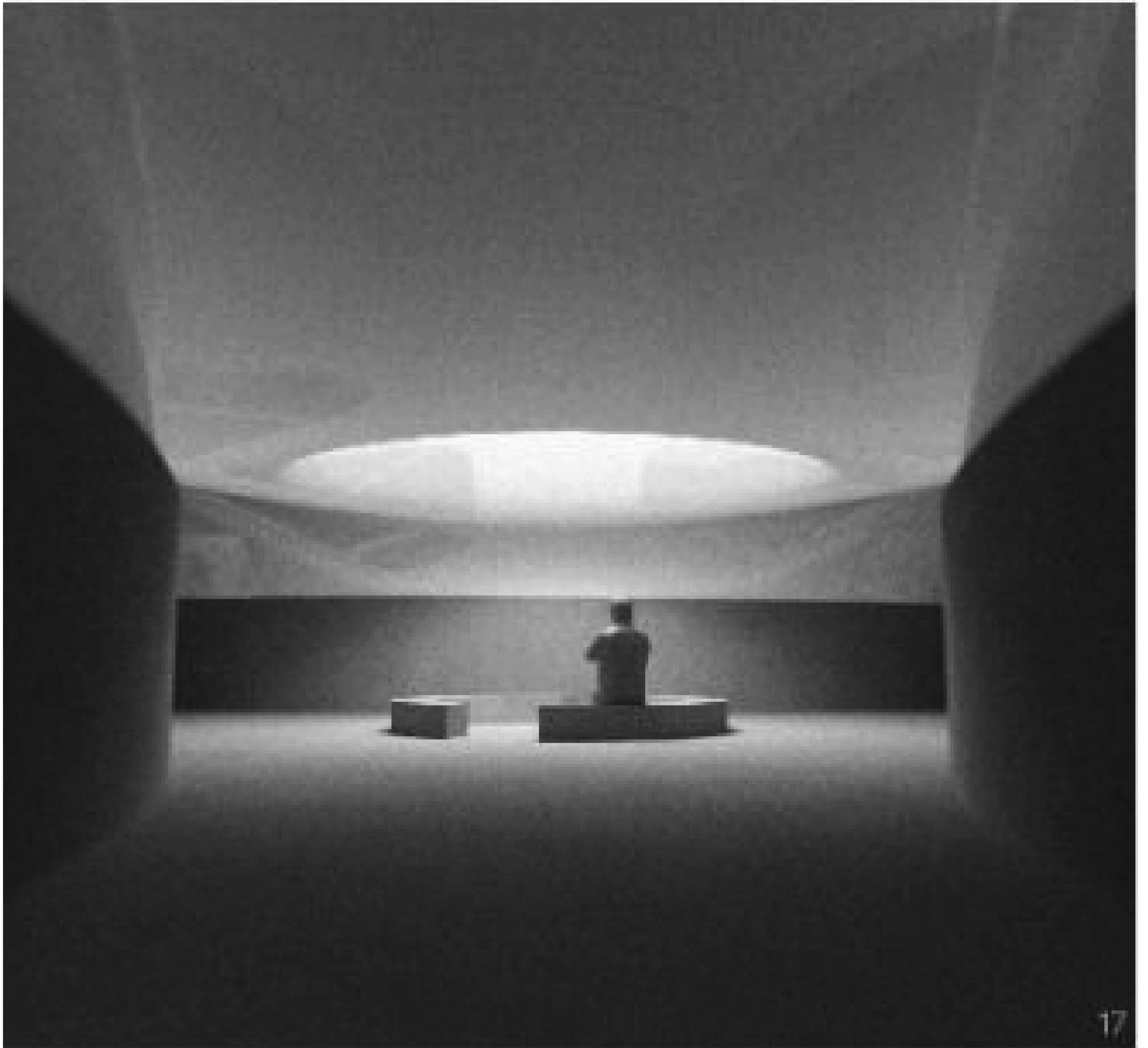
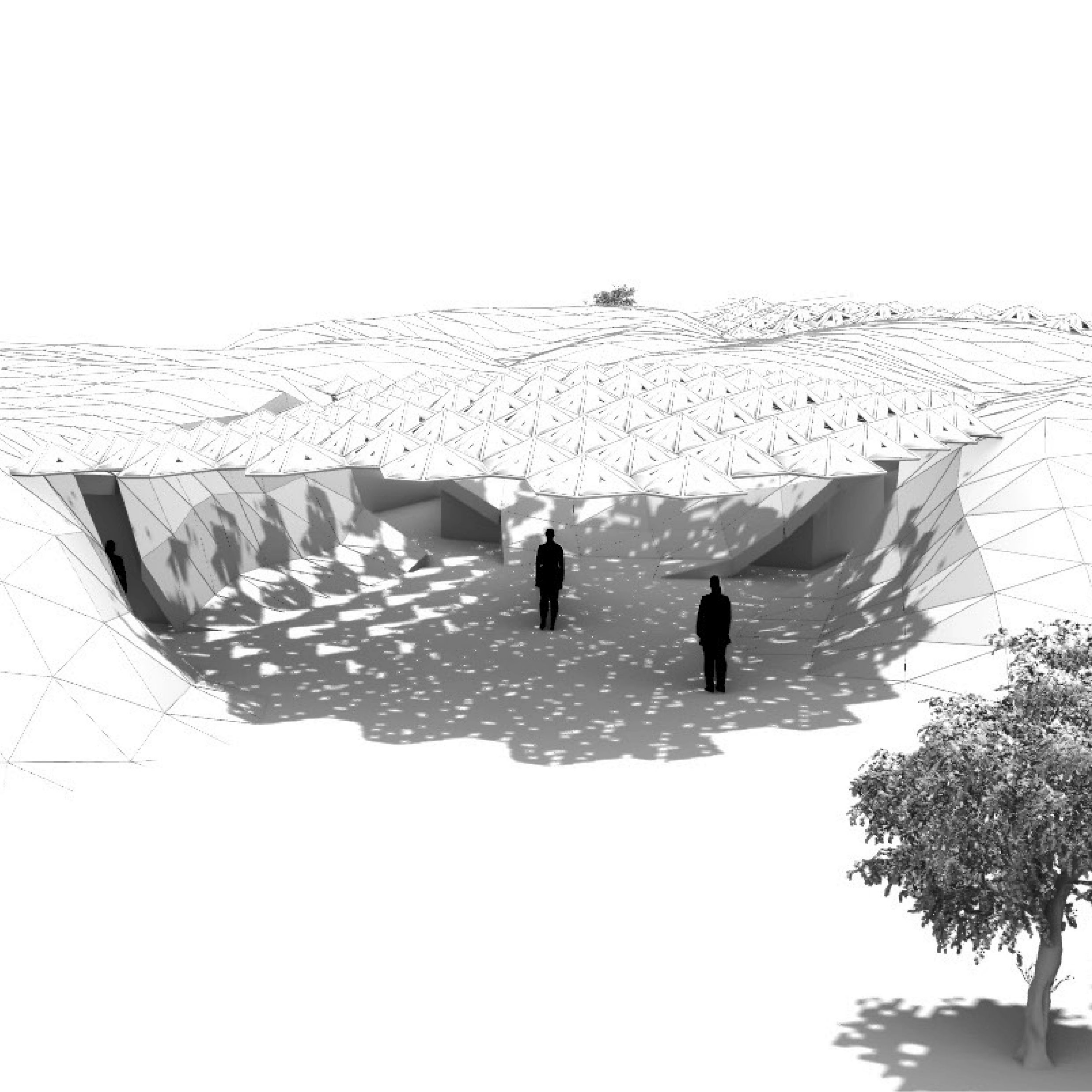


