Augmenting the Wildlife Exhibits:

A Community Media Project with the Denver Museum of Nature and Science

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This article describes how I incorporated an AR-based community media project into a recent undergraduate course on environmental rhetoric, which featured a partnership with the Denver Museum of Nature & Science (DMNS). With the support of DMNS staff in Creative Technology and Exhibits, students in the course researched and wrote curated materials designed for the museum's extensive Wildlife Exhibits. Built with readily available mobile technologies, their projects augment the Wildlife Exhibits' existing print-based text panels (which convey scientific information about the animals) with additional layers of digital texts and multimedia that speak to ways in which these animals have inhabited the human imagination in art, film, literature, and mythology.

The global spread of smartphones, tablets, and wearable devices is changing the nature of the Internet. Increasingly, people employ mobile interfaces to interact with digital content that inhabits the built environment around them. In the future, digital writers will likely attach, link, and sync multimedia to just about any surface.

Today, the most reliable vehicle for embedding online information into public spaces is, oddly enough, print media. According to Bill Buxton, Principal Researcher at Microsoft, "Everywhere you see a poster or sign, paper or otherwise, is going to be an interactive display in the next few years" (00:48:35-00:48:46). To this list, one may readily add the text panel—a staple of museum exhibits, historic landmarks, libraries, and other informal learning venues that sometimes host community literacy projects. How might Buxton's projected trend stand to affect civic engagement, curatorial practices, and local partnerships? What added rhetorical value and new pedagogical opportunities might these burgeoning forms of interactive display bring to cultural heritage sites?

Augmented reality (AR) is one of the most intriguing technologies for creating the interactive displays that Buxton envisions. Since 2009 (following the launch of Apple's App Store and Google's Android Market), AR has emerged from research labs into a multitude of everyday settings. Smartphones and tablets have replaced clunky head-worn prototypes, dramatically increasing access to AR around the world. AR is now amenable to an array of cultural and commercial applications; even more importantly, it has become user-friendly enough to harbor widespread adoption. Distinct from traditional Web browsers, AR apps (e.g., Aurasma, Layar, Wikitudes, etc.) utilize the camera on-board mobile devices to blend online media into our perception of the surrounding environment. In addition, many AR apps incorporate computer vision and image tracking software, giving designers a more precise way to align digital content on top of print media, building facades, signage, and other fixtures of the built environment. All of this technical talk raises a broader, more pertinent question for readers of *Reflections*. In what ways can writing instructors, student groups, and citizen organizations mobilize AR platforms in order to further their current efforts?

This brief essay aims to help readers make sense of AR and its potential to foster community media projects that engage with social and political issues in public spaces. Of particular concern, in what follows, is environmental advocacy and the plight of animal species, many of which are becoming ever more vulnerable in the face of anthropocentric values and practices. In the next section, I

provide an account of a project-in-progress at the Denver Museum of Nature and Science, where my students designed and implemented several "augmented exhibits." As I will explain below, my students' AR work collectively brings a new set of stories to the Museum's Wildlife Exhibits—stories that attest to the subtle ways in which various animal species have been essential to the intellectual, artistic, and spiritual flourishing of human societies throughout history.

AUGMENTING THE DENVER MUSEUM OF NATURE AND SCIENCE

As a professor of rhetoric and new media, I see great potential in collaborative projects between museums and university courses, wherein student teams specializing in creative multimedia or multimodal composition learn to infuse public settings with site-specific content that brings additional, alternative perspectives to bear in shared spaces. With a little guidance on the software (no coding skills needed), students can use AR to prototype and test new digital curation initiatives designed to compliment existing exhibitions in a museum. At best, such projects may culminate in high-quality curatorial materials or educational activities to be implemented and optimized for daily use by museum visitors. At the very least, museum-university collaborations make for a mutually beneficial learning experience, providing students with a meaningful, highly public context for their projects and museum staff with a useful case study that will inform their future visitor engagement strategies.

In Summer 2014, with these objectives in mind, I contacted the Denver Museum of Nature and Science (DMNS) to gauge their interest in launching a partnership to explore the use of AR technologies for bringing additional voices and perspectives into their exhibit halls. Since I was teaching a course on Environmental Rhetoric that fall at my institution (the University of Colorado Denver), I expressed keen interest in working on the Museum's extensive collection of Wildlife Exhibits. The Wildlife Exhibits are a massive permanent display spanning three floors of the museum. Comprised primarily of dioramas, the exhibition presents "more than 90 wildlife and habitat scenes illustrate our planet's amazing diversity…showcasing the world's wondrous animals and the delicate ecosystems in which they live" (*Denver Museum of Nature and Science*). Text panels and other curatorial materials provide concise, factual information about each

animal's habitat, evolution, body composition, and other zoological tidbits that are quintessential to science education. One way to apply AR, in this case, would have been to deliver more detailed glimpses into these topics. Being a humanities scholar—with grave deficiencies in science—I had something different in mind.

