



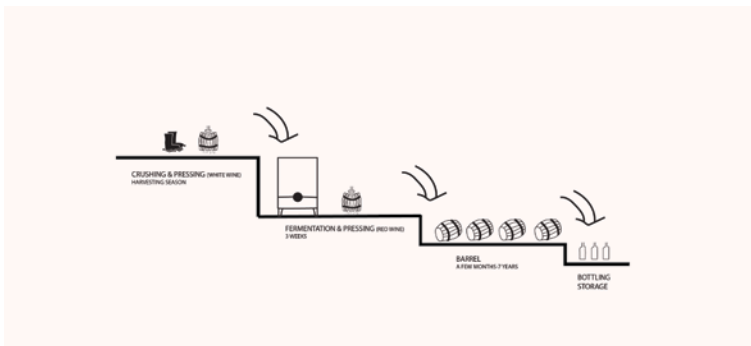
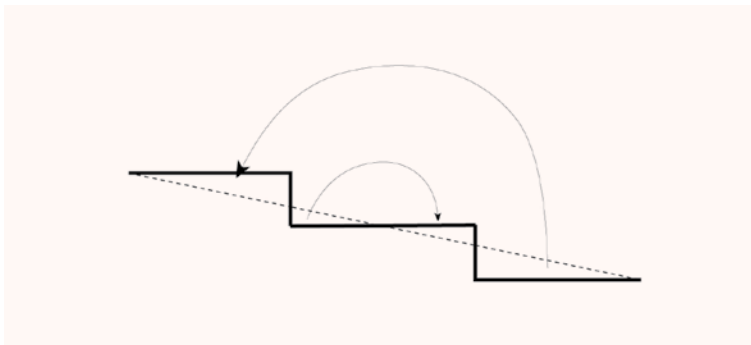
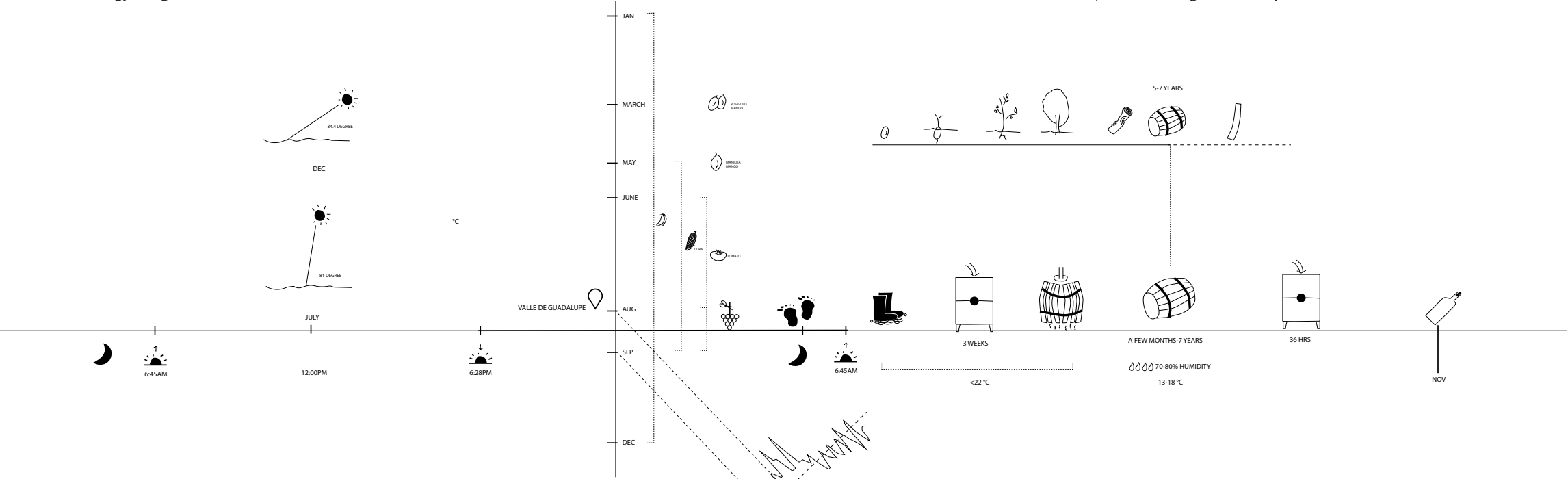
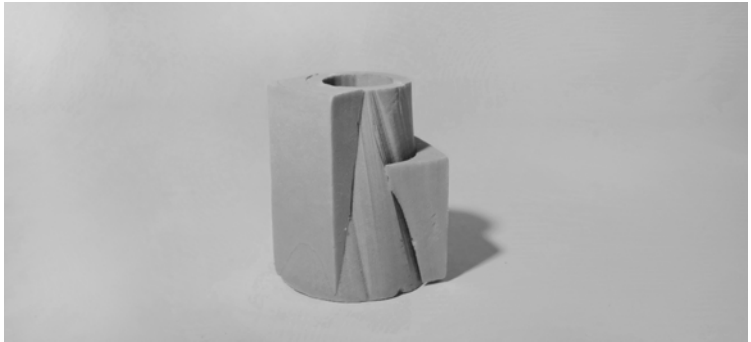
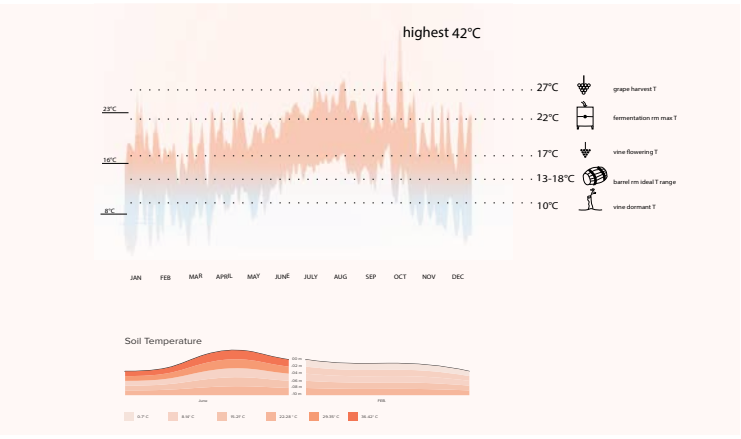
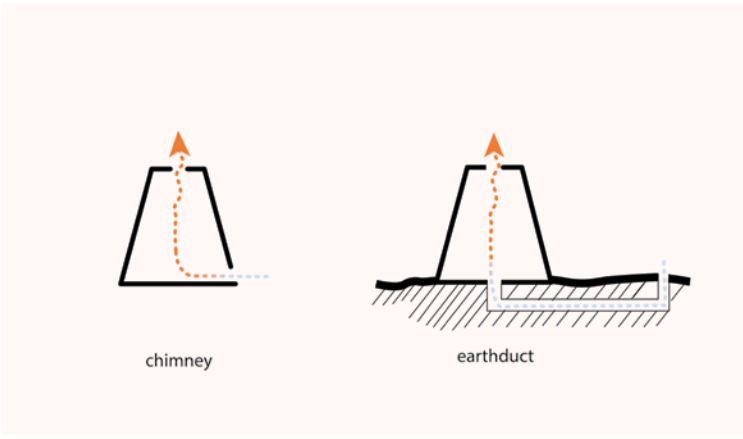
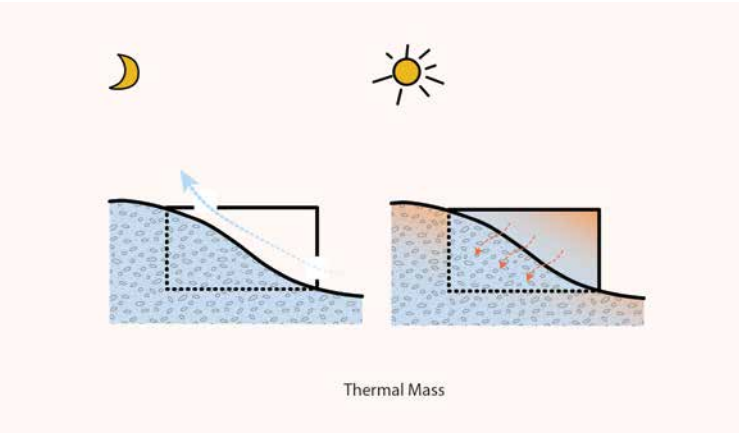
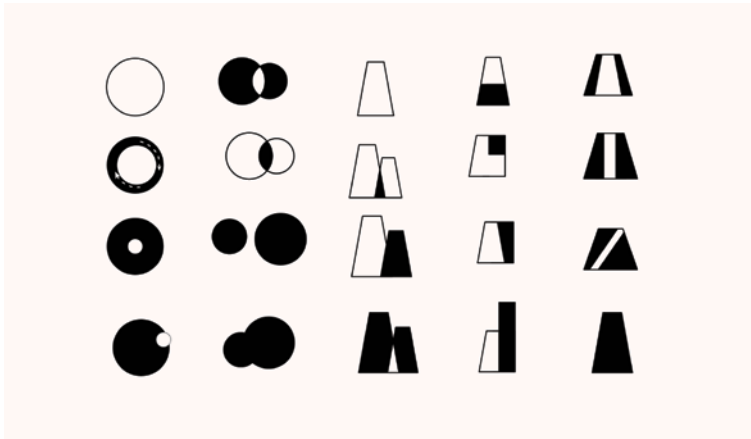
