

"MAKING THEM TALK": ANIMALS, SOUND, AND MUSEUMS

Historians and theorists have often identified the natural history museum as a primarily visual experience, but starting in the 1930s, museums were audiovisual spaces. The development of mobile sound recording by the ornithologists at Cornell University reconfigured natural history knowledge and the way that knowledge was conveyed to the public. Natural history museums added audio playback technologies to their static taxidermic displays in response to the rapid development of entertainment technologies outside of the museum, especially synchronized sound motion pictures. However, these new, "scientific" environmental sounds were implemented largely through representational paradigms that had been established by popular entertainment forms. This essay looks specifically at exhibitions at the Cornell University Museum and the American Museum of Natural History in order to amplify the ways that recorded natural sounds were embedded in the techniques and technologies of preservation, education, and entertainment.

Text by *Craig Eley*

"But," said I, "these things—these animals *talk*!"

-H.G. Wells,

The Island of Doctor Moreau (1896)

In 1914, Harlan I. Smith asked, "If museums of sights, why not museums of sounds?"^[1] An archaeologist and museum worker, Smith had recently discussed the idea with Anna Billings Gallup, curator of the Children's Museum in Brooklyn. Where she speculated that a collection of "the best music would be appreciated by these children and do them good," Smith saw an even greater potential for the use of recordings in a museum setting:

The records might include not only samples of the best music of the world by the world's great artists, but samples of the music of various kinds of instruments, of various kinds of mankind, as for

instance, of the Negro, the Eskimo and the Chinaman, and of great oratory. On the other hand, there might be records for the city dweller who has never had a chance to hear such things as the lowing kine, the rattle of the rattlesnake, the yelp of the coyote, the songs of birds, rare or otherwise, the hum of a swarm of bees, the roar of the waves, the jingle of the chains of a wagon freight train, and the creak of ox carts. Bird songs are probably of as much interest to museum visitors as bird skins.^[2]

Smith's suggestions for incorporating sounds into the museum experience were at once closely aligned with the natural history paradigms of the mid-teens and a radical departure from them. Native American and American folk recordings were already a

component of most major museum collections, but were never connected with museum displays.^[3] This was primarily due to the fact that ethnographic sound recordings were originally understood as an aid to written transcription, and then later as a long-term archival medium—never as a kind of artifact that might be played in the exhibit halls.^[4] In fact, recorded sounds in general were still seen by many as novelties unworthy of presentation in cultural institutions.^[5] As Smith observed, "Some museum authorities might think [playing records is] quite improper, and not at all dignified."^[6] Additionally, the nonmusical sounds that Smith so vividly imagines—the cows, coyotes, birds, and bees—would have been nearly impossible to record at this time. Because sound equipment was so heavy, and because it required such close proximity to its subject, recordings of wild or even captured animals were extremely rare. For all of these reasons, it would take an additional two decades before the songs of birds would be heard alongside their skins.

That happened in the fall of 1936, when the Cornell University Museum opened an exhibit featuring synchronized sound motion pictures projected in front of traditional taxidermic displays. The material for the movies was gathered a year earlier in an expedition co-sponsored by the American Museum of Natural History (AMNH). Describing the exhibit and its potential, ornithologist-turned-cameraman Arthur A. Allen told the *Science News-Letter*, "There is no reason why mounted lions should not roar, wolves howl and deer snort as well as birds sing when the cinematographer and sound technicians take their places with the taxidermist, the artist and the collector in gathering the material and setting up the habitat groups of the future."^[7] Though Allen is careful to mention all of the work that goes into the creation of these groups, his descriptive language focuses exclusively on audio. Like Smith before him, the future of museums that he imagines is not one of spectacular visuality, but one where animal voices call out from their displays.

The sonification of museum displays was driven by cultural and technological changes in sound recording practices that radically altered how natural history knowledge was acquired and transmitted to the public. The development of mobile recording technology by the ornithologists at Cornell University in the late 1920s and early 1930s marked the end of the imitative era of nature recordings and established new standards for how natural sounds were perceived by the scientific community. Where animal imitations, especially imitative whistling, were once common in concerts, lectures, and commercial records, new recordings of "actual birds" were now consolidated into a few cultural and educational institutions, most prominently Cornell and the AMNH in New York. However, fictitious sounds of animals remained popular outside of these institutions, due to a spate of popular "jungle adventure" films in the early 1930s that advertised scientific accuracy even as they trafficked in exotic sexuality and even bestiality. By comparison, museum habitat groups now seemed even more lifeless. As James T. Tanner, a Cornell graduate student, succinctly put it, "The time had come to bring the habitat group to life."

Because of the difficulty of recording non-human subjects on location, efforts to re-animate the display group using sound were hybrid practices that relied heavily on 1910s and 20s cinema sound techniques, which themselves were an amalgamation of earlier forms such as illustrated lectures, vaudeville shows, phonograph concerts, and storefront nickelodeons. "Scientific" natural history narratives in the movie theater had to rely on these forms long after Hollywood studio films had transitioned to "talking pictures," making them generally unpopular at the box office. Therefore, in order for curators to make the natural history museum experience more "cinematic," they did not show more natural history films, but rather incorporated cinematic techniques into their pre-existing taxidermic displays. They made their animals talk.

