

# PICK3D EXTRUD3D SCANN3D PRINT3D

A VORONOI PATTERN DESIGN  
by Francesca Giacomelli



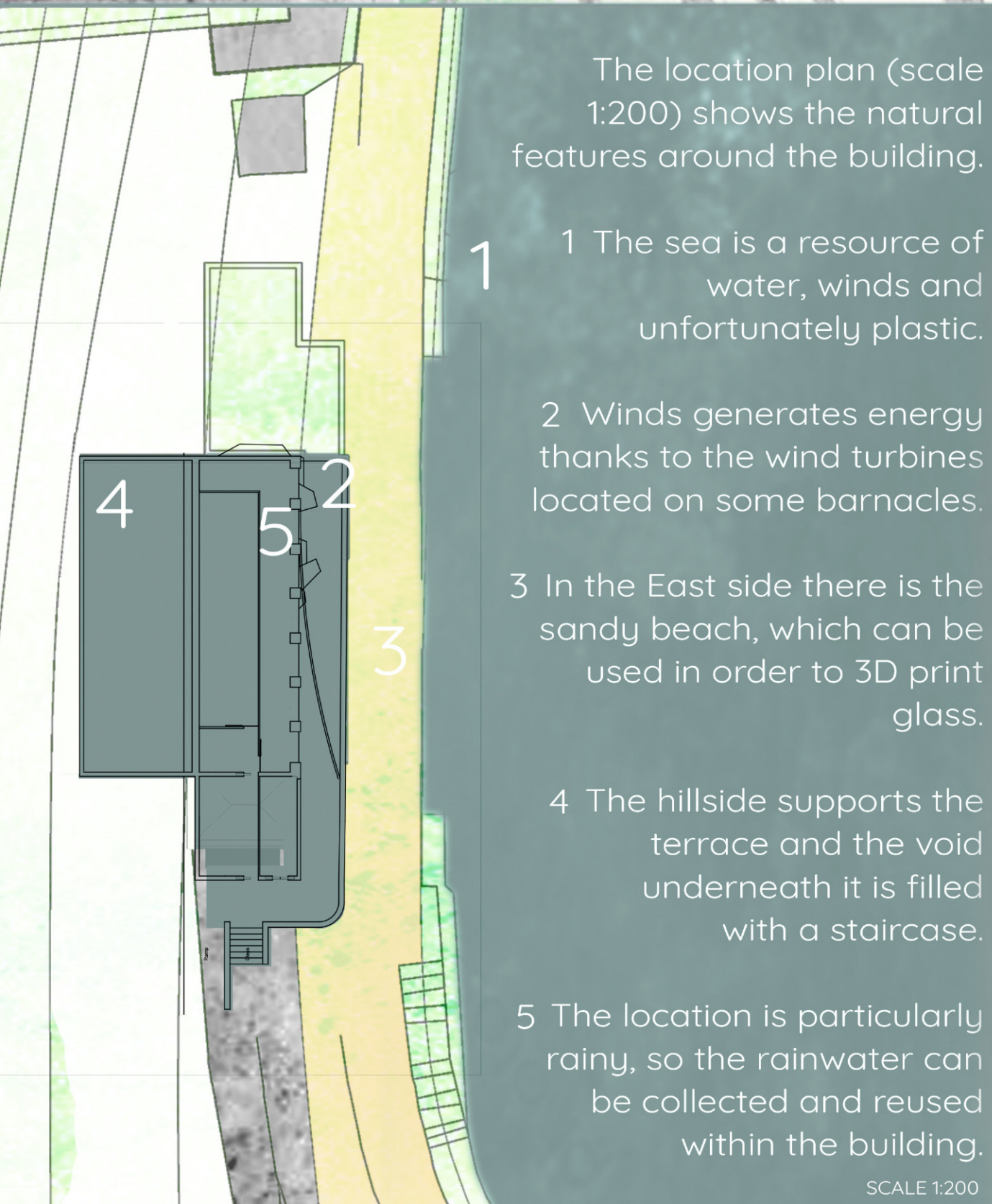
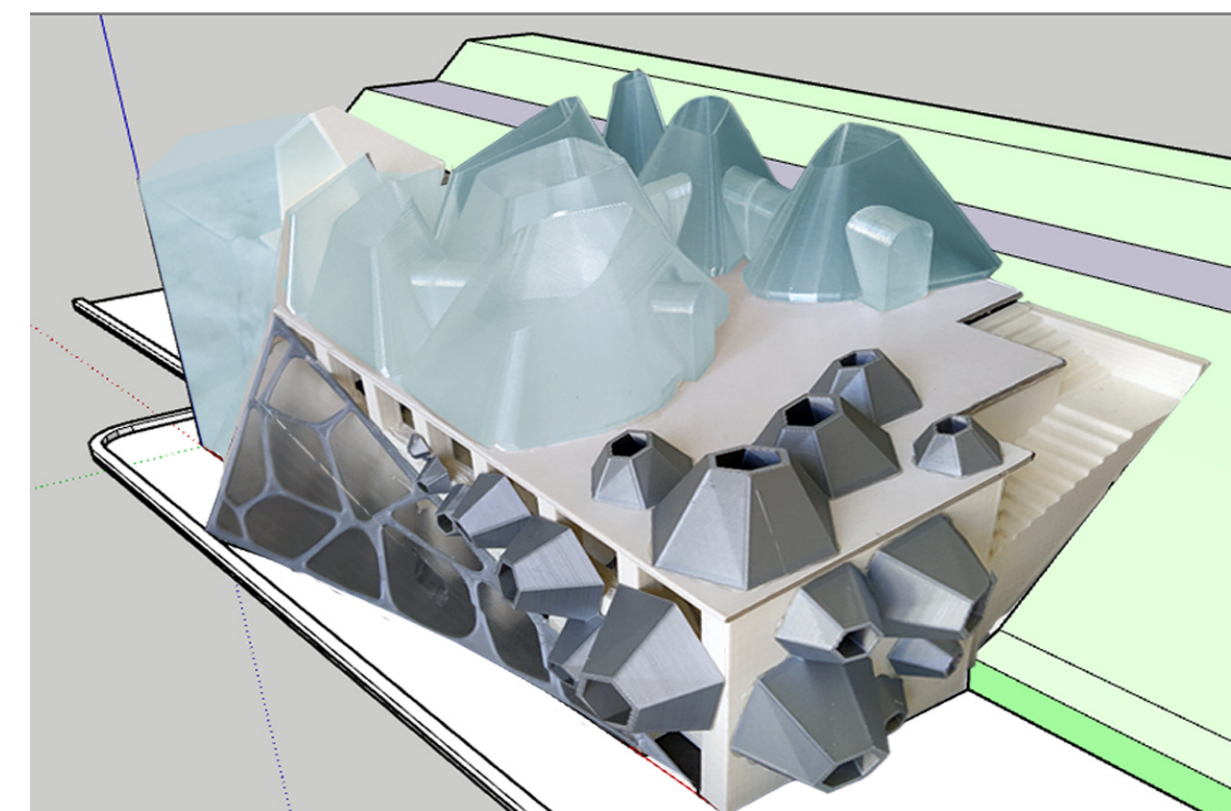
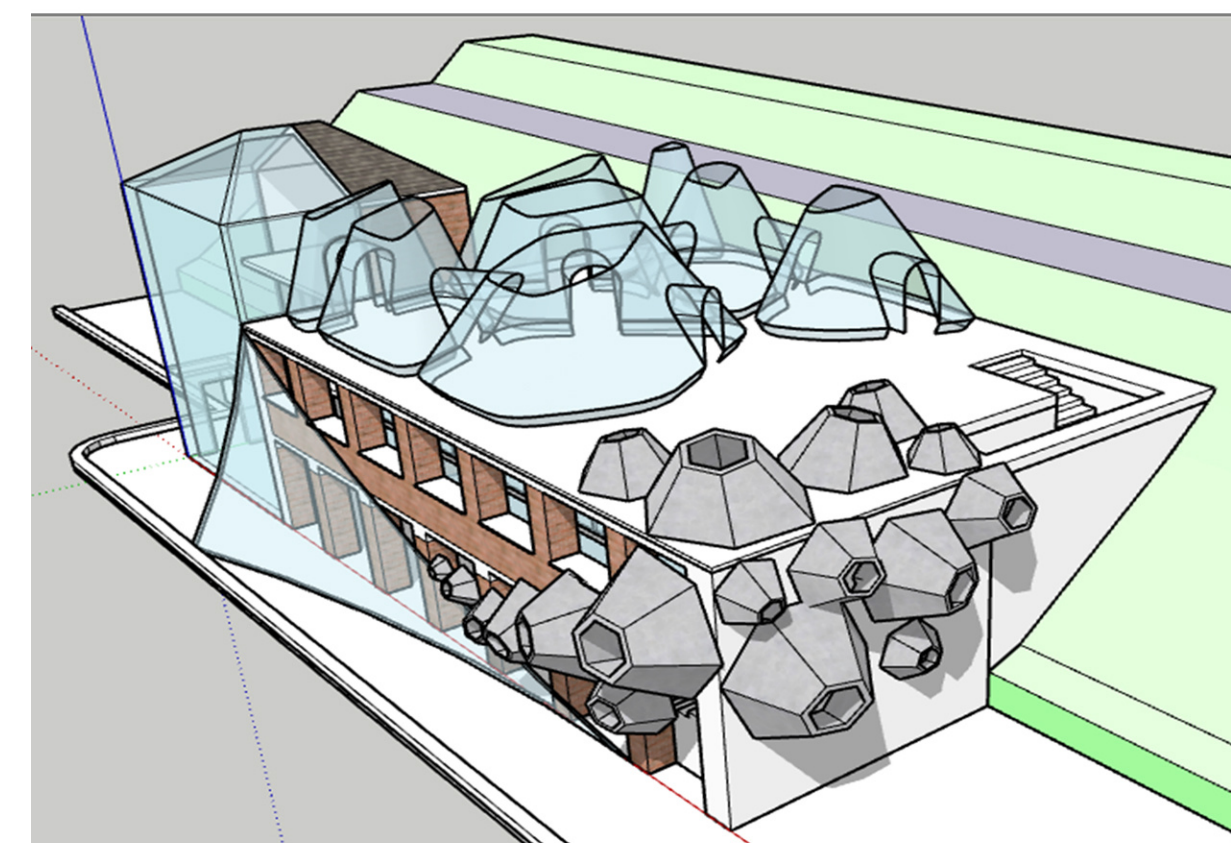
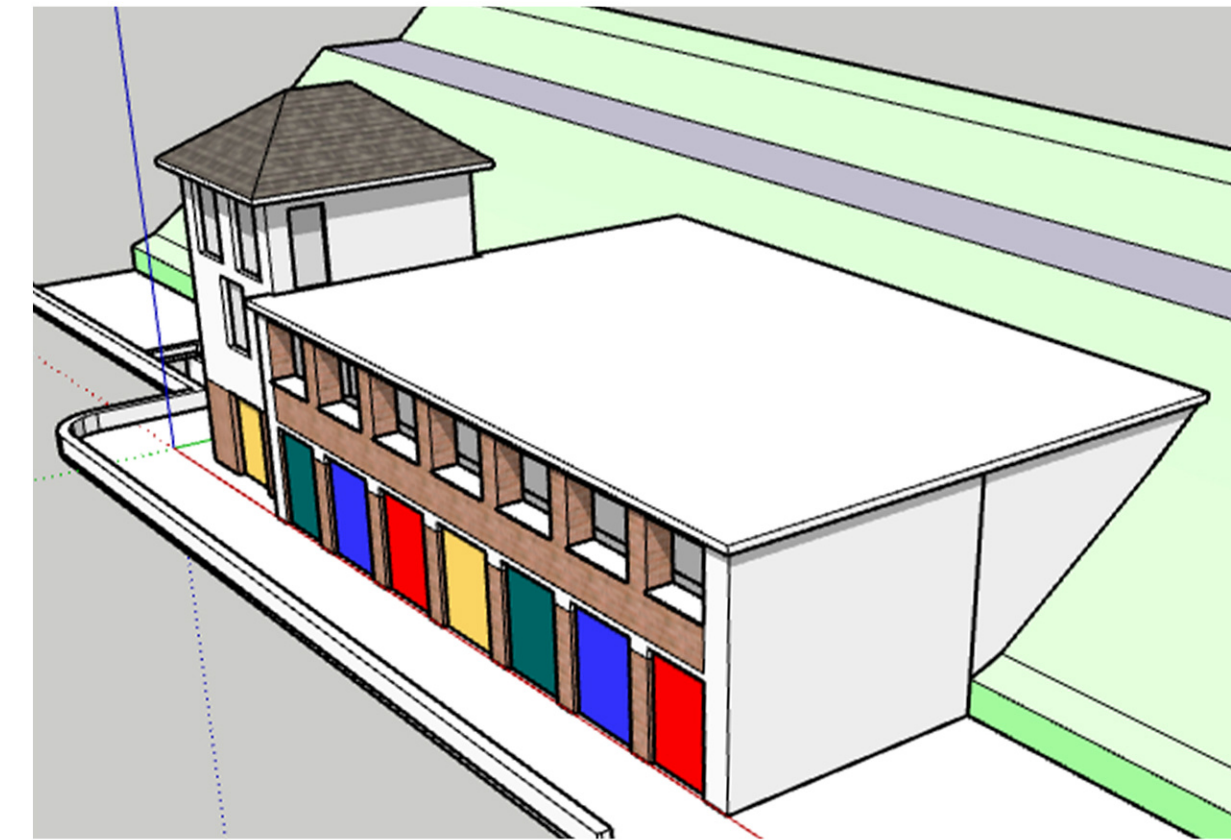
