

**Skin Deep
Taxidermy, Embodiment, and Extinction
in W. T. Hornaday's Buffalo Group**

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*Perhaps you think a wild animal has no soul,
But let me tell you that it has.
Its skin is its soul; and when mounted by skillful hands,
it becomes comparatively immortal.¹
— William T. Hornaday, 1887*

Prologue: Into the Case

One day in 1957, while working on an exhibit renovation project, curatorial staff at the Smithsonian Museum of Natural History discovered a small metal box embedded inside the floorboards of the so-called Buffalo Group, an eighty-year-old display of American bison slated for destruction later that day (Plate 1). Inside the taxidermic time capsule, the curatorial team discovered a note dated March 7, 1888. The message — signed by William Temple Hornaday (1854–1937), creator of the Buffalo Group and chief museum taxidermist for the Smithsonian Institution between 1882 and 1891 — read as follows:

To my illustrious successor:

The old bull, the young cow and the yearling calf you find here were killed by yours truly. When I am dust and ashes, I beg you to protect these specimens from deterioration and destruction as they are among the last of their kind. Of course they are crude productions in comparison with what you must now produce, but you must remember that at this time, the American School of Taxidermy has only just been recognized. Therefore give the devil his due, and revile not.²

Smithsonian curators savored and saved this note, memorabilia fit for the museum's archives, before dismantling the rest of the buffalo display. But what lay behind the Buffalo Group's taxidermied scenes, and vested within its historical seams, to have motivated its creator's somber mes-

← PLATE 1. The Buffalo Group: Completed in 1888, at the U.S. National Museum, Washington DC. Source: Hornaday, *Taxidermy and Zoological Collecting*, 246.

* This article is based on my manuscript "The Soul in the Skin: William Temple Hornaday and the Construction of the Buffalo Group, 1886–1996." Relevant research was conducted during 1997 and 1998 at the *Office of Smithsonian Institution Archives (SIA)*, *The Library of Congress Manuscript Division*, *The Library of Congress Photographic and Prints Collections*, and *The New York Zoological Park Archives and Wildlife Conservation Library*. I am grateful for the assistance of staff at these institutions, as well as for funding from *The Charles Warren Center for American History* and *The Alpha Iota Chapter of The Phi Beta Kappa Foundation*. For their comments, criticisms and support, I thank Doug Coffman, Pamela Henson, Katharine Park, and Alan Trachtenberg.

sage? This quandary is the impetus behind “Skin Deep: Taxidermy, Embodiment and Extinction in W.T. Hornaday’s Buffalo Group,” a case study in the nature and nurture of museum taxidermy and the conservation movement in America.³

Introduction: The Look of Life

In 1899, the United States Government Printing Office published an unusual report. Robert W. Shufeldt’s *Scientific Taxidermy for Museums* was the first — and the last — comprehensive survey of American taxidermy.⁴ By providing a survey of natural history displays in the nation’s museums, simultaneously commenting on the merits and faults of particular styles and artists, Shufeldt sought to elevate the status of the art of preparing, stuffing and mounting animal skins. According to Shufeldt, it should be “the business of the museum to bring whole living sections of nature within its walls.”⁵ Thus, the reanimation of the museum would require the reinvigoration of its taxidermists and their craft, through which dead creatures might be preserved and turned into appealing exhibits.⁶

In Shufeldt’s view, traditional museum displays — generally single taxidermied animals placed by curators in sterile white cases — should be replaced by so-called “habitat groups” in which taxidermied animals and simulated habitats were enclosed within four-sided glass cases.⁷ Such displays would enliven the turn-of-the-century museum by filling its halls with “the look of life.”

One habitat group in particular exemplified what Shufeldt hoped for the future of taxidermy and the American museum. Singling out Hornaday’s Buffalo Group, completed eleven years earlier, Shufeldt reported to his readership:

We have now to notice one of the very finest accomplishments that the art of taxidermy has yet produced in this country. I refer to the case containing the several specimens of our now nearly extinct bison or American buffalo.⁸

Between 1886 and 1888, Hornaday had planned, collected specimens for, and constructed this arrangement of six taxidermied American bison (commonly known, and referred to hereafter, as “buffalo”) arranged behind glass amidst a reconstructed piece of the Montana buttes landscape. Drawn to the buffalo as an endangered American hunting target, Hornaday had made a bold move in the Buffalo Group project, turning from exotic fauna (long the mainstay of museum displays) towards native wildlife. In January 1886, concerned about what seemed like the species’ imminent extinction, he had presented to the directors of the National Museum the idea of a habitat group to be installed on the ground floor. Unveiled to the public just over two years later, the Buffalo Group exemplified the so-called “New School of Taxidermy” that developed in the 1880s and 1890s.⁹ At the same time, his habitat group achieved acclaim for its symbolic role in the buffalo preservation movement, with which Hornaday too would remain involved well into the twentieth century.



FIGURE 1. William Hornaday and calf at the Castle. Source: Smithsonian Institution Archives (Neg. #74-12338).

The Buffalo Group served as a “taxidermic memorial,” both progressive and nostalgic in its simultaneous inscription and erasure of the American wilderness it represented. In this essay, I analyze the late nineteenth-century habitat group’s significance through close attention to this particular display’s construction, reception and ensuing “life history.” As I show, Hornaday’s exhibit came to embody attitudes towards material culture and animal conservation characteristic of its author and its era. Thus, I argue that the story of Hornaday’s Buffalo Group exemplifies what I develop (here and elsewhere in my work) as the “taxidermic model” of natural and cultural preservation. The “taxidermic model” underlying the Buffalo Group and other habitat groups, lies poised between two meanings of the very word “preservation” — chemical preservation of a single dead specimen and wildlife preservation of an entire living species.

William T. Hornaday: Taxidermist-Conservationist

William Temple Hornaday’s early employment as museum taxidermist initiated his interest in the threatened American animal-scapes of the late nineteenth century. Which is to say: his later and enduring passion for saving American wildlife — and for the cause of preservation itself, in museums and later zoos and wildlife refuges — developed out of his background as a museum taxidermist trained to literally “preserve” animal skins.

Though a fulltime taxidermist at the time of the Buffalo Group project, Hornaday was also a lifelong hunter, collector and wildlife lover. In addition, later in life, he would go on to become a zoological park director, environmental activist and prolific author.¹⁰ Born in Indiana in 1854, Hornaday developed a love for animals and hunting at an early age. After working for a small taxidermy establishment in Iowa, he decided to train as a professional taxidermist at the prestigious “Ward’s Natural Science Establishment” in Rochester, New York (Fig. 2).¹¹ Animal preservation — not yet of endangered species but rather of dead individual animal bodies — became his driving passion. This ambiguity — preservation in the senses of both preserving a hunted specimen from decay, and saving a threatened species from extinction, was at the heart of Hornaday’s varied career. This ambiguity is also at the heart of the Buffalo Group’s story.

During the 1880s, Hornaday developed a strong interest in both the accumulation of exotic animal specimens and these same animals’ manipulation through taxidermy. By the early 1880s, Hornaday had undertaken several large-scale collection expeditions to Africa, Asia and South America. At the same time, he created inventive displays of his own design; he constructed habitat groups in which he incorporated taxidermied animals and simulated environments within four-sided glass cases. In his first such display, called “A Fight in the Treetops,” Hornaday presented a group of orangutans in a representative Borneo forest canopy (Fig. 3). Such museum displays were innovative since, up to that point, American natural history museums had generally placed a single taxidermied specimen against a solid background, behind only one pane of glass.

By the early 1880s, Hornaday had also helped establish the Society of American Taxidermists (1881–1883), for which he served as both secretary and president. This organization was founded to raise the stature of taxidermy from secretive craft to prominent profession. Members of the short-lived society dedicated themselves to the perfection of taxidermic technique. At the same time, they promoted this uniquely “skin-deep” representational medium as an exemplary fusion of art, craft and science.¹²

By 1882, Hornaday had become a bright name in the growing American taxidermy profession. Later in the same year, the National Museum hired him as its chief taxidermist. To Washington D.C., Hornaday brought an agenda — the incorporation of his new-fangled habitat group concept into the country’s institutional showcase for natural and cultural resources.



FIGURE 2. Ward's Natural Science Establishment, Rochester NY, c. 1875. Source: *Ward's Natural Science Bulletin*.