This essay examines the discourse

surrounding changes in museum exhibition practices in order to illustrate the ways that recorded natural sound was embedded in the tensions between preservation, education, and entertainment. As Michael Rossi has recently argued, museum displays have proven "a particularly fertile source of reflection on the historically situated characteristics of notions like nature and artifice, falsity and truthfulness, and ideology and materiality."^[8] However, the majority of these academic reflections have focused so narrowly on visibility that they have neglected the historical complexity of "visual" technologies themselves, especially film.

Historians and theorists have often posited the museum as a primarily visual experience—Donna Haraway has called the museum "a visual technology"—but starting in the early 1930s the museum could more accurately be understood as an *audiovisual* technology.^[9] The addition of recorded sounds to museum displays in the 1930s, 40s, and 50s via turntables, magnetic tape machines, and public address systems was the dominant way that curators attempted to update their displays. These changes were driven by the industry-wide problem of "museum fatigue," a condition first given name in 1916 that was attributed to visitors seeing too many specimens or reading too much written text.^[10]

Far from a silent, purely visual experience, the halls of the natural history museum have historically resonated with a variety of human and nonhuman voices. As Michel Chion has argued, "the voice hierarchizes everything around it," and natural histories are especially structured by hierarchies of voices.^[11] This begins with the written museum description, and the subjugation of all voices underneath the professional scientist and curator. Audiovisual technologies complicate this matter by giving those professionals the ability to capture the actual voices of "others" and the decision on how to "grant" that voice back to them—if at all.

Hearing Birds and Beasts on Film

The recording and playback of environmental sounds in the natural history museum in the 1930s was deeply indebted to two related cultural developments whose origins stretch back into the late 19th century. The first was the evolutionary logic that guided early ethnographic sound recording practices. Though evolutionary thinking recognized the connections between various human and animal species, it fit those things into a rigid and linear narrative of "progress." This meant that people who occupied the same geographic space could be cast as temporally separate; according to Jonathan Sterne, so-called "primitive" people were imaged to exist "in the collective past of white society."^[12] And as musicologist Rachel Mundy has argued, "This evolutionary outlook had considerable impact throughout the rest of the century on the way Western listeners heard the sounds of biologically foreign beings, whether that meant birds, beasts, or humans."^[13] The driving force in recording the voices of "birds, beasts, and humans" was to preserve them at the moment of their disappearance, while at the same time attributing that disappearance to the inevitable march of time as opposed to genocidal policies and capitalist expansion. This was especially true in the case of Native Americans, but also true of animals, whose sounds scientists hoped would educate the public and preserve the voices of dying species.^[14]

The second development was the habitat group, the complex taxidermic displays which were first presented in the late 1880s. The popularity of these exhibits launched a three-decade-long period where taxidermists and their art were at the center of museum collection and education. C.C. Nutting, the curator of the natural history museum at the State University of Iowa, noted in 1917 that this was a position that taxidermists themselves seemed to enjoy. "If the taxidermist is an up-to-date man and a real artist," Nutting said, "he will throw all of his influence in the direction of preparing the

beautiful modern habitat groups that are so justly admired by the public and so well adapted to showing the artist's ability and skill."^[15] However, Nutting also noted that these groups were often scientifically inaccurate and disproportionately expensive: "Habitat groups, beautiful and true to nature as they sometimes (not usually) are, are necessarily too limited in number and require too great an expenditure of time, money and space to meet this primary educational need."^[16] Likewise, in 1935, AMNH curator of comparative anatomy William K. Gregory said that display groups were "beautiful but scientifically innocuous ... admirably concealing [natural laws] under a vast welter of accurate details."^[17]

The increasing concern over these displays was also related to developments in entertainment technologies, and museums first attempted to update display groups using motion pictures. This effort was spearheaded in 1927 by Gladwyn Noble, the director of experimental biology at the AMNH, and Douglas Burden, a filmmaker and museum trustee. They collaborated on a habitat group featuring the Komodo dragon that was supplemented by a silent film that Burden shot on his expedition to Java to collect the animals. According to his detailed diary the trip was uneventful, but Burden edited his footage to fabricate drama and apparent danger in capturing his live specimens. When these specimens were put on display at the Bronx Zoo, they appeared lethargic and soon died. Afterward, they were stuffed and shaped into more regal poses that corresponded with the film. This way, according to Burden, the "emotional truth" of the Komodo was transmitted to visitors.^[18] In death, the animals were more "alive" than when they were living. But Burden's Komodo film, like his later documentary *The Silent Enemy*, were popularly unsuccessful due to their lack of synchronized sound, even as they were praised by scientists and critics.^[19]

What both Noble and Burden failed to realize was that the important filmic technology in 1927 was not moving

pictures—indeed, those would have been familiar to most audiences for decades—but rather the association of sounds with those images.^[20] The development of synchronized sound films problematized the various technological intrusions into animal bodies that were necessary to make specimens look as "active" as possible to the viewing public.^[21] Donna Haraway identifies this process as being entirely visual, with the taxidermic animals becoming "actors in a morality play on the stage of nature, and the eye is the critical organ."^[22] But animal reanimation and bodily transcendence was a process that increasingly involved the ear.

