

The Art of Authority: Exhibits, Exhibit-Makers, and the Contest for Scientific Status in the American Museum of Natural History, 1920–1940

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Argument

In the 1920s and 1930s, the growing importance of habitat dioramas at the American Museum of Natural History forced staff members to reconsider what counted as scientific practice and knowledge. Exhibit-makers pressed for more scientific authority, citing their extensive and direct observations of nature in the field. The museum's curators, concerned about their own eroding status, dismissed this bid for authority, declaring that older traditions of lay observation were no longer legitimate. By the 1940s, changes inside and outside the museum had destroyed any lingering notions that what exhibit-makers garnered from observing raw materials constituted scientific knowledge.

Harold Anthony wanted a raise. In 1925, the American Museum of Natural History had paid the thirty-five year old curator an annual salary of only \$4,600, and he found it almost impossible to support his wife and three children on this amount, much less save for sickness or emergencies. "My salary is so little more than that of manual laborers that we must do all the manual labor about my home ourselves, because I cannot afford to have it done," the mammalogist complained to Henry Fairfield Osborn, the president of the museum's board of trustees. This was, Anthony wrote, "rather humiliating" (Anthony to Osborn, 2 October 1925, in DM-AMNH). Osborn agreed to increase the young curator's annual salary to \$5,000, and Anthony expressed profound gratitude.

Had he realized what the museum's own laborers were making, Anthony might not have been so delighted with his raise. That same year, the talented chief of the museum's Department of Preparation, Arts, and Installation, James L. Clark, had been paid \$15,000, more than three times Anthony's salary and fully \$3,000 more than the museum's director, Frederic Lucas. (Lucas was not pleased when he learned about this disparity, but the tactful director kept his temper. In a letter to Osborn, he "respectfully" suggested "it would be no more than fair that I should receive . . . the difference between Mr. Clark's . . . salary and mine") (cited in Hellman 1968, 155).

This disparity in pay was a relatively recent phenomenon at the museum. Before the turn of the century, the men who prepared specimens and constructed exhibit cabinets for the American Museum had made little more than its janitors. But a slow revolution

in display techniques dramatically altered exhibit-makers' position in the medium. In the 1900s and 1910s, museum administrators became increasingly determined to educate the public about nature and science through habitat dioramas, murals, and models, and they hired accomplished artists and taxidermists to help them realize this vision. These new exhibits required more skill and scientific knowledge to create, and exhibit-makers' salaries rose sharply in these decades, to roughly half of what curators took home.

At first, this increase in exhibit-makers' salary seemed wholly justified to the museum's curators. In the first two decades of the twentieth century, many museum scientists embraced the idea that taxidermists and other exhibit-makers derived valid scientific understanding from both careful observation and the production of physical objects – what Pamela Smith has termed “artisanal epistemology.”¹ Many curators at the American Museum of Natural History viewed exhibit-makers as holding some scientific status, by virtue of their field observations, their work with natural objects, and their passion for the natural world. Moreover, curators appreciated the visual appeal of these new exhibits, and agreed that exhibit-makers should receive their due for helping the museum realize its mission to educate the public about the life sciences.

By the 1920s and 1930s, however, curators had come to resent exhibit-makers and their creations. The landscape of the life sciences had changed dramatically between 1900 and 1930, and many curators redefined what constituted scientific knowledge and scientific work in those years. And many among them argued that the scientific vision crystallized by the museum's famous habitat dioramas was profoundly outdated, the stuff of nineteenth century natural history, not modern biology. Yet in these same decades, administrators came to treat exhibit-makers as well as – or better – than the museum's most productive life scientists. Exhibitions had become truly spectacular, as had the paychecks of some of the taxidermists, artists, and modelers who built them. As more of the museum's scientific staff learned of the high salaries paid to taxidermists – now called preparators – and artists, a furious Harold Anthony and other offended curators wrote the administration to insist that “research workers of all grades . . . be [as] favored in the matter of salary as the hundreds of other employees of the Museum” (16 February 1928, in AMNH).

Anthony's demands for higher pay for his peers resulted from new questions about the ways the museum defined and valued scientific work. Since the founding of the American Museum, its administrators and trustees had consistently declared science the backbone of the institution and all its activity. Yet the growing importance of habitat dioramas and other large-scale exhibition work had upended longstanding political and financial hierarchies within the museum. Curators interpreted the lagging appropriations and salaries for scientific departments in the 1920s and 1930s as clear indicators of their worth to trustees and administrators. They began to worry about

¹ For more on artisanal epistemology, see Pamela Smith's excellent history of craft knowledge in early modern Europe (Smith 2004).

their status within the museum, a concern sharpened by new uncertainties about museum-based scientists' standing within the broader life science community. Some complained bitterly that what exhibit-makers and administrators defined as "scientific" work was, in fact, mere observation, art, or outdated expositions of "kindergarten" facts (Wissler 1925).

Throughout the interwar decades, the prominence of habitat dioramas forced the American Museum's scientists and exhibit-makers to redefine their respective contributions to museum work and to reconsider what comprised scientific practices and scientific knowledge. Did, as exhibit-makers and a handful of older curators suggested, making two- and three-dimensional visual representations of the natural world qualify as scientific work? While some of the museum staff stoutly maintained that exhibit-makers' field observations and corresponding representations qualified as scientific knowledge, others insisted that exhibit-makers were little more than talented artisans with an eye for beauty. This group agreed that natural history museums needed such exhibit-makers more than ever, but they also made it clear that they begrudged the increasing prominence of these technicians, and did not consider them contributors to the museum's scientific mission. Indeed, by the late 1920s, a sizable fraction of the museum's scientific staff disavowed the notion that lay observations or the recording of those observations in paper, plaster, or paint were direct paths to scientific knowledge. The polite exchanges, clenched-jawed debates, and occasional eruptions of outright hostility over the proper roles of exhibit-makers in the museum allow historians to glean new insights into the diminishing status of lay observation in the twentieth-century life sciences.² Though many museum scientists continued to value lay observation well into the late 1920s and early 1930s, by the 1940s, changes inside and outside the museum had destroyed any lingering notions that what exhibit-makers garnered from observing or working with raw materials constituted scientific knowledge.

The Impact of Display

Between the early 1890s, when the American Museum of Natural History first took interest in improving its exhibition methods, and the 1910s, when those exhibition methods took on new importance, staff members generally categorized themselves, to borrow a phrase from Steven Shapin and Barry Barnes, by "head and hand" (Shapin and Barnes 1976, 231–254). Curators considered themselves intellectual professionals, while taxidermists, also called preparators, generally described themselves as the

² Although these kinds of debates took place at other natural history museums in the United States, in this article, I will focus exclusively on the American Museum of Natural History. The American Museum prided itself on excellence in both research and display; its staff members in both fields tended to be more ambitious and more competitive than those of smaller, poorer, or more specialized museums, and the financial and social stakes of this debate tended to be higher as a result. At the American Museum, tempers flared especially high over these issues, ensuring a rich series of archival and published sources pertaining to the issue.

