

## Karst

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Karst is a stair that is designed with a modular water-filtering system that brings the sensation of nature into the house. Governors Island is a park packed with public park spaces to create a close relationship between visitors and the harbor. The 19th century houses that humans built are almost like a small disruption to the natural land, made out of standardized industrial material, served mainly for humans. By inserting this new stair, it is allowing nature to reappear and connect to the land inside the set boundary. This stair establishes a communication between humans, water, and the harbor.







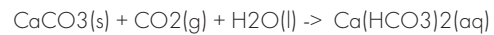


## Interact with Water

Inspired by the Billion Oyster Project on the island, which restores a water-filtering oyster reef for the New York harbor, Karst is made out of concrete, the modular cones are pockets to capture rainwater and filtered through bags of crushed oyster shells. The staircase is like a solutional cave for people to see and hear the flowing water. Karst creates a contrary flow to blur the boundary between human and water. With gravity, water flows effortlessly from the top of the trend to the bottom, creating a strange harmony with the movement of humans walking up and down. Overall, it is to blur the boundary between manmade and nature.

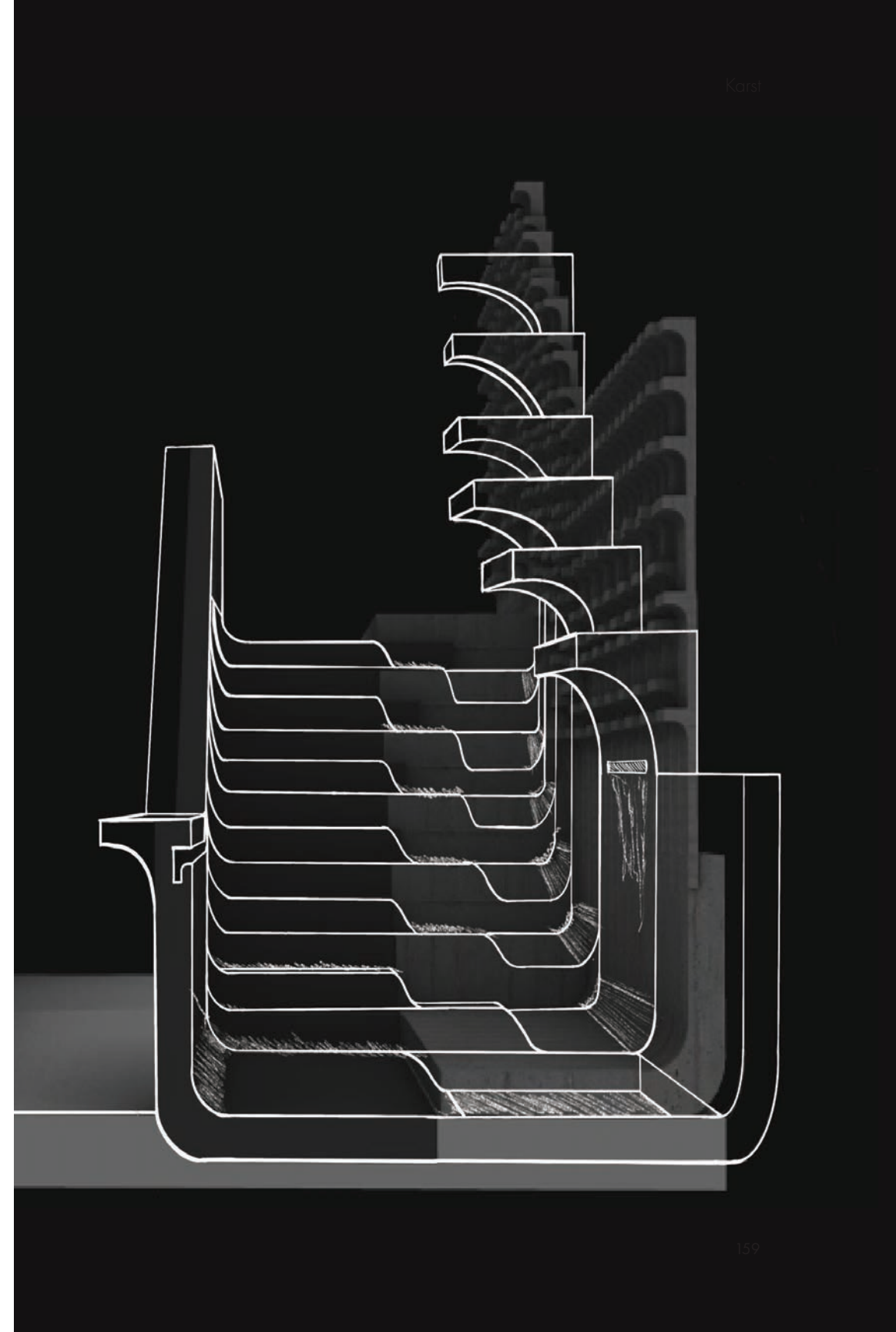
Karst has two pathways merging with each other to achieve this interaction. The left side of the stair is designed for humans, each tread extends to gradually become the trough and cliff for water. The rainwater drips from the cone pockets after filtration, then it trickles down the stairs and eventually out of the house to the sea below.