# RECÍPROCO

GIVEN AND SUPPORTED BY EACH OTHER

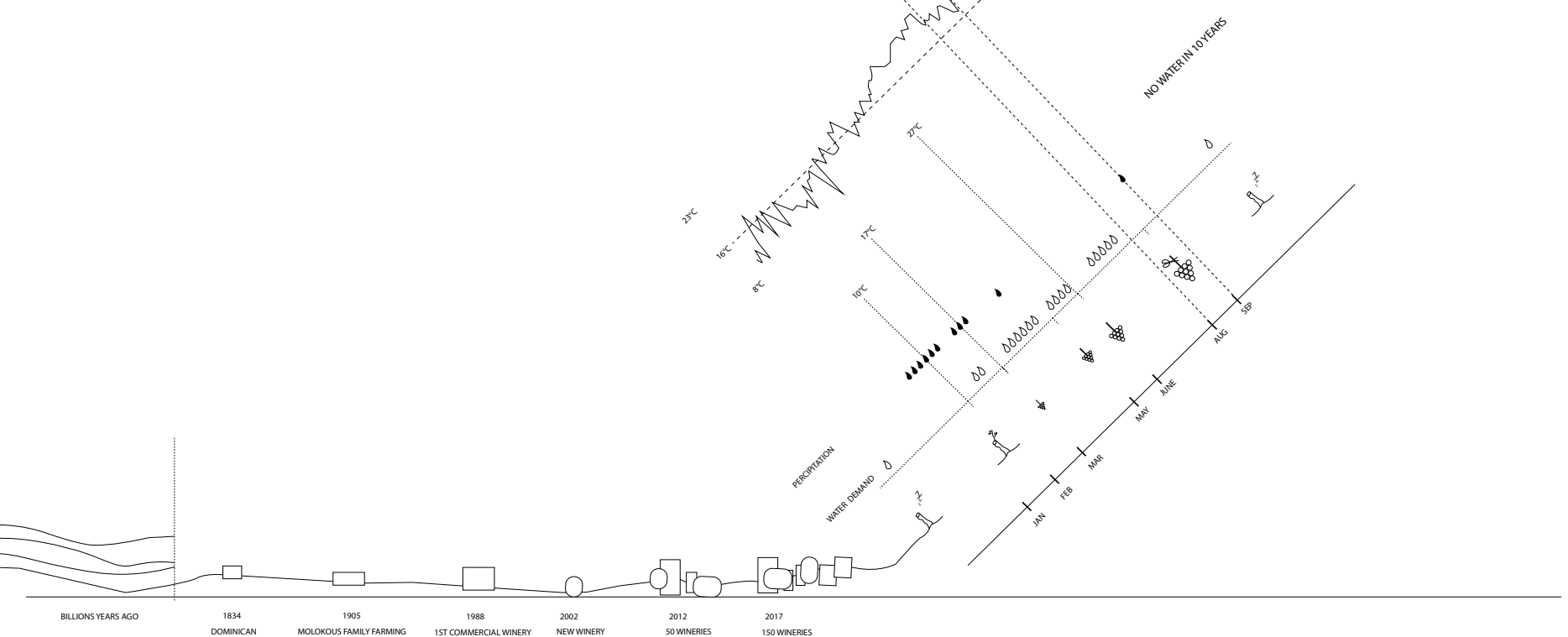
Instructor: Mariana Ibanez, Caitlin Mueller  
Core III Studio+4.463 Building Structural Systems II, Fall 2017 @MIT

Baja is a region that has extreme climate condition and limited water and energy resource. It is