Filmmakers had a near-desperate desire to include sound in adventure and natural history films, as can be seen in the marketing campaign for *Africa Speaks!* in 1930. As the title implies, it was heavily promoted as the first film production to record the sounds of animals in the wild. However, immediately upon release, it was criticized in both the scientific and popular press as being misleading and ultimately fake. The film purports to document a trip taken by adventurer Paul Hoefler, and opens with a shot of a map and a narrator lingering off camera, using a wooden pointer to trace the route that the film is about to follow. From there it cuts right to the expedition footage, where, by today's standards, the sound is immediately and obviously not synchronized. The first shots of *Africa* show three women pounding grains, with only one of them even loosely matched to the accompanying sound effect. In a shot near a river featuring dozens of people loading massive amounts of gear and cargo onto boats, only one or two people are audible above a monotonous and improbably loud sound of lapping water.

It is clear that faking the sound was imagined as part of the film from the beginning, and director Walter Futter exploits it to sometimes interesting effects. In one scene, as porter falls asleep in the truck, his limp arm falls on the horn, cutting to a scene of antelope running. While one of the expedition leaders cries, "Damn those

natives!" a cameraman insists, "Nevermind, it makes a great scene!" Scenes like this are actually somewhat common throughout, as the film foregrounds its own making. But though it often shows various cameras being carried and operated, it never shows any microphones or other recording technologies. The animal sounds, such as the "unusual bark" of the giraffe, seem to be done with human imitations. *Variety* noted that "as an animal picture *Africa Speaks* is a good title even though not justified...the sound end is open to questions."^[23]

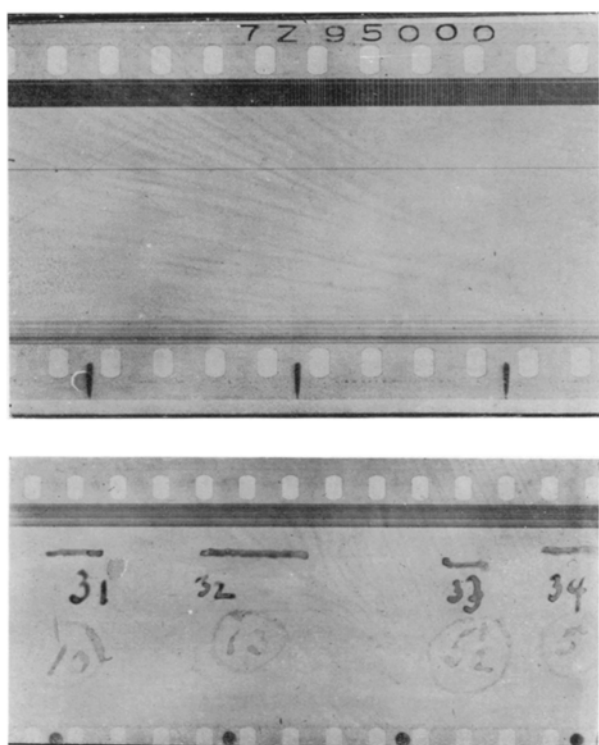
Among fictional Hollywood films, none addressed the issues of evolutionary thinking and the desire to give animals voices as powerfully as Erle C. Kenton's *The Island of Lost Souls*. The film was an adaptation of H.G. Wells' 1896 novel *The Island of Dr. Moreau* released by Paramount Pictures in 1932.^[24] In the film as in the novel, Moreau has been expelled from legitimate scientific circles in London because of extreme forms of vivisection. Along with fellow disgraced scientist Montgomery, Moreau moves his work to a remote island in the Pacific, where he turns wild animals into walking, talking humanoids to varying degrees of success. The arrival of shipwrecked guest Edward Parker (Edward Prendick in the novel) sets off a series of events that exposes Moreau's secret laboratory and turns his modified creatures against him.

Because of the subject matter and Wells' own comments, *The Island of Dr. Moreau* has often been read as a kind of anti-vivisection tract or a critique of science itself.^[25] However, the book and the subsequent film can also be read as a commentary on the act of recording and playback—the art of literally giving animals a voice. In the novel, Prendick's discovery of Moreau's secret work happens largely through the sound of tortured animals. In a chapter called "The Crying of the Puma," Prendick and Montgomery cannot even carry on a conversation due to the wailing of one of Moreau's subjects. "It was as if all the pain in the world had found a voice," the narrator comments.^[26] When Prendick finally confronts

Moreau on his "research," it is because he is appalled by the sounds they make. "These things—these animals talk!" he exclaims.^[27] "The great difference between man and monkey is in the larynx," Moreau explains.^[28] This scene is also one of the key moments in the film version, where Moreau puts it even more succinctly: "It takes a long time and infinite patience to make them talk."