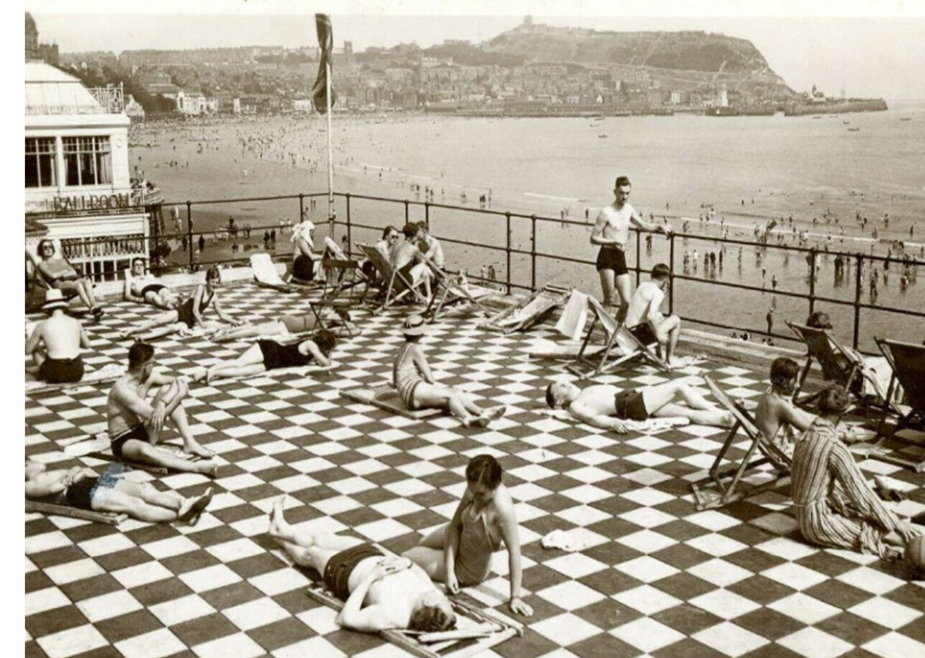
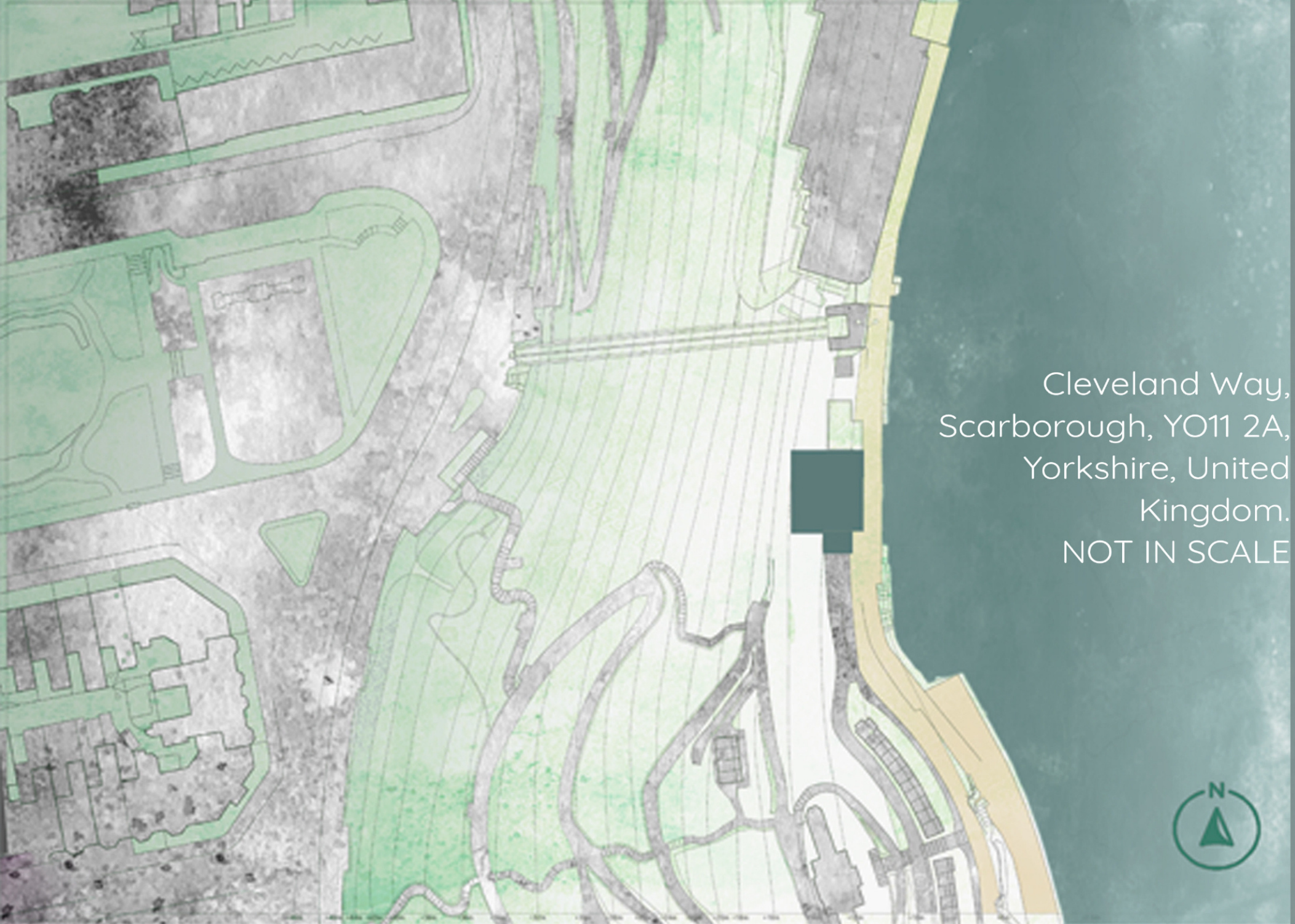
This project re-instates the abandoned Children's Corner Building in Scarborough as the ideal place to recover architectural memory and to house a center for health, art and research. The building is next to Scarborough's famous South Bay beach. The project is an intervention that exploits the artistic and cultural potential of processing environmental pollution. It responds to the fact that England's beaches are known to be some of the dirtiest in Europe.