Lageplan
1:500





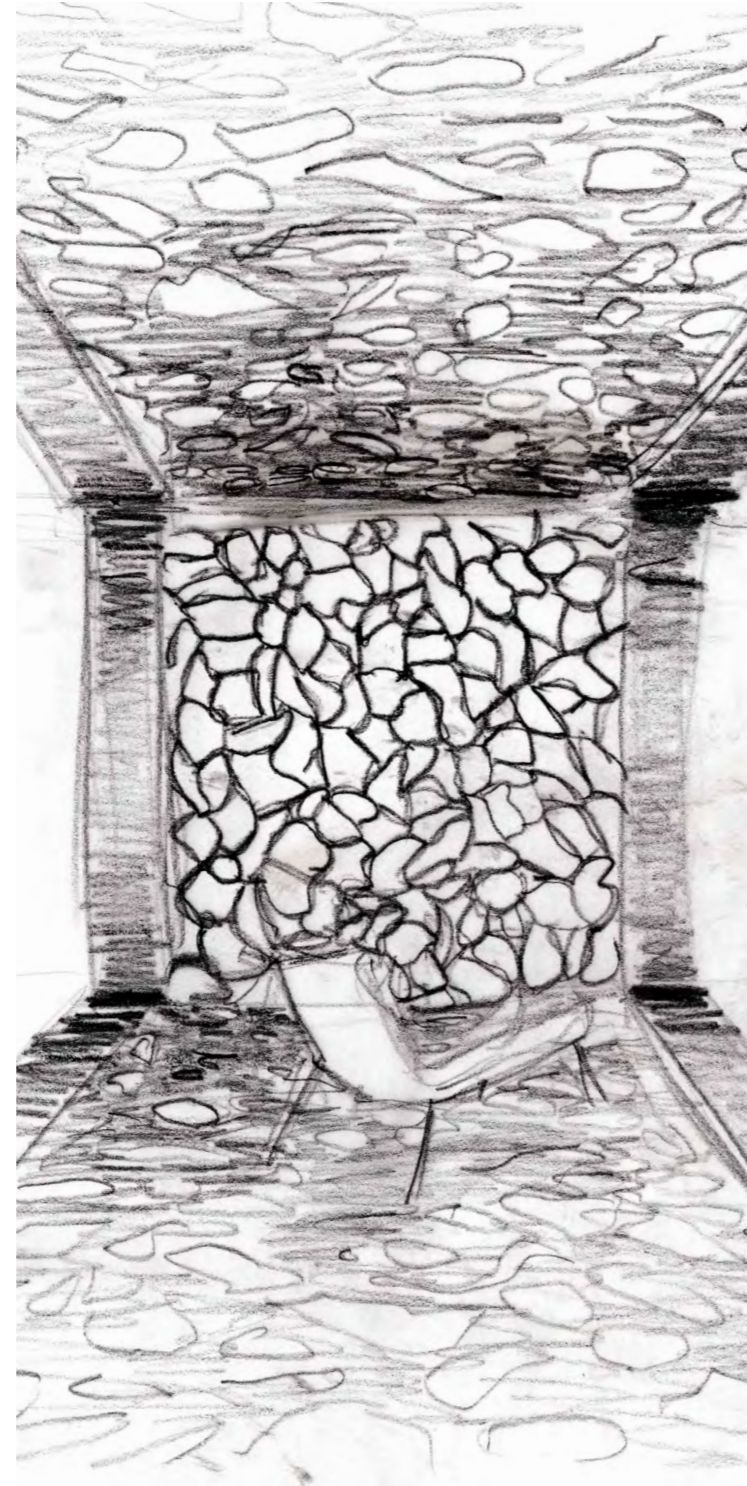
E7 SOLARE RÄUME

Studiengang Architektur | Frankfurt University of Applied Sciences

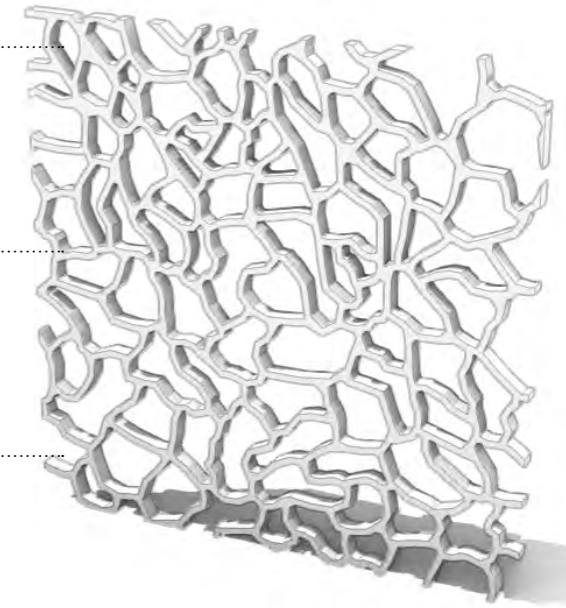
Master | Sommersemester 2020

Julia Brückner | 1339770

Analyse Aggregates 1/1 : Rudy Ricciotti: Mucem



Netzartige Betonhülle.....