“hands” of the museum world. Since the museum’s founding, curators had been at the head of the pecking order; they managed departments, directed exhibit-makers’ work and maintained close relationships with museum administrators, trustees, and donors. Preparators, on the other hand, were largely invisible, appreciated only by the curators who supervised them.

Shared interests in the natural world, the clear hierarchy within museum work, and the ability of preparators to move up the ranks – if they so desired – kept the peace between the two classes of workers for the first two decades of the twentieth century. Despite their different titles and decidedly different status, curators and preparators came from similar backgrounds; most had roamed forest and field as children, and had come of age observing and collecting for scientific expeditions (Cain 2006; Kohler 2006). Their knowledge of – and passion for – the natural world overlapped. Moreover, the fluidity of the scientific and museum communities prior to the 1910s ensured that ambitious individuals could improve their hierarchical status, for many a curator had started as a preparator or expedition assistant. Throughout the 1910s, in fact, several branches of the life sciences still depended heavily upon the contributions of amateurs, and curators routinely observed, collected, sketched, and stuffed specimens alongside preparators. The museum’s field scientists and curators, especially those who had come of age in the late nineteenth century, had deep respect for knowledge gained through the experience of hand and eye, though they remained extremely conscious of the museum’s institutional hierarchy.³ (Even the imperious Henry Fairfield Osborn asserted that “the well-trained naturalist, familiar with animals and plants in their living forms and natural surroundings is the peer of the worker with an exclusively laboratory education”) (cited in Rainger 1991, 107).

In these same years, the American Museum revolutionized its exhibition strategies. The museum’s exhibit-makers built group displays and habitat dioramas, and inserted them between and beyond the long, polished rows of specimen cases. Board of Trustees president Morris K. Jesup, director Hermon Bumpus, and the various curators and exhibit-makers involved hoped these new kinds of displays would not only convey information about the natural world to museum visitors in a clearer, more attractive fashion, but would allow onlookers to understand the complex relationships between featured specimens and their environs (Wonders 1993; Nyhart 2009).⁴ They also

³ Up through the 1900s, most curators firmly believed their labor and reputations proved more than any combination of letters that might trail after one’s name. While a few held master’s degrees and even Ph.D.s, many had lacked funds for college, and several had abandoned their studies in their early teens – fewer than 2 percent of college-age men attended college in 1870, and most of those did not earn a bachelor’s degree. Few considered the lack of higher education a great hindrance, for they had cut their teeth in an era when scientific professionals and serious amateur naturalists were not yet clearly separated by standards, practices, or status.

⁴ The museum’s zoologists weren’t the only curators interested in depicting the interaction between individual, group, and environment. Anthropologists and paleontologists were also eager to highlight these themes, and made similarly extensive use of “group displays,” dioramas and murals as a result (Rainger 1991; Griffiths 2002; Clark 2008).

hoped dramatic depictions of animals in the wild would inspire visitors to support broader conservation efforts. Though a few staff scientists balked at these changes, protesting that science had been subordinated to aesthetics, most were delighted by the broad public interest in the new displays. By the 1910s “ugliness was sufficient to condemn any exhibit, no matter how scientific,” recalled one curator (Wissler c. 1943, 444.)

This new approach to exhibition made exhibit-makers’ observations of animal behavior and their knowledge of animal bodies more visible than ever before. If habitat dioramas were to present scientific fact by freezing nature, they had to be absolutely accurate and lifelike; as German critic Benno Wandolleck put it in 1905, “the slightest lapse makes the thing laughable” (as cited in Nyhart 2004, 309). In order for habitat dioramas to realize their full potential, taxidermists and artists needed real knowledge of the anatomy, the habits, and what staff members called the “spirit” of the specimens. As early as 1892, Smithsonian curator Robert Shufeldt had declared that a taxidermist should have “a complete training in biology, with especial emphasis having been placed upon his studies in comparative morphology, so as to be familiar, as far as possible, with the vertebrate skeleton and topographical anatomy, to include more particularly the study of the superficial muscles of vertebrates” (Shufeldt 1892, 7–8). Curators and exhibit-makers at the American Museum embraced Shufeldt’s larger point: really fine preparation of specimens and precise but vivid background painting required a foundation of considerable scientific knowledge, one based both on book study and field observations.

To gain such knowledge and capture the elusive quality of what taxidermy manuals called “life expression,” members of the museum’s Department of Preparation, Arts and Installation spent hours observing animals in their natural environments (Davie 1894, 262). Exhibit-makers often accompanied scientists into the field to sketch, and when they couldn’t, they watched zoo animals to grasp better their musculature and kinetic motion. During his first few years as a museum taxidermist, the young James Clark spent every weekend and holiday at the Central Park Zoo and the New York Zoological Gardens, where he “modeled and sketched and sketched and modeled” (Clark 1966, 11). Preparators took frequent field trips, attended evening lectures and classes on the natural sciences, and labored alongside scientists in order to understand the ecological relations of animals. (Despite the knowledge they gained on the job, they rarely got much credit: In the American Museum’s early bird dioramas, for instance, Frank Chapman, curator of ornithology, received fulsome public praise, while some of the preparators who worked on the exhibits weren’t publicly acknowledged.)

Curators, preparators, and administrators agreed that compelling exhibits required not only scientific knowledge but also artistic gifts; new technologies of preservation and reconstruction now allowed preparators to sculpt animals rather than merely skin and stuff them, and murals and dramatic background painting had become increasingly important to the museum’s exhibition program. Consequently, in the late 1900s and the 1910s, the museum’s new board president, Henry Fairfield Osborn, and

its new director, Frederic A. Lucas, also hired a series of accomplished professional painters, taxidermists, and modelers to help the museum achieve this objective. As one background painter noted in 1915, “there are not many who seem to combine the sympathy with nature, the specific knowledge of their subject and the technical ability to paint,” so the American Museum snapped up everyone they could whose talents spanned these categories (cited in Sutton 1979, 10). Though Bumpus had hired the unknown Rhode Island School of Design graduate James Clark to help make the displays more vivid in 1902, by the 1910s, the museum routinely employed or commissioned more widely recognized artists and preparators: well-known animal painters Carl Rungius, Louis Agassiz Fuertes, and Charles Knight; commercial artists Belmore Brown and R. Bruce Horsfall; landscape painters Frank Wilbur Stokes, Albert Operti, William R. Leigh, and Zarh Pritchard; and, perhaps most notably, Carl Akeley, an accomplished sculptor and the nation’s best-known taxidermist (Haraway 1989; Wonders 1993; Andrei 2006).