Similar to the 2015 "Metaverses" project1 at the Metropolitan Museum of Art, which used "augmented reality as a means to bring new and critical perspectives into museum spaces," I proposed to DMNS staff that we might use AR to add an *arts and humanities* component to the visitor's learning experience in ways that could complement the existing text panels (Williams et al.). That is, in addition to highlighting the relationships between animals and natural ecosystems, I envisioned my students adding a digital layer of content to each exhibit that would speak to key points in the interplay between animal species and human societies. Animals have always exerted a profound, if unsung, influence on us. Inventors from fields spanning arts to architecture routinely turn to the animal kingdom for inspiration; for instance, Gaudí and Le Corbusier designed some of their most famous buildings around the shape of beehives.[2] Now more than ever (with endangered species at an all-time high), it is crucial that we acknowledge the myriad debts we owe to animals, as well as celebrate and preserve the essential roles they play in both nature *and* culture.

Scientific, zoological studies of animals produce invaluable insights, but they can also yield some problematic ontological side effects. Rigid classification schemas are a mainstay of scientific thought; taxonomic hierarchies (e.g., species, genus, family) furnish us with nuanced categories necessary to give rigorous accounts of the plants and animals that collectively comprise the Earth's vast biodiversity. And yet, such elaborate taxonomies can overshadow the fundamental interdependencies between species that make life possible, and in so doing, they can render an anthropocentric impression that humans and animals are quite distinct, divisible, and more or less capable of existing without one another. Furthermore, scholars working in critical animal studies contend that "speciesism"—the tendency to extend greater moral consideration to species who exhibit human-like characteristics—underwrites routine acts of violence

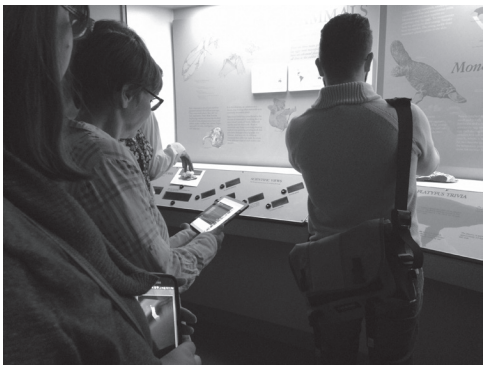
against animals presumed to be more marginal or expendable on account of their perceived otherness (Aigner et al. 57-8). With this urgent critical context in mind, I encouraged my students to view our project as their opportunity to destabilize the boundaries we habitually draw between human and animals. In crafting their digital curatorial materials, one of their tasks was to research and present exemplary cases of human-animal interplay, wherein it's hard to tell where animal activity ends and human achievement begins. Another task was to examine instances of anthropocentrism in pop culture depictions of animals, in order to hold such habits up for critical scrutiny. Ultimately, we wanted our digital augmentations to help museum visitors appreciate the underlying fluidity with which animals represented in the Wildlife Exhibits have variously affected and been affected by human creativity. Indeed, as philosopher Ronald Bogue insists, "The fewer the life forms available for becoming-other, the fewer the trajectories available for creative transformation" (54). Whenever we endanger species or ignore the plight of threatened animals, we also drain and constrain what has long been one of the most crucial sources of inspiration informing so many of the inventions, ideas, and innovations for which we humans hastily take full credit.

After our initial meeting, DMNS staff and I outlined an appropriately loose, low-maintenance collaboration structure for my students' projects. The sequence of partnership activities would unfold around four points of interaction: (1) introduce students to the Wildlife Exhibits and any related initiatives around the museum involving exhibitions and interactive media, (2) supply students with relevant digital assets, (3) follow students' project-in-progress blog and offering occasional feedback online, and (4) attend student presentations and demo their projects in the museum. Most of the project work occurred from late October to early December. As students developed and refined their projects, they visited the exhibits several times on their own over this 7-week period.

With the support of DMNS staff, my students researched and wrote curated materials designed for specific animals featured in the Wildlife Exhibits. Built with readily available mobile technologies (including the Layar AR platform), the students' projects augment the gallery's

print-based text panels—which describe the animals' natural habitat—with additional layers of multimedia that speak to how these animals have *inhabited the human imagination.* The projects, in other words, engaged in digital curation to explore how various cultures have represented animals in religion, literature, art, mythology, film, advertising, and environmentalist campaigns. Our basic objective was to show how pivotal the human-animal relationship has been to our evolving notions of what it means to be human, the development of social practices, and expressions of national identity.

