Rachel. *The Breathless Zoo: Taxidermy and the Cultures of Longing*. University Park: Pennsylvania State University Press, 2012.
- Quinn, Stephen C., and American Museum of Natural History. *Windows on Nature: The Great Habitat Dioramas of the American Museum of Natural History*. New York: Harry N. Abrams, 2005.
- Rader, Karen A., and Victoria E. M. Cain. *Life on Display: Revolutionizing U.S. Museums of Science and Natural History in the Twentieth Century*. Chicago: University of Chicago Press, 2014.
- Rasmussen, Bryan B. "Technologies of Nature: The Natural History Diorama and the Preserve of Environmental Consciousness." *Victorian Studies* 60, no. 2 (2018): 255-68.

- Rexer, Lyle, Rachel Klein, and American Museum of Natural History. *American Museum of Natural History: 125 Years of Expedition and Discovery*. New York: H.N. Abrams in association with the American Museum of Natural History, 1995.
- Reznek, Samuel. "Unemployment, Unrest, and Relief in the United States During the Depression of 1893-97." *Journal of Political Economy* 61, no. 4 (1953): 324-45.
- Rieppel, Lukas. "Bringing Dinosaurs Back to Life: Exhibiting Prehistory at the American Museum of Natural History." *Isis* 103, no. 3 (September 2012): 460-90.
- . *Assembling the Dinosaur: Fossil Hunters, Tycoons, and the Making of a Spectacle*. Cambridge, Massachusetts: Harvard University Press, 2019.
- Rosenberger, Robert. "The Phenomenology of Slowly-Loading Webpages." *Ubiquity* (April 2007).
- Schuessler, Jennifer. "The Dark Side Gets Its Due." *The New York Times*, 26 June 2014.
- . "Morbid Anatomy Closes Its Doors." *The New York Times*, 20 December 2016.
- Schwarzer, Marjorie, and Mary Jo Sutton. "The Diorama Dilemma." National Science Foundation, 2009-10.
- Secord, James A. "Knowledge in Transit." *Isis* 95, no. 4 (2004): 654-72.
- Sellers, Charles Coleman. *Mr. Peale's Museum: Charles Willson Peale and the First Popular Museum of Natural Science and Art*. New York: Norton, 1980.
- Shapin, Steven. "The Invisible Technician." *American Scientist* 77 (1989): 554-63.
- Sharp, William, and Peggy Sullivan. *The Dashing Kansan: Lewis Lindsay Dyche: The Amazing Adventures of a Nineteenth-Century Naturalist and Explorer*. Kansas City, Mo.: Harrow Books in association with the Museum of Natural History the University of Kansas, 1990.
- Shelton, Anthony. "Critical Museology: A Manifesto," *Museum Worlds*, vol. 1, iss 1 (2013).
- Sica, Alan. "Handbooks Past and Present." *Contemporary Sociology* 18, no. 4 (1989): 504-08. DOI: 10.2307/2073042.
- Star, Susan Leigh. "Craft Vs. Commodity, Mess Vs. Transcendence: How the Right Tool Became the Wrong One in the Case of Taxidermy and Natural History." In *The Right Tools for the Job: At Work in Twentieth-Century Life Sciences*, edited by Adele Clarke and Joan H. Fujimura, 257-86. Princeton, N.J.: Princeton University Press, 1992.
- Tiechert, Pietro. "Carl Akeley: A Tribute to the Founder of Shotcrete." *Shotcrete Magazine* (Summer 2002): 10-12.
- Tobias, Ronald B. *Behemoth: The History of the Elephant in America*. New York: Harper Centennial, 2013.
- Tolley, Kim. *The Science Education of American Girls*. New York: Routledge, 2003.
- Trescott, Jacqueline. "Look Alive!" *The Washington Post*, 17 July 2003.
- Ulaby, Neda. "Smithsonian Taxidermist: A Dying Job Title." *NPR*, 26 April 2010.

- Vainshtein, Annie. "This California 'Rogue Taxidermist' Turns Dead Animals into Teddy Bears." *SFGate*, 10 January 2019.
- Waldau, Paul. *Animal Studies: An Introduction*. New York: Oxford University Press, 2013.
- Walker, William S. *A Living Exhibition: The Smithsonian and the Transformation of the Universal Museum*. Public History in Historical Perspective. Amherst: University of Massachusetts Press, 2013.
- Welch, Margaret. *The Book of Nature: Natural History in the United States, 1825-1875*. Boston: Northeastern University Press, 1998.
- Wetmore, Alexander. "The Dyche Museum at the University of Kansas." *Science* 94, no. 2452 (December 26, 1941 1941): 593-98.
- Wicker, Elmus. "The Banking Panic of 1893." Chap. 4 In *Banking Panics of the Gilded Age*, 52-82. New York: Cambridge University Press, 2006.
- Wieckowski, Alex. "Only in Brooklyn: A Taxidermy Studio Thrives in Greenpoint." *Brooklyn Daily Eagle*, 4 January 2019.
- Williams, Patricia M. "The Museum 'Trademark'." *Bulletin of the Field Museum of Natural History* 39, no. 1 (1968): 1-5.
- Williams, Stephen L., and Catharine A. Hawks. "History of Preparation Materials Used for Recent Mammal Specimens." In *Mammal Collection Management*, edited by Hugh H. Genoways, Clyde Jones and Olga L. Rossolimo, 21-49. Lubbock, Tex.: Texas Tech University, 1987.
- Wilson, Anna. "Sexing the Hyena: Intraspecies Readings of the Female Phallus." *Signs: Journal of Women in Culture & Society* 28, no. 3 (2003): 755-90.
- Wonders, Karen. *Habitat Dioramas: Illusions of Wilderness in Museums of Natural History*. Uppsala: Almqvist & Wiksell, 1993.
- World Taxidermy & Fish Carving Championships. "WTC 2019." <https://www.taxidermy.net/wtc/>.
- Wylie, Caitlin D. "Trust in Technicians in Paleontology Laboratories." *Science, Technology, & Human Values* 43, no. 2 (2018): 324-48.
- Yochelson, Ellis L. *The National Museum of Natural History: 75 Years in the New National Museum*. Washington: Smithsonian Institution Press, 1985.
- Yonan, Michael. *Messerschmidt's Character Heads: Maddening Sculpture and the Writing of Art History* New York: Routledge, 2018.