History writes that Scarborough became famous due to the discovery of a source of iron-rich water with properties which are good for health. In honour of this historical fragment, the redevelopment of the building includes a 3D-printed salt room. Inspired by the historical role of the building as a place for lost children to wait for their parents, the building terrace is designed for, and dedicated to, the entertainment of children.

This Live Project has the Live Client of Crescent Arts, an arts charity with the goal to be environmentally friendly. The redevelopment intervention responds to this aim by reducing CO2 emissions and water waste and represents an ecological challenge to the status quo.



# Getting to know the building.



The location plan (scale 1:200) shows the natural features around the building.

- 1 The sea is a resource of water, winds and unfortunately plastic.
- 2 Winds generates energy thanks to the wind turbines located on some barnacles.
- 3 In the East side there is the sandy beach, which can be used in order to 3D print glass.
- 4 The hillside supports the terrace and the void underneath it is filled with a staircase.
- 5 The location is particularly rainy, so the rainwater can be collected and reused within the building.

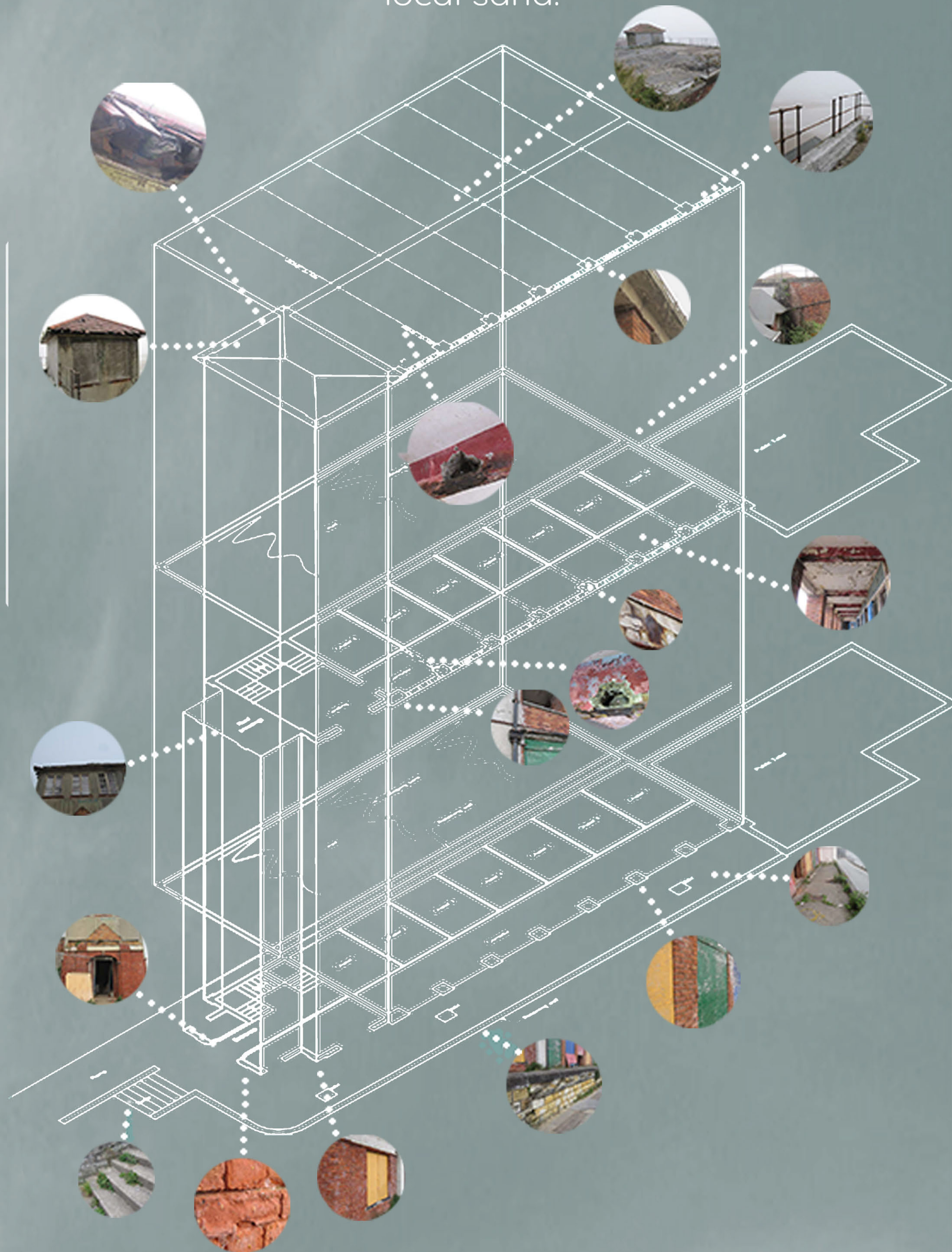
SCALE 1:200

Above and left it is possible to see the topographic map and the location plan.

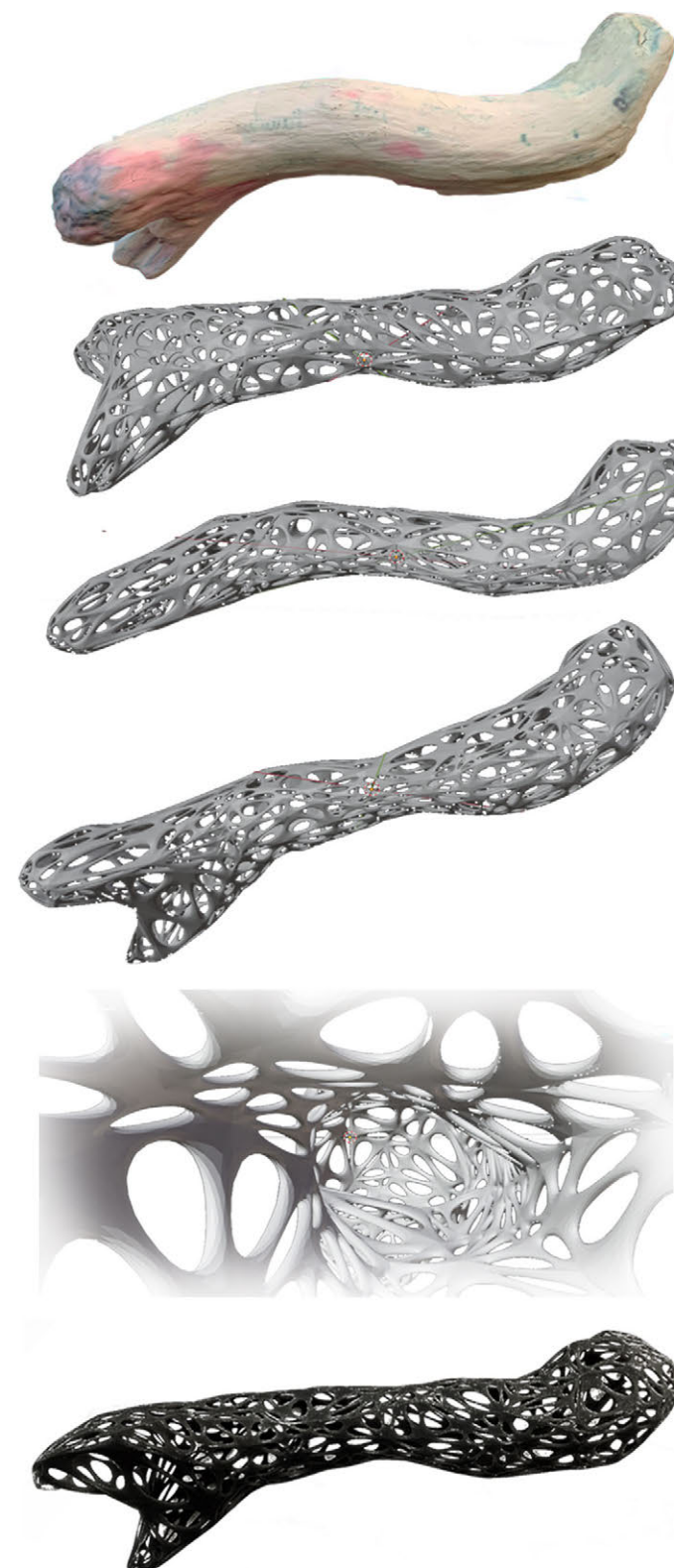
On the right, an historical photo of the terrace, an aerial capture of the place, and the transformation of the building from the original to the 3D printed model.



The damaged parts of the building will be preserved with 3D printed glass which is transparent and it can be printed it from local sand.

