Parts of a Successful Application

The attached document contains the narrative portion of a previously funded grant application. It is not intended to serve as a model, but to give you a sense of how a successful application may be crafted. Every successful application is different, and applicants are urged to prepare a proposal that reflects their unique project and aspirations.

Prospective applicants should consult the application guidelines at https://www.neh.gov/grants/research/neh-mellon-fellowships-digital-publication for instructions.

Applicants are also strongly encouraged to consult with the NEH Research Division staff well before a grant deadline.

This attachment only contains the narrative, not the entire funded application. In addition, certain portions may have been redacted to protect the privacy interests of an individual and/or to protect confidential commercial and financial information and/or to protect copyrighted materials.

The application format has been changed since this application was submitted. You must follow the guidelines in the currently posted Notice of Funding Opportunity (see above link).

Project Title: *A 3D Exploration of Vision, Sound, and Movement in the Ancient Maya City of Copan*

Institution: University of Nebraska-Lincoln

Project Director: Heather Richards-Rissetto

Grant Program: NEH-Mellon Fellowships for Digital Publication

Research and contribution:

Scholars across many disciplines examine landscapes to understand human experience in the past, present, and future. In archaeology, landscape studies are critical to teasing out social, political, economic, and ideological relationships within and between places. In the 1950s, settlement pattern studies coincided with mapping of vast archaeological landscapes. In the Maya region, regional mapping began to shift conceptions of large Maya sites from priestly centers devoid of everyday activities to vibrant places with daily interactions among diverse social classes. Recently the use of rapidly emerging digital technologies such as airborne lidar, 3D modeling, photogrammetry, and virtual reality are resulting in deeper conceptions of ancient Maya cities. As scholars develop new ways to merge reality-based 3D data (from laser scanners and photogrammetry) with interpolated data (derived from architectural plans, sculptural data, excavation data, etc.), we are changing how we investigate and interpret cultural heritage.

"Lost" cultural landscapes are particularly challenging to study as they requires innovative approaches combining the tangible and intangible; however, research is not the only challenge—digital publication is in many ways present an even greater challenge. *How do we convey scholarly research that stems from dynamic, interactive, and iterative processes in a 3D digital environment using a flat, static, and two-dimensional medium? How do we let scholars and the public retrace and visualize our intellectual workflow to guide them through our thought-processes and interpretations?* Working towards solutions to these questions, is an essential part of the future of the humanities.

My web-based digital publication titled *"Multi-sensory 3D explorations of vision, sound, and movement in the ancient Maya city of Copan,"* uses a multi-modal approach to explore vision, sound, and movement among the ancient Maya to understand how multi-sensory experiences shaped urban interactions. For several years, I have employed Geographic Information Systems (GIS), 3D modeling, and immersive Virtual Reality (VR) along with legacy data such as architectural plans, photos, and excavation reports to investigate multi-sensory experiences among the ancient Maya. The ancient Maya city of Copan, now a UNESCO World Heritage site located in Honduras, in the 5th to 9th centuries CE was a cultural and commercial crossroads at the southeast periphery of the Maya world. At Copán, as at other Maya sites, architecture and space conveyed information through inscriptions and imagery, building form, building function, and quality of materials, and more abstractly through location, access, acoustics, and visibility.

Since the 19th century, people have contended that Maya architecture channeled people through spaces. Recently, archaeologists calculated that ancient Maya rulers channeled movement within ancient Maya palaces, and concluded that differences through time in access patterns reflect shifting sociopolitical systems from centralized rule under divine kingship to a more decentralized rule under a council of nobles. Other research shows that sculptural themes and motifs differed based on public vs. private access. We know from iconographic work that for the ancient Maya, sight was multi-faceted. Sight was projective and procreative suggesting that for the Maya "the act of seeing" actually affected and changed the world. In other words, people were not passive recipients—the ancient Maya believed that what they saw affected what they did, how they felt, and how they interacted with the world around them. Deciphered hieroglyphs indicate that "seeing" afforded high status, and sight had an authorizing gaze and witnessing function (similar to Foucault's panoptic gaze) where those who were all seeing in a sense were all knowing. As for sound, speech and sound scrolls illustrate changing volume in vocal readings or performance reflecting an evoking of the senses in experience.

I began my studies of ancient Maya cities investigating vison and movement using GIS to measure accessibility and visibility among five different socioeconomic groups at Copán. The GIS results indicate that the elite of highest socioeconomic status constructed their houses in the most accessible and visible locations. By channeling people past their elaborate complexes and constructing taller houses, in highly visible places they were able to send messages of status, wealth, and power as well as let the non-elite know that they were they were being 'watched over' linking back to ancient Maya core beliefs about vision and movement. In contrast, while people of the lowest socioeconomic status were the most numerous, they were in some sense the most isolated because were they situated in places of low accessibility and had fewer visual ties to the city's other residents of a similar socioeconomic class. These

quantitative findings indicate that visibility and accessibility played fundamental roles in the daily lives of the ancient Maya to send messages of power, wealth, and authority, and link daily experience to the ancient Maya belief that to be "all seeing" is to be "all-knowing". More recently, I have used GIS to explore the role of sound in ritual events and daily experience between two dynastic kings at Copán. Is such quantitative analysis enough? Are flat, two-dimensional maps enough? NO. 3D interactive and immersive multi-sensory data are necessary to enable scholars and the public to delve deeper to ancient Maya cities. Thus, the goal of this digital publication is to present multi-modal, multi-sensory digital interpretations about potential experiences in ancient Maya cities.