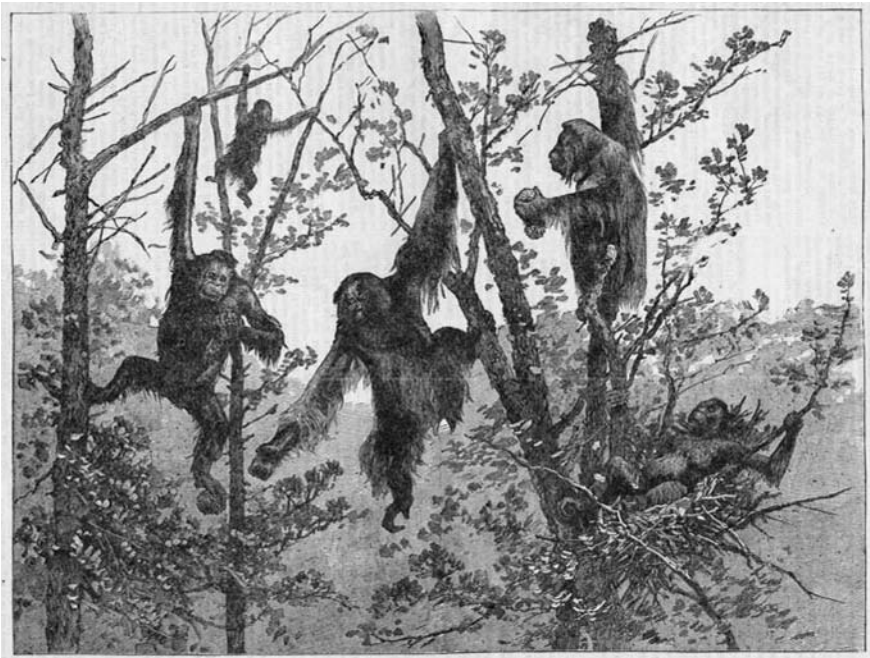


FIGURE 3. "A Fight in the Treetops" by W.T. Hornaday. Source: *Ward's Natural Science Bulletin*.

Where the Buffalo Roam

As Hornaday was well aware, by 1886 — the year he began work on the Buffalo Group project — the previous quarter of the nineteenth century had been marked by rapid change throughout the American West. During these decades, railroad expansion, western migration and military pressures permanently changed the Great Plains (Fig. 4). Once remote areas became easily accessible to sportsmen, commercial hunters and settlers — causing increased hunting, industrialization, and ecological change.¹³ Such conditions, among others, wreaked havoc on the North American buffalo population, once numbering thirty million or more.¹⁴ Thus, in the 1870s and early 1880s, buffalo hides filled eastern-bound freight trains throughout the Great Plains. Rotting carcasses and bleaching skeletons covered the buttes and grasslands of Montana, North Dakota and Wyoming. By 1886, some east-coast newspapers reported that the wild buffalo population was down to only eight hundred animals. Others reported a mere handful left (Fig. 5).

During these same years, many Americans — especially urban Northeasterners — grew concerned about the place of both wilderness and national memory in relation to a booming economy and an industrializing landscape. Such individuals felt ambivalent about America's recent rapid expansion. On the one hand, they supported what seemed to be an inevitable march of national "progress," which included the steady conquest — and quite often destruction — of the continent's land and peoples. On the other hand, they longed for the perpetuation of wild spaces available for their own real or imagined use.¹⁵ Theodore Roosevelt, still sixteen years from the American presidency, voiced this nostalgic anxiety in his *Hunting Trips of a Ranchman* (1885). As Roosevelt lamented:

Gone forever are the mighty herds of the lordly buffalo . . . Now no sight is more common on the plains that that of a bleached buffalo skull; their countless numbers attest to the abundance of the animal at a time not so very long ago.¹⁶



FIGURE 4. Slaughter of the Buffalo Along the Kansas-Pacific Railroad. Source: Hornaday, *Extirpation*, 392.

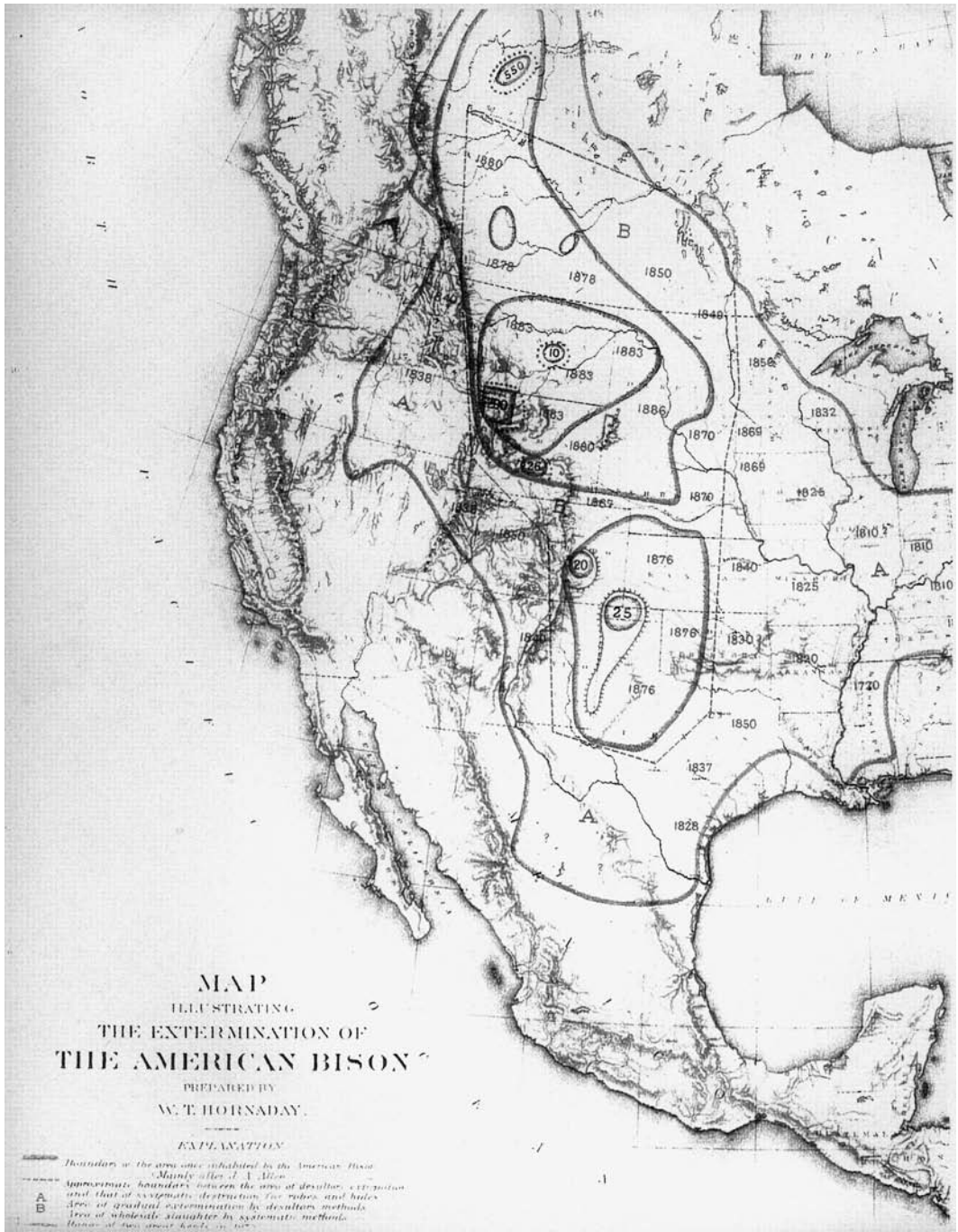


FIGURE 5. Map of the Extermination of the American Buffalo, 1720-1890. Source: Hornaday, *Extermination*, back cover.

In such a cultural climate, the buffalo came to symbolize a particularly American state of wilderness. Sportsmen, naturalists and museum professionals — here Hornaday is a historical case in point — suddenly worried that the buffalo, an animal long considered too ordinary to mount as a museum trophy, would soon no longer exist as a living component of the landscape.

As might be expected, increasing scarcity made the buffalo especially desirable game among trophy and market hunters. Hornaday himself felt certain that the buffalo — at least in its wild state — had reached the eve of its final annihilation. As Hornaday's described the situation at the time: "A buffalo is now so great a prize that extraordinary exertions will be made to find, and shoot down without mercy, the last buffalo."¹⁷ In early 1886, prompted by such anxieties, Hornaday asked the Secretary of the Smithsonian Institution to fund a buffalo collection expedition. In connection with the expedition, Hornaday would compose both a habitat group and a written report for museum publication.¹⁸ As the taxidermist argued: the ongoing slaughter of the buffalo would soon make it quite impossible for the museum to acquire first-rate specimens.¹⁹ Thus Hornaday embraced the notion that he himself, on behalf of the National Museum, should kill some of the last wild buffalo in order to save, which is to say embody, its memory in corporeal form.