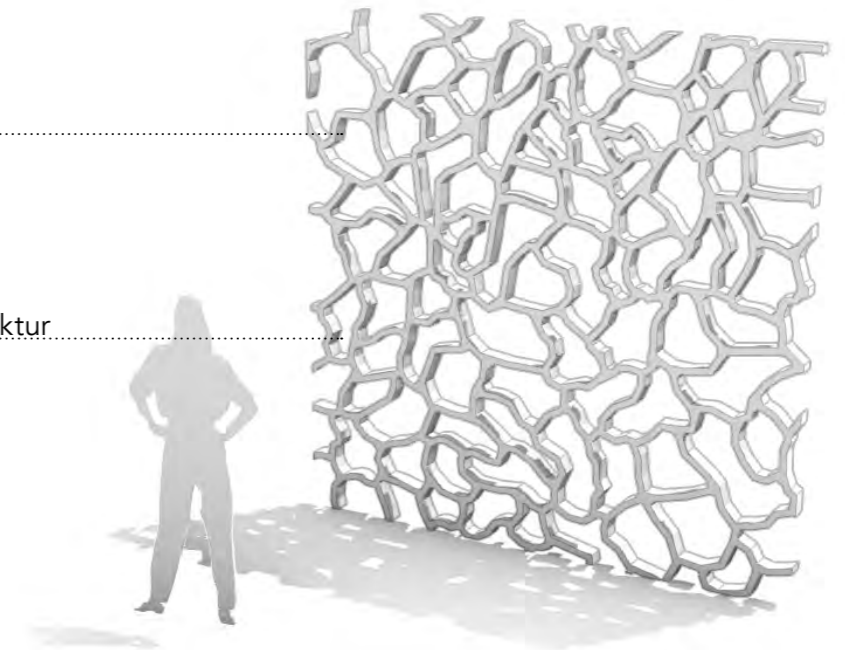


Blickoffen von innen.....

Sonnen- und Hitzeschutz / Luftoffen.....

Blickoffen von außen.....

Gitterartige Betonstruktur.....



Standort:

Marseille - Frankreich

Klimazone:

mediterran

Durchschnittstemperatur Sommer:

25° C

Durchschnittstemperatur Winter:

10° C

Regentage:

59

Durchschnittsluftfeuchtigkeit

74,6 %

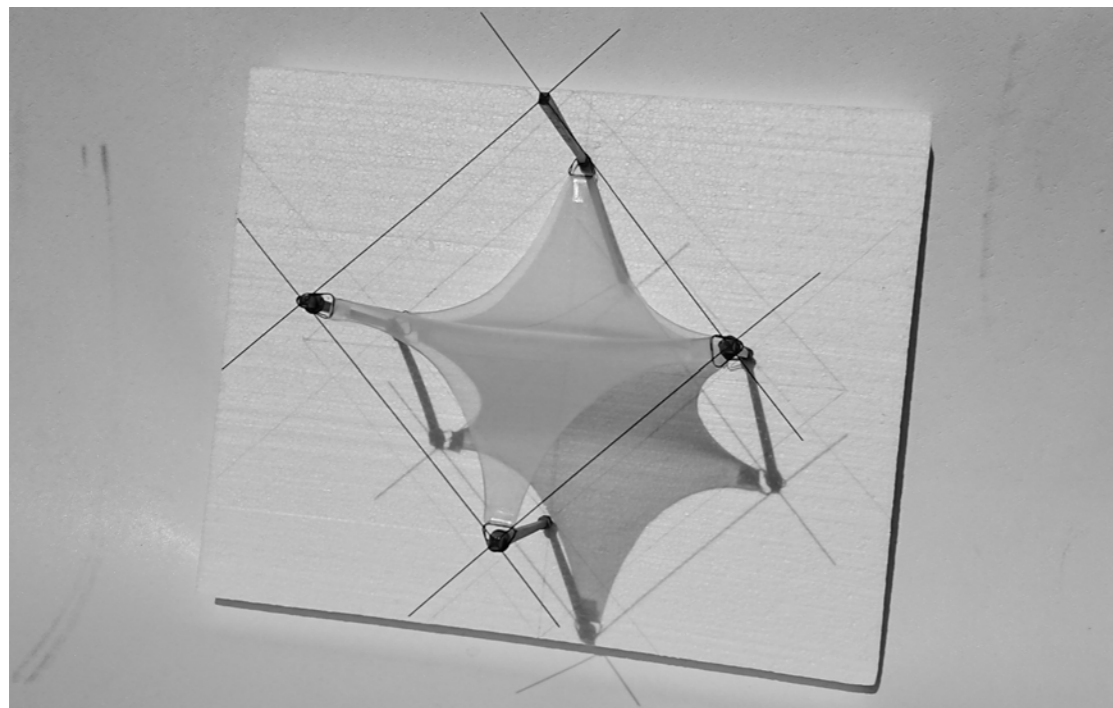
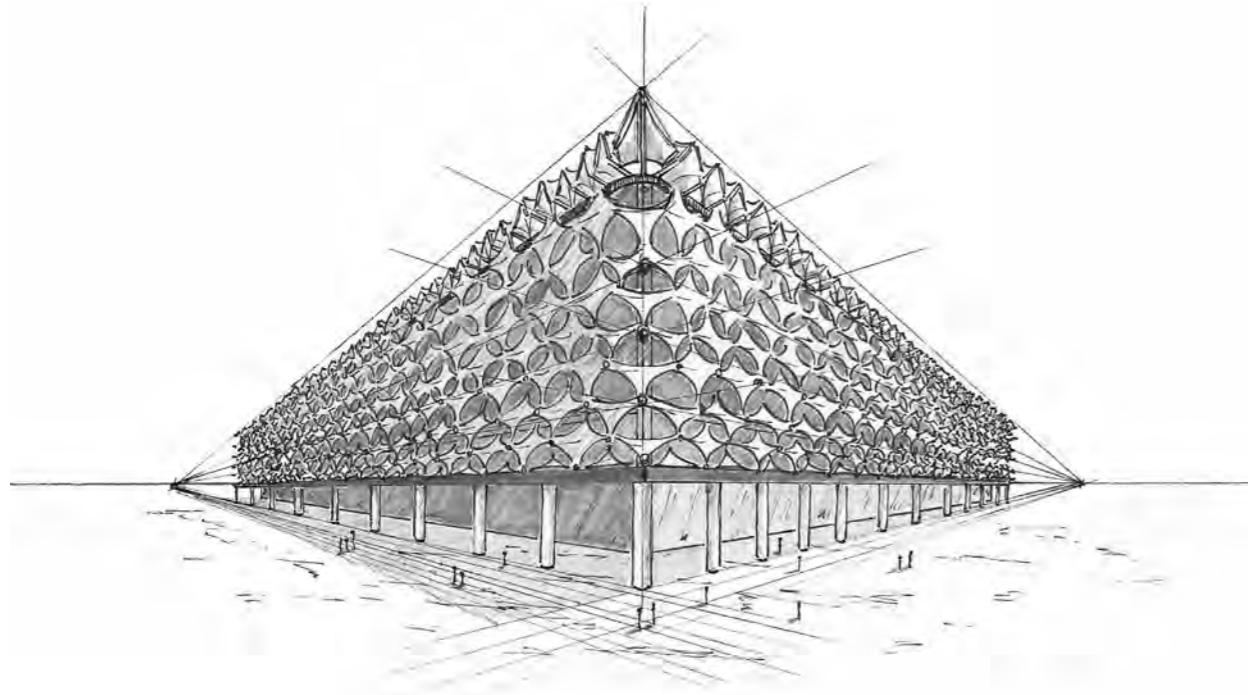
Durchschnittliche Sonnenstunden

