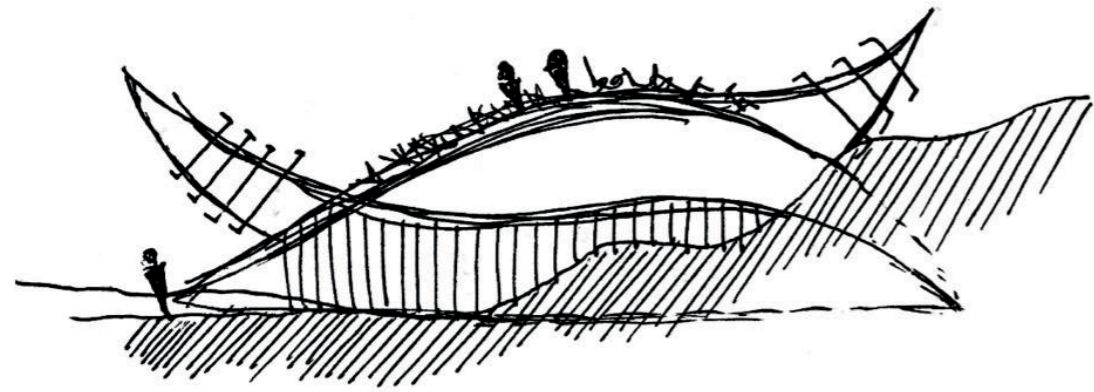


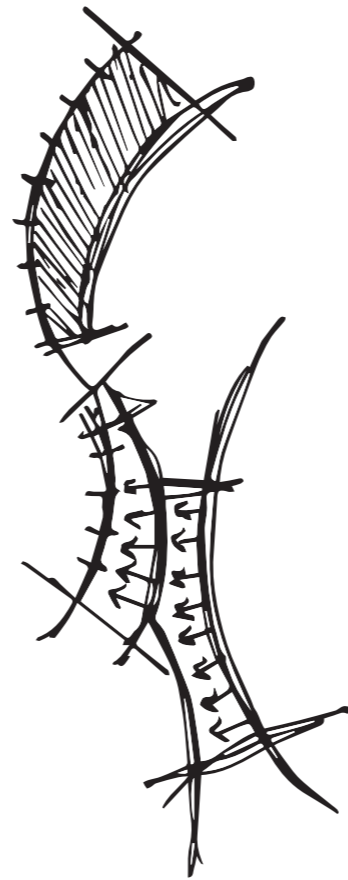


marim..o  
ecological depletion repressing center  
by Kasim Berk Adsan

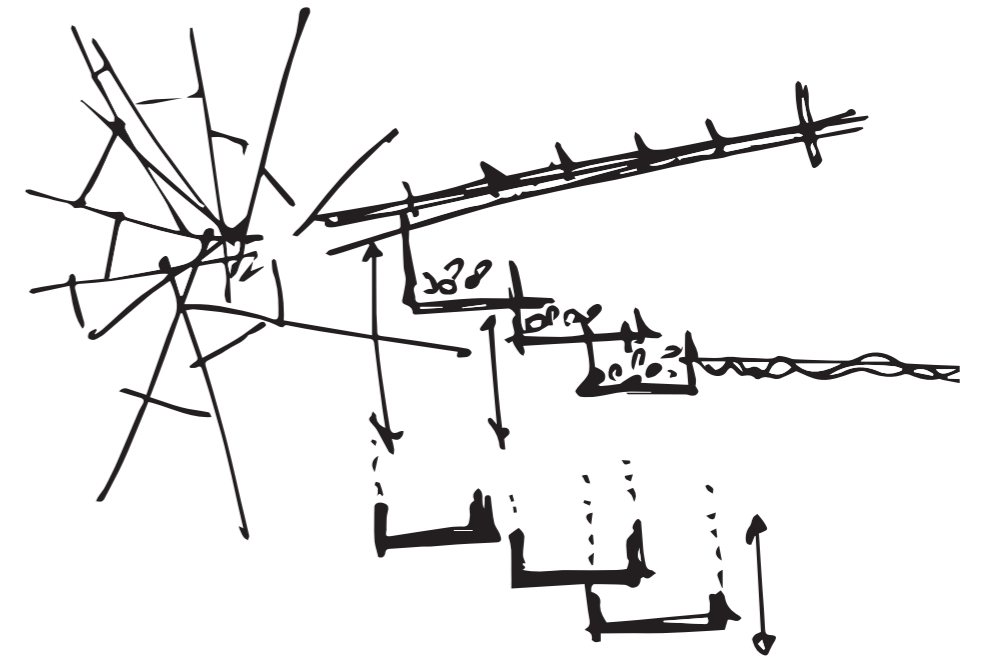
# LIT REVIEW



ARCHITECTURE



ENERGY



BIODIVERSITY



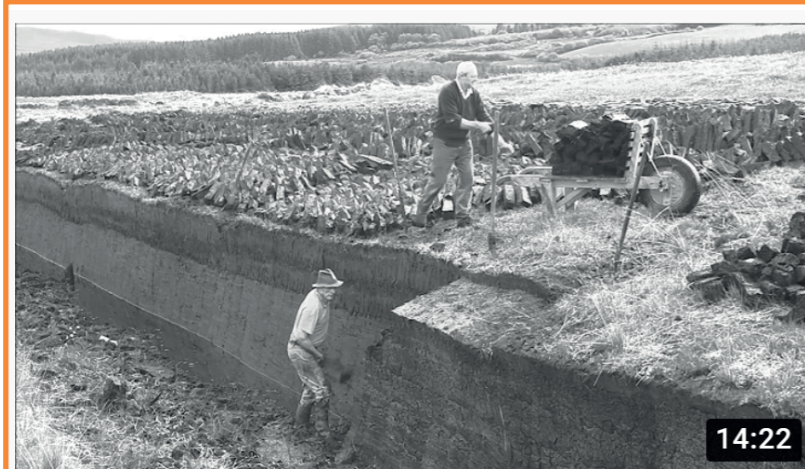
# ARCHITECTURE

## The Possible Advantage of Living in Turf Houses on Settlement Mounds

August 2007 · *Acta Borealia* 24(1):84-97

DOI: [10.1080/08003830701321580](https://doi.org/10.1080/08003830701321580)

Reinhard Mook · Reidar Bertelsen



## Traditional turf cutting

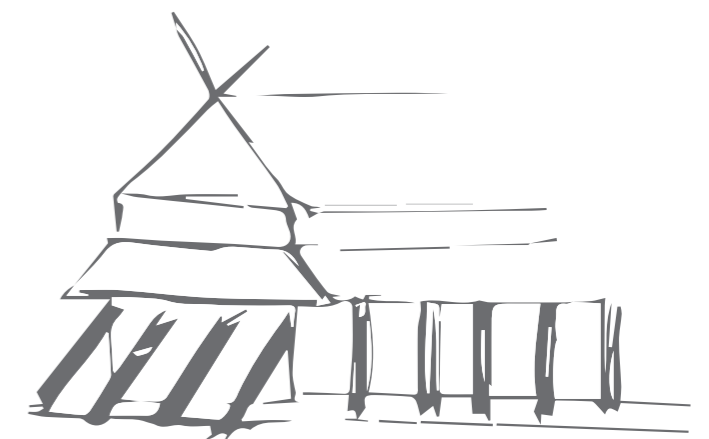
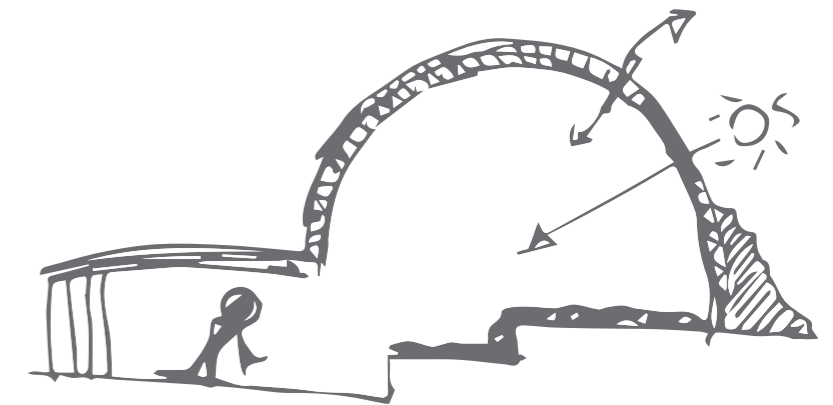
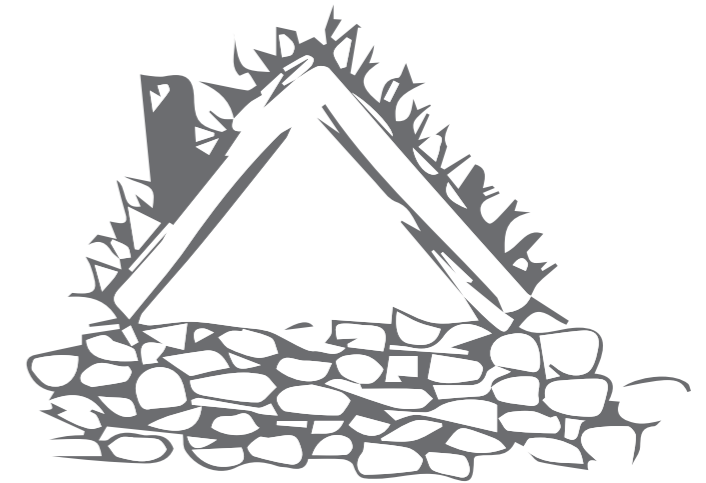
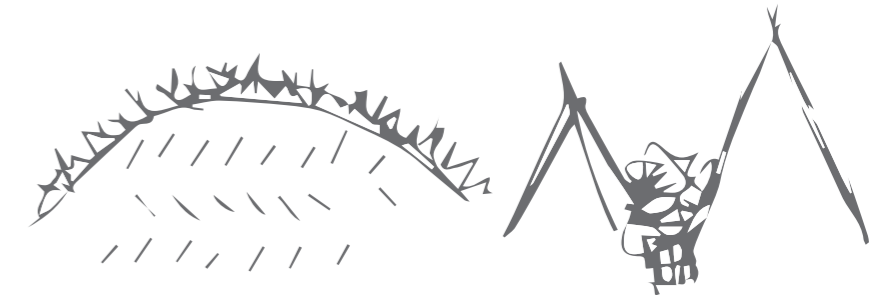
2.8M views · 6 years ago

Teresa Cotter

Cutting turf in the old fashioned way in Derrymore bog to supply the household with fuel for the winter. A sleam is used...

## SYNTHESIS

- Viking longhouses - Turf houses walls are made of wattle (sticks woven together and covered in mud) roofs are covered in straw floor level is sometimes dug up to keep out draughts
- Turf Cutting used for cooking food, keeping the house warm etc. is a solid fossil fuel formed from ancient clumps (trees, ferns, mosses) has 1/3 of heating value of coal 3 person x 3 days is necessary to keep a host supplied for a year turf-cutter, lifter and wheeler are used Dabbing (vertical cutting) and Breasting methods are used



*Freshwater Biology* (1982) 12, 63–82.

## The palaeolimnology of Lake Mývatn, northern Iceland: plant and animal microfossils in the sediment

ÁRNI EINARSSON Institute of Biology, Reykjavík, Iceland

Phillips et al. *Journal of Biological Engineering* (2019) 13:72  
<https://doi.org/10.1186/s13036-019-0200-5>

**ibe**  
Advancing Biology-Inspired Engineering  
Official publication of the Institute of Biological Engineering

Journal of  
Biological Engineering

RESEARCH

Open Access

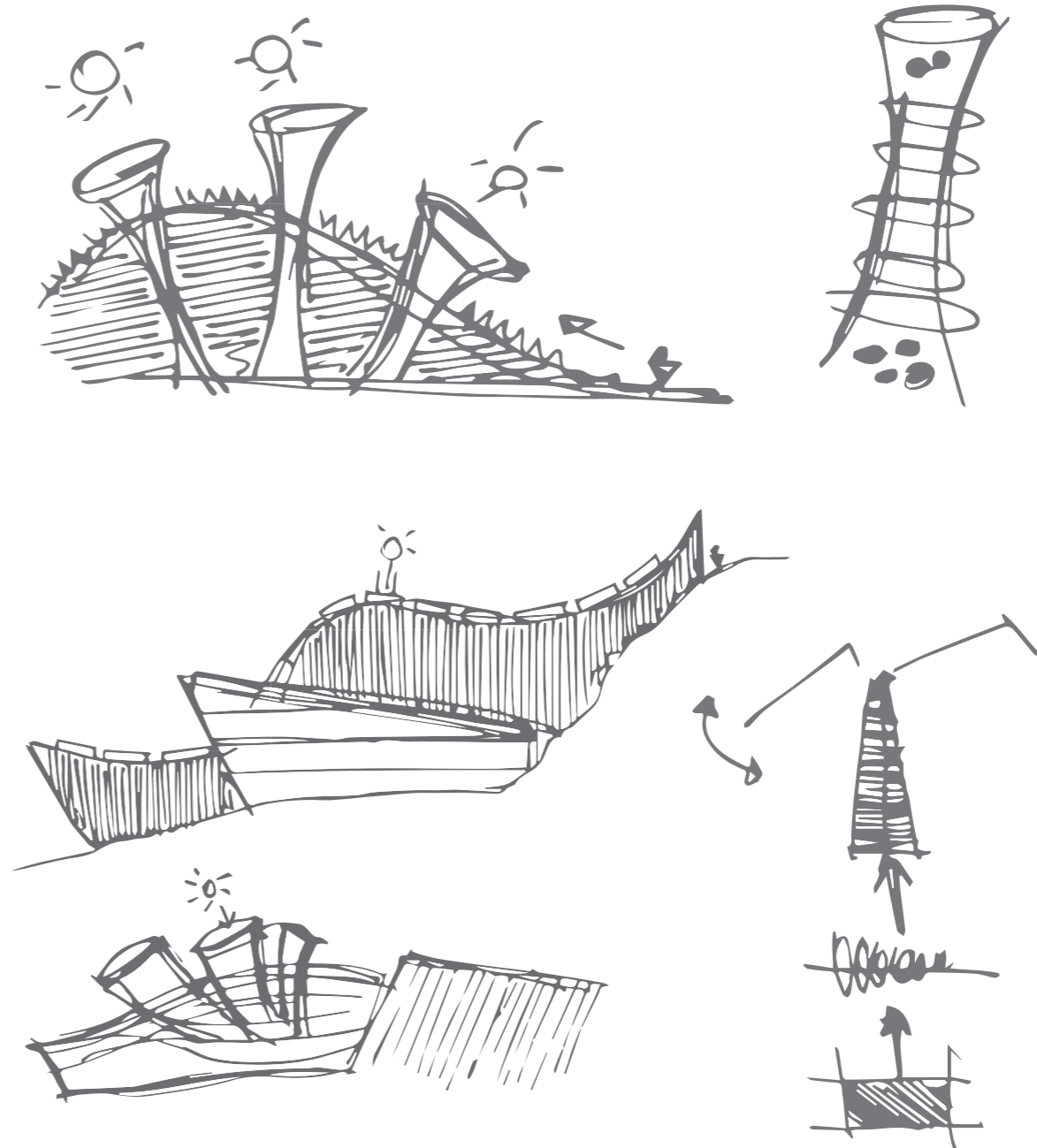
## Marimo machines: oscillators, biosensors and actuators

Neil Phillips<sup>1\*</sup>, Thomas C. Draper<sup>1</sup>, Richard Mayne<sup>2,1</sup> and Andrew Adamatzky<sup>1</sup>



### SYNTHESIS

- Marimo- algae balls (spherical photosynthetic filaments) float in light and sink in dark  
can be used for Bio-artificial devices and Bio-sensors  
Method: movement of bubbles towards the surface of water can be harnessed rather than using bio-mass.  
Marimo-powered rotational motor can be used by bubble generation and retention, causing floatation.
- NordBio (Nordic bio-economy initiative)  
in Iceland there are 21 tons of biodegradable waste from meat industry, 10 tons of waste from garden waste and 4 tons of waste from fish industry  
These biodegradable wastes can be used as a resource
- Geothermal Energy  
in Iceland, there is a 200 celcius-degrees increase every one km below  
geothermal energy supply can vary (pipe, piston, wheel)  
can be utilised to enable carbon negative production of algae, heat, electricity and for geothermal baths



## Physical characteristics of Lake Mývatn and River Laxá

Jón Ólafsson

Ólafsson, J. 1979. Physical characteristics of Lake Mývatn and River Laxá. – *Oikos* 32: 38–66.