The new displays and hires required a hefty financial investment, but the museum’s administrators believed the cost was well worth it. Spectacular exhibitions inspired considerable private philanthropy, generating thousands of dollars in donations. They also seemed to guarantee city funding; New York City’s politicians provided funds to the museum on the condition that it would educate the public. Since most politicians measured public education through attendance statistics, museum officials increased the number of crowd-pleasing murals and dioramas (Wissler c. 1943, 444). The general income of the American Museum steadily increased from \$446,000 in 1910, to \$946,000 a year in 1920, to \$1,827,000 in 1930. The amount raised through private donations in the 1920s was more than ten times what it had been in the 1910s (*ibid.*). Administrators, pleased by the expansion of the museum’s coffers, ignored curators’ quiet criticism of the increased resources devoted to these displays.

Throughout the first two decades of the twentieth century, curators and administrators at the American Museum celebrated these artists and the work of the Department of Preparation, Arts and Installation more broadly. They combined “realism and artistic atmosphere” so effectively that visitors could not help but be interested in the information conveyed, declared curator of herpetology Mary Dickerson in 1914 (Dickerson 1914, 90). While curators praised preparators for their keen eyes and gifted hands, administrators lauded them as accomplished professionals who upheld the scientific and public trust. The larger museum community in the United States also took special notice of the prowess of the exhibit-makers at the American Museum. “We have before us a man of a new calling; a man whose work is as dignified as that of a doctor or a professor,” announced Iowan museum director Homer Dill at the 1916 meeting of the American Association of Museums (Dill 1916). Though Dill was not referring specifically to the taxidermists at the American Museum, he might as well have been; by the 1910s, the museum community generally agreed

that the exhibit-makers employed by American Museum were the finest in the nation, if not the world.⁵

Shifting Values

Though curators had long dominated the process of exhibit building, closely supervising exhibit-makers as they worked, this hierarchy began to change in the late 1910s. Habitat dioramas had become the museums' most iconic and most popular displays. Though the increasingly elaborate exhibits absorbed the museum's most precious resources – time and money – at unprecedented levels, they also served as the financial anchors of the museum's research and display programs, attracting many thousands of dollars in donations each year. Administrators and philanthropists, working closely with Akeley, Clark, and other preparators, began to plan dramatic themed halls filled with dioramas, halls that required several years, and sometimes more than a decade, to design and build (Kennedy 1968; Haraway 1989; Cain 2006). Curators continued to maintain official authority over exhibits, but they increasingly bowed to preparators' artistic and technical expertise, and often allowed them to lead the development of these time-consuming displays.

This allowed curators to devote more time to research, but it meant they could claim less and less credit for the dioramas, which had emerged as the loci of real power in the museum. Exhibit-makers reaped fuller benefits from their work as a result. Administrators, donors, and trustees acclaimed the museum's artists and preparators in both press reports and private correspondence.⁶ Staff members at other museums were equally effusive about the work of the American Museum's exhibit-makers, giving them full credit for the exhibits they produced: "I just saw Jim's rhino when I was in New York last spring and without exception, it is the most perfect and most beautiful piece of work I have ever seen," the director of the Colorado Museum of Natural History wrote a colleague (Figgins to Clark, 20 November 1917, in CMNH).⁷ In turn, preparators became more confident, more ambitious, and less willing to defer to the curatorial staff.

Dioramas significantly altered the dynamics of expeditions, exhibition, and social relations within the museum, and the alterations rarely worked to the curators' advantage. By the late 1910s and early 1920s, members of the scientific staff had begun

⁵ While English and European museums had also begun to build habitat dioramas in the late nineteenth and early twentieth centuries, their exhibits tended to be less spectacular and less extensive than those of their American counterparts, with the possible exception of the natural history museum in Uppsala, Sweden, and a few German exhibits. Many European museums were slow to introduce such displays into their museums – the *Jardin des Plantes*, in Paris, for instance, did not build habitat dioramas until the 1920s.

⁶ They rarely acknowledged the many women – usually the wives of exhibit-makers – who participated in exhibit making, however.

⁷ "Jim" refers to preparator James Clark.

to grumble about the displays and their makers in private correspondence, though they continued to applaud both in public venues. Since the 1880s, curators at the American Museum had seen entertainment as a necessary salt for their displays: a little could enhance an exhibition, but too much was distasteful, even unhealthy. By the early 1920s, many of the American Museum's curators worried aloud in letters, memoranda, and even professional papers that dioramas had become far too visually extravagant, introducing not only the techniques, but also the goals of commercial entertainment to an institution formerly devoted to education and research. In the eyes of many curators, dioramas – and the overwhelming emphasis on visitor attendance and public pleasure that they represented to many members of the scientific staff – demeaned scientific education, endangered scientific research, and could (or might) destroy the credibility of scientists themselves.

By the mid-1920s, tensions between staff members in the museum could no longer remain below the surface. Many curators came to despise the exhibits outright, and angrily declared that habitat dioramas were distorting the museum's mission. Curators began to protest that the resources lavished on habitat dioramas were depriving the scientific staff of the means to pursue their own research. Curators frequently complained, for example, that dioramas had corrupted expedition work. The majority of interwar museum expeditions were launched to collect specimens intended specifically for exhibition, and it was increasingly unclear whose professional needs took priority on these expeditions – the museum's scientists or its exhibit-makers. In the 1900s and 1910s, it had been standard practice to send curators into the field to observe and collect (Kohler 2006). By the late 1920s, scientific staff members were reduced to planning the expeditions while preparators and artists worked in the field without curatorial supervision. Ornithologist Frank Chapman grumbled that organizing expeditions intended to collect solely for exhibition “has been my chief occupation for some time and under circumstances breeding many complications . . . all these affairs arranged chiefly in the interests of others” (Chapman to Osgood, 31 Oct 1928, cited in Kohler 2006, 122). On those donor-sponsored expeditions organized with the express purpose of collecting specimens for habitat dioramas, exhibit-makers were often the only museum representatives the donors invited along. When philanthropist Robert Earle McConnell went to Wyoming to hunt antelope for a diorama, for instance, preparator Robert H. Rockwell accompanied him. No other collector or member of the museum staff went along; Rockwell was the ranking scientist on the trip (Rockwell to Clark, 26 July 1936, in DM-AMNH). By 1934, Curator of Mammalogy Harold Anthony had to request that administrators send at least one member of the scientific staff on each collecting trip, reminding them that expeditions were necessary to advance scientific research as well as exhibit-making. “It is quite practical to collect not only group material but study specimens as well,” Anthony protested. “The acquisition of the latter would place no great additional expense upon the man paying for the expedition” (Anthony 1934).