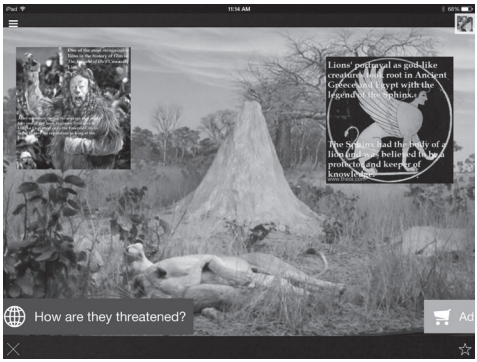
The projects were debuted at DMNS on December 8th, 2014, to a 50-person group made up of students, parents, faculty, and museum professionals.



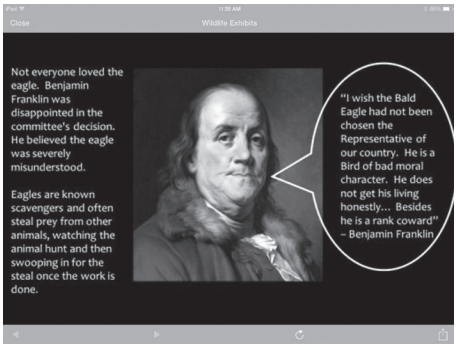
With the free Layar AR app downloaded to our smartphones or tablets, we pointed our devices at the diorama-exhibits to access the digital content. Rather than taking us to a website, the app presents the texts, images, and audio files as a transparent overlay that maps onto the material space of each diorama. Digital interaction was triggered and organized around our physical engagement with the exhibit in front of us. Pointing our devices at the echidna exhibit, for example, gave us instant access to a student's report on how this uncanny egg-laying mammal has been portrayed in an array of myths from Ancient Greece to Aboriginal Australia.

In addition to reading brief texts about the myths, we could click to hear excerpts from the myths read aloud. Many of the students' projects followed this approach, combining brief expository texts with audio clips.

Other projects were more visual and arranged content in a timeline format. One student adorned the lion exhibit with a pair of image-driven slideshows for visitors to swipe through. The first slideshow presented us with a crash course on the lion's appearances in religious iconography throughout history, while the second highlighted its more whimsical cameos in popular films such as *The Wizard of Oz* and *The Lion King*.



This pairing resulted in an interesting juxtaposition: earlier societies tended to represent lions as revered gods and twentieth century movies depict them as vulnerable, comical playthings. Another interesting project explored the bald eagle's role as a symbol for America. The student researched records from the eighteenth century to investigate why the Founding Fathers chose to make bald eagles the national bird. One of her findings was particularly surprising and humorous. Benjamin Franklin had stanchly opposed the idea; after Charles Thomson immortalized the bird on America's Great Seal,



Franklin was very disappointed because he always regarded bald eagles as "a bird of bad moral character."

Collectively, the projects served to clue visitors into the enormous, though sometime subtle degree of overlap between nature and culture, between species' zoological characteristics and the various ways humans attribute symbolic meaning to them, as well as the ways in which human creativity has surged through lessons learned from animal behavior. While scientific research is essential for diagnosing the threats facing various endangered species, science also needs narrative, history, and art to help compel us to change our habits, to rid ourselves of anthropocentrism, and to enlarge our sphere of concern. The use of AR technology proved essential to fostering these appeals, since it brought humanities knowledge and scientific information together in the same space, making for a unique cross-disciplinary learning experience. Of course, experiencing a museum exhibit, with AR or not, does not instantly enlist visitors into environmental activism. But guided reflection on the cultural importance of human-animal relations, which my students' projects aim to provoke, seems to be a crucial prerequisite for communal action. The more we acknowledge the fundamental roles animals have played in human flourishing, the greater the reservoir of public support will be for future wildlife protection initiatives and environmental conservation efforts.

CONCLUSION

I hope these project examples have sparked your curiosity about potential usages of AR in museums and other venues conducive

to community media production. While AR technology is not yet mainstream, now is the perfect time to initiate exploratory collaborations between cultural institutions and related university courses. By all industry projections, handheld digital devices are here to stay, and they are steadily gaining traction as our most preferred method to access online content. As this project indicates, museums and other experiential-learning venues are enthusiastic about partnering on community media projects that experiment with emerging communication platforms like AR. Conversely, cultural institutions provide a complex and meaningful context for student writing, greatly extending the scope and reach of the literacy classroom. AR technologies thus hold rich, relevant opportunities for rhetorical education and civic engagement. In addition to working with community members across diverse public settings, students can author AR projects that literally inhabit the local spaces they write about.

NOTES

1. Lead by graduates students from Brooklyn College, the Metaverses project takes Met visitors on a tour in which selected artifacts become (via AR) the basis for games that extend the artworks' themes, videos monologues that give voice to characters on the canvas, as well as graphics that show what an artifact might looked like in its original context. For details about the Metaverses collaboration, see the project's webpage listed in the references below.

2. Juan Antonia Ramirez's book, *The Beehive Metaphor*, provides a fascinating analysis of how beehives, in their form and function, have profoundly influenced some of the world's most cherished works of art and architecture.

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