Wetlands  
DOI 10.1007/s13157-016-0784-1



REVIEW ARTICLE



## Icelandic Inland Wetlands: Characteristics and Extent of Draining

Olafur Arnalds<sup>1,2</sup> · Jon Gudmundsson<sup>1</sup> · Hlynur Oskarsson<sup>1</sup> · Sigmundur H. Brink<sup>1</sup> · Fanney O. Gísladóttir<sup>1</sup>

## Wetland Restoration at Stokkseyrarsel, South Iceland

October 2011

Conference: Restoring the North - Challenges and Opportunities · At: Selfoss, Iceland

Ragnhildur (Raga) Sigurdardóttir

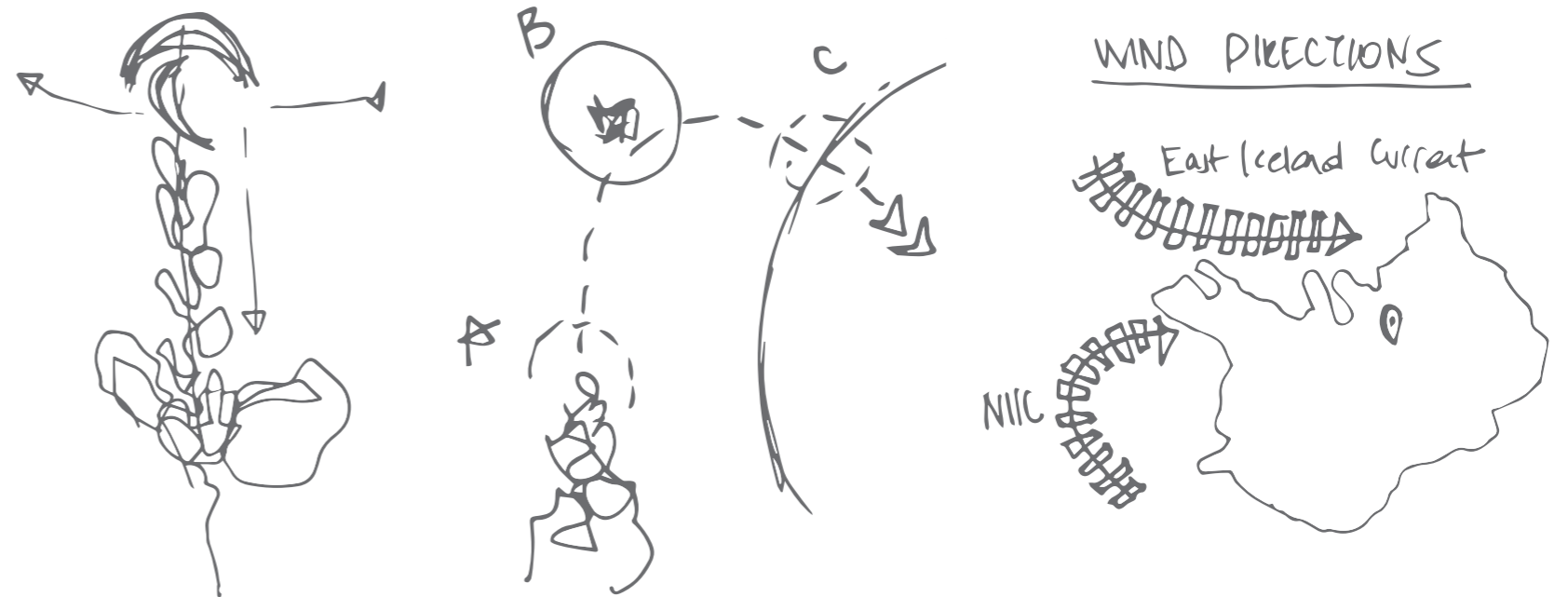
## The ecology of Lake Myvatn and the River Laxá: Variation in space and time

June 2004 · *Aquatic Ecology* 38(2):317-348 · Follow journal

DOI: [10.1023/B:AECO.0000032090.72702.a9](https://doi.org/10.1023/B:AECO.0000032090.72702.a9)

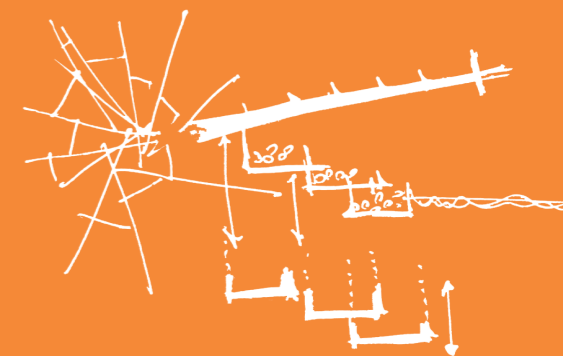
Project: [Lake Mývatn](#)

Árni Einarsson · Gerdur Stefansdóttir · Helgi Jóhannesson · [Show all 8 authors](#) · Arnthor Gardarsson

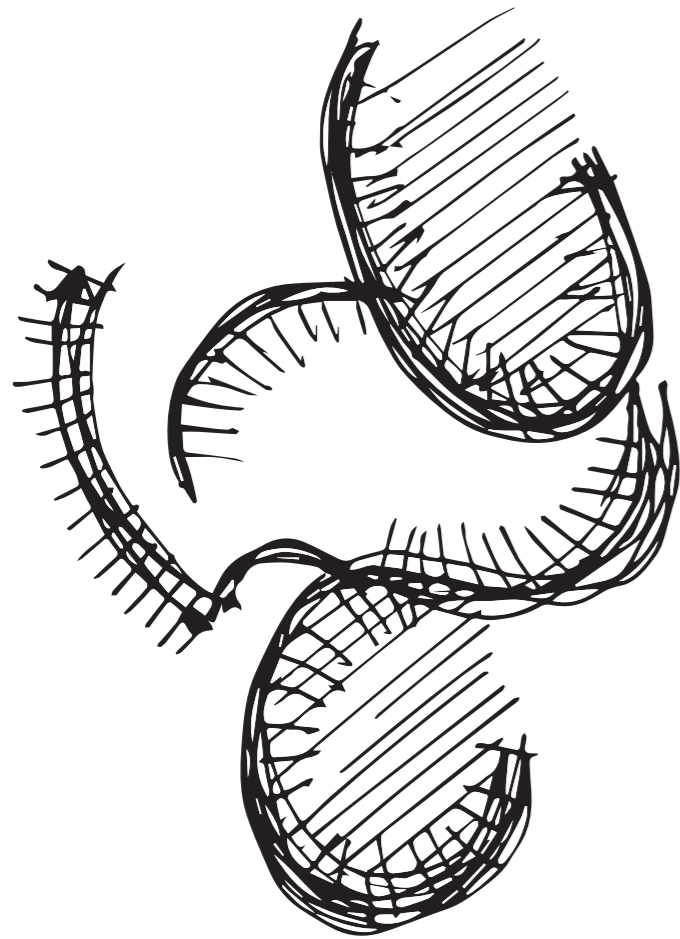


## SYNTHESIS

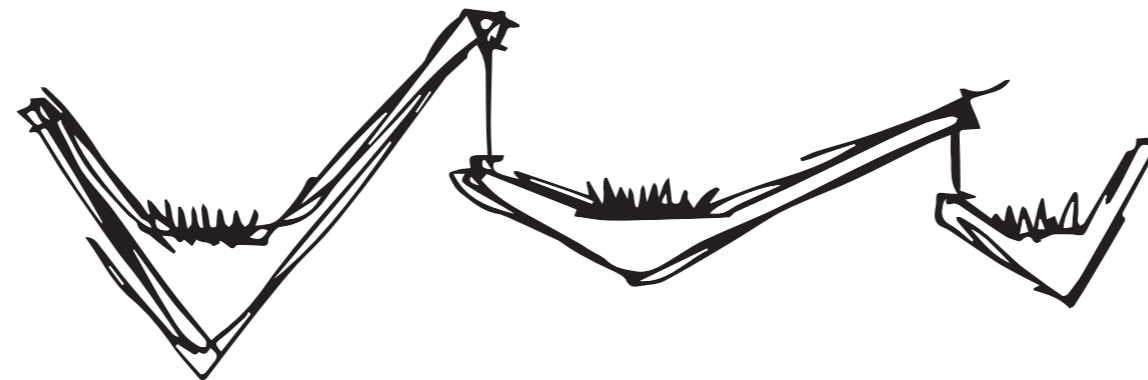
- Geology of Lake Myvatn area
  - loss of vegetation due to wind erosion (wetland remediation can be solution)
  - important bird area (pink-footed goose, atlantic sea puffins)
  - 115 bird species, 28 duck species and insects
  - neo-volcanic zone
  - basalt ridges rounded by glaciation
  - lacks surface drainage channels
  - between the years 1967-2004, served as a mining center, now a farming district
  - Skutustadir and Reykjahlid regions serve as living regions for local people
- Environmental Remarks
  - The Lake Myvatn region achieved an OUV to protect the landscape, geological formations, wildlife while promoting research
  - Existing natural food cycle between marimo, midge larvae and bird fishes
  - The main environmental issues are processing of mineral and energy, and erosion of soil which can be solved by promoting wetland remediation.