Time and specimens were not the only resources transferred from scientific research to exhibition efforts. Curators saw the scientific staff of their departments stagnate, and in some instances dwindle, while the number of exhibition-related hires grew steadily. To build the museum's famous habitat halls throughout the 1920s and 1930s, Jimmy Clark, head of the Department of Arts, Preparation, and Installation, employed more than a hundred people, ranging from animal sculptors, taxidermists, accessory technicians, background artists, ironworkers, carpenters, plasterers, and electricians – while some of the scientific departments were not permitted to hire a single new assistant (Clark 1966, 96). According to one 1935 memorandum, the ichthyology department was so short on staff that its collections were threatened, for there were no employees “to care for them, no one to catalogue them . . . and inadequate help to take care of specimens as they come.” If he could not hire more assistants and associate curators, entomologist Frank Lutz warned, “not only will all growth stop, but we will lose the best of our staff to other institutions” (December 1935, in AMNH).

Interwar curators could not even console themselves with superior status in the museum. More and more, they found themselves distanced from the museum's major sources of power: donors and administrators. A good many of the museum's financial supporters were sportsmen and amateur naturalists who respected exhibit-makers' field experience and artistic talents, and the museum's preparators put their admiration to good use. Preparator-in-chief James L. Clark, internationally renowned exhibit-maker and safari leader Carl Akeley, and their colleagues made a point of becoming close friends with the museum's wealthiest patrons. Preparators and philanthropists had not always shared such cozy relationships. On the first leg of his first trip to Africa in 1909, for instance, Clark spent Christmas in the London Zoo, too lonely and cash-strapped to go elsewhere (Clark 1909, 6). In contrast, by 1926, after landing in London at the outset of the Morden-Clark Asiatic Expedition, Clark hired a car to take him directly to the Ritz so he could drop off his bags. Then he headed over to Saville Row to get fitted for a tuxedo before meeting the Roosevelts for dinner (Clark 1926, n.p.). Akeley guided his team of craftsmen and artists into similarly lofty social circles, insisting in 1925 that taxidermist Robert Rockwell purchase a tuxedo and new field clothes in London before he sailed to Africa, as he would have to dress properly for dinners while on safari (Bodrys-Sanders 1991, 229). Throughout the 1920s and early 1930s, Rockwell, Clark, Akeley, and others were popular guests on New York's dinner party circuit, where they happily related their adventures in the field to awed audiences. This kind of hobnobbing endeared preparators to trustees, who invited them to their clubs to dine, asked them to guide their safaris, and eventually wrote enormous checks when preparators asked for money for museum expeditions. The resulting donations, in turn, endeared preparators to administrators. With a few notable exceptions, curators found themselves left out of this loop entirely.

Curatorial authority over exhibitions and even collecting policy declined as a result. Mammalogist Harold Anthony, for instance, was reduced to verbal fisticuffs with Clark – recently awarded an honorary doctorate of science from a college in West

Virginia – about the direction of the department of mammalogy. “Dr. Clark apparently still does not realize that this department is not under his jurisdiction and seemingly believes that he is our spokesman whenever he takes the notion,” Anthony complained to museum director Roy Chapman Andrews in 1935. “In recent correspondence between Dr. Clark and Mr. Harry Snyder, he undertook to speak for the Department of Mammals, as the files will bear witness. . . . He stated that he found many of the friends of the museum preferred to deal with him rather than with the Department of Mammals” (Anthony to Andrews, 16 April 1935, in AMNH).

The museum’s exhibition program also caused curators’ status to wane in scientific circles. Publication was the gold standard of scientific authority outside of museum walls, and exhibition spending cut into money traditionally directed towards publishing curators’ research. As the museum issued its journals less and less frequently, choosing instead to build more habitat halls and fund its popular publication, *Natural History*, curators found themselves unable to publish their findings. They wrote anxious letters to one another about the lack of publication venues and the stacks of completed work piling up on their desks. “Publication is the mouthpiece of the research of the museum,” protested Frank Chapman. “What are we working for? We cannot urge our men to go on” (5 August 1935, in AMNH).

Declining publication opportunities were simply insults to existing injury, for changes in the life sciences had already begun to jeopardize curators’ scientific standing. Though the life sciences remained fragmented throughout the first few decades of the twentieth century and the traditions of natural history remained strong, many life scientists came to believe that biology should become a unified science ruled by experimentalism (Pauly 1988; Maienschein 1988; Kohler 2002). Taxonomy and fieldwork, museums’ established provinces of expertise, remained central to research in the life sciences, but many young researchers found other fields of inquiry and methods of practice more exciting, and were eager to distance themselves from the naturalist traditions long associated with natural history museums. Moreover, laboratory-based researchers often found it difficult to accept the messy complexity of “naturalist” field observations and the careful comparisons of systematics – the two dominant scientific approaches among curators at the American Museum – and they periodically joined popular authors in dismissing scientists relying upon these methods as bug hunters and butterfly collectors.

The changing missions of the nation’s natural history museums further eroded curators’ status within the larger scientific community. Whereas natural history museums were at the center of scientific research in a number of fields for much of the nineteenth century, by the beginning of the twentieth, many public museums made a conscious decision to turn their attentions from research to public education and exhibition (Kohlstedt 1979; Winsor 1991; Cain 2006). The nation’s largest museums continued to sponsor transformative research in the life sciences, paleontology and anthropology in the interwar years – Ernst Mayr, George Gaylord Simpson, Margaret Mead, and other well-known scholars were based at the American Museum in these

decades, for instance – but natural history museums with vibrant research programs were more often the exception than the rule. As a result, life scientists working in universities often carelessly grouped museums together, dismissing them all as moribund scientific institutions.

Primed for disrespect, some of the museum’s curators feared that the scientific community would begin to think of the American Museum as an establishment devoted to entertainment rather than science, and that they would lose their hard-won institutional credibility as a result (Griffiths 2002, 3–45; Cain 2006, 148–230). Though museums in the United States, devoted as they were to public education, had long accommodated themselves to dioramas, the specter of Barnum continued to haunt their halls well into the 1920s and 1930s, and curators still felt they needed to distinguish their work from that of earlier museum impresarios who had employed artistic spectacles for commercial ends.⁸ At the American Museum, curators’ desire to do so was complicated by the fact that a great many of the museum’s exhibit-makers had worked in entertainment or retail venues.⁹ Many curators, already sensitive about losing prestige among their peers, worried that they would somehow be found guilty of sensationalism or superficiality by association with the museum’s increasingly spectacular exhibits.

