Virtual Wayfinding in Oceania: Developing an Engaging and Remote Learning Experience for Bowdoin Students

Cobra Curtis, 2023

For this project, we set out to develop a virtual reality (VR) wayfinding experience centered around the ancient navigation techniques used by the natives of Oceania to travel across the ocean. The overall goal of this project was to create an environment that could be integrated into Professor Lempert's Anthropology class 2860 "Oceania: Indigenous Sovereignty and Settler Colonialism." At the beginning of this project, we began with the focus of wanting to create an environment that would allow for the appreciation and teaching of navigation techniques used by the natives of Oceania. However, over the course of the summer, our project goal shifted. Instead, we wanted to develop a base environment that we hoped would enrich a student's understanding and appreciation for the native groups in Oceania and provide them with more context of the environment in which they are researching. Hopefully giving them a deeper appreciation and understanding of the topic overall. In this base environment, we wanted students to be able to apply their knowledge of a star compass and map to help orient themselves and understand how navigators imagined the horizon. By shifting our goal, it allows for the creation of a framework that facilitates future expansions and additions to the project, that can both meet and surpass our initial goals and aspirations.

During the first two weeks of this project, I began to work on the implementation of water in a large-scale ocean environment. The designs and application of this environment went through four different design changes and attempts. This asset was one of the most important aspects of the scene and was extremely difficult to get right. After the third attempt a premade asset was used and implemented later in the final week of the project due to the difficulty and need to move on with the project. This new asset allowed for a realistic ocean that can be further optimized and scaled in future development.

With the new broader focus of this project, I needed to create a location that would be a large open environment in which students to walk on. Because of this shift in size requirements, I decided to use a voyaging ship instead of an outrigger canoe. For the next five weeks of the project, I worked on creating an accurate large-scale voyaging ship that would serve as the key environment inside of the VR experience. For the base and inspiration of this model, I used the original schematics of the Hōkūleʻa. From these schematics, I was able to find the basic shapes and sizes that would allow me to have an accurate base for a voyaging canoe. I then began to model using the schematics into a three-dimensional model, in the modeling software Blender.

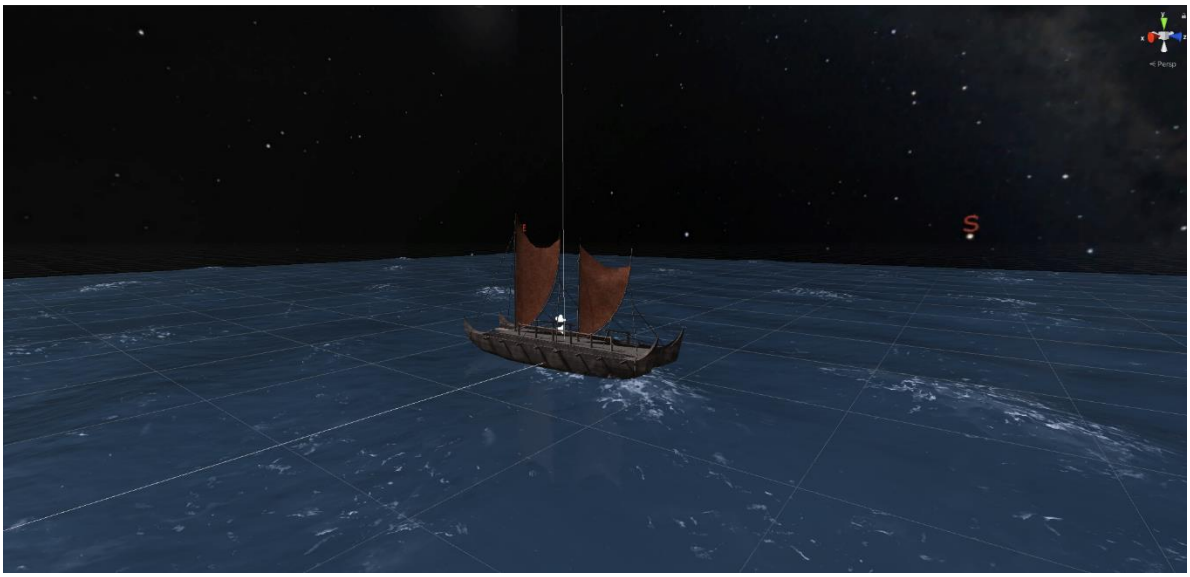
For the next week of the project, I began to focus on the sky of the environment. To allow for students to properly orient themselves using their knowledge of the star compass and map. I wanted to use accurate depictions of stars from Oceania. To achieved this, I used the planetarium software Stellarium. With this software, I was able to compile images of the stars of Hawai'i. These pictures would be used to create the sky in the final product. It is also possible to use the stars from different locations, and times around the globe. Including using consultations lines and art from different cultures including Native Hawaiian.