In 1886, with Smithsonian financial and institutional support, Hornaday organized two buffalo collection expeditions to Montana — in his estimation, among the last areas containing a sizable population of wild buffalo. In the spring and fall of that year, he and a small crew traveled around the Buttes in the eastern part of the state (Fig. 6), collecting specimens and props for the Buffalo Group. The expedition took back twenty-five buffalo in all — twenty-four dead and one live calf named Sandy. The team also collected Montana sod, grasses, rocks and fossils.

Back at the museum, Hornaday scrutinized the animal specimens, alongside his field measurements and sketches, in order to determine those ideal for museum encapsulation. He finally chose six exemplary specimens — a massive bull, a hefty cow, a smaller cow, a young spike bull, a yearling, and a suckling calf.

By the end of 1887, Hornaday had begun the yearlong process of design, construction and installation of the Buffalo Group. To this end, he mounted the six chosen buffalo and placed them in a quasi-realistic environment, complete with the accessories imported from Montana. Hornaday then arranged the animals around a pond rendered in glass and wax. Finally, he enclosed the ecological unit thus formed within a four-sided sixteen-by-twelve-by-eleven-foot glass and mahogany case (Plate 1).

Although Hornaday kept the construction of the Buffalo Group from public view, interest never waned along the way. Throughout the winter of 1888, guides led curious visitors

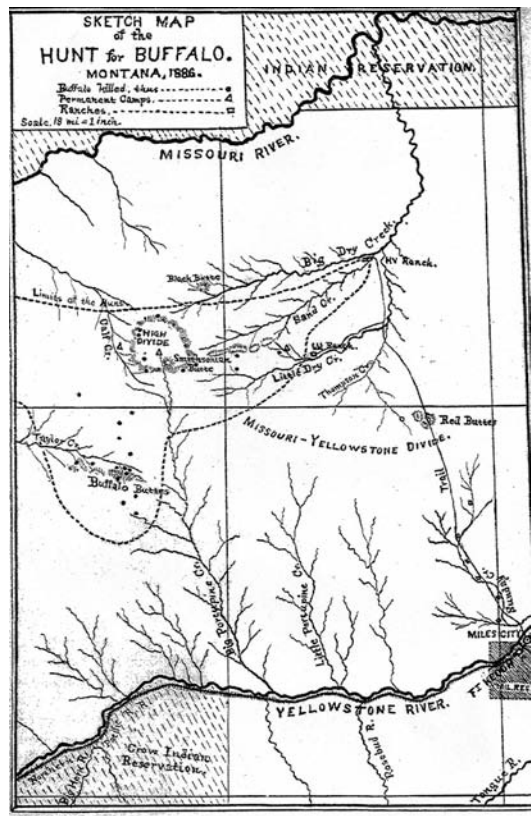


FIGURE 6. Sketch Map of the Hunt for the Buffalo, 1886. Source: Hornaday, *Extirpation*, 534.

around the curtained outskirts of the construction. Finally, in March 1888, before a delighted public, the National Museum lifted the screen surrounding the completed Buffalo Group. On the same day, a popular Washington newspaper ran a photograph with the following caption:

A scene from Montana — Six of Mr. Hornaday's Buffaloes form a perfectly picturesque group — a bit of the Wild West reproduced at the National Museum — something novel in the way of taxidermy — Real buffalo-grass, real Montana dirt, and real Buffaloes — All carefully cut out and brought to the museum.²⁰

Scientists as well as lay people recognized that the Buffalo Group was innovative in both design and effect. Before Hornaday's work developing habitat groups, scientists and museum affiliates had tended to reject such environment-inclusive taxidermy displays. But the Buffalo Group project brought the habitat group idea into a scientific and educational context, thereby replacing the traditional taxidermy museum mount with a naturalized *mise-en-scene*. Indeed, even before the first public viewing, curators at the rival American Museum of Natural History had already begun rallying for funds to build his own buffalo habitat group in New York City.²¹ Meanwhile, the National Museum's director hailed the Buffalo Group as a "true triumph of the taxidermist's art."²²

Embodying Extinction

To the casual museum visitor, as well as the journalist quoted above, the Buffalo Group might have appeared to be a straightforward reproduction of American wildlife, what the *Washington Star* called a "bit of the Wild West." But the Buffalo Group was certainly not *literally* a genuine piece of the prairie. Hornaday's design had to be both exquisitely crafted and carefully executed to make the dead buffalo in a glass box evoke living buffalo in the wild. And to this end, the Buffalo Group's realization required a complicated set of technical, scientific and philosophical decisions by the taxidermist. Complex material and intellectual processes led up to the exhibit's realization. Meanwhile, specific notions of idealization, preservation and conservation became embedded in the material and discursive interstices of the Buffalo Group.

In the Buffalo Group, Hornaday designed and fabricated an ideal section of representational ground.²³ The taxidermist's aim: to condense the essence of the buffalo's once expansive range into the area of a glass museum case.

In *Taxidermy and Zoological Collecting* (1891), Hornaday described the Buffalo Group's construction in order to elaborate his general principals of taxidermy and museum display.²⁴ In a chapter entitled "General Principles of Group Making," Hornaday supported the careful choice and arrangement of accessories "for the best artistic effect."²⁵ Mounting and posing of animal specimens should begin only after basic design issues has been settled.

To convey the buffalo's perfected habitat, Hornaday took everything from the buffalo specimens to sod pieces out of their original locations in space and time. However, since — at least in Hornaday's opinion — typical plots of land in the Montana Buttes territory were aesthetically bland, he collected animate and inanimate specimens from a variety of sites throughout Montana. Eventually he would alter the various found objects and insert them into an idealized space that corresponded to no actual location in the American West.²⁶

Not all taxidermists of the period shared Hornaday's idealizing approach to museum display construction. Some struggled to recreate as exactly as possible a particular plot of nature's geography. One example was Jesse Richardson, Hornaday's contemporary and a taxidermist at the American Museum of Natural History in New York. As described in *Scientific Taxidermy for Museums* (1899), Richardson, as opposed to Hornaday, chose to:

select a given spot of wilderness ground of precisely the same area [as the exhibit space will be] . . . and reproduce only such materials as are found on that particular square of mother earth.²⁷

Thus in his version of the habitat group, Richardson aimed to faithfully reproduce the appearance of a specific plot that he had surveyed, recording its exact perimeter and contents in field photographs. Hornaday, by contrast, demanded the careful construction of an ideal space that was entirely outside any “particular square of mother earth.” Found nature would be subordinated to an idealized “look of life,” the goal, according to Hornaday, of all great taxidermists.²⁸

Of course, the Buffalo Group’s overall “look of life” would depend most of all on the dynamic qualities of its six animal inhabitants. In planning for the Buffalo Group, Hornaday first killed a small herd’s worth of Montana buffalos and then proceeded to hollow out their bodies. His purpose was to make room for his version of idyllic American buffalo-hood.

Hornaday mounted the chosen six specimens using his so-called “clay manikin process.” This process, unlike the more primitive taxidermic techniques of the eighteenth and nineteenth centuries (the “rag and stuff method”), did not use the animal skeleton for structural support.²⁹ Instead, in line with the new taxidermy, Hornaday eliminated the vast majority of the actual animal body in his finished work.

Hornaday’s manikin method not only limited the technical difficulties of the mounting, but also made taxidermy almost entirely a matter of what Hornaday called “artistic sense” and anatomical re-creation. After disposing of the specimen’s bones and innards, Hornaday then removed and preserved the fur-coated skins. While treating the pelts, he was careful to either clean, or else cut around, bullet holes and bloodstains, thereby wiping away any visual traces of violent slaughter. Next, Hornaday set to work on the construction of the form itself. To this end, he created a plaster cast of the idealized buffalo body shape, using a wooden frame wrapped in rope as a foundation (Fig. 7). This cast, called the manikin, was then coated with textured clay (Fig. 8). According to Hornaday, the successful manikin would always surpass the original, organic, animal body in both appearance and endurance. He explained in his manual that:

It is impossible for any taxidermist to stuff a buffalo skin with loose materials and produce a specimen which fitly represents the species. The proper height and form of the animal can be secured and retained only by the construction of a statue to carry the skin . . . The term manikin is this made-up figure of an animal over which a skin is to be adjusted; [it is] made to counterfeit the actual form and size of a living animal.³⁰

Ironically enough, in the construction of the Buffalo Group, the “real” Montana animal was hollowed out to “secure the precise artistic effect that was intended in the design” for the artificial ideal.³¹ The manikin thus became a “counterfeit” form, “made-up” — through care and skillful craftsmanship — to surpass the original.