They were right to worry. Though scientists working outside the American Museum had once enthused over the institution’s educational efforts, as the museum’s exhibitions became more expensive and more time-consuming, scientists became more and more critical of what they perceived as the Museum’s decision to prioritize display over research. Life scientists shook their heads at the resources the Museum poured into habitat dioramas, murals, and elaborate models. In 1927, physiologist and Nobel Laureate Alexis Carrel told Henry Fairfield Osborn, the chair of the museum’s Board of Trustees, that the institution’s activities were “an almost criminal waste of money” (cited in Kennedy 1968, 212). Aware of these shifts, even curators at the top of their fields became a bit defensive about the worth of their work, anxious that their peers would not take it – and them – as seriously as in the past.

“Scientific” Observations, “Scientific” Men

Watching exhibit-makers seize resources and respect once reserved for scientific staff held an especially keen sting for curators already worried by changing values in

⁸ Lynn Nyhart describes similar tensions over habitat dioramas among curators and administrators in German natural history museums (Nyhart 2004).

⁹ Paleontological artist Charles Knight had begun as a designer for a stained glass window company; background painter Albert Operti had worked as a set painter for the Metropolitan Opera; and Charles Abel Corwin had painted cycloramas, for instance, while artists Belmore Browne, William R. Leigh, and R. Bruce Horsfall continued to work as illustrators for sporting magazines and other popular publications while creating exhibits for the American Museum.

the scientific and museum communities. Throughout the 1920s and 1930s, curators' frustrations were exacerbated by the confidence of exhibit-makers, who pressed for official recognition as scientific professionals in their own right. Though exhibit-makers happily acknowledged that they were not scientists, Carl Akeley, James Clark, Robert Rockwell, Francis Lee Jaques, Louis Agassiz Fuertes, and others working with the department had long maintained that they were more than mere workmen.¹⁰ They were proud of their artistic and mechanical skills, to be sure, but they also possessed significant knowledge of flora and fauna, the kind of knowledge valued by early ecologists and field scientists. In these decades, they sought more public recognition of their expertise. James Clark argued, for instance, that anyone qualified to be the chief of exhibits at a natural history museum knew enough about the life sciences to be considered the equal of a departmental curator, and maintained that the heads of exhibition departments around the nation should have curatorships bestowed upon them (Clark to Tose 8 July 1931, CAS).

Increasingly, exhibit-makers touted their observational skills – their scientific eye, their trained judgment.¹¹ The ability to observe, Clark often asserted, was fundamental to the labor of all naturalists, and he frequently declared that exhibit-makers' observational practices clearly identified them as scientific. "Information is difficult to get and still more difficult to impart. The only satisfactory and dependable way to get it is to see for yourself, to get it first hand – only then does it become of an indelible and real value and of a kind we can use" (Clark 1929, in AMNH). As ornithological artist Louis Agassiz Fuertes put it, an exhibit-maker's success was "far less dependent on his ability to handle paints and brushes than on this ability to rightly see the truth" (Peck 1984, 6). Exhibit-makers maintained that their acute, impersonal, and carefully considered sight distinguished them from amateur naturalists or mere artists. Indeed, they argued, their scientific sight had been honed over the course of a lifetime of training and should be accorded the same respect as other methods and tools of scientific observation.

Some began to hint that dioramas and murals should be acknowledged not merely as elaborate pictures of nature or educational tools but as "contributions to science," as Iowan museum director Homer Dill put it at a 1916 conference of museum professionals

¹⁰ Artists had long attempted to assert their authority – or at least parity – over the scientific images they created. This ongoing conflict may have been intensified by the professionalization of the art world in the first three decades of the twentieth century. On artistic ambitions regarding scientific images, see Daston and Galison 2007. On the professionalization of the art world in the early twentieth century, see Bogart 1995. On conflict between artists and scientists at the American Museum of Natural History, see Bogart 2002; and Cain 2010.

¹¹ The term "trained judgment" is borrowed from historians of science Lorraine Daston and Peter Galison (2007), who have argued that artists and scientists began, in the twentieth century, to prize the notion of trained judgment alongside the ideals of truth-to-nature and mechanical objectivity. Trained judgment depended upon the expert training of the eye, training conducted in the classroom and through long apprenticeship and experience. Rather than copying nature in its entirety or perfecting it in order to create a single ideal type, artists and scientists employing trained judgment sought to combine a variety of considerations in order to illustrate objects and concepts most effectively for the task at hand.

(Dill 1915, 85).¹² They believed their field notes and recorded observations could – and should – count as the raw materials of science, and would ultimately be of use to zoologists, ecologists, and other researchers. In the early 1920s, for instance, Carl Akeley suggested that the museum build a special gallery to house preparators' field studies, so that scientists could refer to them in the future – the implication being that artists and preparators produced records as legitimately scientific as curators' own field notes (Leigh 1938, 42). Exhibit-makers' confidence that they could contribute meaningfully to the collection of information used in scientific research may have been augmented by the ongoing participation of amateurs in other scientific fields: meteorology and ornithology, for instance, both relied heavily on observational data provided by laymen. And museum administrators and magazine editors' tendency to treat exhibit-makers as experts whose interpretations were as legitimate as the curators' own further solidified preparators and artists' belief in the worth of their observations.

Conviction about the scientific validity of their observations wasn't limited to those exhibit-makers' reconstructing ecological environs. Paleontological artists were especially firm about the validity of their own knowledge. Charles L. Knight, Erwin Christman, and other artists for the museum's Department of Vertebrate Paleontology routinely insisted that the years spent reconstructing extinct animals and the knowledge gained studying living creatures provided them with insights into the study of paleontology that the museum's scientists needed to respect. Knight frequently pushed back when scientists critiqued his work, claiming he knew just as much about fossils as they did (Cain 2010, 295). In 1919, when scientists complained to chairman Henry Fairfield Osborn that the Neanderthals Knight had painted for the department's Hall of the Age of Man looked too European, the artist was furious. "Of course, my restorations will differ from those of any other person's," Knight wrote Osborn. "Fifty men working from the same data will arrive at different results and in the matter of prehistoric men there can be no 'final' word on them from any one person. . . . Upon a subject upon which so little is known, every man who has made it a study is perfectly right in restoring the head as it appeals to him" (Knight to Osborn, 3 February 1919, in DVP-AMNH).

