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Ocean colonization

Ocean colonization has not existed yet; however, it might become a new form of living in the future. Nowadays, we are facing increasingly severe problems such as a lack of available land for habitation, the rising sea levels caused by global warming, and the broader impacts of climate change. As urban populations grow and climate issues worsen, people are being forced to consider alternative environments for living. The ocean, which covers the majority of our planet, may become the next frontier for human settlement.

In the research of six case studies of existing living buildings that are related to ocean colonization, it is evident that the way people live and carry out their daily activities is mostly the same as on land. However, ocean colonization brings unique challenges that differ from those on land. The most critical issues are the limited resources available in marine environments and the need to define and expand territorial boundaries. These challenges require innovative solutions in order to create sustainable and adaptive communities on water.

One major focus in my research is on materials. In our vast ocean, there exists a place called the Pacific Garbage Patch—a region where massive amounts of plastic and other waste have accumulated. This area could become an opportunity for ocean colonists. Rather than being a symbol of pollution, it could transform into a resource hub where colonists gather materials to construct their homes and infrastructure. It offers a potential site for collaboration, creativity, and new construction methods using recycled ocean waste.

Looking ahead to Expo 2035, it is predicted that rising sea levels will continue to increase, leading to the submergence of more land. These submerged areas may provide new opportunities for resource extraction and territory expansion. This changing geography could shape the way ocean colonists live, move, and build.

In my pavilion design, I mainly focus on the use of materials and the concept of expanding territory. The pavilion is divided into two zones. The first zone, called the Pacific Garbage Patch zone, is the initial space that visitors enter. Here, they can observe the architectural language of ocean colonization. This space includes a hands-on workshop where visitors can create a compressed plastic dock. These custom docks can then be attached to the pavilion, symbolizing expansion and collaboration.

The second zone, called the Submerged Land zone, allows visitors to create compressed plastic façades that attach to a wireframe structure, providing shade and function to the pavilion. After the Expo ends, the compressed plastic docks can be recycled and reused as real docks in other submerged cities. This process not only demonstrates sustainable material use but also reflects the idea of adaptable, mobile architecture in response to climate change