This cinematic history was embedded in "scientific" mobile sound recording practices from the very beginning. If, as scholars have suggested, cinema has had a major influence on the look of natural history, then it had at least as strong an influence on the way natural history sounded.^[29] Albert R. Brand, discussing the work of himself and his colleagues in 1932, commented, "It is now several years since sound has been added to the motion picture and it naturally follows that if the motion picture industry can take sound out-of-doors, the naturalist should also be able to do so."^[30] And James T. Tanner, in his 1936 thesis outlining the efforts of Cornell to pair sound with natural history displays, stated matter-of-factly, "In 1928 the motion picture industry took the plunge into talking pictures and became the leaders in sound recording. This industry is mostly responsible for present day recording standards and technique."^[31] While somewhat of a simplification, Tanner's assertion establishes that the Cornell sound practices were indeed a cinema technology from conception to implementation, with modifications to meet the needs of the ornithologist.

The sound recording itself was done using a technique developed by Brand where audio was electrically "photographed." Brand had made "out-of-doors" recording his passion since retiring as a stockbroker in 1928 and taking up with the ornithologists at Cornell, transforming what was merely a hobby into a more formal relationship with the department. Brand not only brought along his knowledge of birds and a considerable amount of private wealth, but also a relationship with the AMNH, where he sat on the board. Working with Cornell ornithologists and engineers, Brand developed the mobile



SOUND FILMS.

UPPER: NOTE VERTICAL LINES ON BLACK STRIPE SHOWING FREQUENCY OF SOUND AND INTERVALS.

LOWER: A STUDIED SONG SPARROW FILM.

Detail of bird song on sound film, from Albert R. Brand, "A Method for the Intensive Study of Bird Song," *The Auk* 52.1 (1935): Plate V

recording studio that became known as the "sound truck." Inside the sound truck, the energy created by sounds captured by a large parabolic microphone was passed through to a light tube that would "flicker in exact correspondence with the frequency and intensity of the sound."^[32] This tube was placed inside a motion picture camera that had its lens covered, so that the film only picked up the flickering light. This technique allowed the scientists to examine bird songs in greater detail by putting the film under low-powered microscopes, where they could analyze the frequencies and intervals of individual songs in ways that were previously impossible.^[33]

From the outset of the sound truck and its attendant technologies, the Cornell staff touted its potential for education as equal to, if not more important than, its potential contributions to ornithological science. Brand bragged that his sound photography technique allowed for the easy transfer of

sounds to phonograph discs so that they could circulate "in elementary and secondary schools, and in scout groups, etc."^[34] Brand also transferred his sounds to disc for commercial release to the general public, starting with *The Songs of Wild Birds*, released on two 78 rpm discs with an accompanying book in 1934; the follow-up, *More Songs of Wild Birds*, came out in 1936.^[35] Brand shared his work with his colleagues and friends at the AMNH, who became interested in the sounds as well as motion pictures as a way to create more "cinematic" educational experiences in their halls. In 1935, Brand brokered a partnership between Cornell and the museum in order to collect such material for new exhibits to be developed at the AMNH as well as at the Cornell University Museum.

The Cornell-AMNH expedition was launched with a statement of purpose that echoed the logic of imminent disappearance inherent in evolutionary thought: to capture "the cyclical and disappearing species so that these may be preserved when the subjects are no longer available."^[36] The 2-month, 13,000-mile expedition left Cornell on February 13, 1935, and marked the first time Cornell ornithologists would attempt to capture moving images as well as sounds in the field.^[37] The expedition was led by Peter Paul Kellogg, who was in charge of sound recording, and Arthur A. Allen, who directed the filming. Allen was a long-time photographer who outfitted a second truck, this one specifically designed to capture images that could later be synced with the sounds. His truck included "sleeping quarters for two men," all of the camera equipment, and collapsible platform that could elevate eight feet above the roof.^[38] Their goal was to create the first synchronized sound motion pictures and taxidermic displays that mutually informed each other.

In order to accomplish this, the recordists had to confront how they would portray the relationship between sight and sounds—a relationship that did not exist in Brand's previous sound-only recordings. As late as 1930, the technical literature for

motion picture sound engineers was marked by conflict over what techniques were more desirable for audiences. These debates often hinged on the assumption that some modes of representation were more "natural" than others. No one made these arguments more explicitly than J.P. Maxfield, who believed that sound reproduction practices needed to mirror the "nature" of the physical body, and that the experience of sound in cinema should mimic the experience of sound in "real life."^[39] In a 1930 article, he wrote, "When a person is viewing a real scene in real life, he is viewing it with lenses—that is, the eyes, and pickup devices—that is, the ears, which are in a fixed relationship, one to the other."^[40] For Maxfield this meant that sound in the film needed to correspond with how much the image "actually moves," making a close-up louder than a wide shot, for example. Maxfield's literal, bodily interpretation of sound was largely rejected in favor of a less lifelike but more consistent listening experience, where sounds maintained their volume levels regardless of their distance in the frame. This was also the approach adopted by the expedition, in part for aesthetics and in part out of necessity.^[41]