Methods and work plan:
While GIS offers locational precision that allows us to use maps to examine relationships between buildings, or between buildings and landscape features, and thus more accurately carry out spatial analysis; in contrast, 3D models allow us to create complex architectural visualizations and explore them from multiple perspectives and using multiple versions (or simulations). 3D visualizations give us a sense of mass and space more closely attuned with human perception. Using 3D technologies, archaeologists now acquire large amounts of georeferenced 3D data of what exists today, **but** we are not limited to reality-based 3D data acquisition n—as scholars, we can also employ 3D modeling and visualization to find news way to simulate, link, and explore data of different formats and resolutions—particularly useful for "lost" or hidden cultural heritage.

I have argued elsewhere in an article on "From mounds to maps to models" that a key part to scholarly inquiry into cultural landscapes is the **modeling process itself**—it is via this process that we acquire new knowledge and formulate new questions that would not be possible using non-digital approaches. Scholars need ways to publish not only a single end-product (or visualization), but rather a way to publish interactive landscape simulations that are explicitly linked to their data sources and arguments. In other words, we need digital publications that construct 3D digital narratives, which allow scholars and the public to retrace and visualize intellectual workflows leading to specific interpretations.

I will build on past and current research from the MayaArch3D (www.mayaarch3d.org) and MayaCityBuilder (http://mayacitybuilder.org/) Projects—two affiliated projects I co-founded that bring together GIS and 3D technologies to study ancient Maya architecture and landscapes. The MayaArch3D Project received Phase I and Phase II NEH Digital Humanities Start-Up Grant, and subsequent funding from the German Ministry for Education and Research (BMBF). These projects provide a wealth of archival, geospatial, and 3D data. Using these data, I have carried out studies using GIS and 3D tools to investigate vision, sound and movement at Copán.

Using the 3D Gaming Engine—Unity—I am visualizing and interacting with these 3D models in an interactive landscape context, and have developed several scenes (i.e., simulations) constructing interpretations about ancient Maya use of vision, sound, and movement. I will use an open source digital publishing platform (*Scalar*) to present a traditional narrative interwoven with multi-media to present the data and my interpretations (based on over 10 years of research) on the role of vision, sound, and movement at Copan in daily and ritual experiences. **The fellowship, requested from June 2020-May 2021, is to create a 3D digital publication that presents my research findings using appropriate media to "guide" researchers and the public through my scholarly arguments, and simultaneously makes evident the data and embodied process used to come to specific interpretations.** The digital publication will include interactive maps, interactive 3D models, animations, audio, and immersive VR applications (using WebGL). I have organized the work plan into three phases comprising three components: manuscript (text narrative), multi-media (maps, interactive 3D models/simulations), and web development (*Scalar*). The design of the Scalar framework takes place prior to the fellowship.

June 2020-September 2020: Sections 1- 2

- **Implement Scalar Framework**
- **Section 1: Introduction-Ancient Maya landscapes, cities, and sensory beliefs**
- **Section 2: Ancient Copan (background/cultural and spatial context)**

Oct 2020-Jan 2021: Sections 3-4
- **Section 3: Vision (from 2D to 2.5D to 3D)**
- **Section 4: Sound (from 2D to 2.5D to 3D)**

February 2021-May 2021: Sections 5-6
- **Section 5: Movement (from 2D to 2.5D to 3D)**
- **Section 6: Synesthetic Experience---Vision, Sound, and Movement---in ancient Maya cities**

Competencies, skills, and access:

I specialize in Mesoamerican and Landscape Archaeology, GIS, and 3D modeling and visualization. Since 2005, I have carried out research at the archaeological site of Copan. I held two postdoctoral fellowships (2010-2013)—a Digital Humanities Fellowship at the HUMlab at Umeå University (Sweden) and a National Science Foundation International Fellowship at the 3D Optical Metrology Unit, Bruno Kessler Foundation (Italy). I am an Assistant Professor in Anthropology and a Faculty Fellow Center for Digital Research in the Humanities (CDRH) at UNL. I have many peer-reviewed publications, serve on professional committees, and have hosted symposia, forums, and workshops on digital cultural heritage, 3D data preservation and access, and 3D publishing. Moreover, I have served as an invited speaker at several institutions both in the U.S. and abroad where I have shared my research with members of the academic community and the public. The research will take place at CDRH allowing me to work with digital specialists, who will assist in hosting the 3D digital publication online.

Final product and dissemination:

The audience includes scholars and the public, who will have a multi-sensory experience interacting with 2D and 3D data sources as well as 3D digital narratives of the ancient Maya city of Copán.

Final product(s) will:

- Present users (readers) with multi-modal data to guide interpretations of ancient Maya multi-sensory experiences that shaped ancient cityscapes

- address current and pressing challenges associated with publishing scholarly research that stems from dynamic, interactive, and iterative processes in a 3D digital environment

- enable people to experience inaccessible cultural heritage whether due to lack of travel opportunities or "lost" cultural heritage

- provide exposure to ancient cultures helping to foster an appreciation of cultural diversity that encourages people to protect cultural heritage

- serve as a form of preservation for cultural heritage

Additionally, recently efforts supported by Mellon on 3D publishing and IMLS on 3D data preservation and access as well as recent publications such as *Gabii Goes Digital* and the upcoming publication *Constructing the Sacred: Visibility and Ritual Landscape at the Egyptian Necropolis of Saqqara* serve as models for this scholarship.