7,25

E7 SOLARE RÄUME [dek]

Studiengang Architektur | Frankfurt University of Applied Sciences
Master | Sommersemester 2020
Andreas Dangelmaier | 1338412

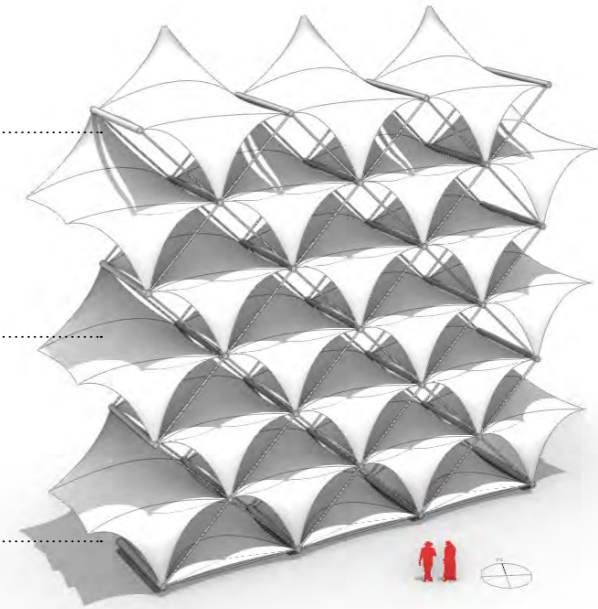
Analyse Aggregates 1/1 : Gerber Architekten: King Fahad National Library



mehrfach gekrümmte Membranflächen

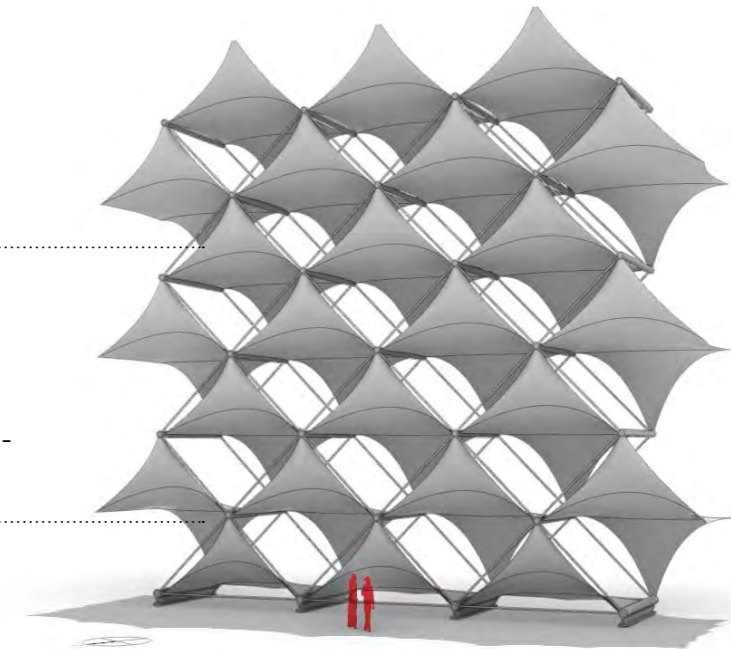
teilweise blickoffen von innen

Sonnen- und Hitzeschutz / Luftoffen



teilweise geöffnet von außen

Fassadengestaltung durch diagonale Ausrichtung der Membranflächen



Standort:

Riad, Saudi-Arabien

Klimazone:

subtropisch

Durchschnittstemperatur Sommer:

38,9° C - 43,4° C

Durchschnittstemperatur Winter:

20,3° C - 22,7° C

Regentage:

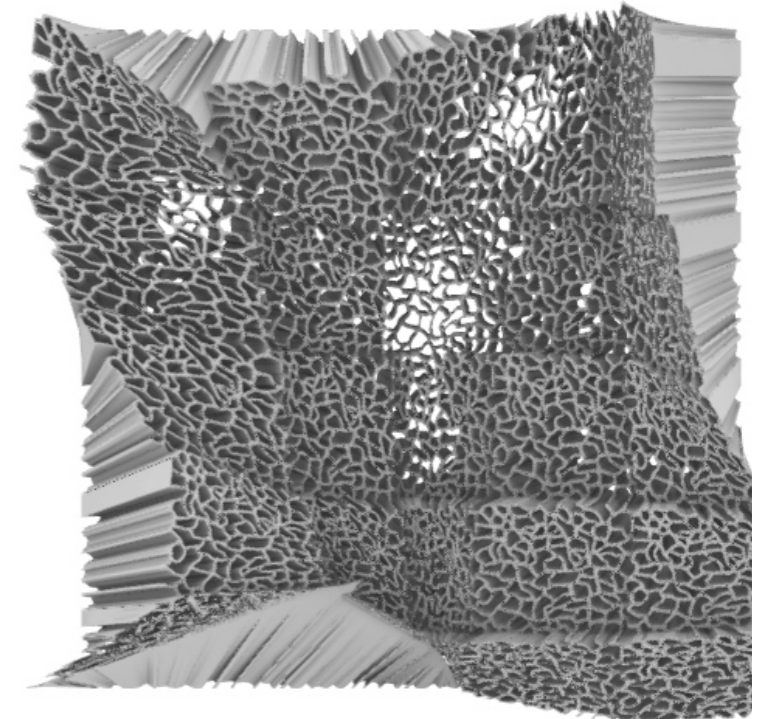
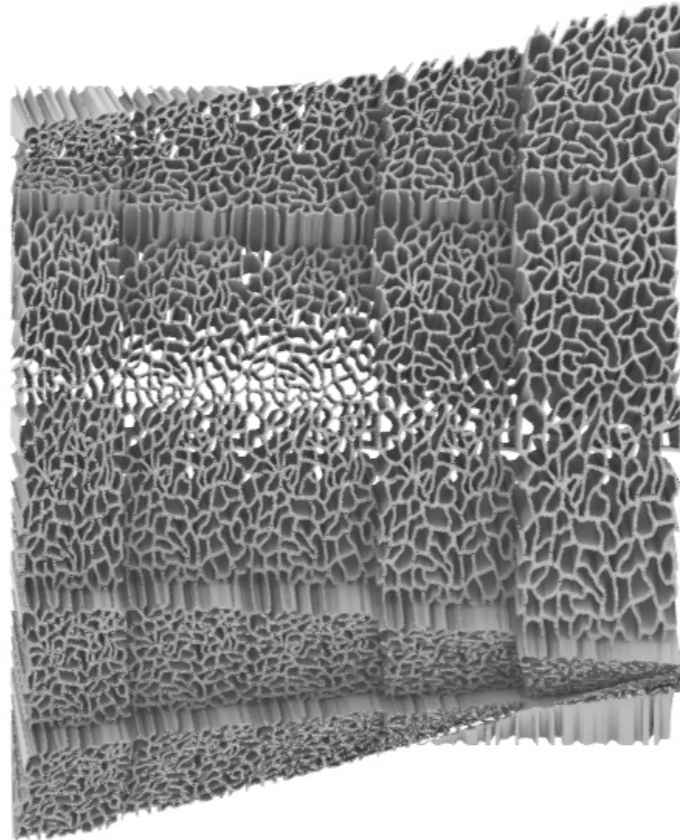
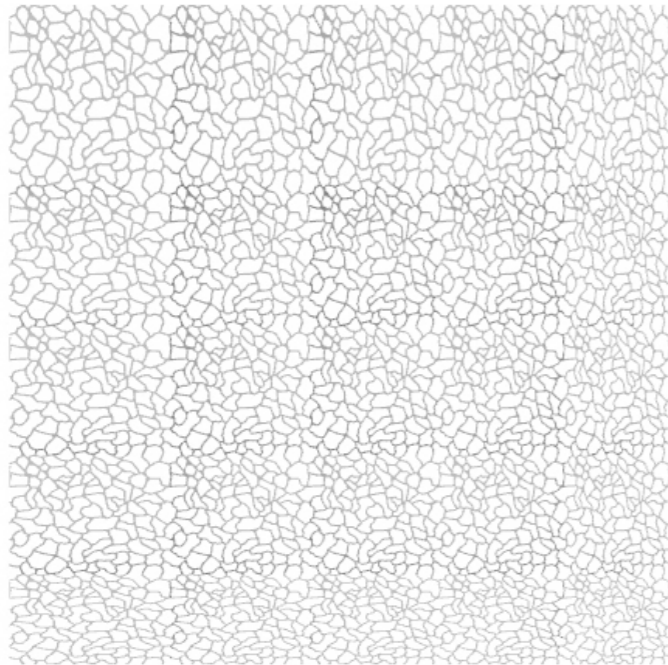