The camera operators were perched in the car-top platform in order to shoot the birds as closely as possible, though because of their relative lack of mobility from the truck (which couldn't be driven while they were on top) they also took medium and long shots. The parabolic microphones, which remained on the ground with their operators, recorded sounds from a distance but technically in a kind of "close up." Recordists used gun-sights mounted to the edge of bowl-like reflector surrounding the microphone, in order to "aim" at the sounds being made by the birds.

After the filming and sound recording were finished in the field, the visual and sound elements were synchronized together at the Ornithology Lab, creating short synchronized sound films of an individual bird in its daily life. At least four short films were created: a Parula warbler, a Prothonotary warbler, a male Ivory-billed woodpecker, and a female Ivory-billed woodpecker. After these short segments were



Parabolic microphone used in the field, from Albert R. Brand, "The 1935 Cornell-American Museum Ornithological Expedition," *The Scientific Monthly* 41.2 (August 1935): 189

compiled, a still image was captured from the first frame of each. These still images were then cut and spliced together to create a single, hybrid image of all of the specimens in a single frame. The exact frames, and how they were cut, are included in Tanner's thesis and can be seen on the following two pages. Once that master image was assembled, it was used as both the model for a habitat group created with Ivory-billed specimens that museum had previously acquired, and as the first frame in a motion picture that would play in front of the diorama. The movie began with the composite still shot, then zoomed it to a close-up of an individual bird. This would dissolve into the individual sound film of the bird, a visual



Individual frames from Cornell motion pictures, James Taylor Tanner, "Sound Recording for a Natural History Museum" (M.A Thesis, Cornell University, 1936)

representation of literally "bringing the group to life." One reviewer explains the experience in detail:

When you stop in front of the museum case, you first see the mounted specimens. They are like all other modern museum specimens—very lifelike and natural, but still and silent, as though under a magician's spell.

Then you press a button. Immediately a motion picture screen rolls or slides into the place of the glass case front. On this the same group is projected in exactly the same position, from a motion picture machine. The birds and animals 'go into their dance,' moving and singing exactly as they did in nature when the sound film

was taken by the naturalist-cameraman in the woods. The film, as a matter of fact, has been used as a guide in setting up the museum group.[42]

From Tanner's thesis, it is clear that Allen and the entire team at Cornell were hopeful that this would truly usher in a new era of museum display, but they were not naive enough to think that every museum and school would have the technological capability to display it. In Tanner's thesis, four possible ways are described to improve educational experiences in museums and classrooms, and only one involved such specialized film and taxidermic displays as were created for the Ivory-bill group. Tanner also mentions the "lecture-demonstration film," which used non-synchronized sound and with voice-over narration to present on an individual topic. He also mentions the use of phonograph records in conjunction with traditional habitat groups, and lastly phonograph records on their own. At no point does Tanner suggest the use of silent films, revealing his belief (and likely that of his Cornell advisors) that moving images were merely an extension of the work that the habitat group was already performing. The novel and important educational development was the incorporation of sound.[43]

Music and Museum Fatigue

Though the Cornell-AMNH expedition and subsequent exhibit pioneered the use of natural sounds in the museum, the introduction of recorded music had started years earlier. A series of musical programs initiated in the mid-teens were a direct response to "museum fatigue," a problem first identified in 1916 by the director of the Boston Museum of Fine Arts, Benjamin Ives Gilman. In a study published in *Scientific Monthly*, Gilman gave a museum guest a series of factual questions, then had a photographer follow him as he moved through the museum in search of the answers. Gilman was not



Fig. 2 Ivory-bill Habitat Group Picture

The group image compiled from separate film stills, James Taylor Tanner, "Sound Recording for a Natural History Museum" (M.A Thesis, Cornell University, 1936)

a scientist, but his "experiment" found that "an inordinate amount of physical effort is demanded of the ideal visitor by the present methods in which we offer most objects to his inspection." [44] Accompanying the essay were a series of pictures showing this "ideal visitor" ("an intelligent man with good eyesight and well accustomed to museums and their content") standing, stooping, crouching and nearly lying on the floor in an attempt to see the objects and read their descriptive cards. [45] The impact of Gilman's article was immediate and widespread, not just at major metropolitan art museums, but for large and small museums across disciplines and across the United States. Just 12 months after the publication of the essay, the curator of the

natural history museum at the State University of Iowa was able to outline several changes that the museum had made in their displays in order to reduce fatigue, including eliminating the "overcrowding" of materials, and placing "specimens as to be within eighteen inches of the level of the average eye." [46] More detailed studies and explorations of the topic followed, most notably F.C. Brown's 1928 article "Building a Museum to Human Specifications," and Arthur Melton's 1935 book, *Problems of Installation in Museums of Art*. [47]