For the final two weeks of this project, I began to work on the creation of the environment in the game engine Unity. To do this I began to transfer over my voyaging canoe, water, and skies all into one environment. While implementing my sky into the project it became apparent that the software, I used to take photos of the stars had overlapping sections. This error resulted in the images needing to be cropped by hand and reimported. This correction sadly resulted in a dramatic loss in image quality. Though it is still usable, I would like to work towards correcting this problem in the future. Once

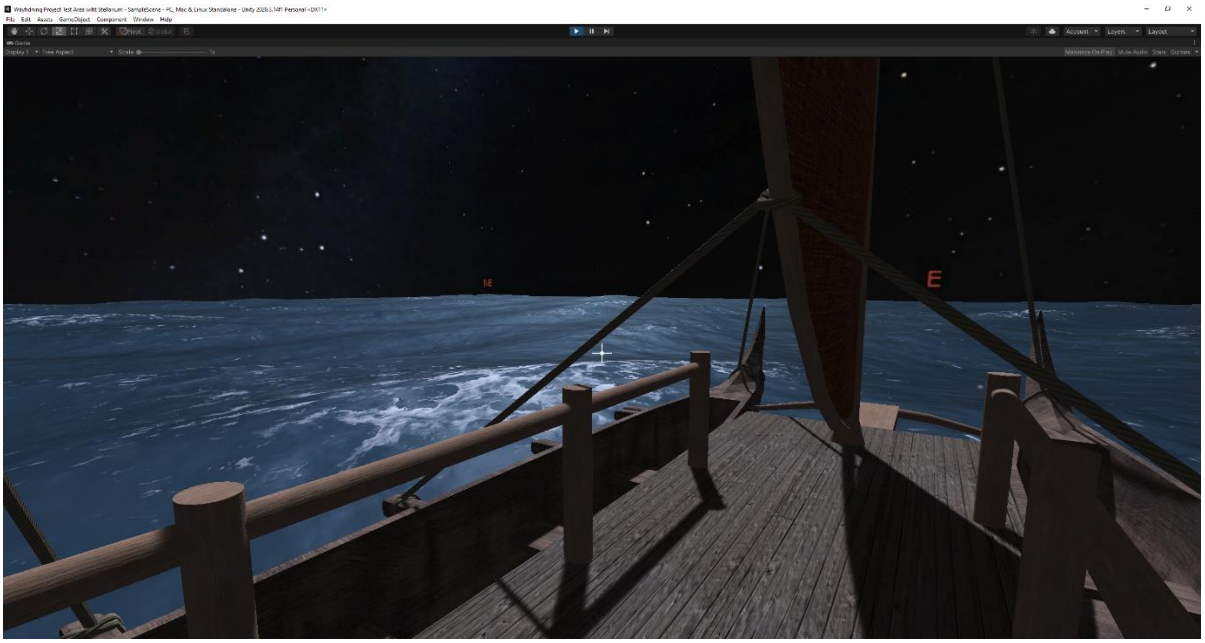
everything had been imported into the project, I began to work on implementing ways in which students could walk, orient, learn, and explore in the final base environment.

Images:

(Voyaging ship in 3D software Blender)



(Environment in Unity outside perspective)



(Environment in Unity student perspective Note: Cardinal points are for orientation only during development and will not be present in final project)

Faculty Mentor: Professor Lempert (Bowdoin Anthropology)

Funded by the Gibbons Summer Research Fellowship