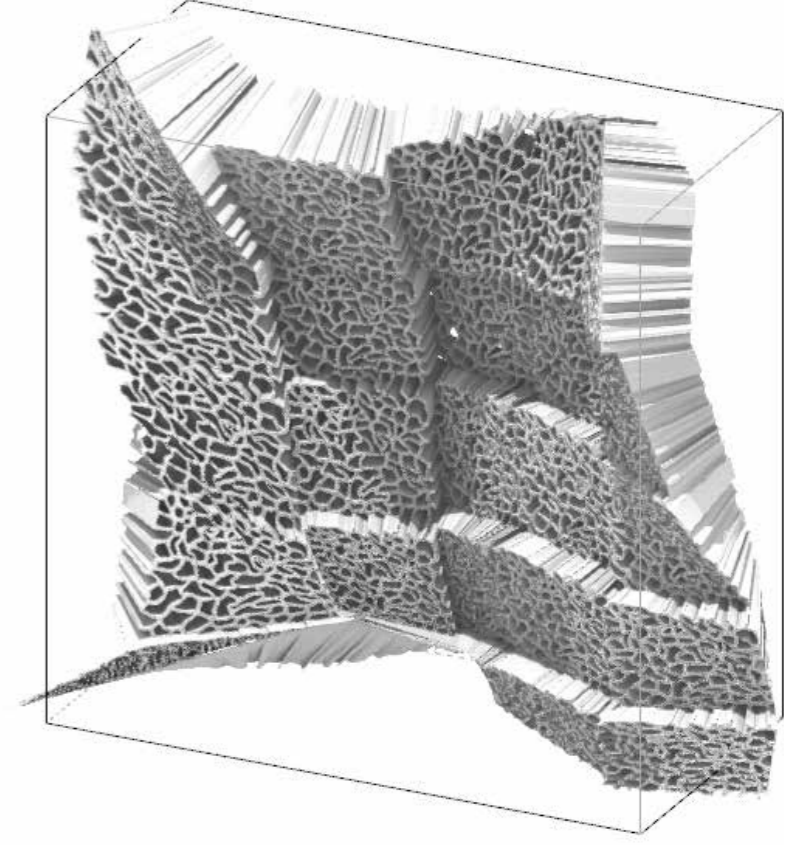
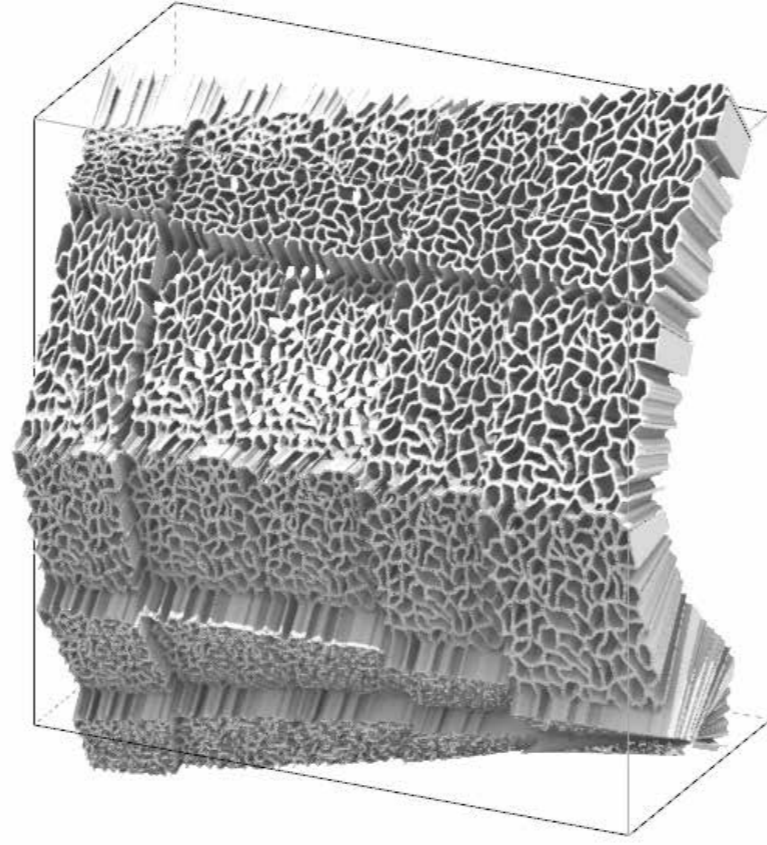
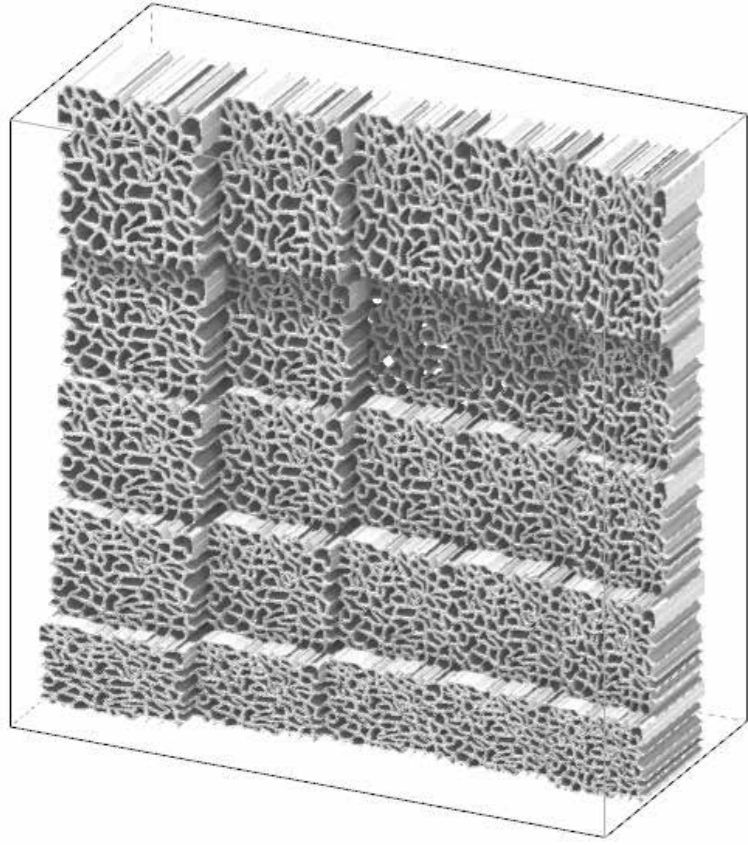
47