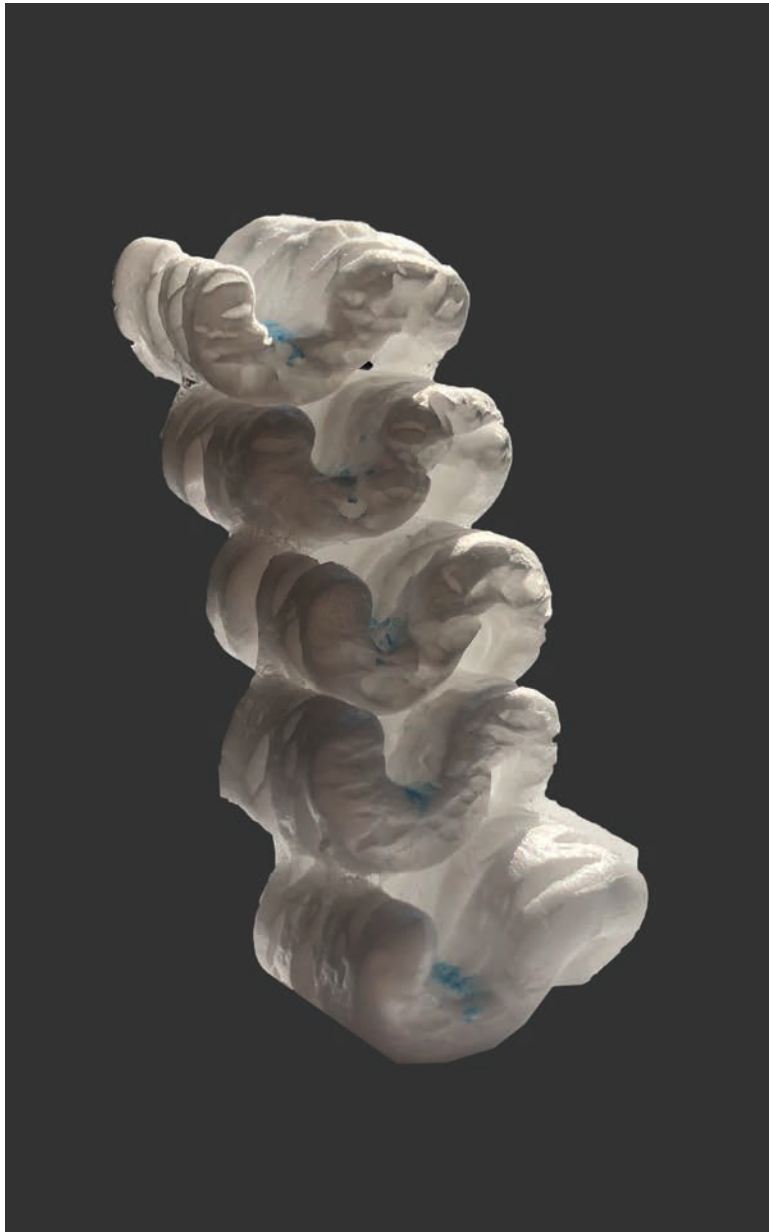
The system can insert into each individual slice unit along the coastline, the shells composed of calcium carbonate can react with acid rain which is saturated with carbon dioxide to form the soluble calcium bicarbonate.