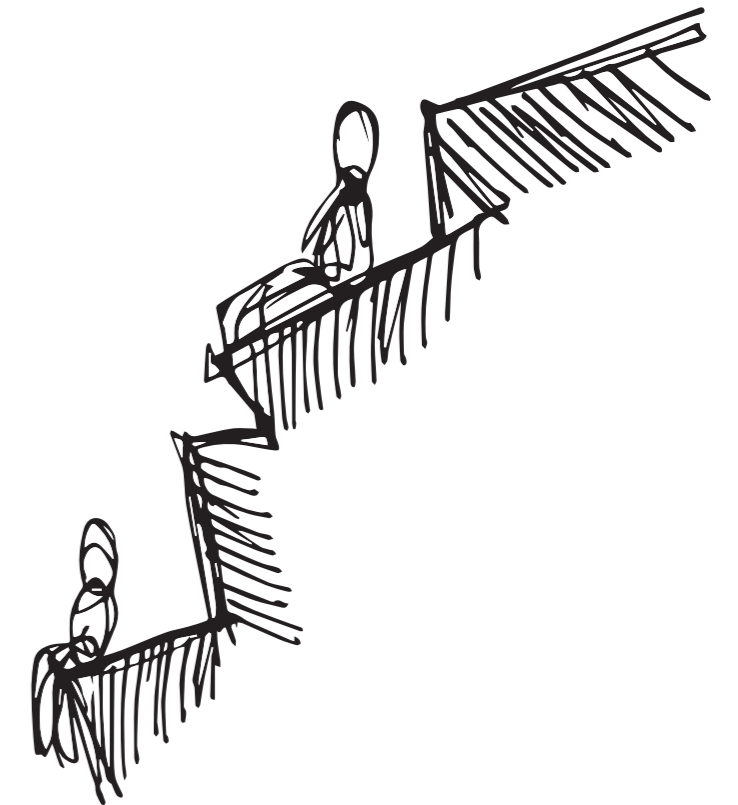
# CASE STUDY



“Guoloug Baths”  
BASALT Architects



“Wetland Research and Education Centre”  
Atelier Z+

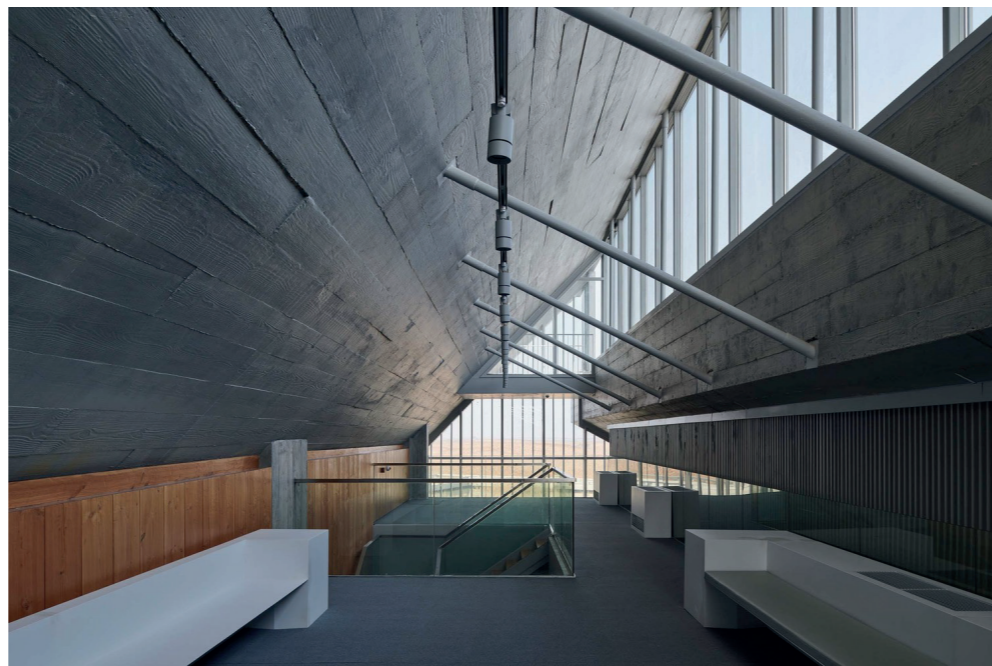
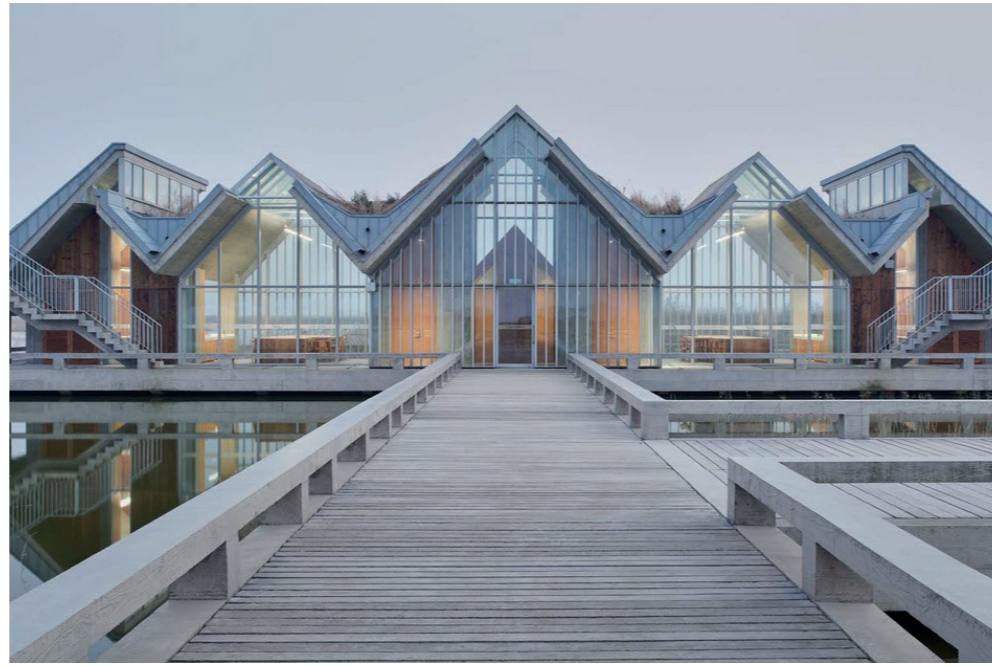


“Tbilisi Coffee Factory”  
Giorgi Khmaladze Architects

“Guoloug Baths”  
BASALT Architects



“Wetland Research and Education Centre”  
Atelier Z+

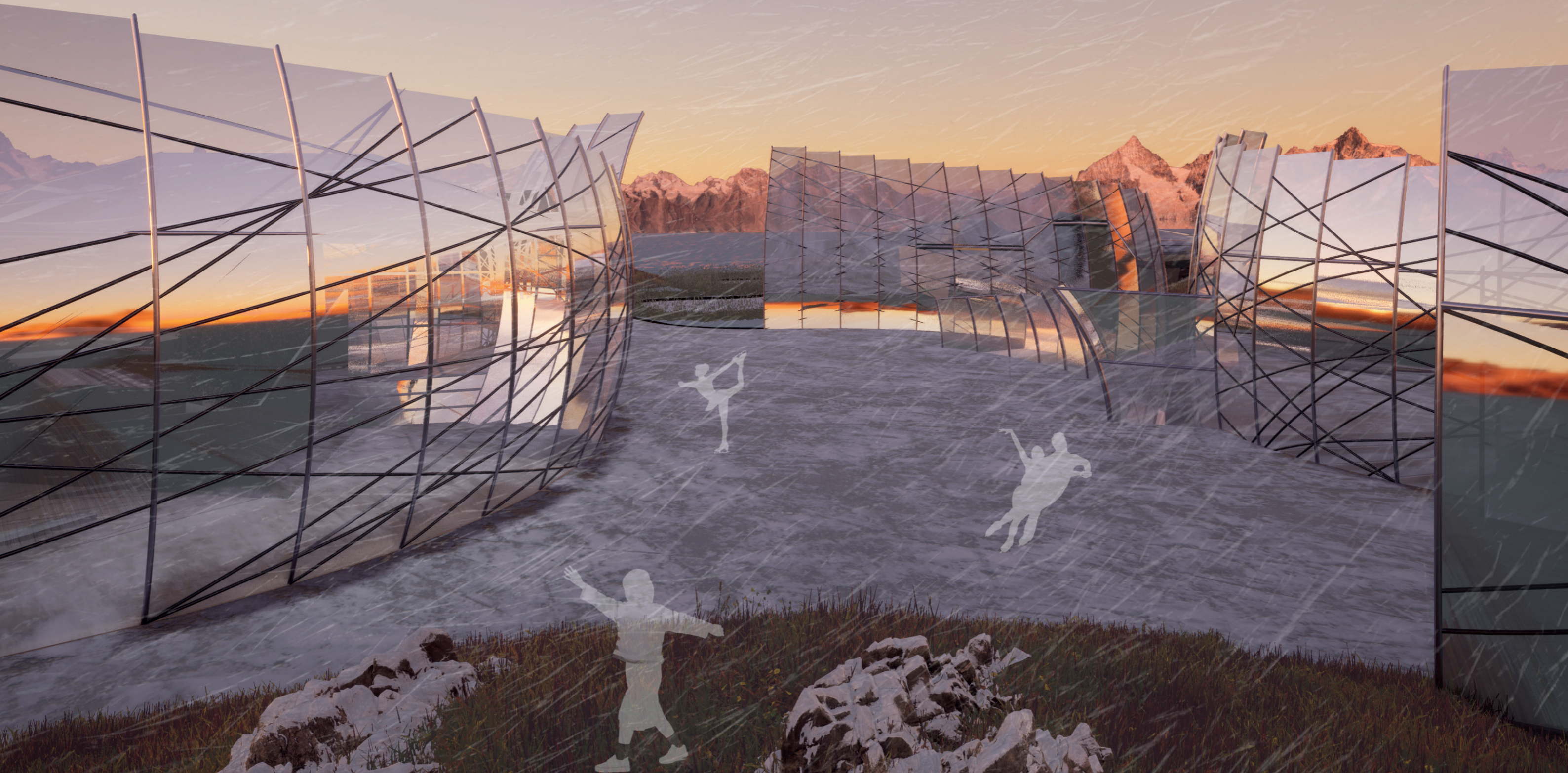


“Tbilisi Coffee Factory”  
Giorgi Khmaladze Architects



# marim..o

Repression center aims to leave an ecosystem for Iceland so that there will be no need for any external act from humans to endangered species. The center encloses the tip of one specific lake while forming a relationship between both above and below sea level. The functions of research and education wings take its foundation points from three essential problems of Myvatn region: algae balls, soil and endangered species. The repression of the ecological depletion will result in a more sustainable environment for both living in and outside of the complex.



