

## Art

# Building an Architecture for Climate Change

The Buoyant Ecologies Float Lab evidences the importance of the artistic imagination for developing an architecture adequate to the planet's climate future.



Louis Bury July 9, 2019



Underwater views of ecological substrate prototypes, with marine invertebrate habitats (all images courtesy of Architectural Ecologies Lab)

Supported by the California College of the Arts' (CCA) Center for Impact, and set to launch late summer in the San Francisco Bay, the Buoyant Ecologies Float Lab — a contoured, bean-shaped white buoy, approximately 13 feet by 8 feet long — looks like a cross between an ice floe and an alien pod. In fact, the buoy is a human-researched structure whose design evidences the importance of the artistic imagination for developing an architecture adequate to the planet's climate future.

The Float Lab is the product of a cross-disciplinary collaboration between the Architecture faculty and students in CCA's Architectural Ecologies Lab (AEL), scientists at Moss Landing Marine Laboratories Benthic Lab (BL), and fabricators at Kreysler & Associates. CCA faculty

members Margaret Ikeda, Evan Jones, and Adam Marcus founded AEL in 2018 as, in Ikeda's words, "a research lab that could link speculative architectural thinking with real-world prototyping and scientific expertise."



#### View of Buoyant Ecologies Float Lab

But the conceptual foundations of the Float Lab, and the larger AEL, date to 2014, when Marcus, whose background is in computational design, had his studio architecture students explore "how to optimize more diverse [marine] communities using geometry." The students' topographical sketches for artificial marine habitats — ranging from stalactite-esque spikes to curved bridges — catalyzed "a cycle of ideation and testing" with biologists at BL. Those iterative tests showed that ridged and hilly gradients, rather than flat surfaces, are most conducive to marine animal biodiversity.

Similarly detailed levels of thought and care can be seen throughout the Float Lab's elegant design. Because custom fabrication molds produce excessive waste, the Float Lab's top and bottom halves are made from the same mold, then flipped and rotated to connect. The Lab's bean shape is also modular, affording multiple Labs the capacity to interlock into a reef-like island. What's more, each Lab's exterior contains hooks onto which smaller architectural prototypes can be affixed.



Diagram of the Float Lab's ecological performance, above and below the water

While the Float Lab's design particulars derive from practical concerns, the project as a whole draws inspiration from architectural and artistic predecessors. Architect Buckminster Fuller worked at length on designs for floating cities and even patented a pair of unrealized floating breakwaters in the 1970s. Artist Robert Smithson sketched an idea for a *Floating Island to Travel Around Manhattan* (1970/2005), realized posthumously by Minetta Brook in collaboration with the Whitney Museum. Marcus also cites contemporary initiatives, such as artist Mary Mattingly's barge garden, *Swale* (2016–present), and landscape architecture firm SCAPE's *Living Breakwaters* project on Staten Island, as influences.



Speculative diagrams of scalability of Float Lab and system of floating breakwater reefs

Like artists, AEL and its collaborators have had to allow room for surprises in their work. The project began with design questions about marine biodiversity but may have other, unintended ecological implications. The thick, algae-like layers of marine animals that will attach to the Float Lab's bottom unexpectedly act as a sponge that attenuates waves, suggesting possible uses for coastal resilience efforts. "What's latent in this project," Marcus explains, "is the possibility of floating architecture that interacts with the environment in a productive way."

At the moment, however, AEL is focused on the Float Lab's launch and its attendant public outreach. Ikeda believes that "public engagement is as important [a part of the project] as design strategy." Jones adds that public engagement requires explaining AEL's work to stakeholders with different expertise and values, such as engineers, regulators, and the local community. To that end, AEL has planned not only a public demonstration of the project but also a community and school program series that utilizes the Lab for environmental education.



View of Buoyant Ecologies Float Lab

This combination of civic integrity, design ingenuity, and scientific rigor is what makes the Float Lab so promising. Both open-ended academic research and imaginative creation can feel untethered from workaday concerns. But AEL's speculative eco-collaborations demonstrate the practical potential of seemingly impractical approaches.

*More information on Architectural Ecologies Lab is available [here](#).*