This reaction can reduce ocean acidification by absorbing carbon dioxide, and the water containing dissolved bicarbonates can contribute a high alkaline (High pH) source as an antacid to help neutralize acidified ocean.

Karst is one of many examples that creates a physical and visual connection between human and nature, the stair helps to educate the audience the filtering process of using oyster shells. This model is designed to allow everyone to adapt easily.

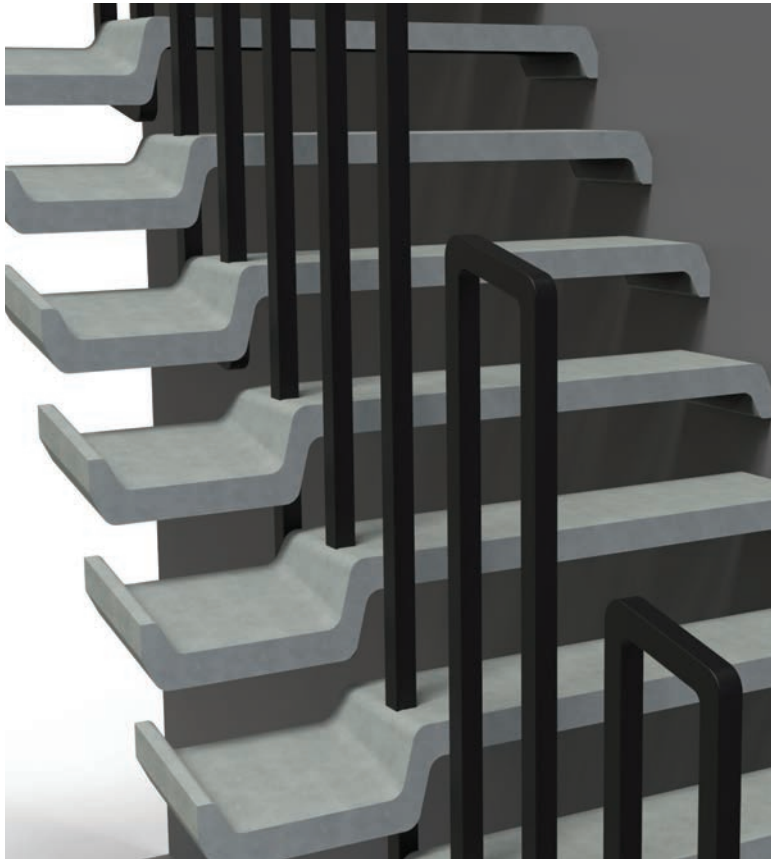




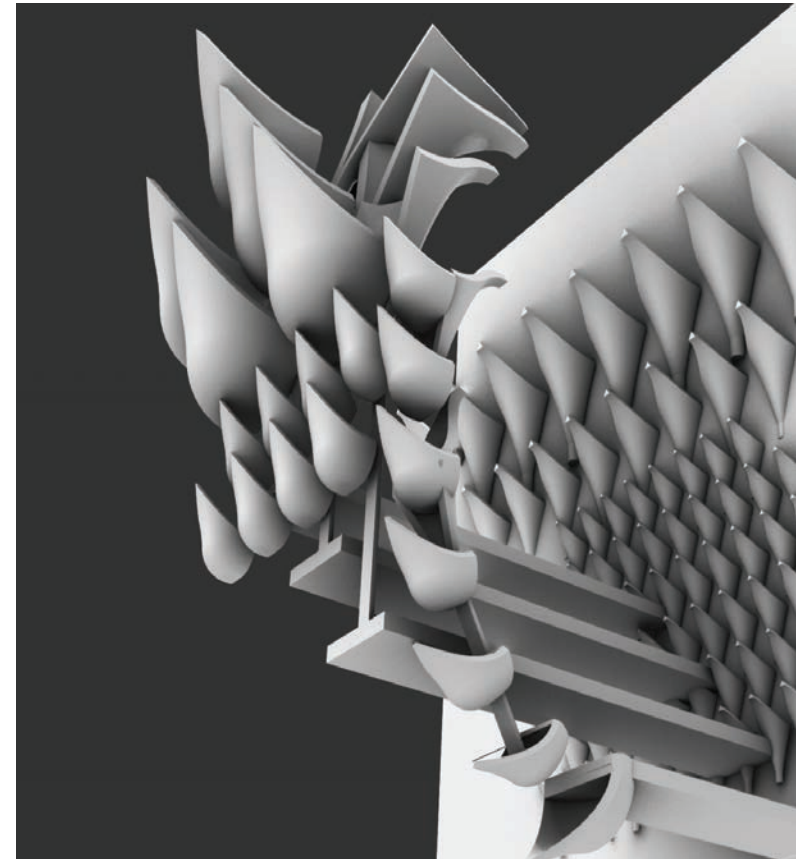
Physical model of styrofoam packing peanuts.



Physical model of pine cone pieces.



Model ideation from the styrofoam packing peanuts.



Model ideation from the pine cone pieces.