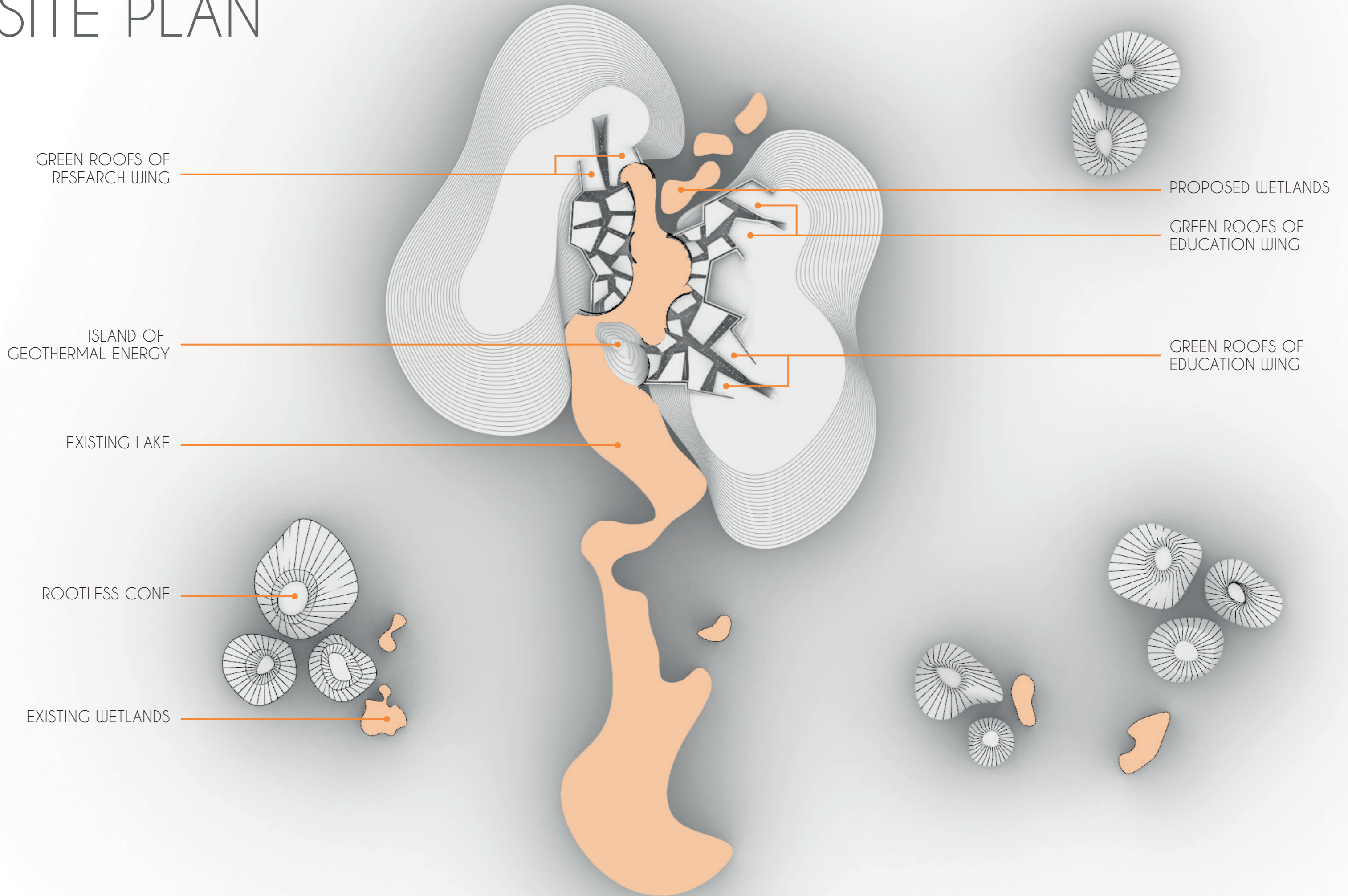


# FORM DEVELOPMENT

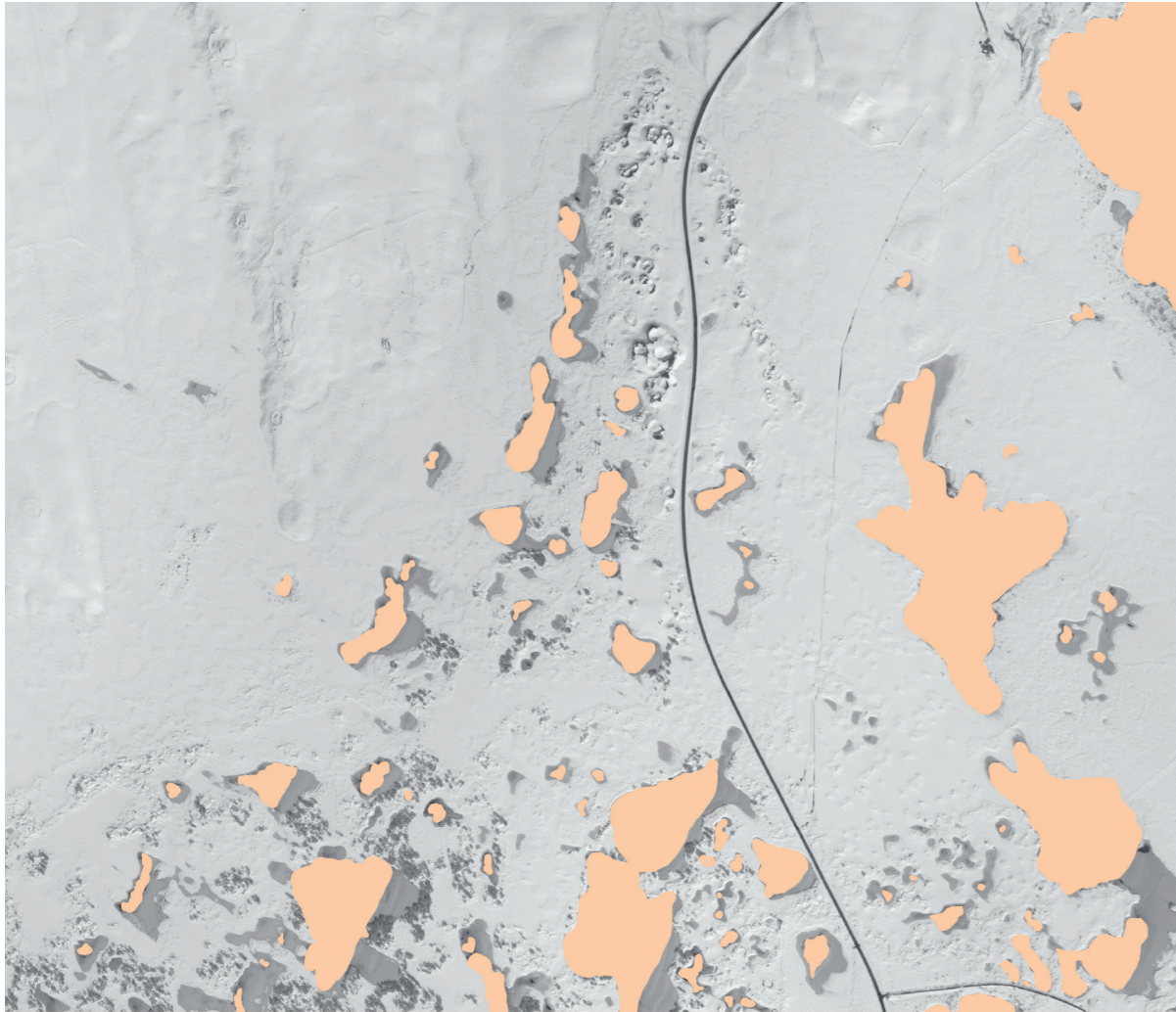
Initial Sketches of Overall Design



# SITE PLAN



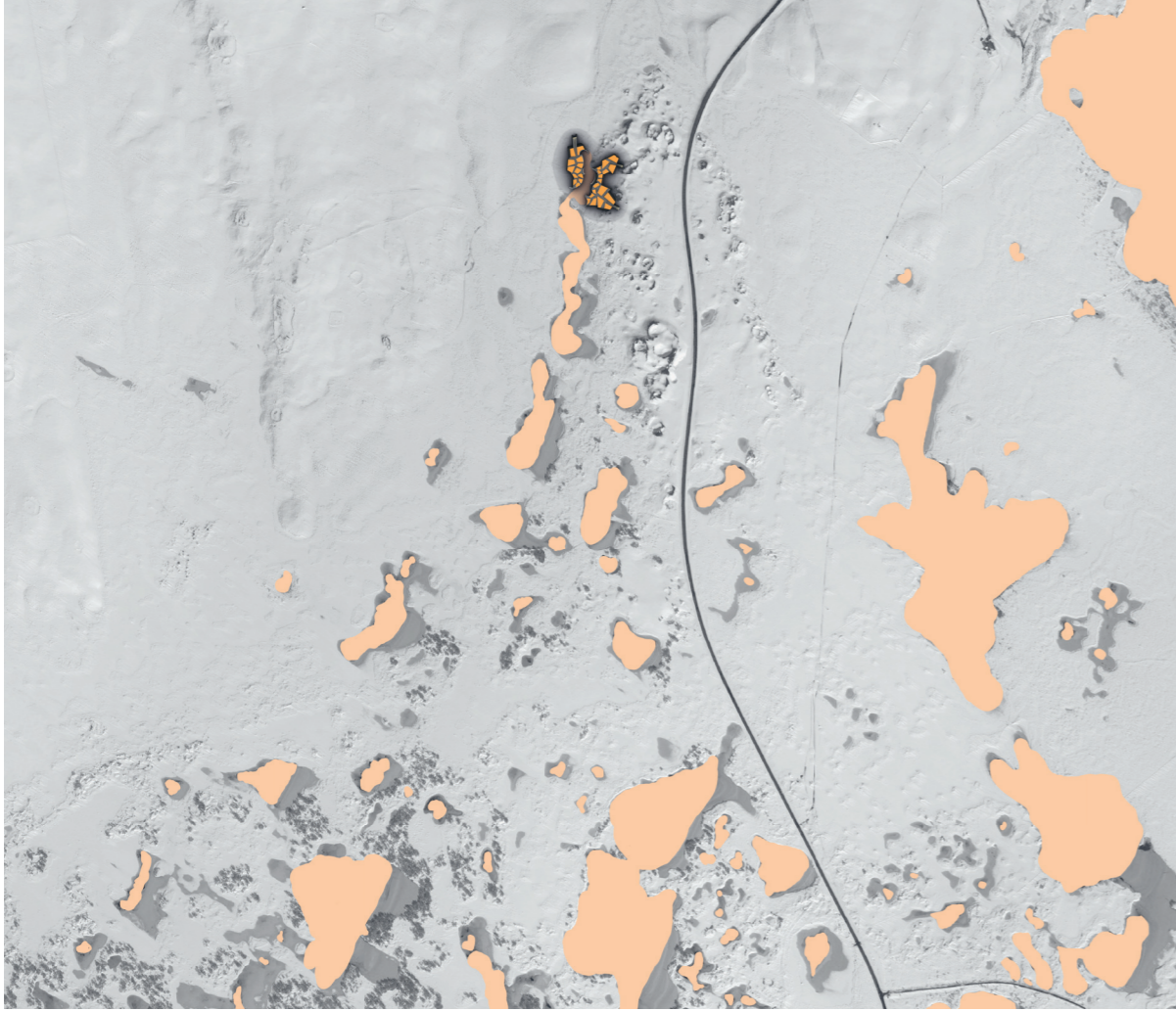
2012



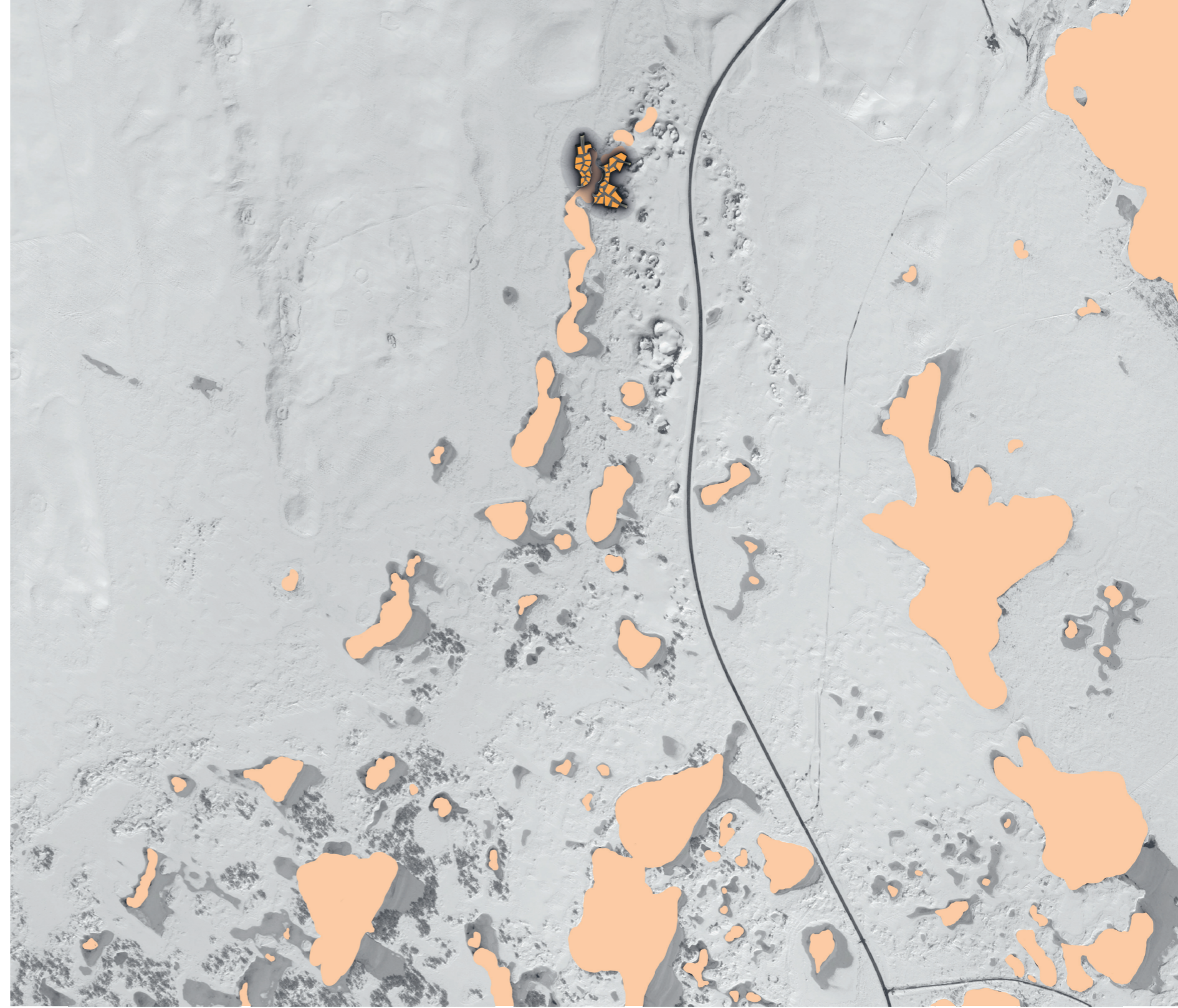
# “THE 30-YEAR EFFECT”

Repressing center’s one of the main purpose is to act as a prototype for Iceland which will promote natural formation of future wetlands as well as the increase of biodiversity for endemic species like algae balls (marimo) and waterbird species.