As a result of their skill and experience, many exhibit-makers believed they should be recognized not as scientists, but as "scientific." This concept was appropriately and perhaps intentionally vague, allowing exhibit-makers to claim authority over those matters they wished to control without requiring them to comply with all the practices and standards associated with professional science. The flexible notion of being scientific legitimized exhibit-makers' input into the representation of science and nature. For the artistic staff of the American Museum, to be scientific meant to share the values and standards of the professional scientific community; to contribute to the production

¹² In her study of the emergence of habitat dioramas in German museums, Lynn Nyhart notes that the exhibits were not automatically granted scientific status, because of dioramas' long association with entertainment (Nyhart 2004).

and dissemination of scientific knowledge; and to use methods employed by scientists themselves. To be scientific became a legitimate way of claiming authority, a way that commanded respect but required neither publications nor Ph.D.s. If they were seen as scientific, exhibit-makers believed, they could claim public credit for their illustrations and dioramas. They could be properly compensated when magazines used images of their exhibits. Perhaps most important, they would have more ammunition in the frequent and increasingly nasty conflicts with curators over who should have the last word on matters of display.

Reproducing Nature or Making Knowledge?

In the 1930s, curators' frustrations with exhibit-makers came to a head as a result of changes in the museum's administration. When the chair of the Board of Trustees Henry Fairfield Osborn retired in 1933, leaving the museum under the direction of the charming but hapless Roy Chapman Andrews, anxious curators founded a Council of Scientific Staff to advocate for their own interests with administrators and trustees. Osborn's direction of the museum had been capricious and dictatorial, but there was no questioning the old man's commitment to research. Andrews, on the other hand, expressed little interest in conducting his own scientific research or in supporting anyone else's – little interest in anything save funding more expeditions and building more habitat dioramas, actually (Kennedy 1968, 162–172). Curators believed they would need to make their voices heard even more forcefully than in the past, and so, as preparators and artists busily installed exhibits in the Hall of Ocean Life, the Hall of South Asiatic Mammals, the African Hall, the Hall of North American Mammals, and the Whitney Hall of Birds, the Council struggled to develop a coherent stance on exhibition and other museum matters that they could present to administrators. Composed of the museum's most senior curators, the Council met monthly in an attempt to protect their interests from the administration's aggressive neglect of the museum's research program.

Though they hotly debated questions of exhibition, scientific authority, and institutional mission throughout the early 1930s, every member of the Council drew a firm line when it came to who should possess the ultimate authority over exhibits. As ornithologist Frank Chapman wrote in 1935, an exhibit could be “easily prostituted,” unless “scientist, artist, and preparator . . . collaborate harmoniously in its production, but with the first-named always in control. Never must truth be sacrificed to beauty” (Chapman 1935, 167). Curators agreed their approval of an exhibit's accuracy should be considered far more important than the opinions of those whose specialties were aesthetic or mechanical, and they frequently reminded others of this hierarchy of authority.

While they were resolutely unified on this issue, curators were far more divided when it came to assessing the value of habitat dioramas. Some curators, often those

whose research required them to spend months in the field or those older curators who held tight to the vestiges of the older traditions of natural theology and Romanticism defended the scientific and educational character of the dioramas. These curators had never described dioramas as groundbreaking contributions to scientific knowledge, but they did argue that the exhibits were uniquely effective educational instruments. Mammalogist Harold Anthony, for instance, maintained that the habitat halls were “filled with expressions of biological principles; that the biology was there if the visitor cared to see it; that labels devoted specifically to biology could point out this fact” (27 May 1935, in AMNH). Ornithologist Frank Chapman, a septuagenarian by the 1930s, also remained a loyal proponent of the exhibits he had introduced to the museum in the late 1890s. In 1942, for instance, when Council members suggested replacing the North American Bird Hall habitat dioramas with a more contemporary Hall of Man, Chapman protested vehemently. “Each [exhibit,]” he wrote, “might serve as a text for a paper on the home-life of its species” (Chapman 1942, in AMNH). Beyond their mass appeal, supporters suggested, dioramas remained valuable to those interested in ecology and other branches of the life sciences – especially as many of the places and species they depicted were disappearing.

Other members of the scientific staff, especially those curators interested in ethology, experimental taxonomy, and other cutting-edge scientific topics, dismissed this position, arguing that habitat dioramas were neither repositories of scientific research nor effective forms of science education.¹³ Dioramas were little more than “beautiful but scientifically innocuous . . . centerpieces,” zoologist William Gregory bitterly jested (Gregory to Anthony, 24 May 1935, in AMNH). These curators agreed that dioramas were more appropriate for the libraries of nineteenth-century naturalists and trophy hunters than for a twentieth-century institution ostensibly devoted to educating the public about modern biology.

Curators were also divided on the value of exhibit-makers’ knowledge. Chapman and the other defenders of habitat dioramas also tended to support exhibit-makers’ bid for increased authority. Even the aggrieved Anthony, still furious at Clark’s usurpation of his responsibilities in the department of mammalogy, argued that exhibit-makers should be granted considerable respect. These scientists agreed with exhibit-makers that diorama building required significant knowledge, vast experience, and keen scientific observation of the natural world. They tacitly agreed that exhibit-makers merited more respect than the museum’s scientific staff generally gave them. Many, though not all, of the curators who felt this way had come of age in an era when the boundaries between professional and amateur scientists were still fluid; they had begun their study of science when descriptive natural history still dominated the life sciences. They tended to specialize in subjects where amateur field naturalists could still make significant contributions to systematics and the study of animal behavior by recording

¹³ Among this group were Ernst Mayr, Gladwyn Kingsley Noble, William K. Gregory, James Chapin, and Frank Lutz.

their careful observations. As late as the 1930s, many of them still encouraged these amateurs, holding tight to the idea that persistence and a diligent eye could result in scientifically useful observations.

Those who identified themselves as field scientists or naturalists also tended to support the authority of exhibit-makers – a support inspired by empathy, respect, and perhaps a little resentment towards laboratory-based scientists. As Robert Kohler has recognized, field scientists straddled “the boundary between head and hand work, white and blue collar, craft and profession,” a boundary also straddled by museum artists and preparators (Kohler 2006, 183). To many of the museum’s field scientists, knowledge earned through hands and eyes was every bit as legitimate as book learning (and sometimes much more so). They railed against those who believed manual labor “was beneath the dignity of a man of science” (Dill 1915, 79). As a result, field scientists on the museum staff may have seen exhibit-makers as they saw themselves, as highly qualified naturalists who rarely got the respect they deserved.