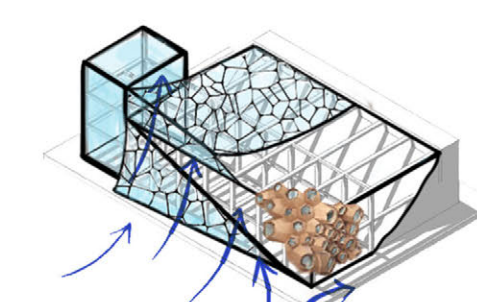
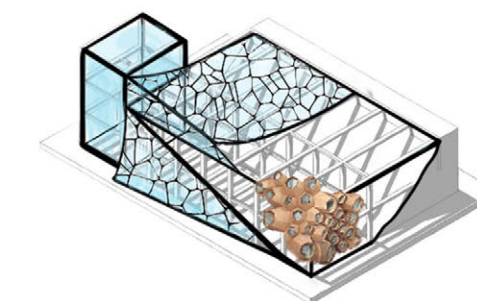
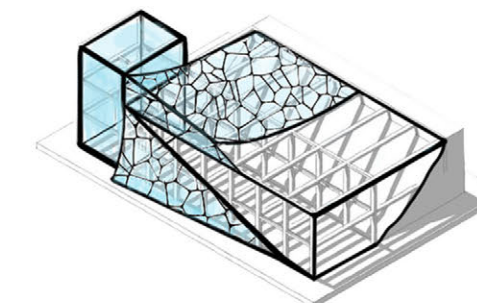
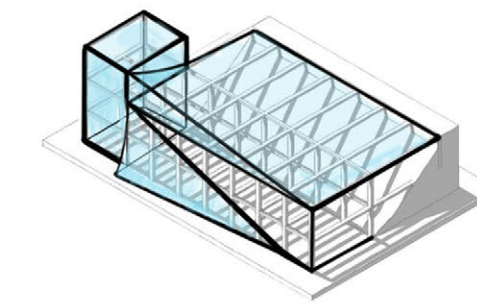
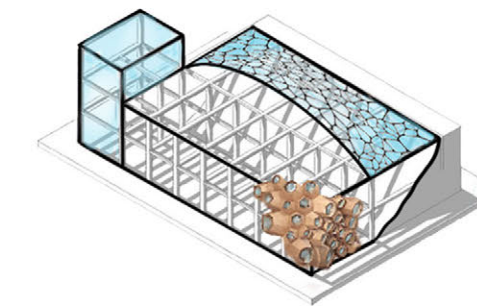
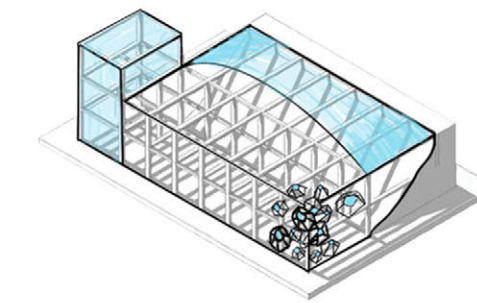


The driftwood piece found on the seaside has been 3D scanned, then elaborated into Voronoi Pattern, then 3D printed using recycled plastic. Voronoi Pattern is a naturally occurring pattern that can be found on the back of a turtle, on the seabed created by light, and is often considered the symbol of 3D printing.

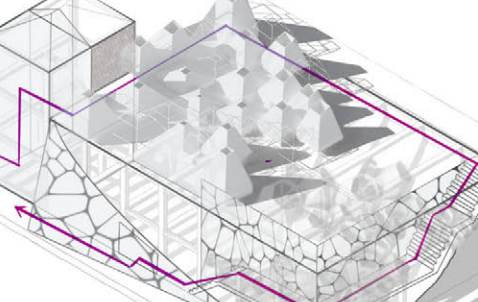
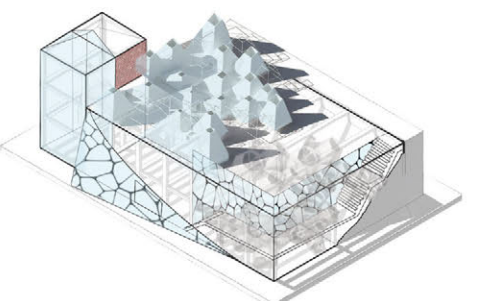
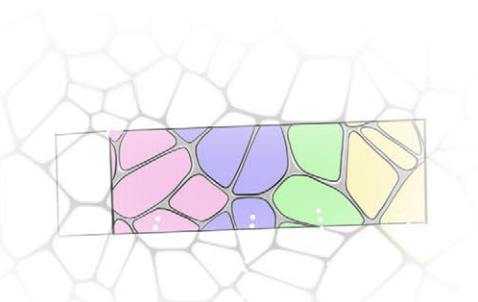
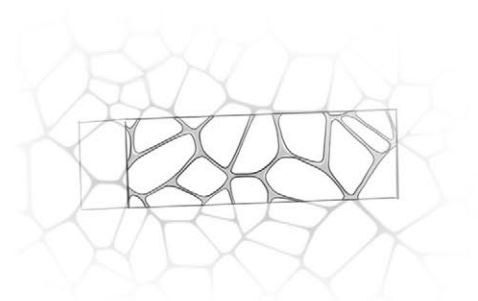
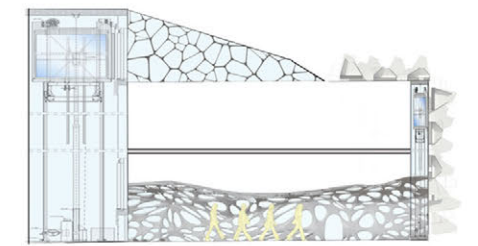
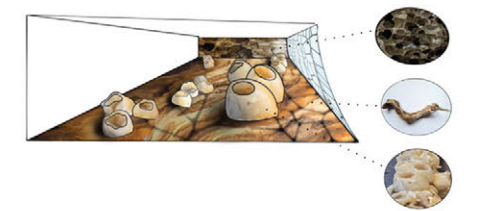