At the AMNH, at least one suggestion was made to eliminate written descriptions entirely and replace them with sound recordings. The suggestion was made by

Douglas Burden, who had already worked on the Komodo dragon exhibit. Burden continually lobbied for more technological innovation in the museum's displays, but often found himself at odds with director Albert Parr in the 1940s.^[48] In 1955, he wrote a vigorous 9-page proposal for "Improvements in Exhibition," that started by recounting his long (and mostly uphill) battles with museum administrators. His proposal, though, reveals a deep commitment to reducing fatigue through the creation of dynamic sonic narratives. He wrote, "labels can't carry much of a story. In fact, they can scarcely carry a story at all. So, in spite of the fascinating objects that we had been able to put on display, we lacked the means of telling successfully the great scientific stories that lay hidden behind these objects." In his mind, the solution was "fairly simple": "we only needed to replace the written word with the spoken word and provide some means of reducing fatigue."^[49]

Burden would have been well aware of the use of recorded music in museum settings stretching back to the Edison Tone-Test era of the teens and early 20s. Tone-Tests were recitals that ran from 1916 to 1926, featuring live performers alongside Edison's Diamond Disc phonograph, with audience members asked to compare the two.^[50] As Emily Thompson has pointed out, these performances "brought about a new willingness to accept these reproductions as an authentic aspect of musical culture."^[51] This also opened the door for their use in cultural institutions. Edison himself sent a Diamond Disc phonograph and a collection of records to the Cleveland Museum of Art, not far from his hometown of Milan, Ohio. The museum's bulletin commented that the records were played in the garden court on Sunday afternoons, and "the short recitals of mechanically reproduced music, made possible through Mr. Edison's generous gift, have been welcomed by our visitors, and have been particularly successful when a small attendance has insured the comparative quiet required to hear such records."^[52]

Because of technical, financial, and institutional limitations, such programs were slow to come to natural history museums. In 1939, though, William D. Campbell—a longtime associate of the AMNH and an adventurer in his own right who had led several African expeditions—made a \$10,000 donation for the installation of a museum-wide sound system. Unlike phonograph concerts, which would have featured a single playback device moved in and out of the performance area, this project would hard-wire large portions of the AMNH building for sound, using a central mixing board and control booth that would operate the public address system speakers. In announcing the development, the museum was able to boast "the first such installation in a free public museum in America."^[53]

Once the system was installed, the museum initiated a series of events that were very much based on one of the methods suggested in Tanner's thesis: the playback of phonograph records alongside traditional displays. Under the direction of Dr. Charles Russell, the Curator of the Department of Education, the museum unveiled a series of musical programs that were played daily in five of the main halls. Consistent with the way "nature records" were understood and organized in the 1920s, these programs encompassed an impressively wide array of sounds. Russell explained the breadth of the recordings like this:

In organizing the programs for the halls the records have been classified into the following groups: animal and bird calls and recorded sound tracks of jungle and forest—recordings of nature and natural phenomena such as rustic and peasant music. Primitive and exotic music such as songs and dances of African natives and the American Indian—music of the Orient for the Asiatic and Tibetan halls—folk dances related to ethnology—miscellaneous geographical associations—

mystical and ritual music, and, general music recordings for the relief of fatigue.[54]

Russell's somewhat oddly-worded and irregularly-punctuated descriptions are at times difficult to parse, but it is clear that recordings of "natural phenomena," "rustic and peasant music," and "dances of African natives" were all subsets of the same category: the sounds of racial, ethnic, and animal "others." Russell advanced that these sounds were meant to "increase the understanding of the public of the natural history materials that are represented in the Museum," but he occasionally marketed them using sensationalist appeals to drama and violence, especially when they included humans. A press release for the musical program on August 2, 1939 opens with this description: "The blood-stirring beats of an Indian war dance throb through the halls of the American Museum of Natural History. Warriors, brandishing clubs and spears, dance in a circle as they shriek and yell the battle-cry of the Indians of the Plains." [55]

The program in the Geographic Hall of Birds, on the other hand, was about tranquility, creativity, and observation. "Birds have long held a special place in the heart of man, and their graceful flight, lovely songs, and and exquisite colorings have led many musicians to express their delight in these feathered friends through music." [56] This program is representative of the variety of sounds that were imaged to "represent" birds. The hour-long program on October 23 featured 20 different recorded selections. It opened with the Percy Grainger composition "Country Gardens," as played by the Victor Concert Orchestra. Then there were four species recorded by Brand and the Cornell Ornithology Lab, followed by a selection from Beethoven, followed by whistling bird imitations by Charles Crawford Gorst. [57]