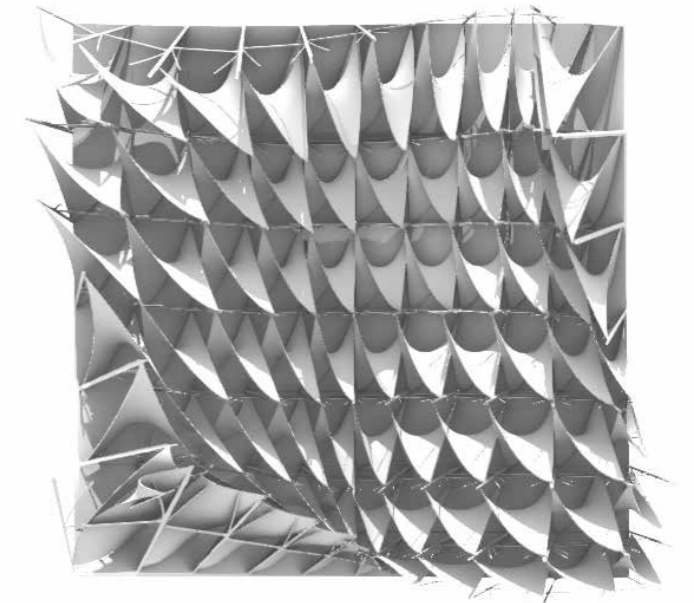
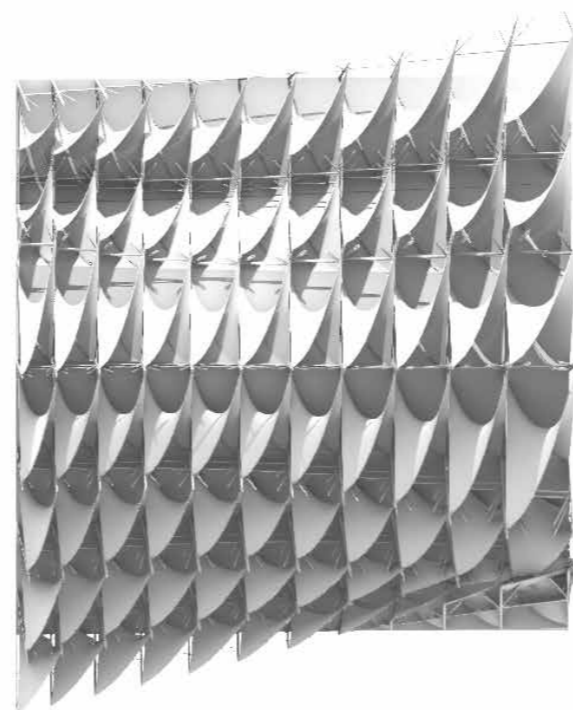
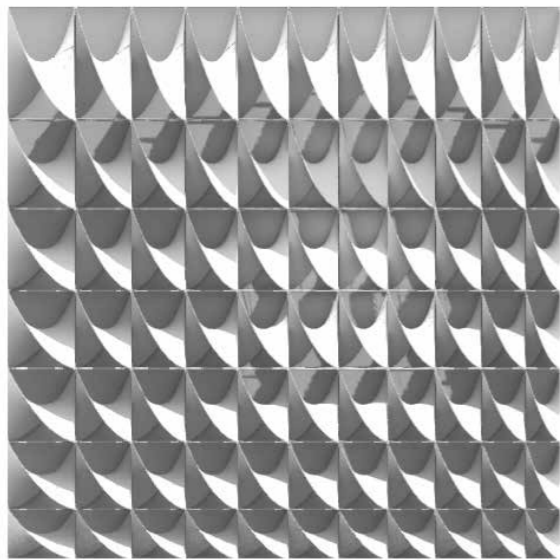
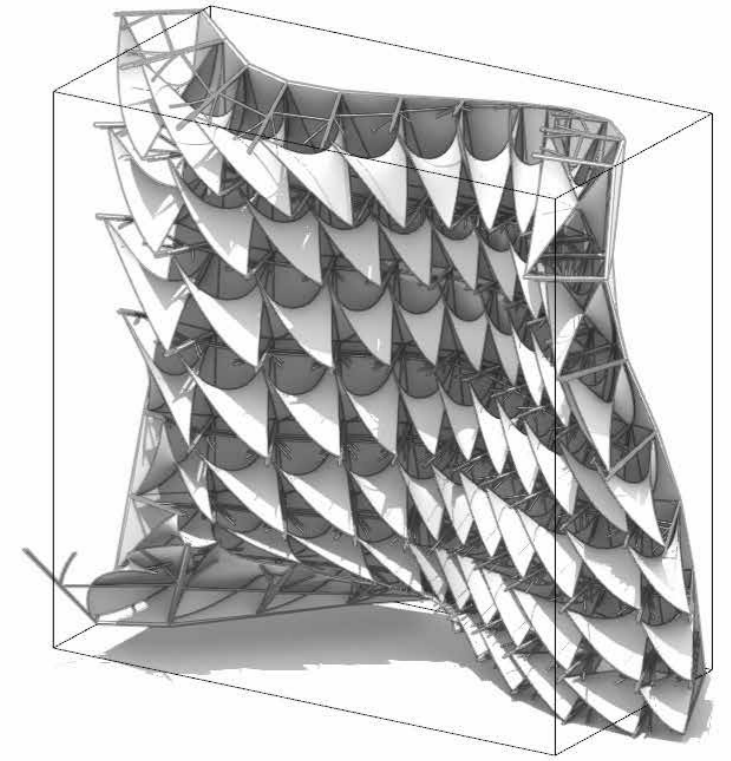
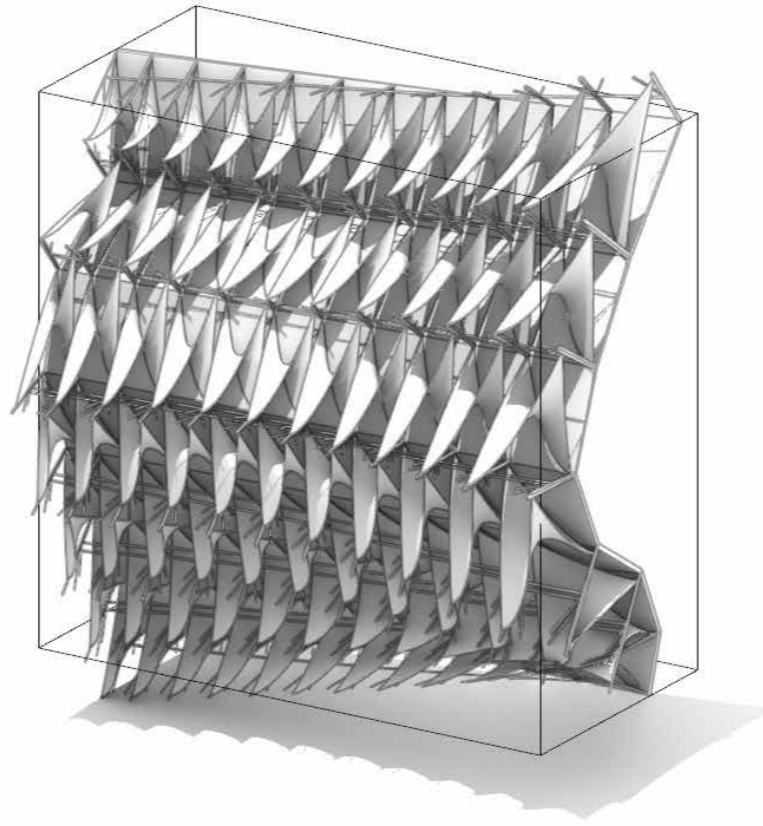
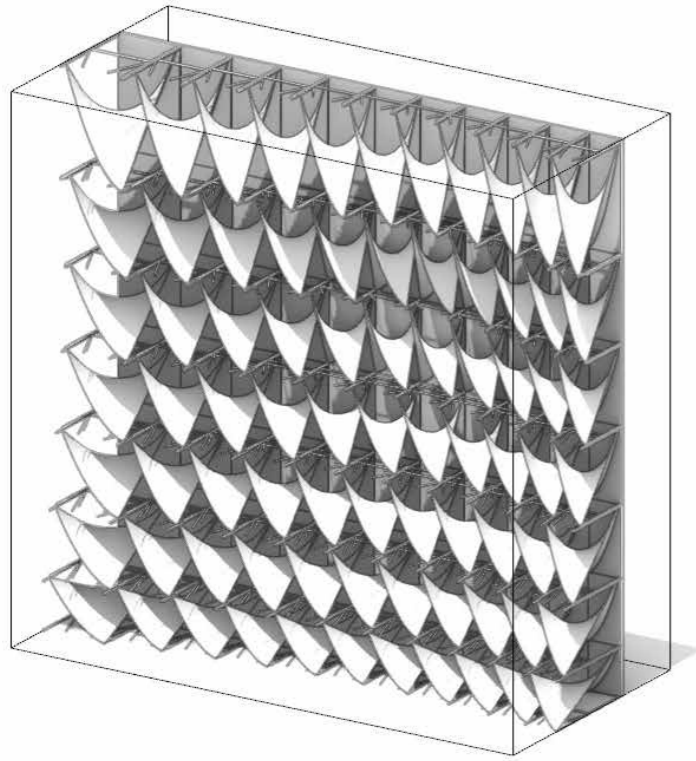
Durchschnittsluftfeuchtigkeit:

