Mellon Undergraduate Fellowship
Price Lab for Digital Humanities
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Final Report

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Final Products:

Site: https://mozia-2023.glitch.me
Repostiory: https://github.com/olee0114/Mozia2023

Summary of Work:

From May 27th to July 8th, I worked on the excavation run by Dr. Paola Sconzo and the University of Palermo on the island of Mozia. Ancient Mozia was settled in the 8th century BCE as a trading post by Phoenician traders from the eastern Mediterranean. The archaeological investigations at this site seek to better understand the chronology of urban development and the organization of urban spaces. As this was my first excavation, I did not know exactly what to expect. However, the experience was formative to both the work I'm doing for this project and my long term goals as an archaeologist and digital humanist.

Not only did I assist my professor, Dr. Jason Herrmann, in his work on the magnetometric survey of the grape fields on the island, but I was exclusively responsible for the daily photogrammetric records of the excavations. Every morning I flew a drone to take pictures of the 3-4 areas of excavation (about 50-100 pictures for each), and throughout the day I used a camera to take pictures of individual features inside each area. In the afternoons, I ran the image collections through Metashape, a software for photogrammetry. I integrated GPS points gathered by a total station into the models so they could hold geographic data. Every day, I created about 6 orthomosaics mapped with daily points and labeled by elevation. Alongside this, I was also working on 3D modeling smaller features such as pottery, cremations, and a kiln. I took pictures at each stage of a feature's excavation, so that in the future those working on the project can look back to see how it progressed.

Once I returned to Philadelphia, I started to create the 3D models of the kiln that would be used for the website, then further collected and consolidated the data I needed. Once I began working on the website, I decided to create both a Glitch site and a Github repository, so that both the assets and the code itself were openly accessible. There are components on the site other than 3D models, including an interactive map and timelapse video, that also took time to create. The first stage of building the site itself involved outlining a narrative and designing the display. There was also a moderate amount of scholarly research needed for the written content and a few images. The site provides a snapshot of Mozia and its excavations, and it shows the potential of combining UX/UI design with digital archaeology.

Walk-through of the Website:

On the homepage, there's an interactive map created using Leaflet. There were some problems using *geotiff* because it was too large of an asset to be supported by either Github or Glitch, so I had overlay the image of the island onto the map and set geographic bounds. The result is not as accurate as a *geotiff*, but since I chose not to have a base map underneath, the geographic accuracy is not as important as interactivity. When you click on the circles, a popup will give a little bit of information about the area. I thought that an interactive map would do a good job of bringing the user in and giving them some sort of directional understanding of the island.

I start by summarizing the excavation, explaining my role on the island, and stating the purpose of the project. I move on to a brief history of the island, so the user can understand why there are excavations on the island in the first place, and then give descriptions of the areas that our team excavated. This includes aerial images that I created and a drawing I sourced from another publication. All of this helps to situate the user within in the digital presentation, giving them all the background information they need to understand and become interested in the next part of the site.

On the page dedicated to the kiln, I open with an image of me doing photogrammetry on the kiln and a timelapse video of all its orthomosaics. After explaining how photogrammetry works and the different things it can create, I address how it can be useful to archaeological science and to individuals interested in history. Next are three models of the kiln at different stages of excavation, and a blurb that walks you through it. I provide other images that go along with the discussion. The page ends with some ideas about what I'd do better and a final 3D model. There are other pages on the website that contain this write-up, citations, and acknowledgements.

Possibilities for Further Research/Development:

Because I had just a loose plan going into the project, and I hadn't been on a dig before, I didn't know exactly what the final product would look like. By the time the central figure was chosen, I didn't have much time to gather information from the specialists while I was in Italy, or at the time even know what kind of information I needed. Now that I'm at the end, I feel more prepared to create other versions or even expand on this one. There's a lot that I'd be looking to improve with the next iteration of a project like this. I'd like to experiment more with 3D display, perhaps by layering models. There are certain aspects of Leaflet that I'd like to see in Model-Viewer, namely the ability to turn layers off/on. This will take some tinkering around in Javascript to figure out. I'd also like to delve into the immersive aspects more, with things like AR or experimental UX/UI design. It would be interesting to have a site that is not confined by the bounds of the screen.

Overall, I want to continue making projects like this, and improving my technical skills in all related areas. In the distant future, I think that this has the potential to be a bigger project that encompasses entire excavations, perhaps as another form of research documentation or something to be used for conference presentations. For now, I'd like to get my smaller versions looking seamless and immersive.