Idealization in the habitat group, according to Hornaday, extended from the calculated fiction of the counterfeit bodies, to the pelts that would drape them. After completing the manikins, Hornaday attached authentic buffalo skins to the sculptural pieces he had created. Each of the six buffalo whose skins appeared in the Buffalo Group should, he thought, stand as perfect representatives for every buffalo of their type that had ever lived. Assembled together, they should represent far more than just a single cluster of dead buffalos. Rather, these buffalo should constitute a perfected vision of the species as a whole — the “spirit” of the buffalo in the wild.

During his expedition to Montana in 1886, Hornaday and his team had collected twenty-five buffalo specimens of varying sexes, ages and statures. Upon returning from the 1886 Smithsonian collection expedition, Hornaday was very proud to report: “It may be fairly represented that the

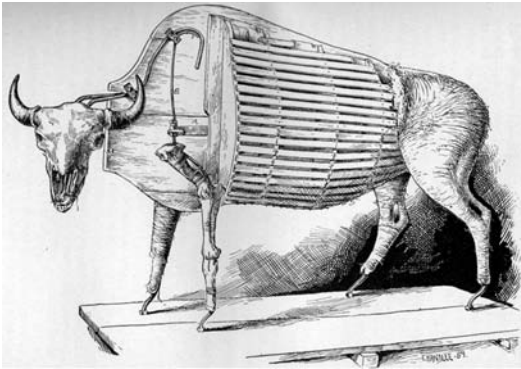


FIGURE 7. Manikin for Male American Buffalo: In Process. Source: Hornaday, *Taxidermy and Zoological Collecting*, 152.

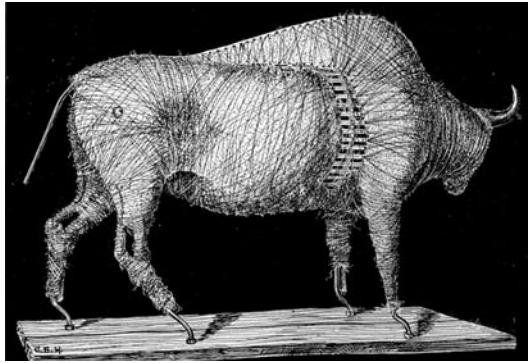


FIGURE 8. Manikin for Male American Buffalo: Completed. Source: Hornaday, *Taxidermy and Zoological Collecting*, 156.

specimens taken by the expedition were in every way perfect representatives of the species.”³² When Hornaday was back at the National Museum, he scrutinized these twenty-five specimens alongside the measurements and sketches that had been produced at the site of their individual deaths in order to determine the most perfect of the “perfect representatives.” Hornaday chose a massive bull, a hefty cow, a smaller cow, a young spike bull, a yearling and a suckling calf.

Of the six chosen exemplars, Hornaday considered the large male buffalo specimen the most perfect of all (Fig. 9). The large male buffalo specimen would stand at the center of this vision. According to Hornaday, the bull’s perfection inhered in his massive size and strength. Hornaday described him as “the giant of his race . . . believed to be the absolute largest specimen of which there is an authentic record.”³³

The other five specimens, all females and youths, flanked the big bull, positioned so as to accent the bull’s size and power.³⁴ To be sure, the bull buffalo did eventually acquire the sort of iconicity for which Hornaday had hoped. Indeed, in the 115 years since the Buffalo Group’s unveiling, portraits of this same bull have adorned buffalo nickels, buffalo bills and buffalo postal stamps; his silhouette graces the current seal of the National Park Service.

Hornaday posed his buffalo posse around an artificial alkaline pool of his own construction. As in his design of the Buffalo Group overall, in creating the artificial alkaline pool, Hornaday manipulated the viewer’s perception of the display’s material dimensions. He recounted proudly in *The Extermination of the American Bison* that “the pool is a glassy delusion, and very perfect in its way.”³⁵ By using several layers of glazed glass and coated wax, he created an effect of depth far greater than the model’s actual dimensions (see Plate 1). In the result,

one sees a plant growing beneath the water and in the soft, oozy bottom near the edge, are the deep prints made by the fore feet of a big buffalo bull.³⁶



FIGURE 9. The Perfect Representative: Head of the Buffalo Bull, Model for the National Park Service Seal. Source: Hornaday, *Extermination*, 382.

After creating the interior of the ideal outdoor scene, Hornaday provided his buffalo with a protective enclosure, a four-sided glass and mahogany case. Early museum display cases (those in general use before the 1880s), had only one or two transparent walls.³⁷ Hornaday's introduction of the four-sided glass case for the Buffalo Group created an additional compositional requirement; the animals must come to life from all possible perspectives, and not only from one side.

Once the case was in place, the glass panes locked the animals in and the observers out. The glass partition created a spatial boundary between the viewer and the viewed. This break between observer and observed strengthened the resulting sense of two separate realms — of lay-reality and pristine nature. Within the interior realm, Hornaday positioned the animals so that their expressions — the sparkling alert eyes of the mother and father especially — would lure the observer into the quiet drama of the scenic moment (see Plate 1).

The glass partition of the vitrine created not only a spatial, but also a temporal barrier between the viewer and the viewed. Holden Caulfield, of J.D. Salinger's *The Catcher in the Rye*, pointed out that the passage of time that occurs for the museum visitor is entirely out of sync with the time understood to be operative inside the display case. For the adolescent Caulfield,

The best thing about the museum . . . [is that] everything'd stay right where it was. Nobody'd move . . . The only thing that would be different was you.³⁸

As Salinger's character articulates, the everyday life of the museum visitor passes moment by moment. Spatial and material changes mark temporal progression. The six buffalo of Hornaday's group, by contrast, are caught forever in an imaginary moment of time on the Montana prairie. A single moment is eternalized behind the glass — illustrating an impossible but convincing version of the exterior world.

In Hornaday's Buffalo Group, the temporal fantasy ultimately extended further and deeper — to embrace not only idealized stasis but also the unrealistic — and specifically anachronistic — relations between the objects within the case. In *Taxidermy and Zoological Collecting*, Hornaday admitted that the six buffalo specimens on display, aside from being collected at different sites, were shot at different times of year and therefore appeared in seasonally incongruous fur phases.³⁹ Although the buffalo calf and yearling specimens obtained in the spring of 1886 were in perfect condition, according to Hornaday, the adult specimens had begun to shed their winter pelage; consequently the adults' skins were "unfit" to mount.⁴⁰ As a result, Hornaday had to return to the field in the fall to collect adults in the finest and firmest period of their fur. Hornaday strongly defended this choice, contending that:

No matter what hypocrites may say, do not hesitate to perpetrate an anachronism by taking adult specimens later in the season, when their fur is at its best.⁴¹

Thus, Hornaday constructed a group of animals that could never have existed simultaneously in their current forms, displacing them from seasonal and spatial origins.

Notably, throughout his taxidermic process, Hornaday vehemently rejected the use of photography. He argued that photographs taken in the wild, whether of live or dead animals, were of minimal use to the taxidermist precisely because photographs were too tightly bound to an actual place and time. In Hornaday's view (disputed by some of his colleagues), the photograph would always fail to elucidate the very points which taxidermists considered to be important.⁴²

In contrast, to the photographer, the taxidermist was not trying to represent, or even memorialize, the dead animal as it actually was. The taxidermist aimed to present the living animal in an idealized setting. In contrast, instantaneous photography, developed in the late nineteenth century, did exactly the opposite, capturing only a single moment and locale. Instead of making photo-

graphs, Hornaday recommended field sketches, which would allow taxidermists to pick and choose exactly the sort of reality they wanted to transport back to the studio for transformation into a taxidermic moment. As a local newspaper would report just days before the Buffalo Group was unveiled for public viewing:

It is as though a little group of buffalo that have come to drink at a pool has suddenly been struck motionless by some magic spell, each in a natural attitude and then the section of prairie, pool, buffalo and all had been carefully cut out and brought to the National Museum.⁴³

The “magic spell” had been cast by the crafty hand of the illusionistic taxidermist.