# Building Condition Concept Piece Key Moves

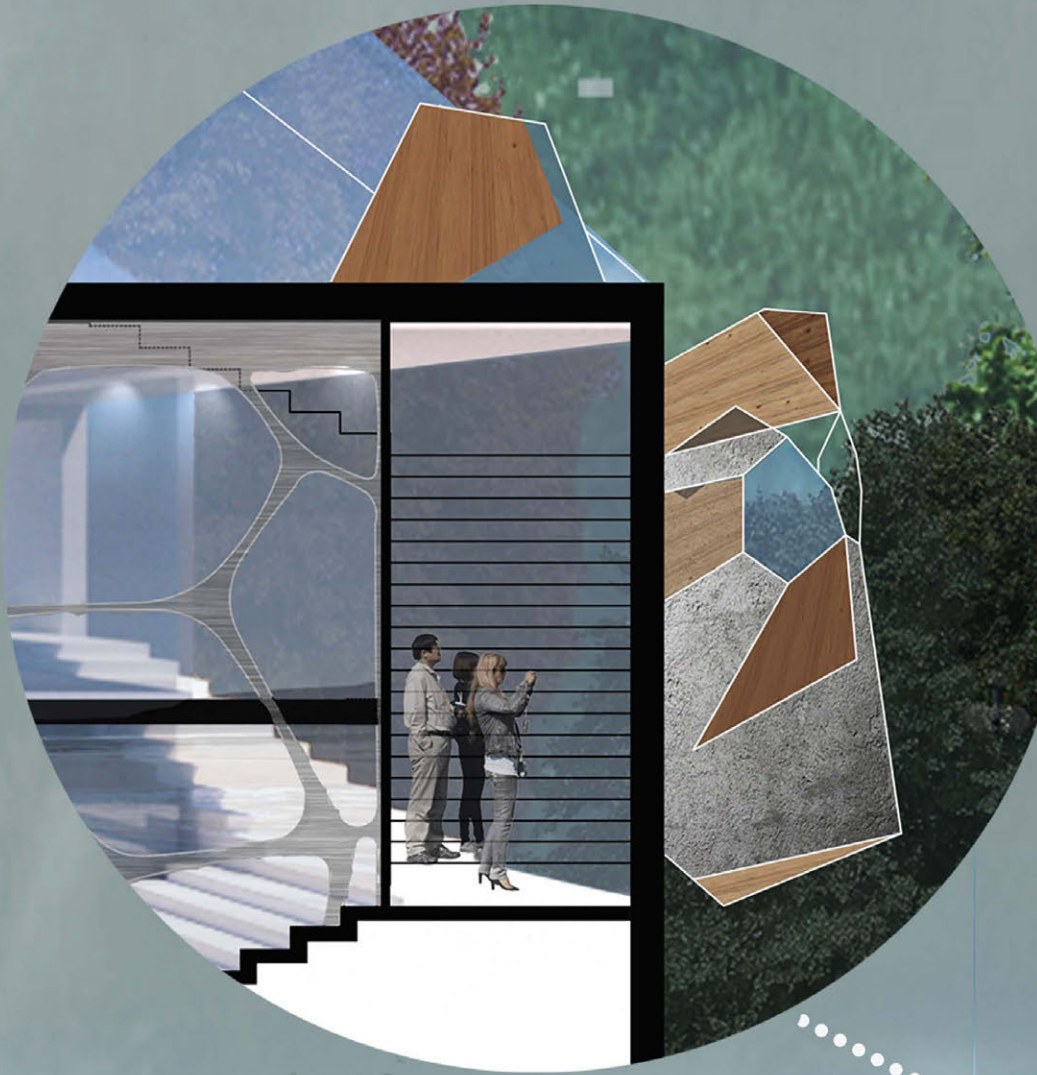
## Exterior Key Moves



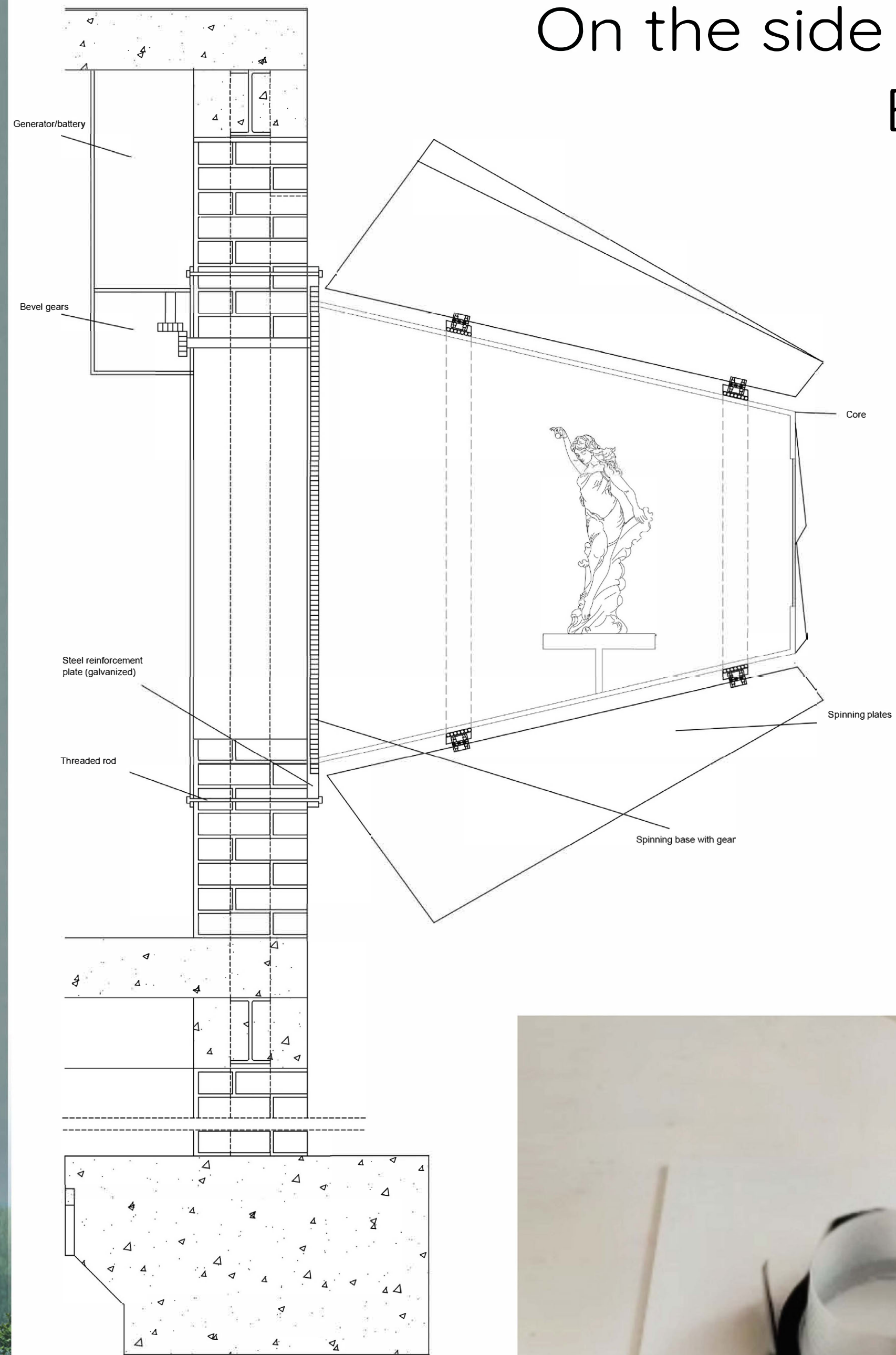
## Interior Key Moves





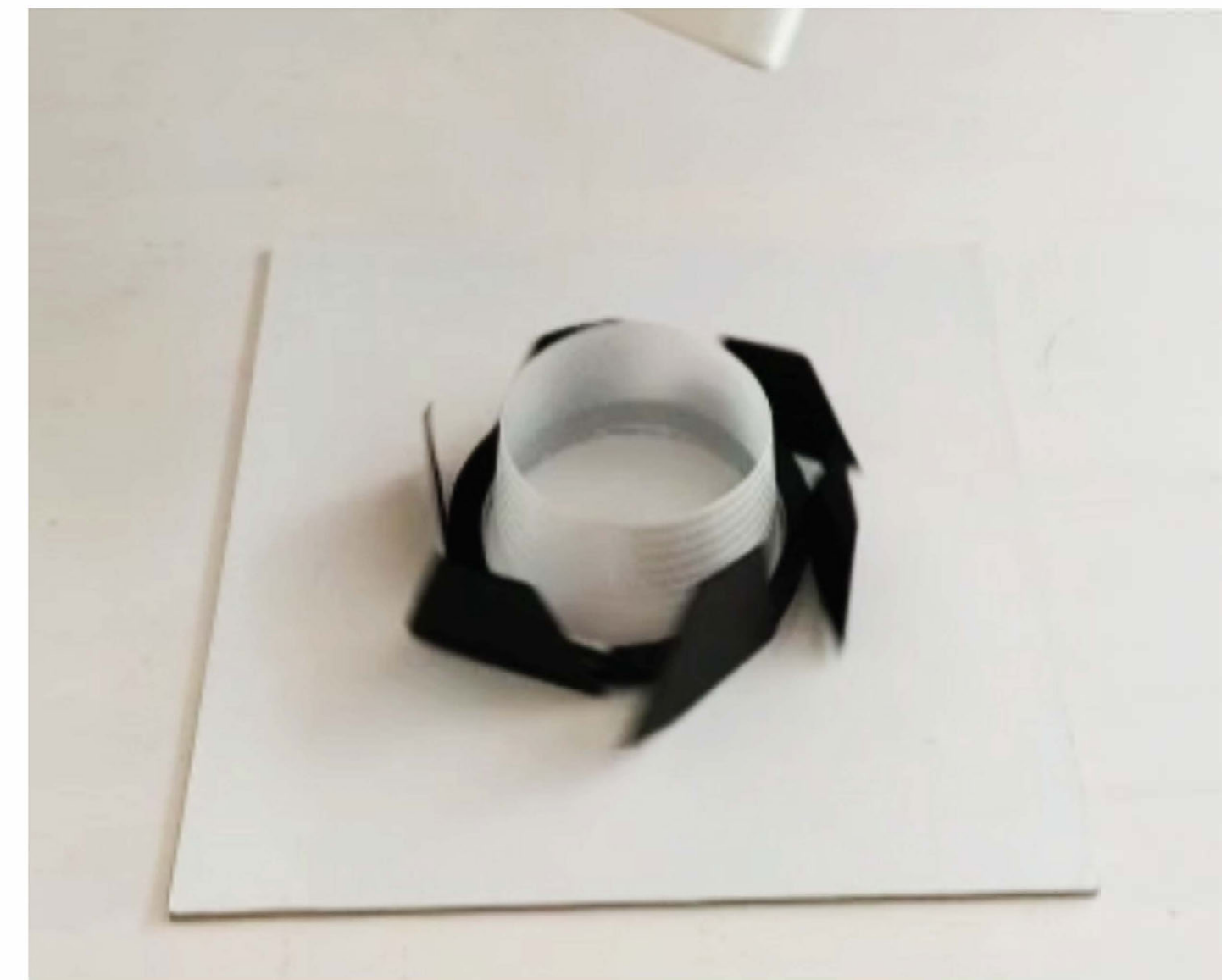
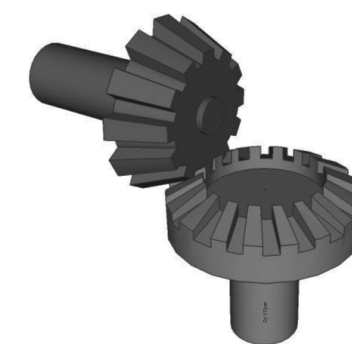


Biomimicry is the science that studies biology and mimics its behavior so that humans can learn and replicate how life forms work. The barnacle is a mollusk that forms its shell on existing surfaces. It is composed of 6 plates that store water and use it in times of drought. Similarly, The Barnacles on the roof collect rainwater. The glass ones, whose vents can be opened, create a passive cooling system, while the ones on the sides open and become wind tubes, as shown on the right.



## On the side of nature: Biomimics

Click the links below to see an experimental model of the wind turbine operation. The plates opens when it is windy and spin. Thanks to a bevel gear system and a generator, the movement will be turned into energy





# New Design for New Purposes