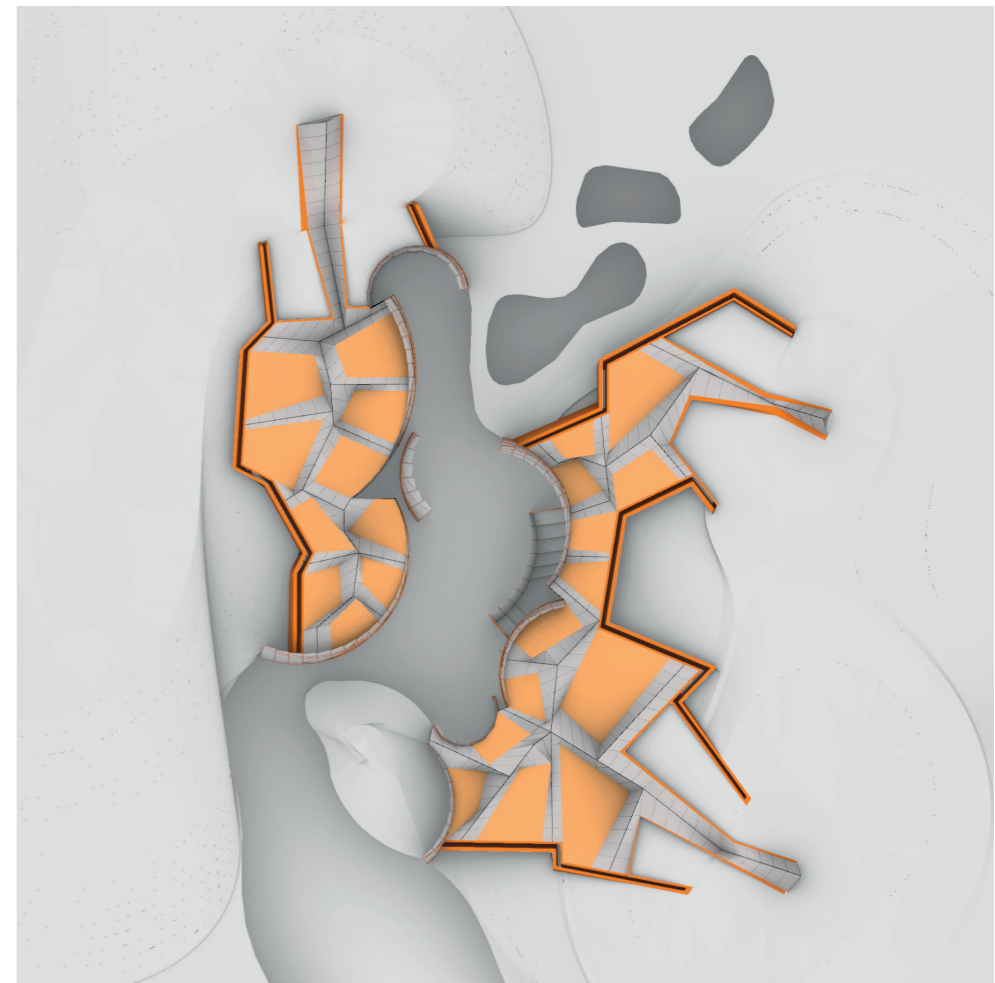
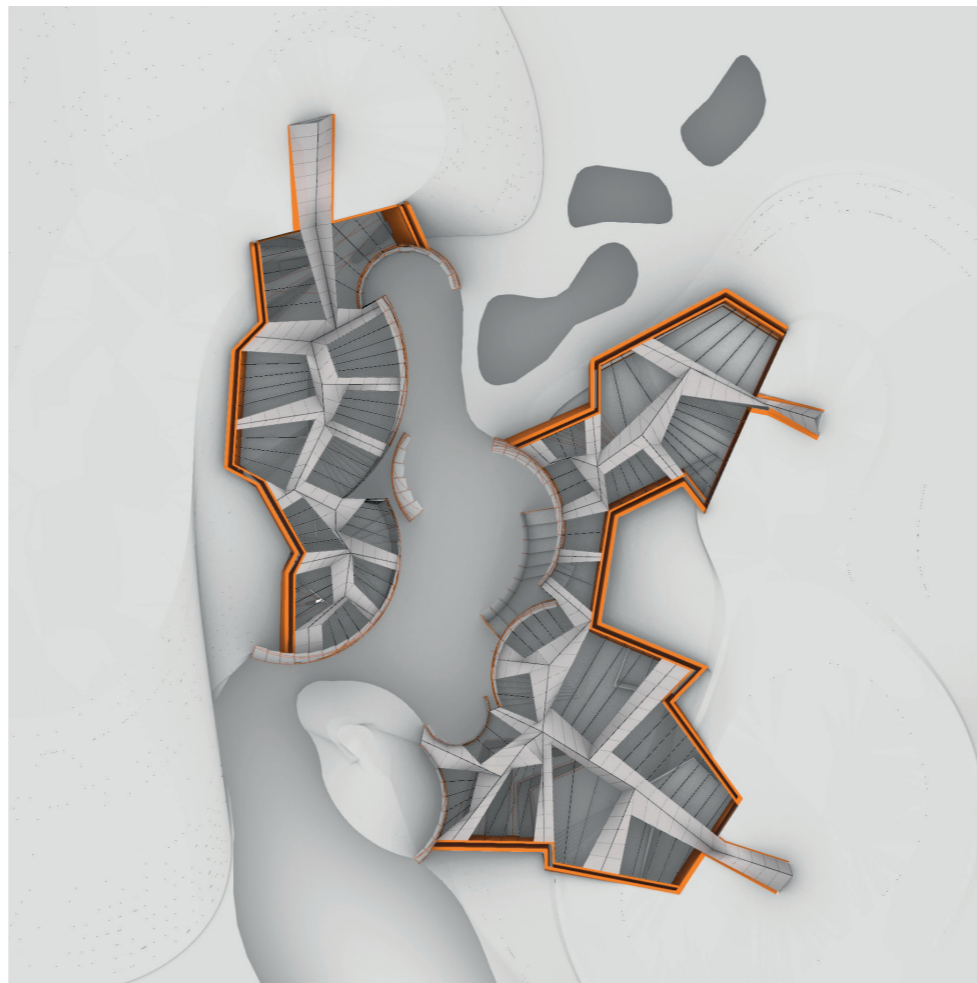
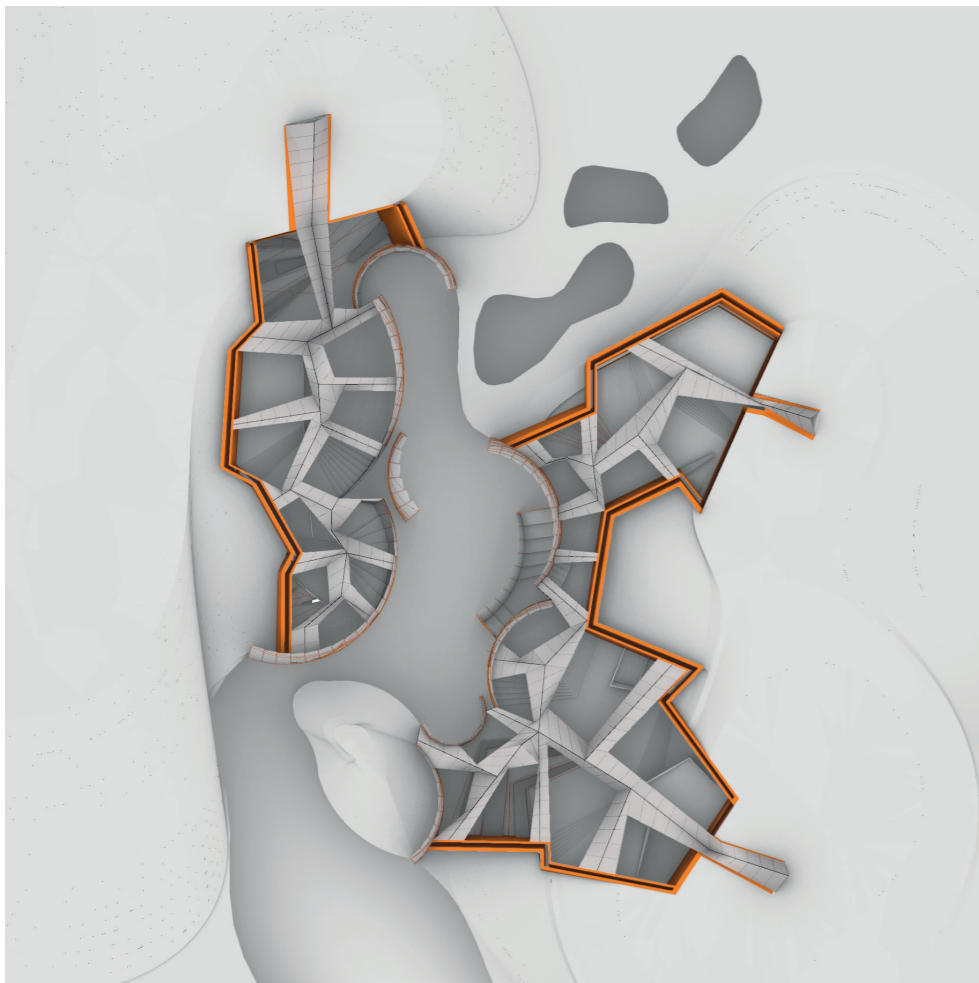
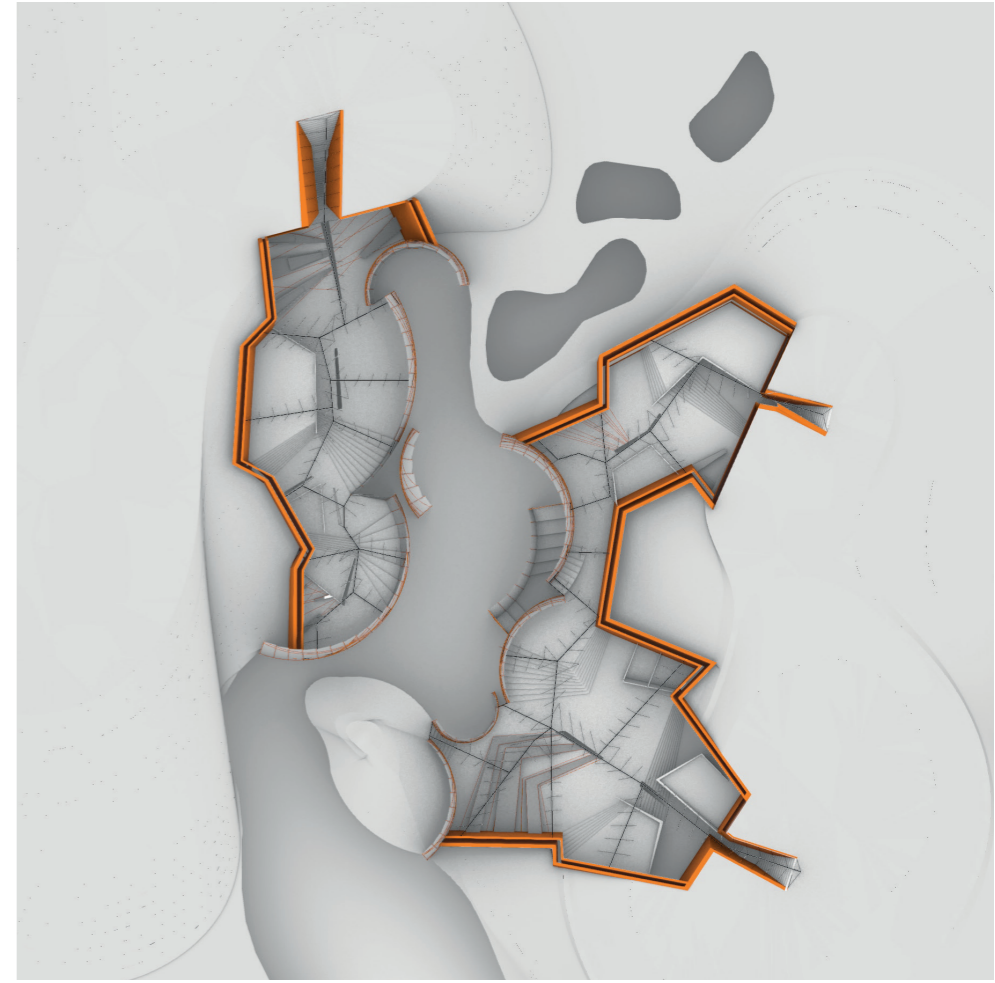
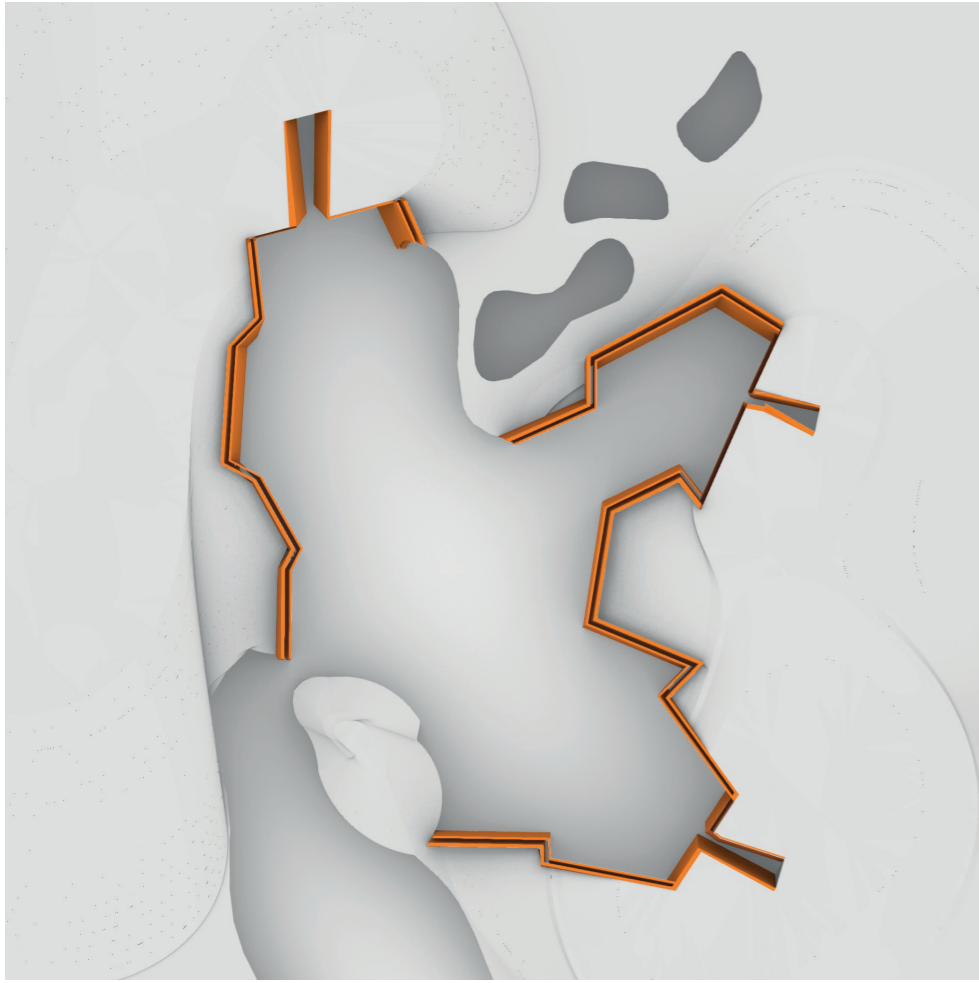
2022



2050



# MASS DEVELOPMENT



# OVERALL MASSING

The Relationship between Topography and Buildings

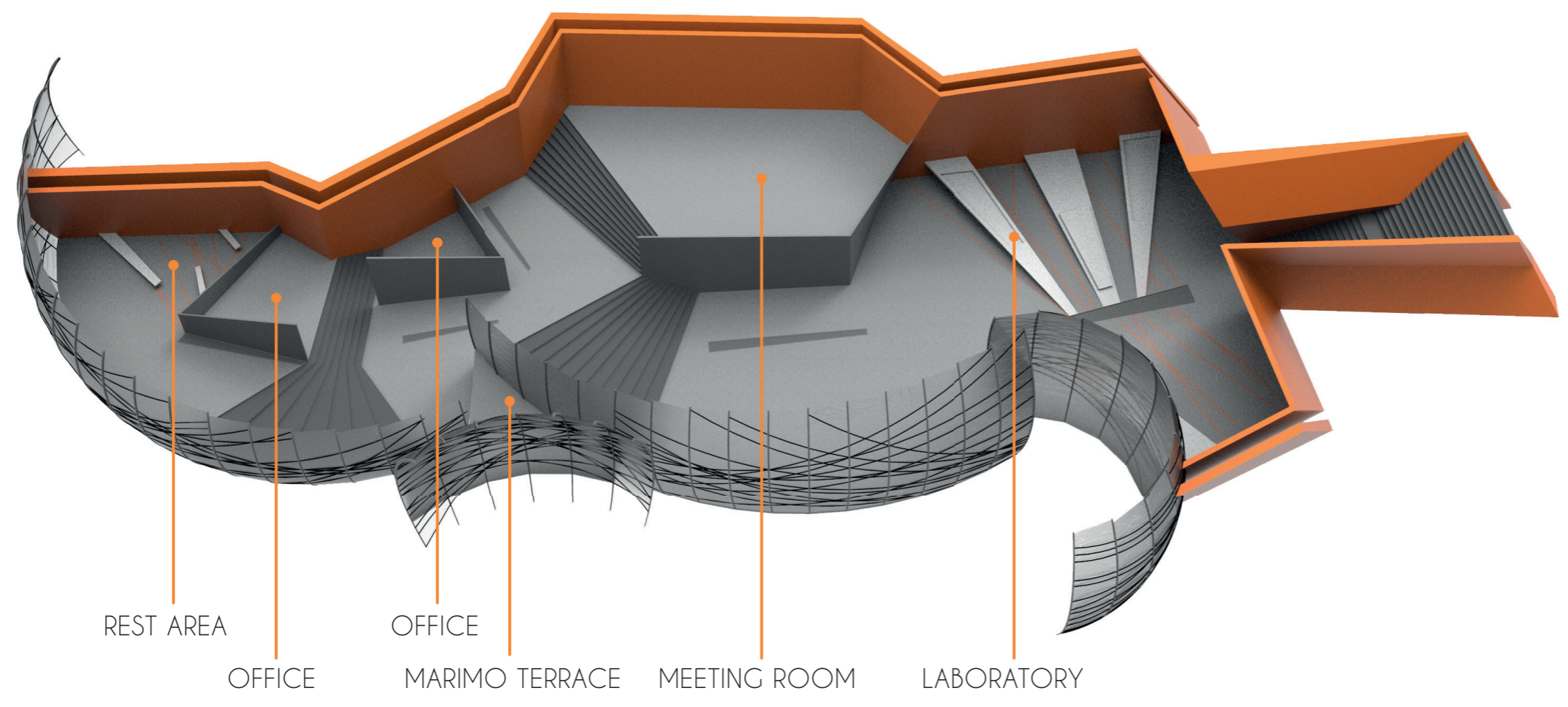
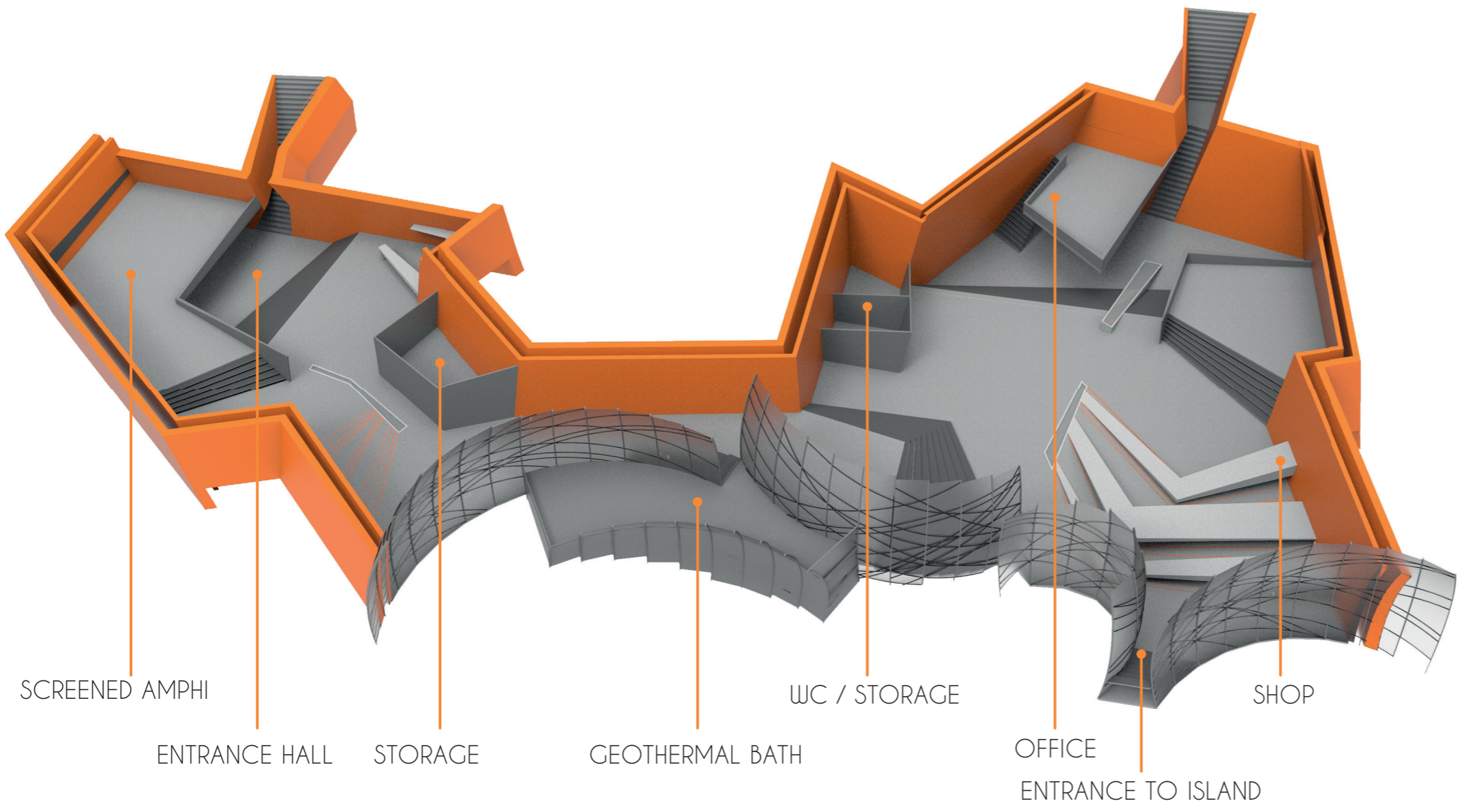
ENTRANCE STAIRWAYS TO  
EDUCATION WING