None of these curators considered exhibit-makers to be scientists according to the contemporary definition of the word. Rather, they considered preparators and artists to be workers knowledgeable about the natural world and skilled in scientific observation. Exhibit-makers weren’t scientists, these curators believed, but contributors to the larger scientific project of accumulating, recording, and disseminating new information. Frank Chapman, for instance, held painters Louis Agassiz Fuertes and Francis Lee Jaques in the highest scientific regard, describing them as “stimulating scientific associate[s],” and maintaining that the two artists knew birds better than most university-trained ornithologists (Chapman 1915; Chapman 1935; Chapman 1937; Chapman 5 January 1942, in AMNH).

To many of these curators, scientific accuracy required a measure of aesthetic beauty. This belief was in part the result of a lingering Romanticism; it also rested upon their comfort with an older paradigm of representation, one historians of science have dubbed “truth-to-nature” (Daston and Galison 2007, 55–114). According to the principles of truth-to-nature, artists should render specimens’ most essential, most universal, and often, most beautiful qualities. Exhibit-makers’ observations, sketches, and subsequent creations generally fell under this rubric, capturing, as Chapman put it, both “accuracy of detail and the receipt of inspiration through contact with original sources” (Chapman, 5 January 1942, in AMNH). Curators who embraced the truth-to-nature paradigm believed it possible for artists to celebrate the natural world in their work without sacrificing objectivity or accuracy. These curators valued murals and habitat dioramas because they seemed to merge the observer’s emotional relationship with nature, the province of popular natural history, with the impersonal ethos of professional zoology.

In defending the scientific and educational contributions of exhibit-makers, these curators often made claims that their younger scientific counterparts found contradictory – namely, that exhibit-makers copied nature while also interpreting it. Those who championed habitat dioramas had long cast exhibit-makers as copyists

rather than authors, transcribing rather than interpreting nature. According to a 1914 issue of the *American Museum Journal*, the museum's preparators and artists' left "no earmarks" or evidence of human individuality (Dickerson 1914, 96). Yet these same staff members also believed that exhibit-makers could reproduce the natural world more exactly *because* they were artists and not merely "hands." As museum artist Francis Lee Jaques put it, good exhibit-makers did not produce "large Kodachromes" but made thoughtful, expressive depictions that gave viewers insight into animals' experiences (as cited in Luce and Andrews 1982, vi). Many curators believed emotionally-charged observation introduced a necessary "life and individuality," as American Museum director Frederic A. Lucas put it in 1921, to specimens and background paintings, resulting in exhibits that depicted not just the shape but also "the spirit of an animal" (Lucas 1921, 11). The ability to create scenes that aroused emotion, Lucas and others suggested, made the nature portrayed more accurate. Background painter William R. Leigh echoed this, arguing that scientists needed artists and taxidermists to make their studies "more understandable, more nearly complete, more human" (Leigh 1938, xi).

This kind of rhetoric illustrates the divided loyalties of many curators at the American Museum. Though the emphasis on human experience sometimes flew in the face of more contemporary ideas about objectivity, to the self-declared naturalists among the curatorial corps who embraced a "truth to nature" ideal, there was no contradiction whatsoever. Accurate visualizations of nature demanded emotional inflection. Many self-proclaimed naturalists on the scientific staff of the American Museum supported preparators' bid for more authority, because they believed that the museum should straddle both the rational and the Romantic traditions of science.

Other curators, however, were not so willing to grant preparators the recognition and independence that they desired. Curators such as Robert Cushman Murphy, who generally got along with artists, revealed his stance on exhibit-makers' scientific status by damning exhibit-makers with faint praise. In an ornithological department meeting about the Whitney Memorial Hall of Birds, for instance, he complimented artist Francis Lee Jaques for his depictions of the birds and landscape of the Pacific Ocean before noting that Jaques was "peculiarly well fitted to carry out the ideas of members of the ornithological staff" (5 February 1942, 1–2, in AMNH). Murphy's statement expressed a typical sentiment held by many curators: the best artists and preparators stuck to rendering curatorial ideas rather than presenting their own visions of the natural world. It seems unlikely that Jaques, who had traveled throughout the Pacific independently and was universally agreed to be the most accomplished ornithological artist of his generation, was happy to be relegated to the position of scientific servant.

Some scientists were more forthright in their objections. Throughout the 1930s, younger curators like Mayr and longtime researchers like Lutz, Gregory, and Noble dismissed preparators' claims to scientific authority, scoffing at the idea that exhibit-makers possessed anything near their own hard-earned knowledge. Curators' desires

to guard the distinctions between artist-naturalists and professional scientists had been amplified by new educational requirements for scientific positions. Field experience was still valued, but it was no longer a sufficient foundation for a career as a scientist. By 1921, the heads of thirteen out of sixteen departments possessed doctorates, and the staffs of those few departments not headed by Ph.D.s were filled with assistant curators who had earned doctorates (1921). To curators who had suffered through several years of graduate training, it seemed grossly unfair that men like Clark – who was not a scientist and had not earned a degree in scientific study – would receive similar status and far better pay.

But their sense of professional distinction was based on more than a desire for superior social status. Changes in the life sciences had also lowered many curators' opinions of the scientific and educational value of dioramas and their makers. In the first four decades of the twentieth century, biologists cheered the study of developmental biology, physiology, and cytology, as work in these subfields explored experimental manipulation, attention to causal-mechanical explanations, and quantification – topics that seemed far more important to contemporaries than systematics. And the standardized methods used to explore these subjects were quite different from the craft-based approaches associated with collection, taxidermy, and taxonomy (Star 1992, 274–276). For those researchers used to pursuing questions of biological function in an impersonal laboratory setting, determining taxonomic groups by eyeballing species seemed a crude, even arbitrary technique. Considering evolutionary biology through the lenses of population genetics, cytology, and other contemporary specialties would result in more precise, more interesting study of evolution (Cain 1993, 17). Younger curators, eager to use recently developed analytical techniques, dubbed themselves “experimental taxonomists” and established a new (and they believed more objective) catalog of diagnostic characteristics – chromosome structure, physiological markers, behavioral cues, and geographical and ecological indexes (*ibid.*, 3; Griesemer 1990). Curator George Gaylord Simpson introduced quantification on a massive scale into his research and began extensive studies of populations and intraspecific variation in paleontological samples. Ernst Mayr, an associate curator of ornithology, explored how divergence and isolation affected speciation using the knowledge of biogeography and geographical variation of populations he had gleaned from the American Museum's bird collections (Cain 1993, 19).