necessary to consider the local environmental condition while designing the winery, thus it could exist in harmony with the environment. Winery is a special program that requires specific indoor temperature for different stage of production. The idea here is to design a winery that itself could act as an engine to mediate the temperature and ventilate the air. A chimney with its height different could produce air pressure different to drive the air. Furthermore, by passing the air through an earth duct buried 2 meter below ground could mediate the temperature of the air even more.

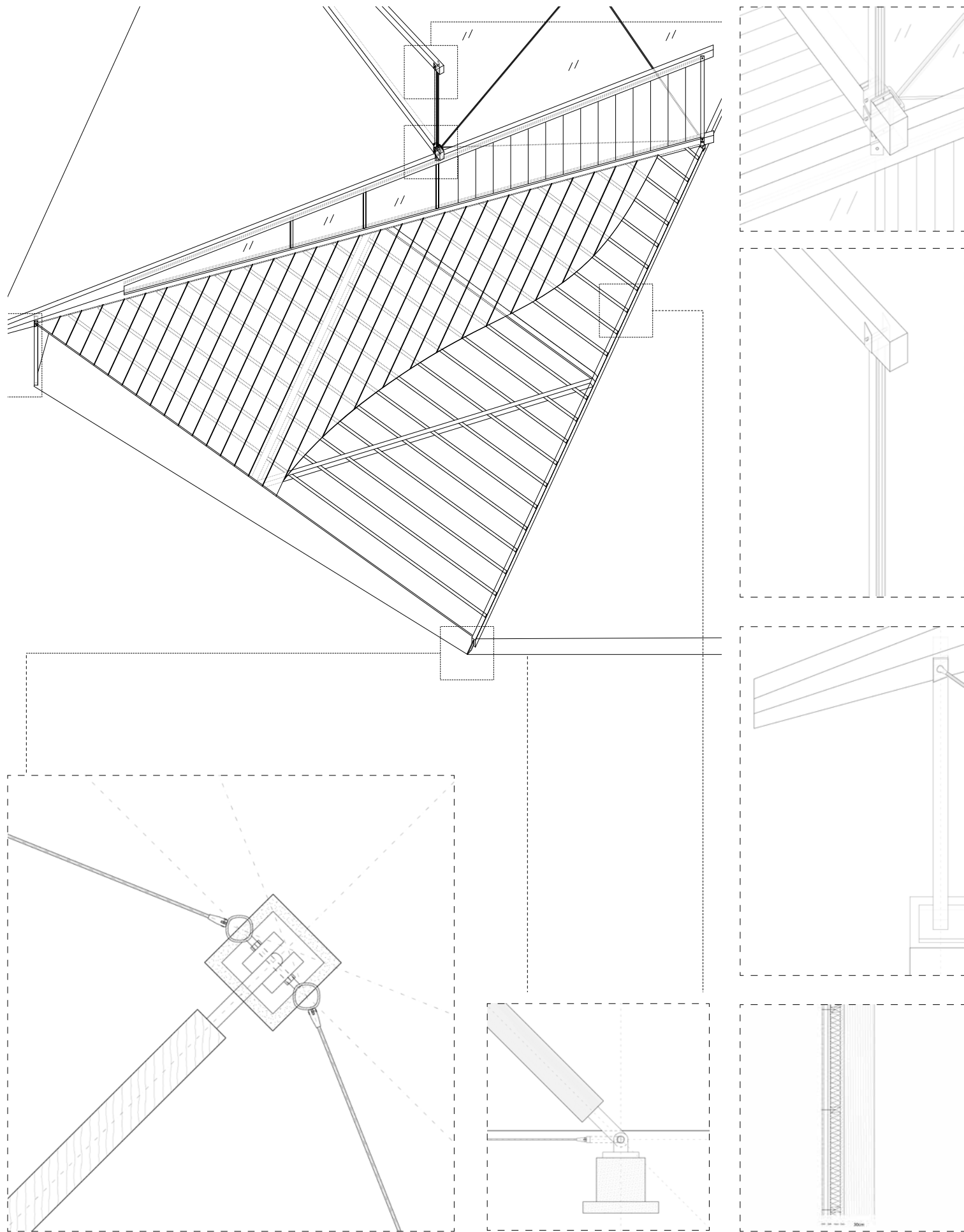