The Whole Story

Hornaday’s habitat groups, and the Buffalo Group in particular, situated themselves between scientific “critical scrutiny” and mass appeal through the telling of a particular kind of “story.” As *The Washington Star* would report:

The [Buffalo] group with its accessories has been prepared to tell in an attractive way to the general visitor to the museum the story of the buffalo, but . . . at the same time to secure an accuracy of detail that will satisfy critical scrutiny.⁴⁴

Hornaday’s colleagues and followers also used the word “story” to describe their constructions. In the *Story of Museum Groups* (1922), an informational pamphlet for visitors, Frederic Lucas, director of the American Museum of Natural History in the 1910s and 1920s, described the construction of Hornaday’s Buffalo Group in just such terms. Lucas, like Hornaday, approved of anachronistic depictions of nature for the sake of the story. As Lucas wrote:

The habitat group thus involves a slight departure from nature . . . May we combine animals from different localities, or show together those taken at different seasons? Personally the writer believes that all these things are permissible . . . in no other way can you complete the life-cycle and tell the whole story of the buffalo.⁴⁵

But what kind of “whole story” was this?

When Hornaday and his colleagues referred to such stories, they do not refer to a linear narrative containing a beginning, middle and end; after all, such a structure would defy the habitat group’s quality of cyclicity. Nor is the habitat group story a baseless tall-tale. Rather, the taxidermists’ allusion to “story” refers to a molding of shape, narrative and moral design. The prominence of the “story” concept also underscores their celebration of taxidermic artistry and craftsmanship.⁴⁶

Hornaday claimed that each taxidermy display should teach “a number of little facts” to the viewer about the displayed species — for example its characteristic appearance, habitat and social structure.⁴⁷ The Buffalo Group’s story was the result of such conscious distillation and presentation of idealized habitat and pedagogical message. In his opinion, the Buffalo Group taught specific facts regarding the buffalo’s ideal size and presented typical elements of the Montana Buttes in a condensed landscape.

But these pieces of specific information did not exhaust the factual content of the habitat groups in general. In his *Taxidermy and Zoological Collecting*, Hornaday described many of the general facts he had embedded in his “Squirrel Triptych,” a three part habitat group completed at the Smithsonian just after the unveiling of the Buffalo Group. The Squirrel Triptych display presented the squirrel in three distinct incarnations. Representations of the squirrel’s fall, winter and spring habitats were separated by panes of tinted glass. According to Hornaday:

Besides teaching what the nesting habits of the gray squirrel are, [the Squirrel Group] also impresses upon the observer the very important fact that the habits of different individuals are capable of very wide variation. It shows how dangerous it is for a student or scientific investigator to generalize too freely from one or two facts, and that it is dangerous for anyone to say what an animal will NOT do!⁴⁸

In another passage, Hornaday instructs taxidermists that habitat groups should convey lessons about scientific method and appropriate field observation techniques. He specifies that “the design [of the habitat group] must be dominated by one central idea of purpose, which should never be lost sight of in the construction of the group.”⁴⁹

According to Hornaday, the habitat group should teach not only about natural history and scientific observation, but also about aesthetics, morality and gender roles; it should teach lessons about human, as well as animal, behavior. Hornaday contended that in any large mammal habitat group, animal poses should be perfectly timeless and peaceful. Taxidermists should not sculpt eternal moments that depict climaxes of violence or love-making; instead they should present the complacently domestic within the museum case. Hornaday suggests in *Taxidermy and Zoological Collecting* to “represent every-day, peaceful home scenes in the lives of your animals . . . anything but fighting, leaping and running.”⁵⁰ He later compares the tranquility that should be created in the mount, with the peace that should be cultivated in the museum itself, asserting that “in a well regulated museum, no fighting is allowed.”⁵¹ Hornaday’s statement presents a critical double meaning. The actions that Hornaday prohibits in his taxidermied specimens are the very same actions that would be prohibited outside the glass fantasy — in the realm of the museum itself.

In the Buffalo Group, then, Hornaday crafted a moral education as much as an education in natural history. His exhibit might be interpreted as, among other things, a moral lesson in the naturalness of patriarchy. Although the male and female are both central in the Buffalo Group, the male specimen is the focus of the display, as well as of the overall project. Hornaday posed the six buffalo specimens so as to create a buffalo family portrait in which the male would occupy the highest and most prominent position. He posed the dominant bull so as to exaggerate his size and girth in comparison to the other specimens. Thus, *The Washington Star* would report, “it is around this great bull that the romance of the group centers.”⁵² Modeling the habitat group after an ideal Victorian American family, Hornaday reinforced the very conventions upon which he drew, thereby naturalizing the patriarchal structure of the idealized nuclear family.⁵³

Hornaday and his colleagues also inserted a morality of “fairness and justice” into the rhetoric of taxidermy. In their opinion, to create a display that does justice to a notable species, the taxidermist must conceal the peculiarities of a particular specimen.

Unless the individuals of a given species are always scrawny, I pray you for the sake of truth and justice, do not make your solitary representative of that species look like a candidate for special honors at a bone-yard.⁵⁴

Hornaday claims that his artificial manipulations of actual organic form are “for the sake of truth and justice.” If the last buffalo looked dead, then ultimate “truth” would be lost; violence and mortality would triumph.

The habitat group’s lessons were aesthetic as well as moral. Hornaday contended that the form, composition and construction of the habitat group’s specimens and accessories must be exquisitely balanced. As he wrote:

It is unnecessary to say that each group should form a perfect picture, compact, well rounded . . . so clearly defined as to leave no room for the suggestion that the specimens have been mounted independently and simply placed together.⁵⁵

Successful taxidermy should seamlessly create the natural rather than reproduce the actual. Nature should be perfected through deliberate modification of particular observations. As Hornaday advised his students:

Do not make the mistake of concluding that because you have seen a particular animal assume a particular attitude, it is “natural” and that therefore you can do no better than reproduce that attitude. This mistake will lead to the reproduction of many an ugly attitude even though like life itself.⁵⁶

Hornaday thus concludes, definitively, that nature should not be seen when it is ugly. Rather, the taxidermist should select from beautiful poses, even if drawn from the imagination. In the end,

the choice of an attitude depends wholly on your artistic instincts, “on your eye” so to speak . . . Choose [the pose] which is most graceful or grand and is at the same time truly characteristic of the subject.⁵⁷

The stuffed specimen in the habitat group must be at the same time “most characteristic” and perfect. Natural anomalies and asymmetries would thereby be wiped out resulting in a story of tranquil normalcy.

Hornaday thereby sanctified the natural and domestic human orders, as well as the museum space in conceiving and implementing details of the Buffalo Group. “Seek not to startle and appall the beholder, but rather to interest and instruct him.”⁵⁸ “Beholding” rather than simply seeing, the museum-goer becomes a participant in a spiritually uplifting experience — the observation of nature distilled and preserved in compressed form.

History, Memory, Animal Reliquary

To create a successful model of the buffalo species for future generations, Hornaday had to fabricate the buffalo’s recent history as well as its interiority. As part of this process, this taxidermist-conservationist consciously hid away the real mortality, violence, and space that constituted the buffalo’s Great Plains habitat.

Recent scholarship on the relationship between history and memory proposes that in building monuments, human society seeks to rid itself of its obligation to remember the past. Much of this scholarship has tended to address war memorials and commemorative outdoor statuary, and has argued that the reality of the past often becomes buried beneath complex veneers of myth and artifice. As James Young has written, “In effect, the initial impulse to memorialize events . . . may actually spring from an opposite and equal desire to forget them.”⁵⁹ French historian Pierre Nora made a foundational argument about *lieux de mémoire* (sites of memory), contending that “the less memory is experienced from the inside, the more it exists through its exterior scaffolding and outward signs.”⁶⁰

Such lines of inquiry can well be brought to interpretation of natural history exhibition space. Indeed, Nora’s words bear profoundly on the “exterior scaffolding” of the Buffalo Group. For in mounting each of the six buffalo specimens, Hornaday turned a dead animal — a body whose liveliness had been destroyed by the violence of extermination — into a simultaneously literal and figurative veneer. The Buffalo Group’s literal veneer consisted in preserved dead skin laid over plaster manikins. But the figurative creation went far deeper into the object itself, becoming an antidote to both memory and the reality of incipient species extinction.