ENTRANCE STAIRWAYS TO  
RESEARCH WING



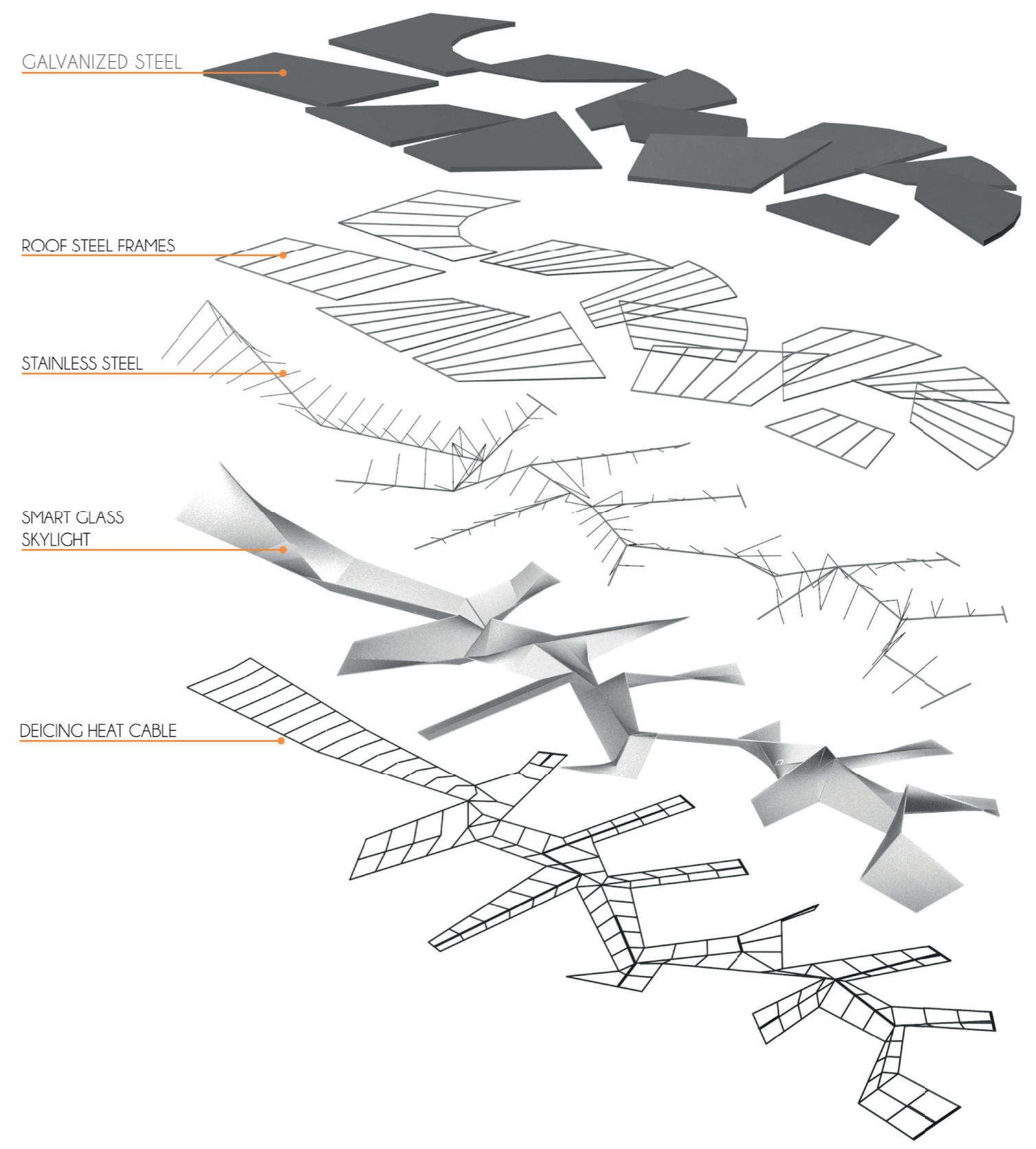
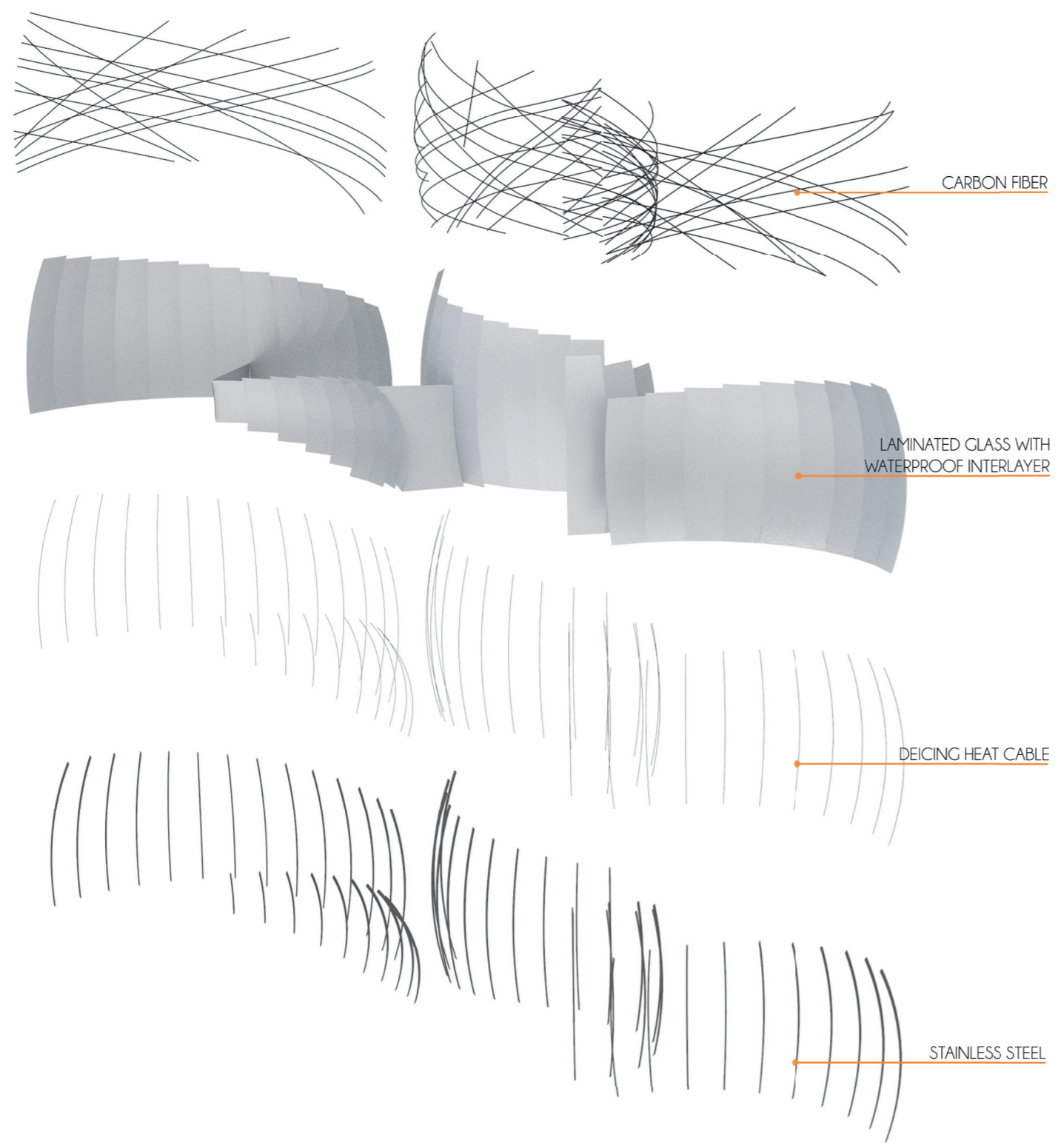
# INTERIOR

Education and Research Wing



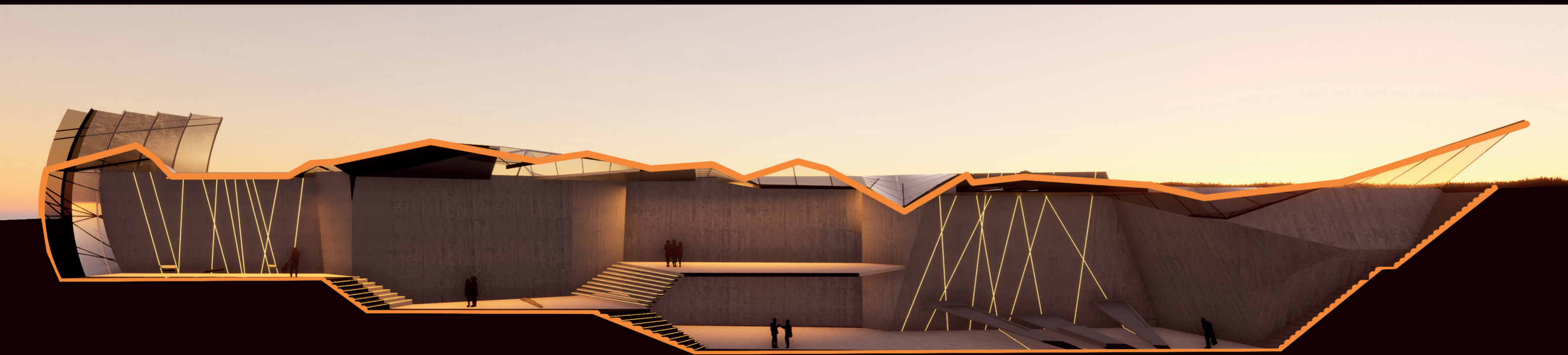
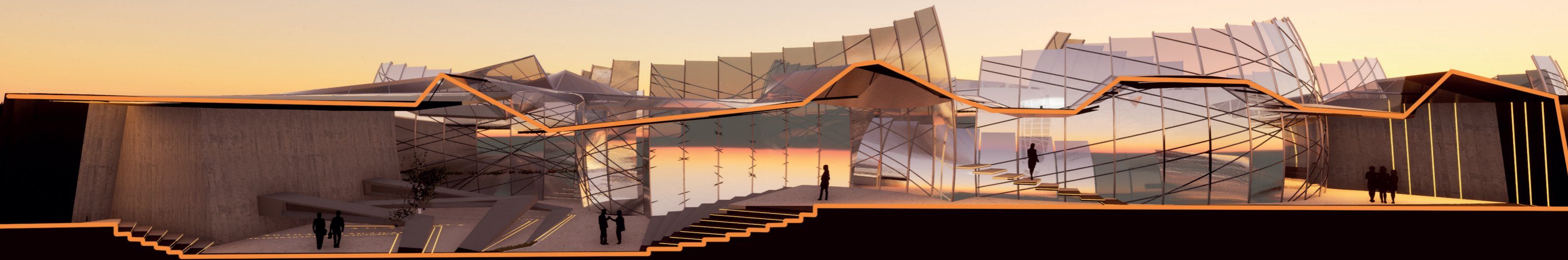
# STRUCTURE

Facade and Roof Details



# SECTIONS

Education and Research Wing



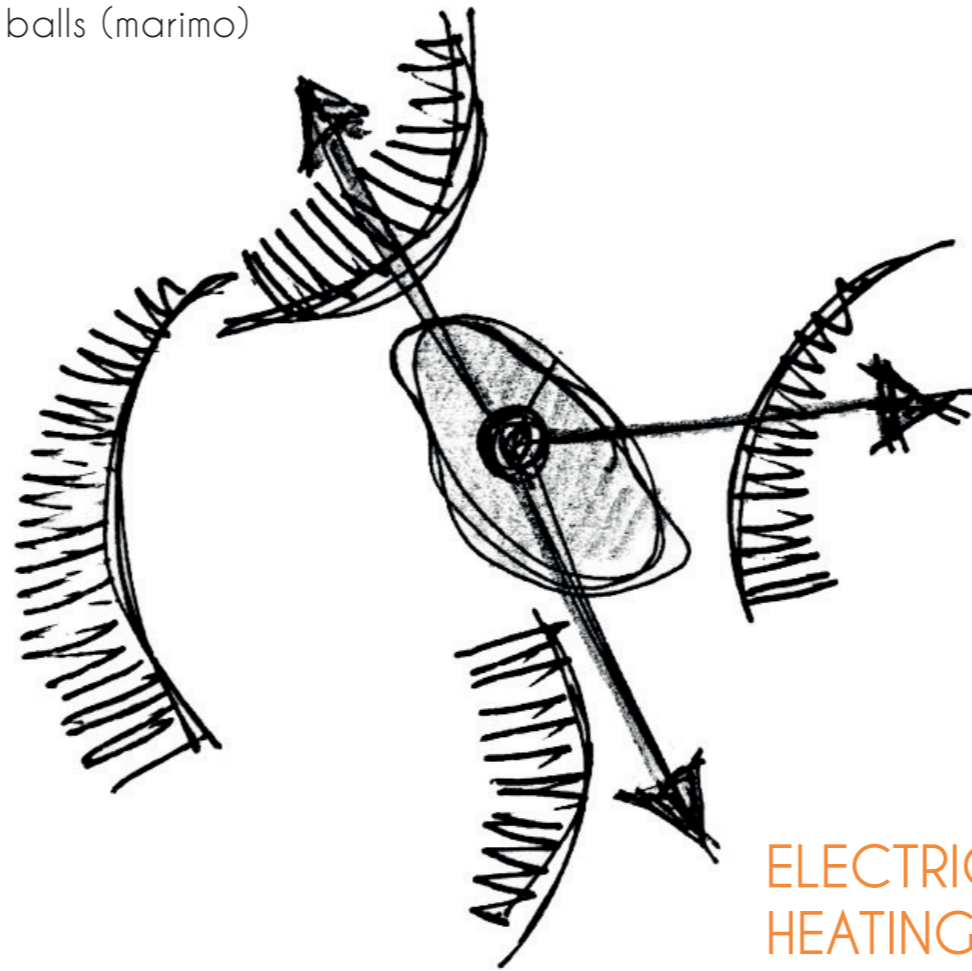


# GEOHERMAL ENERGY

Supply of Energy from the Island

## ALGAENNOVATION

utilise geothermal energy to enable  
carbon negative production of algae  
balls (marimo)