The site of the winery is on a hillside of a mountain. By cutting and filling the slope, a terrace could be constructed to operate the winery in a gravity fed way, which saves the energy for transferring the juices from each stage of production. Occupying the hillside could also take advantage of the high thermal mass of the earth, which could stay cool for longer and absorb heat during the day.



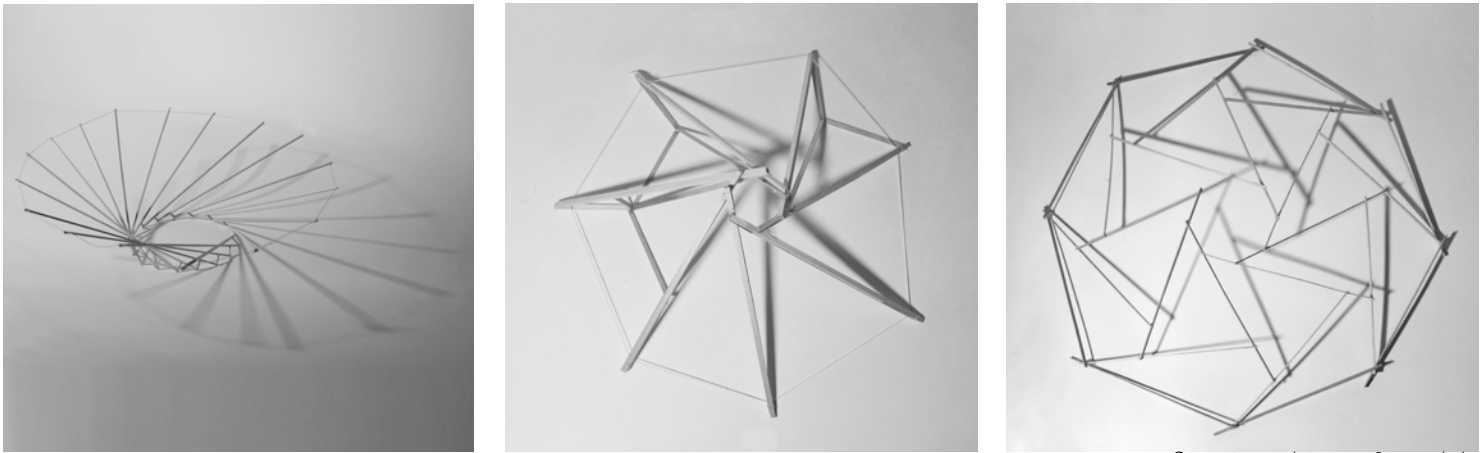
Winery gravity operation



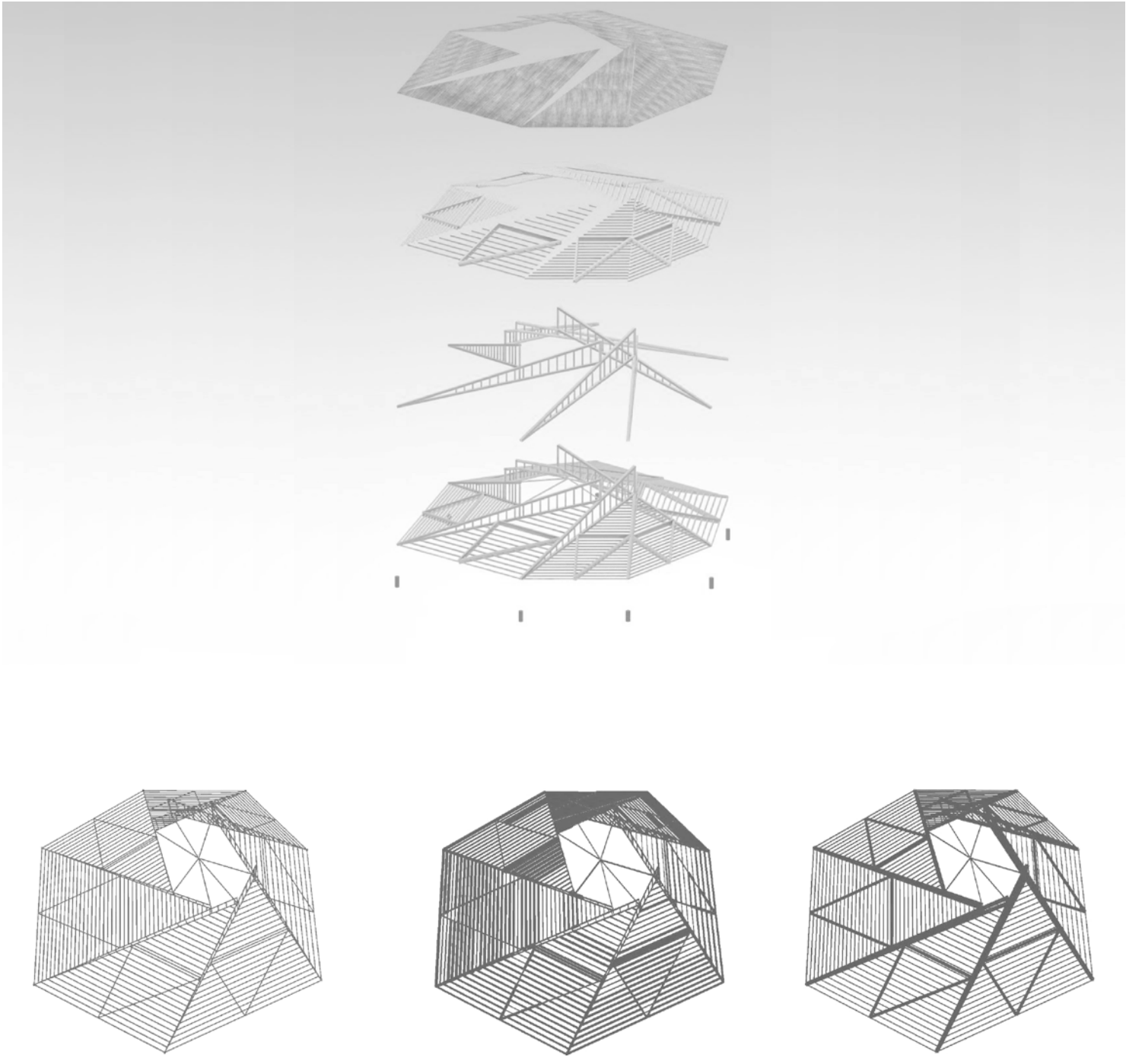
Winery operation, vine growth diagram



Structure detail designs



Structure designs& models



Structure optimization on Karamba