The organization of this program mirrored the exhibition practices of film in the 1910s and 20s, when one sitting at the theater would include a "full program" of material, of which the feature was only one

part.[58] These programs typically opened with a musical overture and then moved to a newsreel. This is exactly how the AMNH material proceeded, starting with an orchestral number and then featuring Brand's documentary-like bird songs. In an extended note on those sounds, they made this connection explicit by explaining the equipment as "similar to that used by motion picture companies in talking News Reels." [59] The full cinematic program also included "musical novelties," and likewise, the AMNH program includes music and sound effect descriptive scenes such as "Carnival of the Animals" and "Toy Symphonies." The success of this exhibit laid the groundwork for even further development of sound within the American Museum of Natural History's walls, including the first exhibit to have an accompanying soundtrack, as well as the development of the first museum audio guide, the Guide-A-Phone. [60]

Conclusion

The development, financing, and presentation of the Cornell-AMNH expedition reveals that the capture of nature sounds was deeply related to earlier museum sound practices as well as film technologies. Just as ethnographers hoped to capture dying cultures, this expedition was charged with recording rare and endangered birds—a charge that proved to be prescient: this expedition is best remembered in ornithological circles as the last group of people to see the Ivory-billed woodpecker. They also collected the domestic birds of field and farm, again with the fear that these sites (and the experiences contained within them) were disappearing in a rapidly urbanizing America. For Native Americans, it was already "too late": the ethos of preservation resulted in what Jonathan Sterne has called a "a bizarre self-fulfilling prophesy" where the subjects being recorded for posterity were simultaneously being actively destroyed, with the total destruction of native life and culture treated as a foregone conclusion. [61] Yet the capture of animals, in both sound and in

stuffing, was imagined as part of a larger educational and ecological mission to save the things being represented.

This mission was advanced by the AMNH's addition of recorded sound to their exhibit halls in 1939, which also used earlier sound techniques as a way to relieve museum fatigue as well as present visitors with new experiences within the museum. Like the taxidermy on display, the sounds coming out of the speakers were based on a series of fictions, as artful animal sound recreations and musical settings mixed with "authentic" recordings in order to create an experience of nature, that, as Douglas Burden might say, was true to the "experience" if not true to the actual facts. This is one of the paradoxes of recorded natural sounds: even when the material is hybridized or totally fictionalized, it retains its "naturalness" in the ears of the listener.

Endnotes

[1] Harlan I. Smith, "Museums of Sounds," *Science* 40 (August 21, 1914): 273.

[2] *Ibid.*, 273-274

[3] Smith would have likely been familiar with the recordings of Jesse Walter Fewkes, an early sound ethnographer. Fewkes' recordings of a trip to Maine were deposited in the Peabody Museum at Harvard in 1890; Smith took a job there in 1891. He also would have known about the sound work at the American Museum of Natural History, where he started working in 1895. For more on Fewkes, see Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke University Press, 2003), 288-326.

[4] See Sterne, *The Audible Past*, 325.

[5] For highbrow rejection of recorded music, see Emily Thompson, *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1933* (Cambridge: MIT Press, 2002) 238.

[6] Smith, "Museums of Sounds," 273.

[7] "Stuffed Birds Now Move and Sing in Museum Exhibits," *The Science News-Letter* 30.819 (December 19, 1936): 399.

[8] Michael Rossi, "Fabricating Authenticity: Modeling a Whale At the American Museum of Natural History, 1906-1974," *ISIS* 101, no. 2 (2010): 341.

[9] Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989), 54.

[10] Benjamin Ives Gilman, "Museum Fatigue," *The Scientific Monthly* 2.1 (January 1916): 62-74.

[11] Michel Chion, *Audio-Vision: Sound on Screen* (New York: Columbia University Press, 1994), 6.

[12] Sterne, *The Audible Past*, 311.

[13] Rachel Mundy, "Nature 's Music: Birds, Beasts, and Evolutionary Listening in the Twentieth Century" (Ph.D., New York University, 2010), 2.

[14] K.A. Rader and V.E.M. Cain, "From Natural History to Science: Display and the Transformation of American Museums of Science and Nature," *Museum and Society* 6.2 (2008): 152-171.

[15] C. C. Nutting, "Museum Methods," *Transactions of the American Microscopical Society* 36.1 (January 1, 1917), 16.

[16] *Ibid.*

[17] As quoted in Rader and Cain, "From Natural History to Science," 156.

[18] Gregg Mitman, *Reel Nature: America's Romance with Wildlife on Film* (Cambridge: Harvard University Press, 1999), 21-25.

[19] *Ibid.*, 50-54.

[20] For example, hunting and adventure travelogues were popular as early as 1909, with the faked documentary *Hunting Big Game in Africa*. See Kalton C. Lahue, ed., *Motion Picture Pioneer: The Selig Polyscope Company* (South Brunswick: A.S. Barnes and Co., 1973), 51-53.

[21] Jane Desmond, "Displaying Death, Animating Life: Changing Fictions of 'Liveness' from Taxidermy to Animatronics," in *Representing Animals*, ed. by Nigel Rothfels (Bloomington: Indiana University Press, 2002), 159-179.

[22] Haraway, *Primate Visions*, 29.

[23] "Africa Speaks," *Variety* 24 Sept. 1930.