In constructing the Buffalo Group, I contend that Hornaday aimed to atone for the physical reality of the buffalo extermination he had witnessed (and participated in) on the Montana plains by simultaneously acknowledging and denying it; he wanted to make people forget mortality and

violence. The real time and space of the late nineteenth century should be scrubbed clean, supplanted by the glassy perfection of the Buffalo Group.

In 1886 Hornaday and his expedition crew traveled across the Montana Buttes territory, encountering the animal genocide-in-progress. In his 1888 article for *Cosmopolitan Magazine*, he described the actual remains of the extermination; mile after mile of dead carcasses littered the landscape of the West (Fig. 10).

The bleaching skeletons lie scattered thickly all along the trail. Like ghastly monuments of slaughter, these ugly excrescences stand out in bold relief on the smooth hard surface of the prairie, from the huge bull skeletons lying close beside the wagon trail to those far back in the bad-lands, where they are merely dark specks in the distance . . . They are the only monuments that remain to the American bison.⁶¹

Hornaday's words here describe a horrific diorama — what he calls a “bold relief.” His vivid observations might have inspired a different kind of museum display — one that more accurately captured the habitat he had witnessed. But such found images — snatched out of Hornaday's actual experience — evoked cruelty and extinction rather than livelihood and perfected nature. Indeed, the buffalo bones and rotting carcasses exposed the ugly interior of the slaughtered animals. And to be sure, such untreated corporeal remains — the “only that remain[ed]” before Hornaday's project, were transient as well as sinister. Unlike the well-preserved taxidermic sculptures of the Buffalo Group, buffalo carcasses in the wild would soon decompose. The real, albeit ghastly, monuments would rot, smell and then disintegrate into nothing. Hornaday asserted that “in a short time, even the bones will all be gathered and nothing whatever will remain save what can be found in the museums, the zoological gardens or the tertiary deposits of the earth itself.”⁶²

Hornaday thus decided to supplant these natural remains with a work of human art. Through his work as taxidermist, he replaced the natural memorials of the carcasses with the construction of artful relics.⁶³

The Buffalo Group then, Hornaday's first major preservation project, required a killing that denied itself. Rather than collecting any of the buffalo corpses lining the railroad tracks, Hornaday's team hunted and killed each and every specimen. In this way, they ensured that the carcasses would bear no visible signs of violence, unlike the “ghastly specimens” already scattered over the fields. Hornaday was most proud of his ability to kill the massive bull. With a shot aimed “squarely through the backbone,” he granted his own “wish to bring down a buffalo with a single shot.”⁶⁴ Hitting this target assured the perfection of the bull's hide; the killing would leave no trace of blood. Only thus could violence be negated in the fantastical world of the glass case.

The perceived importance of national memorialization justified Hornaday's purposeful slaughter. According to one journalist reporting on the expedition: “Bullets found in the Great Bull's body showed that he had been chased and hunted before, but Fate had long preserved him for the immortality of the Museum exhibit.”

After the slaughter of the six specimens, Hornaday and his crew collected several desiccated skeletons from the Plains that they later hid within the museum's storage rooms. As Hornaday described, the bones were “cached. . . against the great famine for bison that will soon set in.”⁶⁵ Eventually these skeletons would either be used by Smithsonian scientists for comparative morphological studies or sent to other museums' research facilities. Next, Hornaday's crew turned to the carcasses of the animals that they themselves had hunted down and collected. Hidden away behind the screens that veiled the construction and installation of the Buffalo Group, taxidermists peeled back, and scrubbed away, all traces of flesh and blood on the skins.⁶⁶ Hornaday (and an assistant) flanked the skin-covered manikin with carefully-chosen accessories of its imagined envi-

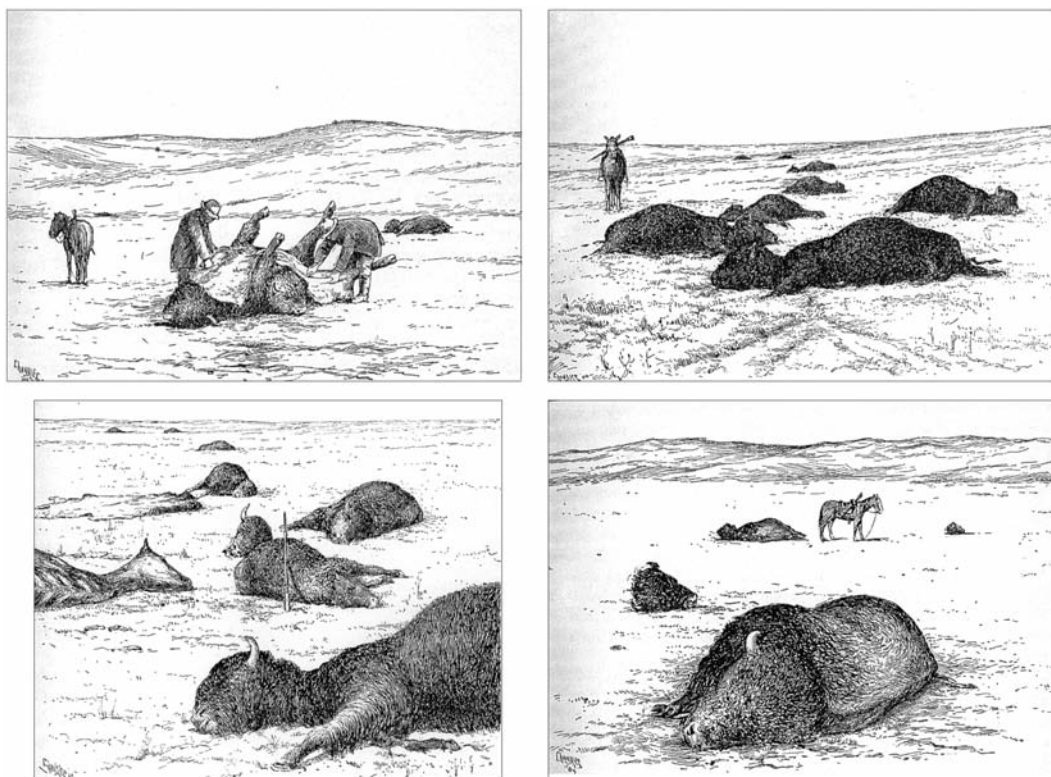


FIGURE 10. Ghastly Monuments: Scenes on the Northern Buffalo Range, c. 1875, after photographs by L.A. Huffman. Source: Hornaday, *Extermination*, 534.

ronment. Nascent memories of extermination having been swept away, finally all was encased in a world of glassy fantasy. As Nora suggests in his discussion of French public monuments:

Memory had been wholly absorbed by its meticulous reconstruction. Its new vocation is to record . . . it sheds its signs upon depositing them there, as a snake sheds its skin.⁶⁷

Taxidermy literalizes Nora's metaphor of the shedding of the skin. In the Buffalo Group, as it appeared in 1888 at the National Museum, the horrors of the hunt had been well-hidden. Instead of displaying the relics of the actual slaughter — these being the bones and innards of dead animals — Hornaday's killing of the buffalo specimens became an affirmation of life itself. Through the buffalo's meticulous, taxidermic reconstruction, death was transformed — nature rendered in glassy perpetuity.

As a concerned sports-hunter and museum professional, Hornaday reacted to the depletion of the buffalo — which he himself attributed to excessive hunting — by deciding to seek out and kill several of its remaining specimens. The notion of killing a species to save it, today seems quite puzzling — even ironic. Yet the practice made sense within Hornaday and the Buffalo Group's milieu. The drive to memorialize threatened natural resources justified — and indeed necessitated — the killing of specimens.