## GEOHERMAL BATHS

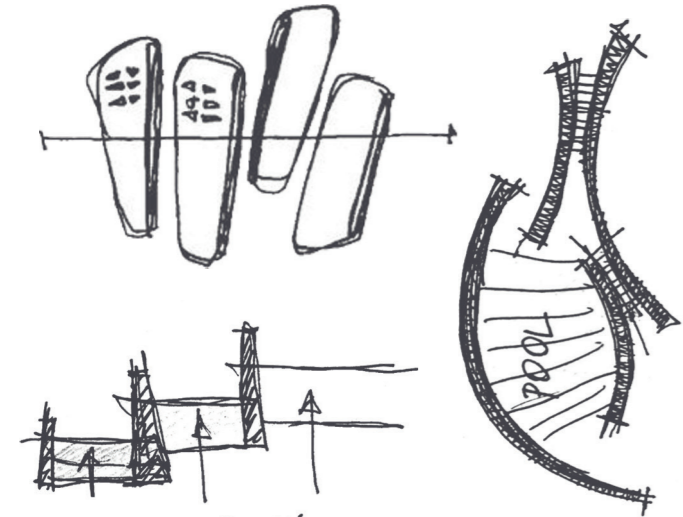
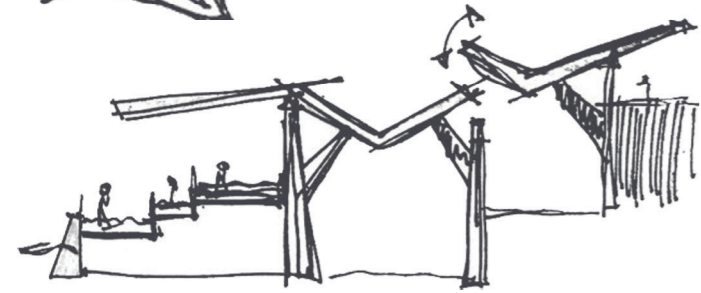
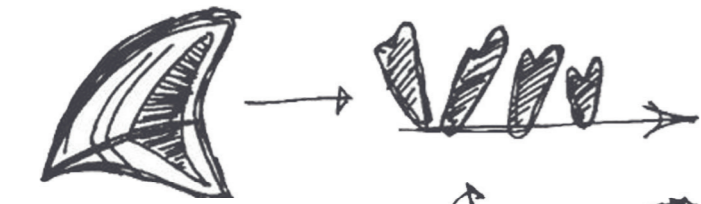
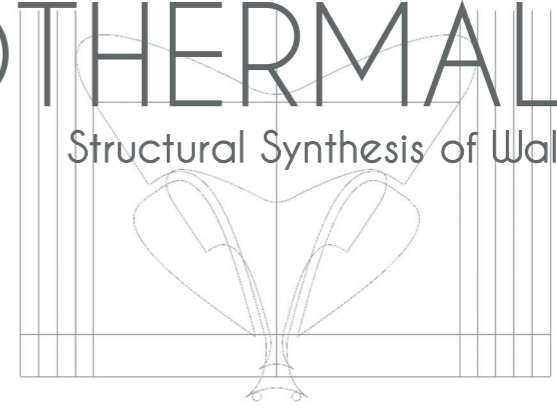
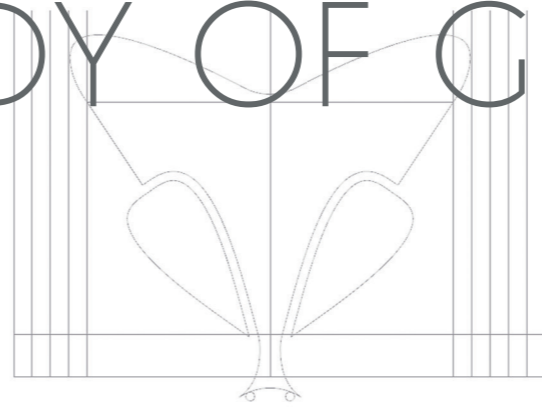
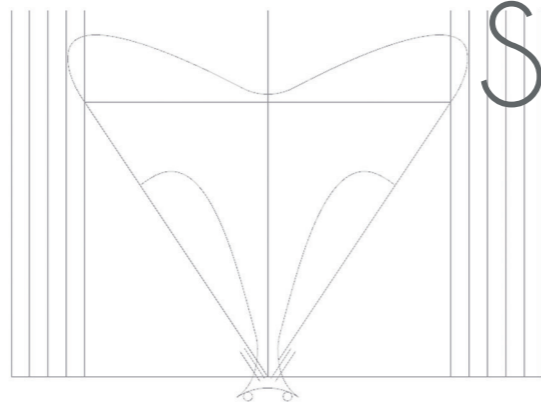
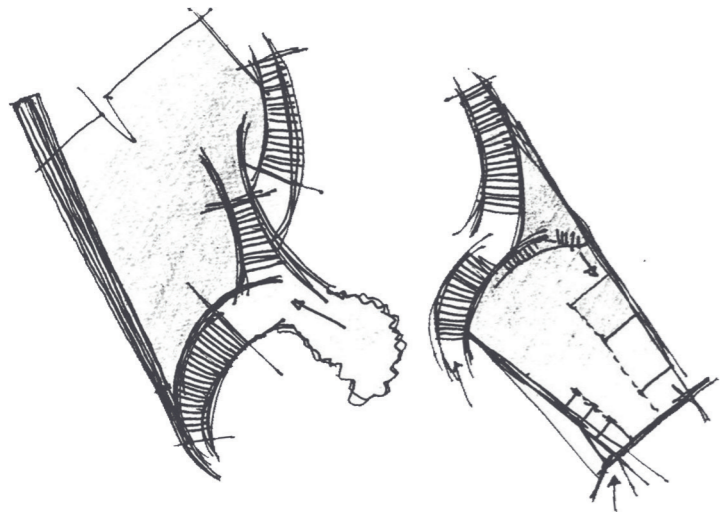
with modern direct-use system, a well  
is drilled into a geothermal reservoir  
to provide a steady stream of hot water

## ELECTRICITY HEATING

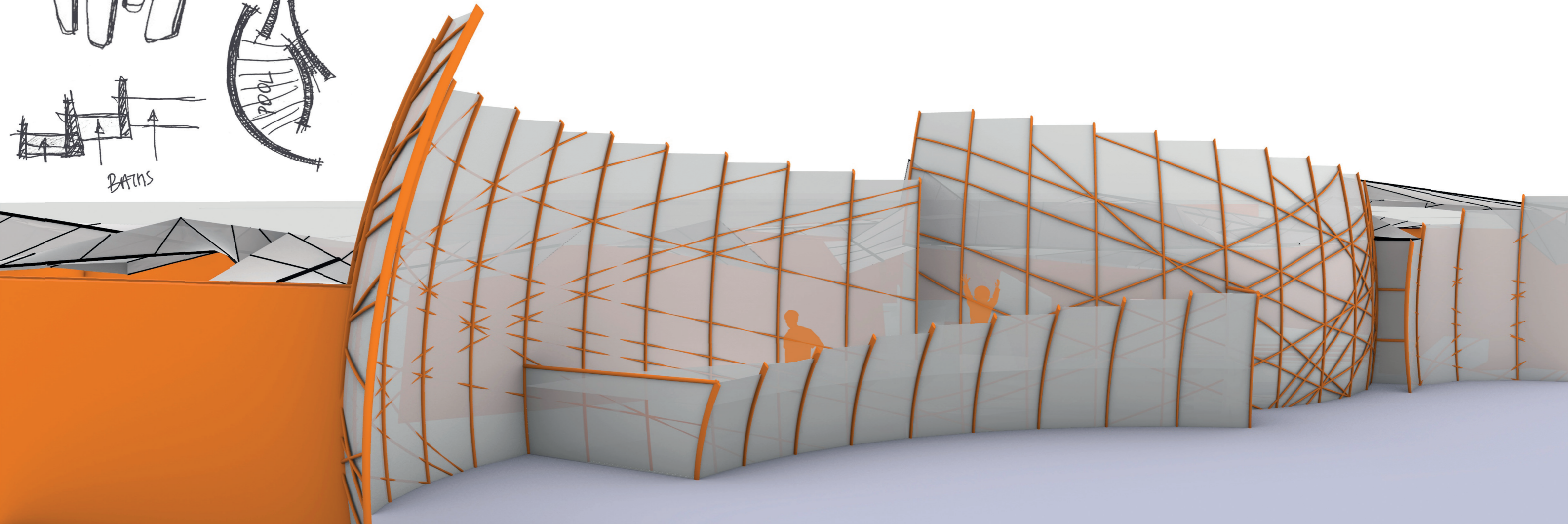
the steam that comes from reservoirs of hot water  
is used to rotate the turbine, activating a generator  
to produce heating and electricity

# STUDY OF GEOTHERMAL BATH

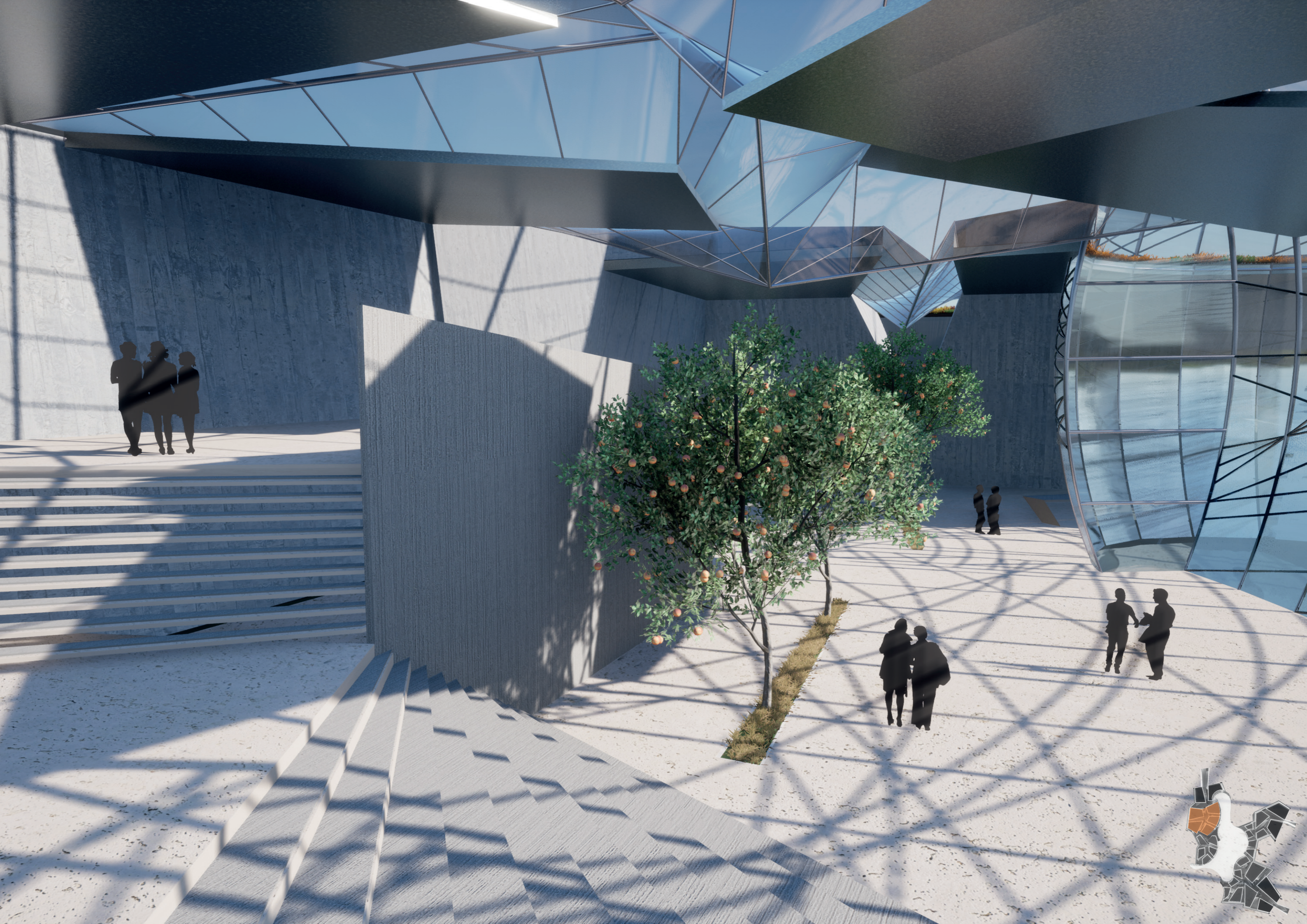
Structural Synthesis of Wall-Roof Connections