As these curators' scientific methods changed, their interests in illustration and exhibition changed, too. Widespread interest in animal behavior, experimental taxonomy, and biogeography put a new premium on methods of observation in interwar scientific journals. At first glance, it seems that this emphasis on observation should have brought curators and artists closer together than ever. But in practice, it forced the two communities ever farther apart. Life scientists increasingly focused on aspects of zoology that observers without substantial esoteric background knowledge would fail to perceive: variation in local populations, transitional forms, and speciation, as well as sibling species that looked identical but could be distinguished by small

differences in behavior. Sharp-eyed artists and preparators could observe and intuit a good deal, but only those who knew what they were looking for continued to be of use to scientists no longer interested solely in description. Moreover, new questions asked by physiologists and ecologists often required the statistical examination of massive populations rather than the close study of single specimens. Consequently, Simpson needed statistical and diagrammatic representation to accompany his work, not the careful illustrations of species' surfaces that had once required an artist's hand. Exhibit-makers' observations, useful when the life sciences were primarily descriptive, no longer contributed to the production or dissemination of scientific knowledge.

This shift in the scientific landscape occurred just as the museum began to value visual spectacle, an institutional preference that required exhibit-makers to visualize the natural world in a completely different way. The expedition diaries of James Clark illustrate this shift in exhibit-makers' approach. In the 1910s, Clark's expedition notes focused on the scientific detail of flora and fauna. By the 1920s, however, his diaries featured vivid, almost painterly descriptions of the landscape and its inhabitants, as if planning in advance the exhibits and radio talks he would be expected to deliver once he returned from the field (Clark 1909; Clark 1926). This kind of description, though appealing to the broader public, had fallen out of scientific favor by the mid-1920s. The descriptive techniques of old-fashioned naturalists were sadly outdated, wrote ornithologist Robert Cushman Murphy in 1943, and museum scientists increasingly lauded those "who are ready to carry their research into the experimental field whenever they get the green light" (Murphy to Whitney, 31 August 1943, in AMNH). Exhibit-makers were never going to fall into that category.

In short, the curators pursuing newer approaches to life science resisted preparators' attempts to gain more control over specimens, exhibits, and gallery space. They recoiled at the idea of elevating preparators to anywhere near their own status. To do so, they believed, would signal a profound devaluation of scientific research at the museum, as well as a frightening disregard for higher education, professional scientific training, and the general state of science.

Though curators continued to struggle over these questions throughout the 1930s, by the 1940s, with the retirement of Frank Chapman, Roy Chapman Andrews, and James Clark, the debate resolved itself – at least among the museum's scientists. Thanks to advances in the scientific method and knowledge, the American Museum's curators now understood more about fauna than exhibit-makers ever would, wrote curator George Tate in 1941. As a result, "it is strictly needful and logical that [curators] pass upon every phase of development of the display group or habitat group of mammals." The scientific staff, he concluded, "constitutes a last court of appeal" and exerted "a regulatory influence over work which may otherwise become 'art for art's sake'." "Although many of those artists and preparators have acquired considerable knowledge of animals during long association with the museum, and so are able to solve ordinary problems themselves," he acknowledged, "they remain primarily artists or taxidermists and only secondarily naturalists" (Tate 1941, 6–7, in AMNH).

Conclusion

Between the 1910s and the 1940s, the changing practices, epistemologies, and professional standards of the life sciences collided with an expanded mission and altered social universe in the American Museum, ultimately igniting controversy over the status of the museum's exhibit-makers, and the museum itself. Within the realm of the museum, the centrality of elaborate displays provided exhibit-makers greater power and status as scientific laborers; beyond the museum, in the world of professional science, these displays threatened to drag curators into a sort of second-class status – a competent but ultimately denigrated strata similar to the one the American Museum's exhibit-makers inhabited. In part to preserve their own precarious scientific authority within and beyond museum walls, curators fought to separate themselves from exhibit-makers, arguing that exhibit-makers' observations and subsequent creations should not be considered valuable scientific currency. While exhibit-makers' observations were not counterfeit, curators maintained, they certainly should not be seen as the gold standard.

The debate over the status of exhibit-makers' vision and observation subsided in the years after World War Two. Though museums continued to build them throughout the next several decades, habitat dioramas no longer commanded the interest they once had. In a world dominated by flickering television images, mounted animals and landscape painting had begun to seem static, out-of-date. More and more, educators and scientists considered dioramas' depictions of an untouched natural world disconcertingly idealized – an old-fashioned approach to nature and science. As early as 1937, curator Robert Cushman Murphy summed up this disenchantment. "The old aspects of truth have become insufficient," he wrote. "Ignoring even the rich satisfaction that knowledge of the green and vibrant world of nature confers in this out-of-door age . . . the 'man in the street' must add to his fund of information at least a minimum knowledge of modern physics and of the miracles of protoplasmic behavior if he is ever to gain an inkling of what life and the cosmos are all about," he concluded (Murphy 1937, 81). Stunned by the awesome power of wartime science and the atomic age, postwar Americans found the study of natural history – even when it was presented in the aesthetically pleasing form of the habitat diorama – far less compelling than physics, biomedicine, and other fields of inquiry (Rader and Cain 2008).

Profound changes in the practice and objectives of the life sciences in the American Museum also helped render the debates over exhibit-makers' authority moot. The museum's new director, Albert Parr, raised curatorial salaries to the level of those earned by professors at first-rate universities. Museum staff no longer treated observation or exhibit-making as proxies for scientific authority in public rhetoric or private conversation. The scientific staff of the American Museum still admired preparators for their keen eyes, gifted hands, and careful minds. But they agreed that exhibit-makers did not qualify as scientific.

The internal debates over habitat dioramas and exhibit-makers at the American Museum of Natural History provide historians with a window into a world in transition, one where the public taste for and the subsequent success of museum exhibitions threatened to topple an established hierarchy based on scientific knowledge. By the 1940s, as science changed and natural history itself fell victim to changes that threatened to make the entire field appear amateur, the museum began to protect its scientists in order to protect itself. It did so by accepting scientists' redefinition of lay observation as fundamentally unscientific. Yet the museum also protected its exhibit-makers – and, by extension, its relationship with the public – by emphasizing the importance of interpreting scientific research, especially as it moved beyond the realm of the visible, and giving exhibit-makers more authority over the interpretations. These compromises helped to diminish the tension between the groups – for at least a little while.

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Archival Abbreviations

Central Archives of the American Museum of Natural History – AMNH

California Academy of Sciences Archives – CAS

Colorado Museum of Natural History Archives – CMNH

Department of Mammalogy Archives at the American Museum of Natural History – DM-AMNH

Department of Vertebrate Paleontology at the American Museum of Natural History – DVP-AMNH

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