Thus, by constructing the Buffalo Group, Hornaday saw himself — as others saw him — as atoning in small part for the devastating slaughter of the buffalo that had occurred over the preceding century. This notion of atonement, central to his and his peers' later conservation efforts, and

detailed elsewhere in my work, emerged from the same tenets he propounded as professional taxidermist.⁶⁸ In his 1891 treatise on the art of taxidermy, Hornaday counseled his readership: “if you really must kill all the large mammalia from off the face of the earth, do at least preserve the heads that are brought low by your skill and powers.” And as he reiterates: “If you must go and kill things, saves their heads and mount them, as atonement for your deeds of blood.”⁶⁹

Like other prominent naturalists and taxidermists of the late nineteenth century, Hornaday felt strongly that taxidermy might preserve a representative remnant of a vanishing species for posterity. Losses effected through conquests of native nature and culture could be replaced by convincing taxidermied specimens. Evanescent creatures might thereby remain safe for years to come, memorialized in a visually accessible form. Hornaday expressed this sentiment when he addressed his readers later on in his taxidermy treatise. As he wrote:

Perhaps you think a wild animal has no soul. But let me tell you that it has. Its skin is its soul. And when mounted by skillful hands, it becomes comparatively immortal.⁷⁰

However, to be effective, taxidermic preservation must be exquisitely designed and crafted for endurance.⁷¹ As Hornaday advised in *Taxidermy and Zoological Collecting*:

A preserved and mounted animal that has not enough solidity and stability to stand the test of time is unworthy of a place in any museum, for its existence is sure to terminate speedily — in disappointment, disgust and loss.⁷²

Deterioration of the habitat group would disable its function as a permanent embodiment of space, time, and species. Years would wash over the finished specimen; cracks and seams would begin to show through the skin. Without proper care, he suggests:

its sides will be a succession of hills and hollows, its seams will be ripped and gaping wide open, its nose will be shriveled up and shapeless, its ears will look like dry autumn leaves. It will lean over to one side and will also have settled down upon its feet until they are shapeless deformities.⁷³

The mistreated specimen returns from a state of glassy perpetuity to one of tragic mortality; perceived as “ripped,” its component parts “gape wide open.” In his manual, Hornaday warned that “dishonest or careless taxidermy work [is] like murder.”⁷⁴ Without the taxidermist-given (rather than God-given) gift of incorruption, taxidermied form “shrivels” and evolves into formlessness. Sculpted perfection becomes “ripped. . . . gap[ing] . . . helpless and disordered.”

Conclusion and Epilogue: Old Skins and Fresh Meanings

Thus, in the eyes of many late-nineteenth-century taxidermists and museum-goers, the Buffalo Group, once properly assembled and installed, would present an arrested version of wild nature — of the wild animal in its purest form, simultaneously idealized and immortalized. Thus did killing and stuffing animals seem to provide a virtual salvation.

To be sure, in the decades following 1888 and indeed well into the twentieth century, Hornaday brought this taxidermic model of preservation to bear on the development of displays and enclosures at various zoological parks and wildlife refuges the world over. He applied ideas generated during the Buffalo Group project, to his work for the National Zoo, the New York Zoological Park, the American Bison Society, and both the Wichita and National Bison Ranges. And more broadly as well, taxidermic production and discourse in the late-nineteenth century influenced the development of the American conservation and environmental movements. In particular, as I show elsewhere, Hornaday’s taxidermy work impacted profoundly his development of zoological parks and wildlife refuges in the twentieth century.⁷⁵

Like Hornaday's own career, and like the live buffalo population (which, after recovering by the 1930s, continues to skyrocket into the twenty-first century [Fig. 11]), the Buffalo Group itself did not stand still in the twentieth century. Its journey through space and time has continued into the present day.⁷⁶ Hornaday's Buffalo Group remained on display at the Smithsonian for sixty-five years after its first unveiling in 1888. From 1911 until 1955, the Buffalo Group occupied a central position on the ground floor of the National Museum of Natural History, across the Smithsonian Mall from its original location at the Arts and Industries Building. For these forty-four years, the Buffalo Group's massive mahogany case rested to the left of the Museum's ground-floor entryway. Its six taxidermied buffalo inhabitants gazed out through glass eyes at arriving museum visitors. All the while, their living, breathing counterparts — that is, buffalo in the flesh — made a remarkable comeback, repopulating wildlife refuges, zoological parks and private ranches throughout the nation.

But, in 1955, the natural history museum's Mammal Division began a large-scale mid-century modernization project. Curators hoped to update the displays of the larger North American quadrupeds. As part of this project, the Hornaday display would have to be removed — "perfect representatives" and all. On the one hand, the Buffalo Group seemed old-fashioned in style as compared to more contemporary dioramas that incorporated painted composite backgrounds. On the other hand, the skins it contained — its real soul, according to its maker — had not been mounted up to the standards of the 1950s taxidermists. Curators, therefore, replaced the Buffalo Group with a new buffalo diorama, for which they used the fresh pelts of animals recently killed from the National Bison Range, which Hornaday had himself helped establish in 1908.

While workmen were dismantling the great mahogany case, they discovered the metal box, Hornaday's time capsule, buried in the floorboards. Within was his handwritten plea — "When I am dust and ashes, I beg you to protect these specimens from deterioration and destruction, as they



FIGURE 11. National Bison Range Montana. Source: Author's photograph, June 2001.

are among the last of their kind.” The curatorial team saved the note, along with the attached sketches and news clippings. They treasured it with the same fondness they held for its now-deceased author. But they chose not to heed its advice. Preferring new buffalo skins and new ideas, they moved the Hornaday buffalo to the basement and disposed of the case.

Yet these buffalo did not last long in the dusty Washington D.C. basement. Rather they enjoyed a brief hibernation, followed by a major buffalo migration.

In 1958, the National Museum of Natural History shipped the six specimens back to Montana by request of the University of Montana at Missoula, which — after a few years — in turn donated these specimens to various sites in the region. The calf and mother cow were soon relegated to a nearby basement storage facility. The Great Bull was sent to the Montana Department of Fish, Wildlife and Parks. Meanwhile, the younger cow ended up underground — in a converted old army bunker in Fort Ellis, just outside of Bozeman.

The monument was in pieces — sent across the country, dispersed throughout the state of Montana. Time and the twentieth century had shattered the idealized material, space and moment of the original Buffalo Group. But in the late nineteen-eighties, an Oregon writer and naturalist named Doug Coffman decided to track down the Buffalo Group’s dispersed pieces; his goal was reunification. Coffman had fixated on Hornaday’s lost display as a symbol of both the recovery of American buffalo — already numbering in the hundreds of thousands — and the birth of the conservation movement. Over the next four years, he located all six specimens. Coffman began to plan for their reassembly at the Montana Agricultural Museum in Fort Benton, just miles from the Buttes where Hornaday had collected the same buffalo over a century earlier.

To pay for the planned restoration and homecoming, Coffman and the Fort Benton museum commissioned bronze miniature casts of the once-unified Buffalo Group. Using funds from their sale, the team hired a crew of taxidermists to “restuff” the six old buffalo, using new manikins and restored glass eyes. The Buffalo Group’s original accessories, long since lost, were matched to similar rocks, shrubs and sod collected in and around the Buttes.

In June of 1996, the ribbon-cutting ceremony took place in Fort Benton. The resurrected taxidermy group stands today in a special new wing of the small museum (Figs. 12–13). The exhibit hall is heated year-round for the comfort and longevity of the Buffalo Group, whose specimen and accessory arrangement almost perfectly match those in the 1888 photographs and description. Unlike the original Buffalo Group, the resurrected version is in open air; the glass of Hornaday’s case has completely disappeared. The six buffalo specimens rest on an eight-sided pedestal. Steel guard-rails, rather than glass walls, prevent collisions between human and animal.

No longer a national monument to loss, the Buffalo Group has become a regional monument to recovery. Thus do taxidermied landscapes and life-scapes come to be refigured in space and time. Old skins are refitted with fresh meaning.



FIGURE 12. Renunited Buffalo Group: Museum of the Northern Great Plains and Montana Agricultural Center. Source: Author's photograph, June 2001.



FIGURE 13. Details of Hornaday's Buffalo Group. Source: Author's photographs, June 2001.

NOTES

¹ William T. Hornaday, "The Passing of the Buffalo," *Cosmopolitan* 4 (October 1887):51–89, 85.

² Letter reproduced in Doug Coffman, "William Hornaday's Bitter Mission: The Mysterious Journey of the Last Wild Bison," *Montana Magazine* (February 1991):59–71, 63.

³ Some of the cultural histories and meanings of twentieth-century taxidermic production have been explored in Donna Haraway's "Teddy Bear Patriarchy," in *Primate Visions: Gender, Race and Nature in the World of Modern Science* (New York: Routledge Press, 1989): 26–58; also Susan L. Star's "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, NJ: Princeton University Press, 1992): 257–287; and Marc Simpson, "Immaculate Trophies" *Essays on Canadian Writing* 68 (Summer 1999):77–106.

⁴ Robert W. Shufeldt, *Scientific Taxidermy for Museums: A Report Based on a Study of the United States Government Collections* (Washington D.C.: Government Printing Office, 1899).

⁵ *Ibid.*, 430.

⁶ Traditional museum taxidermy, according to Shufeldt, was entirely incapable of such a feat. American museum taxidermists in the early nineteenth century produced drab and lifeless specimens. For a concise and informative discussion of the development of taxidermy in England see *Encyclopedia Britannica*, 11th ed., s.v. "Taxidermy."