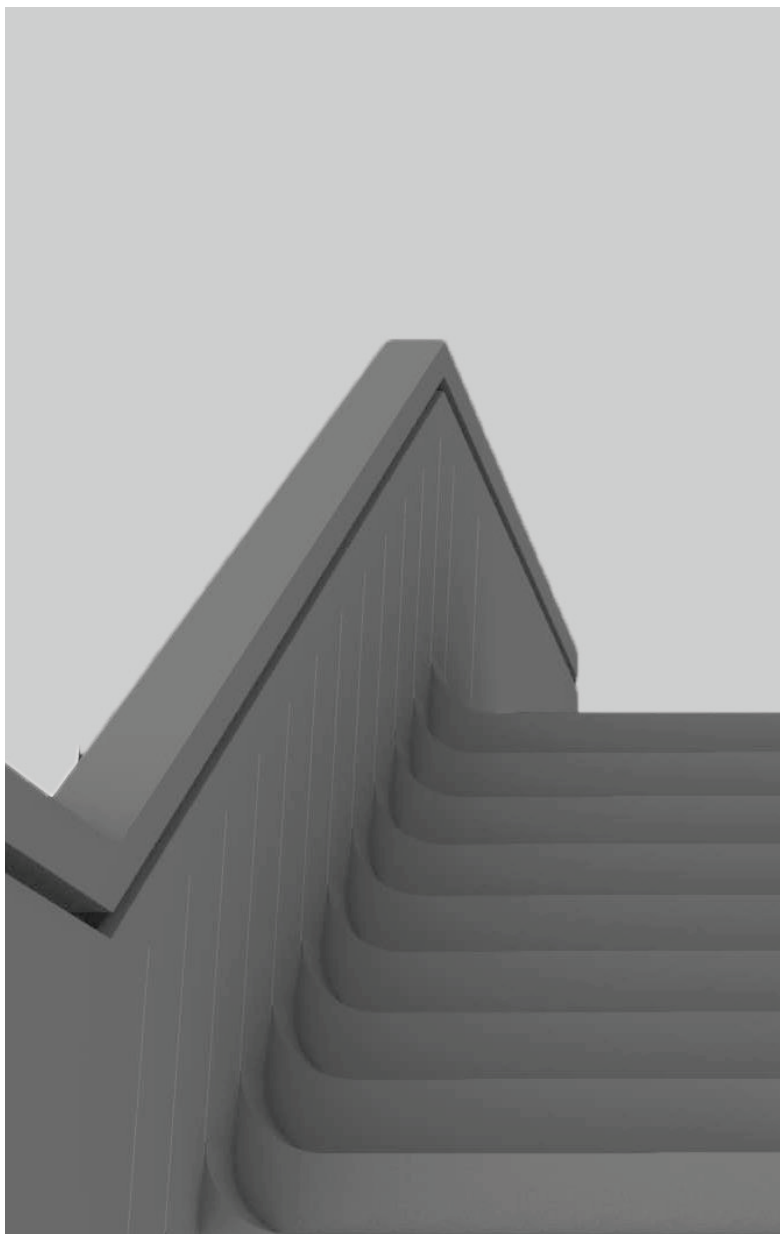


3d-printed model from the Ideation of styrofoam packing peanuts.

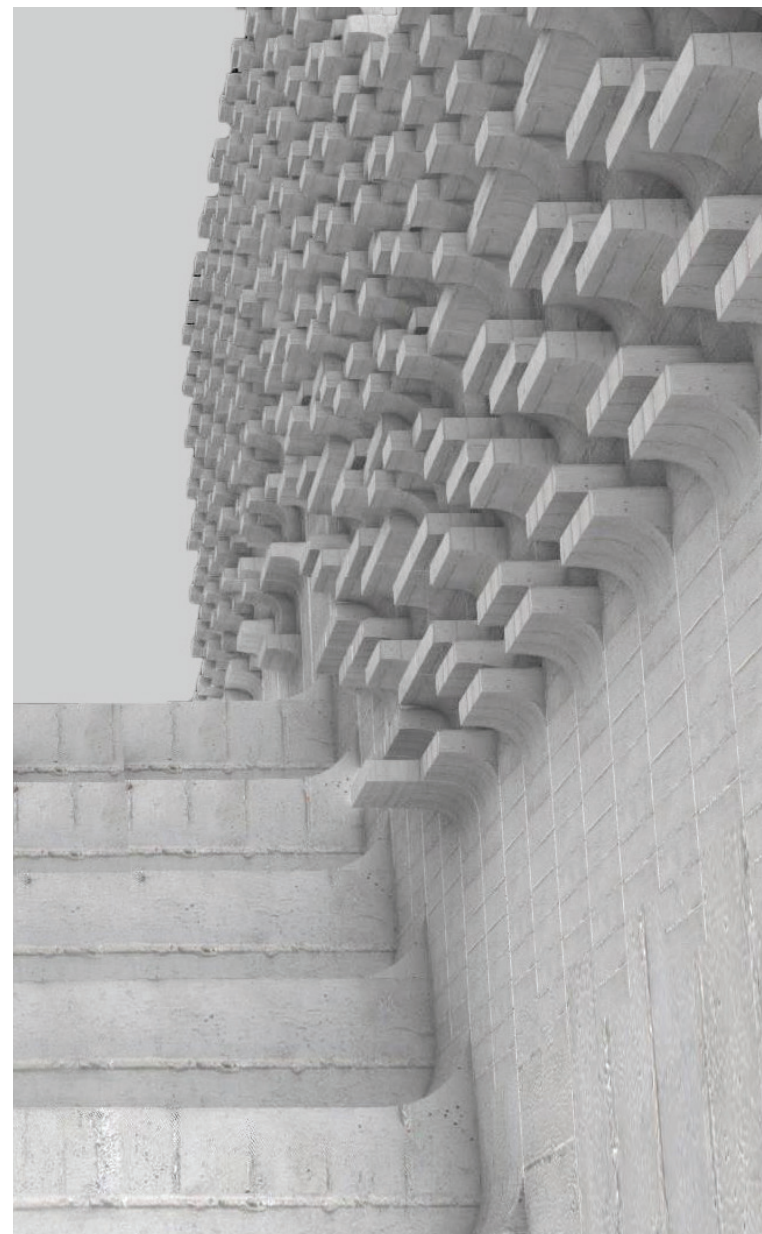


3d-printed models from the ideation of pine cone pieces.





Iteration of the steps for human and water.



Iteration of the modular cones.





Front view of the final model.



Back view of the final model.