[24] Erle C. Kenton, *The Island of Lost Souls*, Paramount Pictures, 1932.

[25] H.G. Wells, "Fantasy or Science?—A Test Question," *New York Times*, July 24, 1927, Magazine.

[26] H.G. Wells, *The Island of Dr. Moreau* (Garden City, NY: Garden City Publishing Company, 1896), 27.

[27] *Ibid.*, 55.

[28] *Ibid.*, 55

[29] Gregg Mitman has argued that film was "the structuring metaphor" for natural history displays at this time. See Gregg Mitman, "Cinematic Nature: Hollywood Technology, Popular Culture, and the American Museum of Natural History," *ISIS* 84.4 (1993): 640. See also Fatimah Tobing Rony, *The Third Eye: Race, Cinema, and Ethnographic Spectacle* (Durham: Duke University Press, 1996), 20-35.

[30] Albert R. Brand, "Recording Sounds of Wild Birds," *The Auk* 49.4 (October 1, 1932): 433.

[31] James Taylor Tanner, "Sound Recording for a Natural History Museum" (M.A. Thesis, Cornell University, 1936), 1.

[32] Albert R. Brand, "A Method for the Intensive Study of Bird Song," *The Auk* 52.1 (1935): 40–52.

[33] This method seems to have been developed independently of the "phonophotography" technique of Carl Seashore and Milton Metfessel at the State University of Iowa, who made similar recordings as early as 1925. See Steve J. Wurtzler, *Electric Sounds: Technological Change and the Rise of Corporate Mass Media* (New York: Columbia University Press, 2008), 236–238.

[34] Albert R. Brand, "The 1935 Cornell-American Museum Ornithological Expedition," *The Scientific Monthly* 41.2 (August 1935): 187–190.

[35] Jeffery Boswell and Dominic Couzens, "Fifty Years of Bird Sound Publication in North America: 1931–1981," *American Birds* 36.6 (November 1982): 930.

[36] Albert R. Brand, "The 1935 Cornell-American Museum Ornithological Expedition," *The Scientific Monthly* 41.2 (August 1935): 187–190.

[37] James Tanner's personal diary documented the details of the trip. It is located in the Arthur A. Allen papers, #21–18–1255. Division of Rare and Manuscript Collections, Cornell University Library.

[38] Albert R. Brand, "The 1935 Cornell-American Museum Ornithological Expedition," 185.

[39] J. P. Maxfield, "Acoustic Control of Recording for Talking Motion Pictures," *Journal of the Society of Motion Picture Engineers* 14.1 (1930): 85–95.

[40] *Ibid.*, 85.

[41] Wurtzler, *Electric Sounds*, 268–270.

[42] "Stuffed Birds Now Move and Sing in Museum Exhibits." This article also suggests that there was a second group in development using ruffed grouse, but I have yet to find evidence that it was ever exhibited or even finished.

[43] That being said, Allen himself took stills from the expedition, hand painted them, and turned them into glass slides, which he likely used in illustrated lectures. I'm not entirely sure if these were used in educational settings or solely for private and professional lectures.

[44] Gilman, "Museum Fatigue," 62.

[45] *Ibid.* See especially the photos on 64–71.

[46] Nutting, "Museum Methods," 15.

[47] FC Brown, "Building a Museum to Human Specifications," *The Scientific Monthly* 26.3 (March 1928): 193–201; Arthur W. Melton, *Problems of Installation in Museums of Art* (Washington, D.C.: American Association of Museums, 1935).

[48] Mitman, "Cinematic Nature," 655, n35.

[49] Douglas Burden, "A Proposal for Improvements in Exhibition at the American Museum of Natural History," December 1955, Subject Folder 1232, AMNH Archives.

[50] Thompson, *The Soundscape of Modernity*, 237.

[51] *Ibid.*

[52] "Music in the Museum," *The Bulletin of the Cleveland Museum of Art* 5 (May 1, 1918): 51.

[53] Minutes from the Board of Trustees meeting on Jan. 15, 1940. Box 1237, AMNH Archives.

[54] Press Release, April 10, 1939, Subject Folder 1237, AMNH Archives.

[55] Press Release, August 2, 1939, Subject Folder 1159.1, AMNH Archives.

[56] "Free Illustrative Program for Geographic Hall of Birds," Oct. 23, 1939, Subject Folder 1237, AMNH Archives.

[57] *Ibid.*

[58] For a complete description of "The Full Program" in film exhibition, see Rick Altman, *Silent Film Sound* (New York: Columbia University Press, 2004), 379–388.

[59] "Free Illustrative Program for Geographic Hall of Birds," Oct. 23, 1939, Subject Folder 1237, AMNH Archives.

[60] The exhibit was called "Men of the Montaña." See Craig Eley, "When It Rains, It Pours: Sounds of a Tropical Rain Forest in America and the Birth of the Science Series", *Smithsonian Folkways Magazine*, Fall/Winter 2012, online.

[61] Sterne, *The Audible Past*, 331.

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