⁷ Karen Wonders, "Bird Taxidermy and the Origin of the Habitat Diorama," in *Non-Verbal Communication in Science Prior to 1900*, ed. Renato G. Mazzolini (Firenze, Italy: Leo S. Olschki Press, 1986), 446.

⁸ *Scientific Taxidermy*, 422.

⁹ In the late nineteenth century, university and public natural history museums strengthened their ties with the non-academic groups and interests including entertainment as well as education, as natural history museums' mission became less and less exclusively tied to scientific research *per se*, with the increasing importance of experimentalism and the industrialization of science. (See Keith R. Benson "From Museum Research to Laboratory Research: The Transformation of Natural History into Academic Biology" and Sally Kohlstedt, "Museums on Campus: A Tradition of Inquiry and Teaching" in *The American Development of Biology*, ed. Ronald Ranger, Keith R. Benson and Jane Maienschein (Philadelphia: University of Pennsylvania Press, 1988), 49–83, 15–47. On the "New School of Taxidermy," Christopher Stoate, *Taxidermy: The Revival of a Natural Art* (London: The Sportsman's Press, 1987), 6.

¹⁰ Literature on W.T. Hornaday's life and career remains quite limited, but includes: James A. Dolph, "Bringing Wild-Life to the Millions: William Temple Hornaday, The Early Years: 1854–1896" (Ph.D. diss., University of Massachusetts at Amherst, 1975); and Hanna Rose Shell, "Finding the Soul in the Skin," critical introduction to Hornaday's *The Extermination of the American Bison* (Washington D.C.: Smithsonian Institution Press, 2002 [Washington D.C.: Government Printing Office, 1889]): viii–xxiii. Also of note is William Bridges' *A Gathering of Animals: An Unconventional History of the New York Zoological Society* (New York: Harper and Row, 1974).

¹¹ 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):647–661.

¹² Frederic S. Webster, "Address," *Annual Report of the Society of American Taxidermists* 1 (1881):31–36.

¹³ Andrew Isenberg, *The Destruction of the American Bison: An Environmental History, 1750–1920* (Cambridge: Cambridge University Press, 2000).

¹⁴ Dale F. Lott, *American Bison: A Natural History* (Berkeley, CA: University of California Press, 2002), 69–76.

¹⁵ T. J. Lears, *No Place of Grace: Antimodernism and the Transformation of American Culture, 1880–1920* (New York: Pantheon Books, 1981). Also Leo Marx, *The Machine in the Garden, with a New Preface* (Chicago: University of Chicago Press, 1994).

¹⁶ Theodore Roosevelt, *Hunting Trips of a Ranchman: An Account of the Big Game of the United States and its Chase with Horse, Hand and Rifle* (New York: Putnam and Sons, 1885), 241–243.

¹⁷ William T. Hornaday, *The Extermination of the American Bison* (Washington D.C.: U.S. Government Printing Office, 1889), 376.

¹⁸ *Ibid.*, 376.

¹⁹ *Ibid.*, 531.

²⁰ *Ibid.*, 546–547.

²¹ Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Museum's of Natural History* (Upsalla, Sweden: University of Upsalla Press, 1993), 125.

²² Shufeldt, *Scientific Taxidermy*, 153.

²³ Hornaday created the Buffalo Group exactly along these ideal taxidermic lines laid out by himself and his peers in the closing decades of the nineteenth century. Using his skills as museological craftsman, Hornaday altered the buffalo spec-

imens and accessories he collected, creating an ideal section of representational ground. Rather than reproducing any specific geographic site in Montana, Hornaday aimed to condense the buffalo's formerly expansive habitat into the small area of a Washington D.C. museum case. — six buffalo in glass box assembled so as to conjure up the Great Plains.

²⁴ William T. Hornaday, *Taxidermy and Zoological Collecting*, (New York: Scribner's Sons, 1891), 229–247.

²⁵ *Ibid.*, 233.

²⁶ Frederic A. Lucas, *The Story of Museum Groups: Guide Leaflet Series No. 53* (New York: American Museum of Natural History, 1921), 32.

²⁷ Shufeldt, *Scientific Taxidermy*, 238.

²⁸ William T. Hornaday, "Common Faults in the Mounting of Quadrupeds," *Annual Report of the Society of American Taxidermists* 3 (1883):67–71, 67.

²⁹ This earlier method — variations of which were standard practice throughout the eighteenth and nineteenth centuries — consisted of "stuffing" the chemically-treated animal pelt with fibrous material (rag and hemp). (C.J. Maynard, *The Naturalist's Guide in Collecting and Preserving Objects of Natural History* [Boston: Fields, Osgood and Co., 1870], 50–51. Also, *Encyclopedia Britannica 11th Edition*, s.v. "Taxidermy" and P.L. Farber, "The Development of Taxidermy and the History of Ornithology" *Isis* 68 [1977]:550–566.)

³⁰ *Taxidermy and Zoological Collecting*, 140.

³¹ *Ibid.*, 245.

³² *Extermination*, 395.

³³ *Extermination*, 547.

³⁴ A *Washington Star* journalist pointed out that the larger cow complemented but did not excel the mighty male; the journalist described the cow as "a creature that would be considered of great dimensions in any other company than that of the great bull." (Reproduced in Hornaday, *Extermination*, 547).

³⁵ *Ibid.*, 547.

³⁶ *Ibid.*, 547.

³⁷ Karen Wonders, *Habitat Dioramas: Illusions of Wilderness in Natural History Museums* (Sweden: Upsalla University Press, 1993).

³⁸ J. D. Salinger, *The Catcher in the Rye* (Boston: Little Brown, 1951), 121.

³⁹ Hornaday, *Taxidermy and Zoological Collecting*, 243.

⁴⁰ Hornaday, "The Passing of the Buffalo," 87.

⁴¹ *Ibid.*, 243.

⁴² Robert Shufeldt, "Taxidermy and Photography," in *The American Annual of Photography and Photographic Almanac* (January 1899):72–4.

⁴³ *Extermination*, 546.

⁴⁴ *Extermination*, 546.

⁴⁵ Frederic A. Lucas, *The Story of Museum Groups*, Guide Leaflet Series, no. 53, (New York: American Museum of Natural History, 1921), 26–27.

⁴⁶ Star, "Craft vs. Commodity," *Op. Cit.*

⁴⁷ *Taxidermy and Zoological Collecting*, 241.

⁴⁸ *Ibid.*, 242.

⁴⁹ *Ibid.*, 237.

⁵⁰ *Ibid.*, 141.

⁵¹ *Ibid.*, 142.

⁵² *Extermination*, 547.

⁵³ Notably, buffalo are, in reality, a matriarchal species.

⁵⁴ *Taxidermy and Zoological Collecting*, 112.

⁵⁵ *Ibid.*, 143.

⁵⁶ *Ibid.*, 111.

⁵⁷ *Ibid.*, 112.

⁵⁸ *Taxidermy and Zoological Collecting*, 140.

⁵⁹ James E. Young, *The Texture of Memory* (Yale University Press: New Haven, 1993), 5.

⁶⁰ Pierre Nora, "Between History and Memory: Les Lieux de Mémoire [1984]," *Representations* 25 (Spring 1989): 7–25.

- 61 “The Passing of the Buffalo,” 88.
- 62 *Ibid.*, 88.
- 63 See Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (Oxford: Oxford University Press, 1964).
- 64 “The Passing of the Buffalo,” 95.
- 65 *Ibid.*, 88.
- 66 *Ibid.*, 88.
- 67 “Between History and Memory,” 13.
- 68 Hanna Rose Shell, “Vital Sparks: Taxidermy at the Zoo, 1890–1930,” (forthcoming article).
- 69 *Taxidermy and Zoological Collecting*, 157–158.
- 70 “The Passing of the Buffalo,” 85.
- 71 *Ibid.*, 235.
- 72 *Taxidermy and Zoological Collecting*, 109.
- 73 *Ibid.*, 109.
- 74 *Ibid.*, 110.
- 75 As I argue in “Vital Sparks: Taxidermy at the Zoo, 1890–1930,” Hornaday modeled his innovative “zoological park idea” on a taxidermic model, employing photography and painting as media to compensate for the inadequacies encountered in orchestrating live animal displays.
- 76 Doug Coffman, “Bitter Mission”; also Hanna Rose Shell, “The Last Wild Buffalo” *Smithsonian Magazine* (February 2000):26–30.