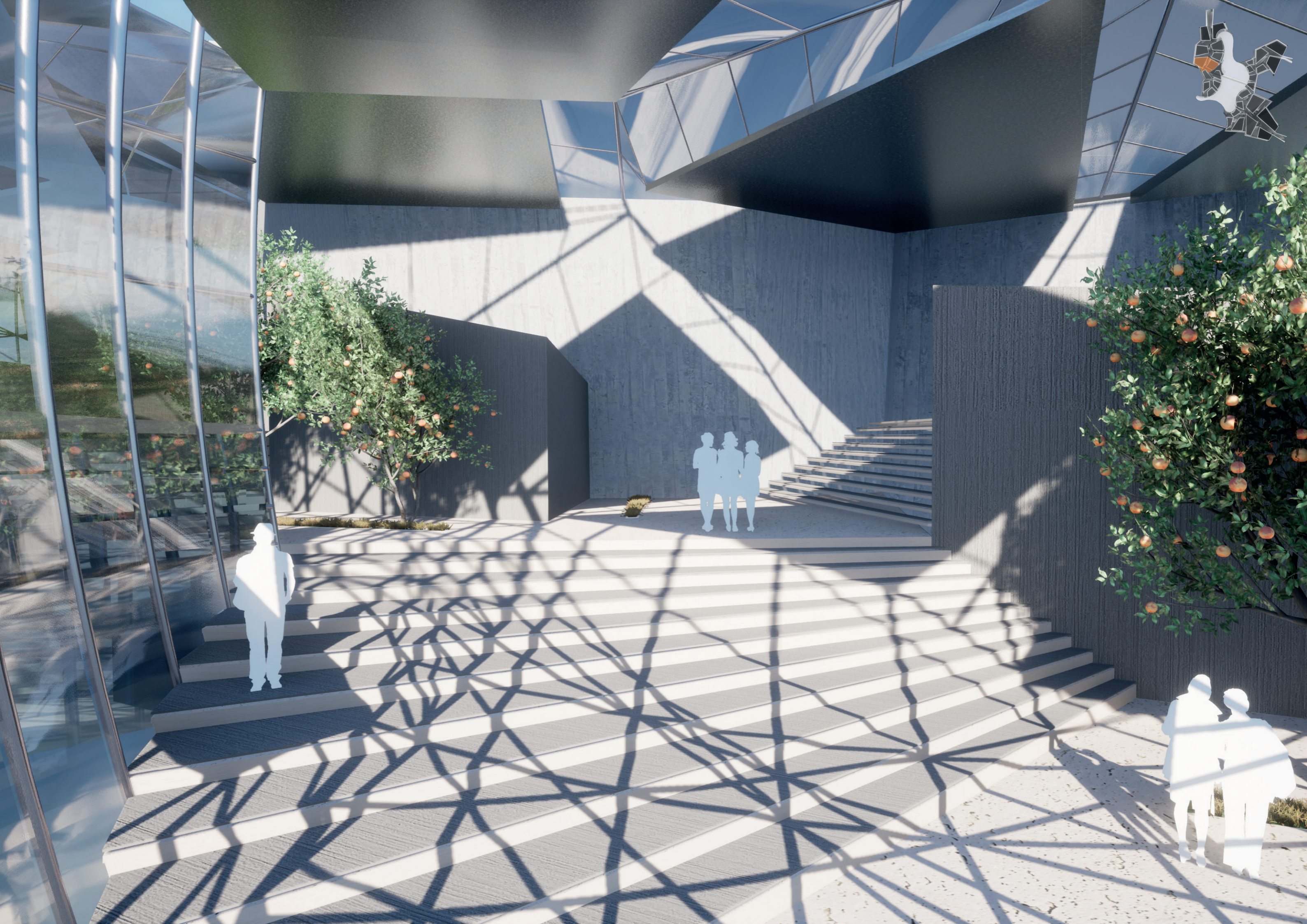


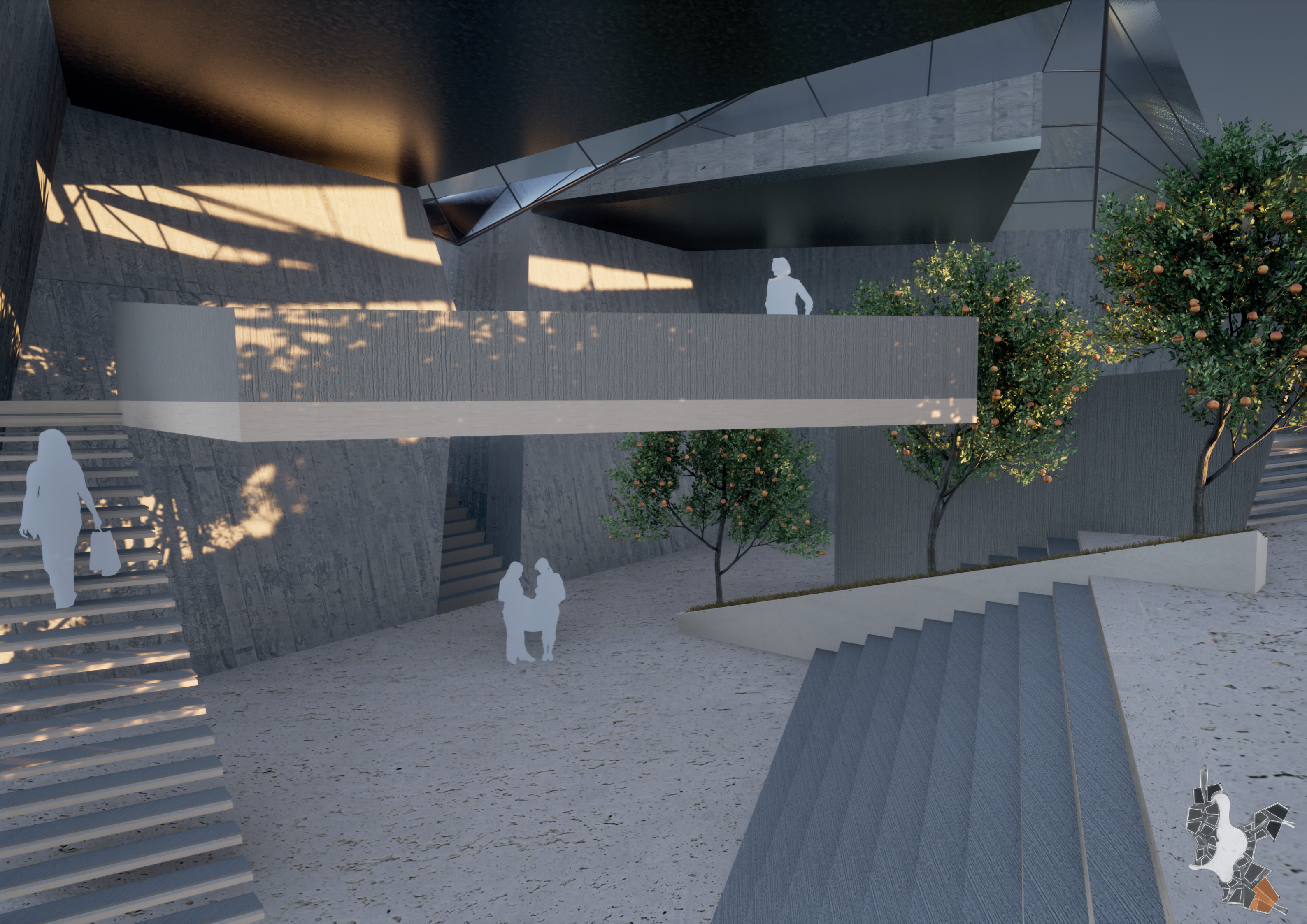
BATHS

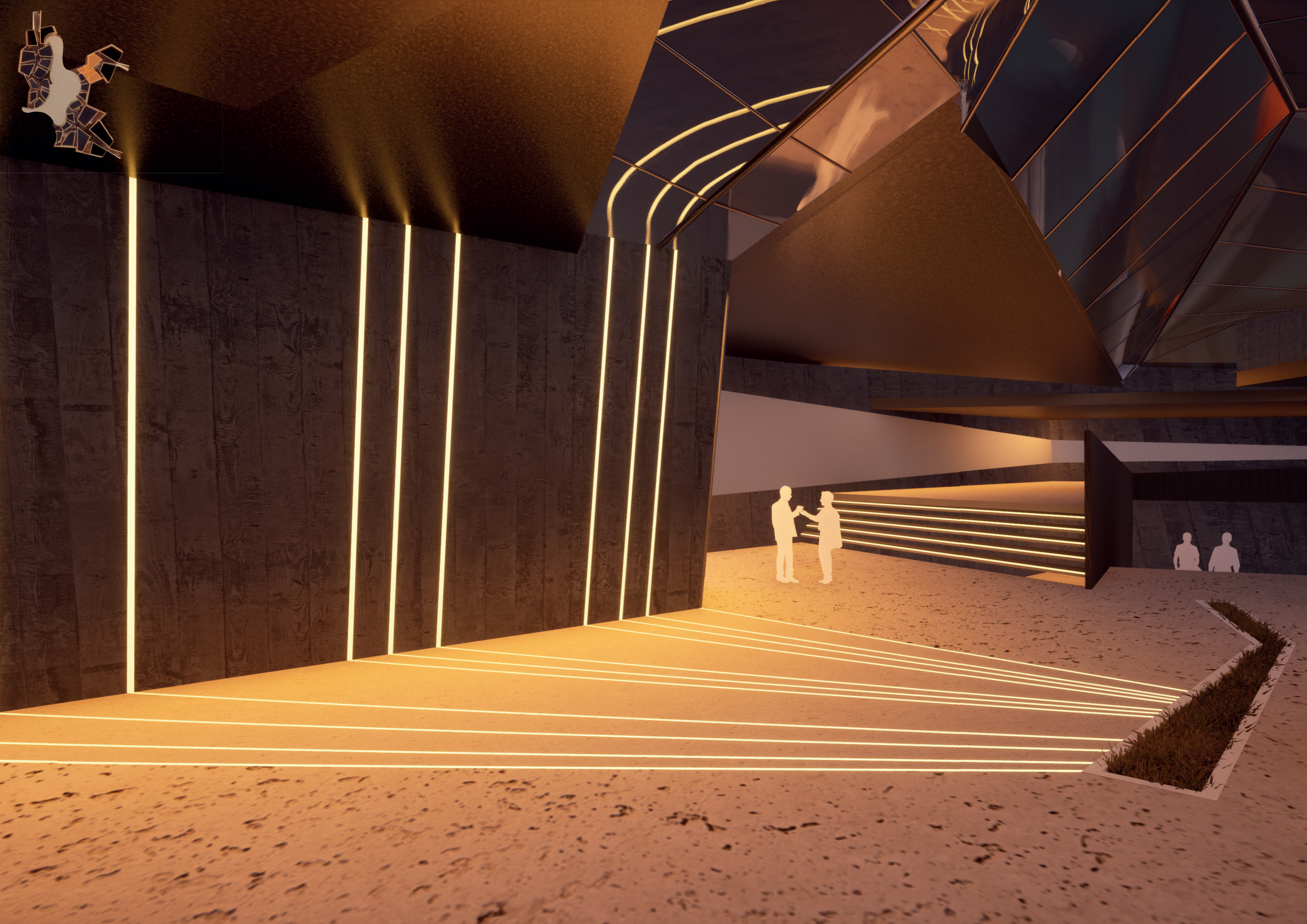


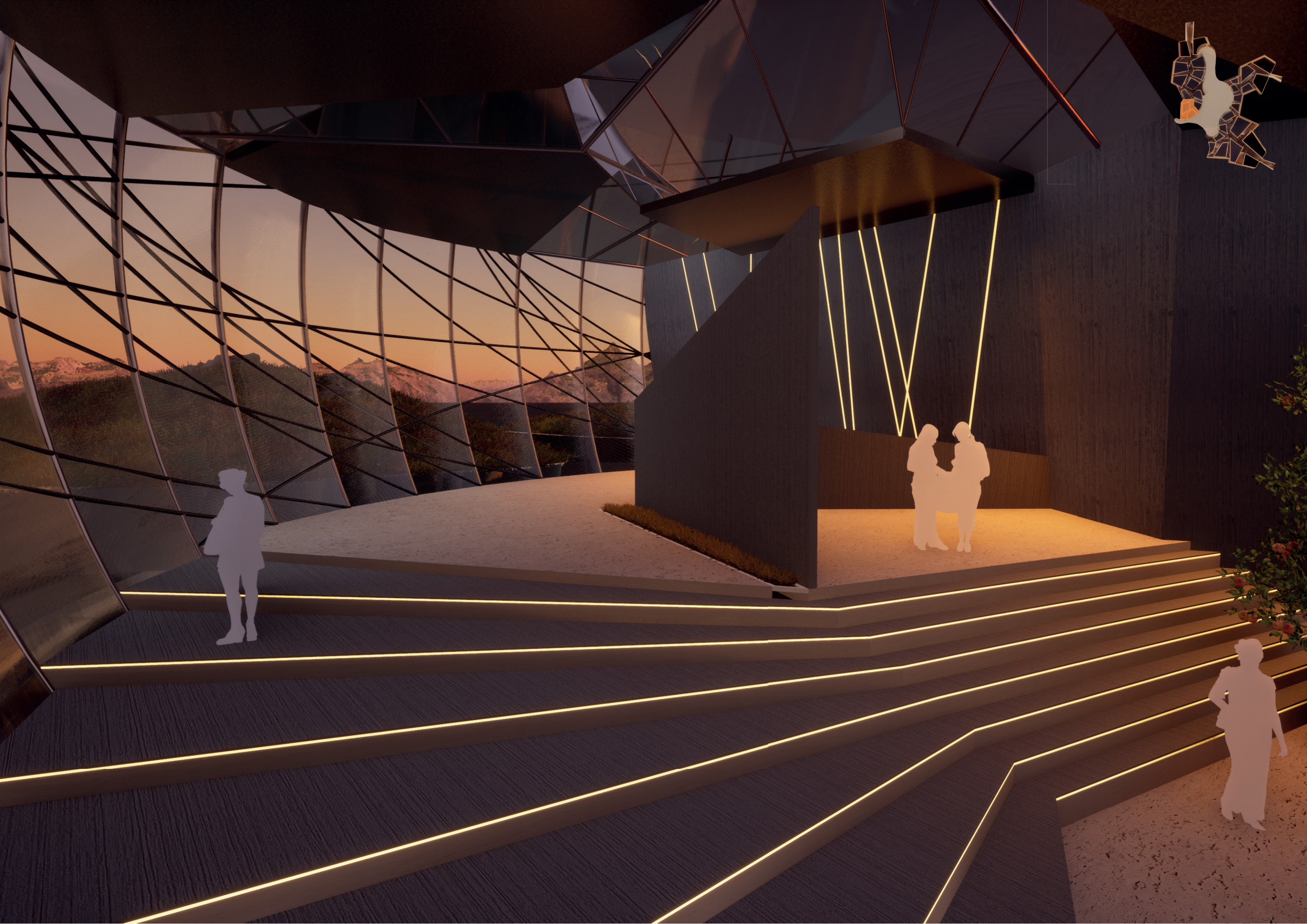
















marim..o  
ecological depletion reprëssing center  
by Kasim Berk Adsan