29,0%

Durchschnittliche Sonnenstunden:

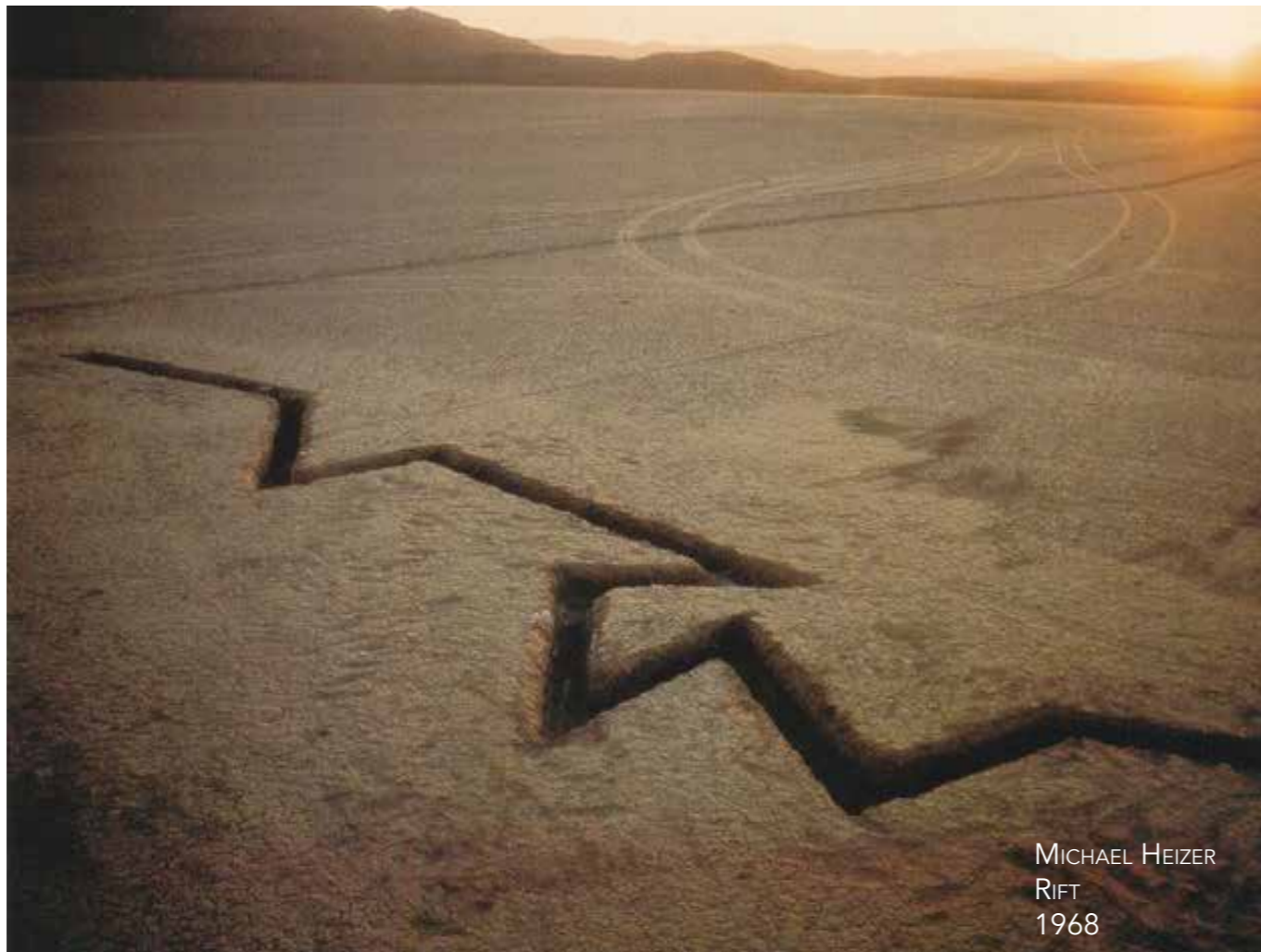
9,0



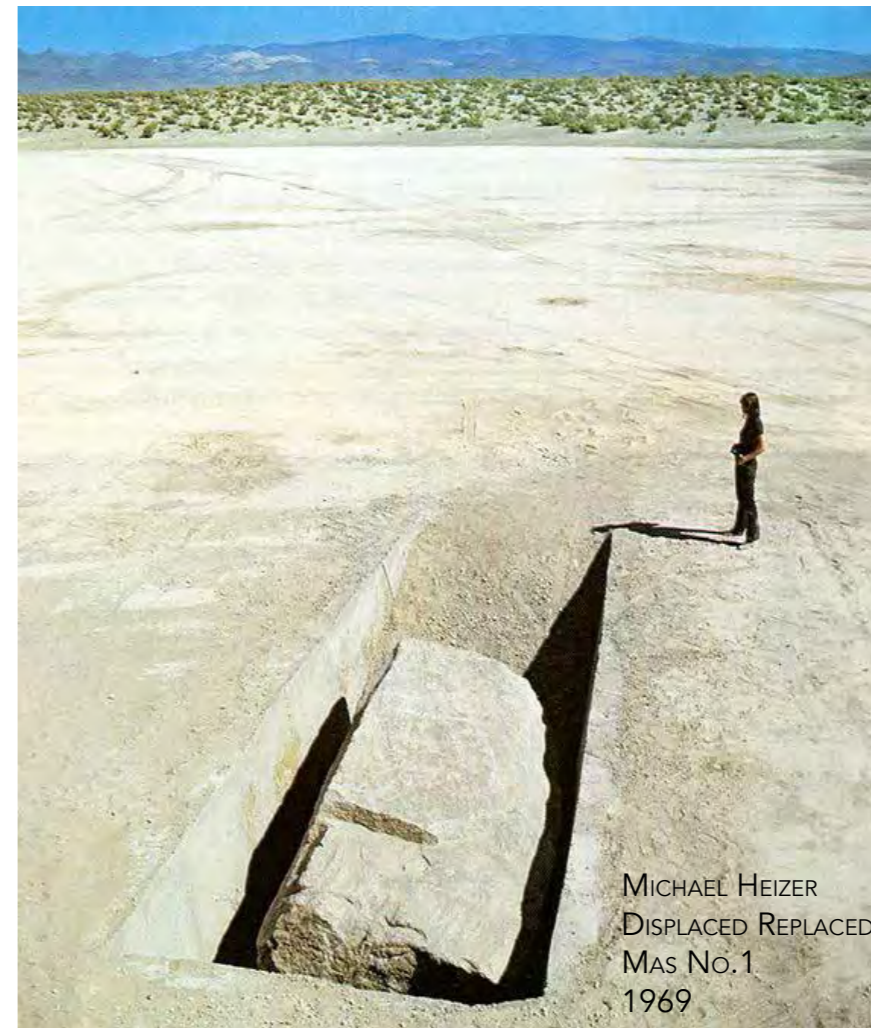




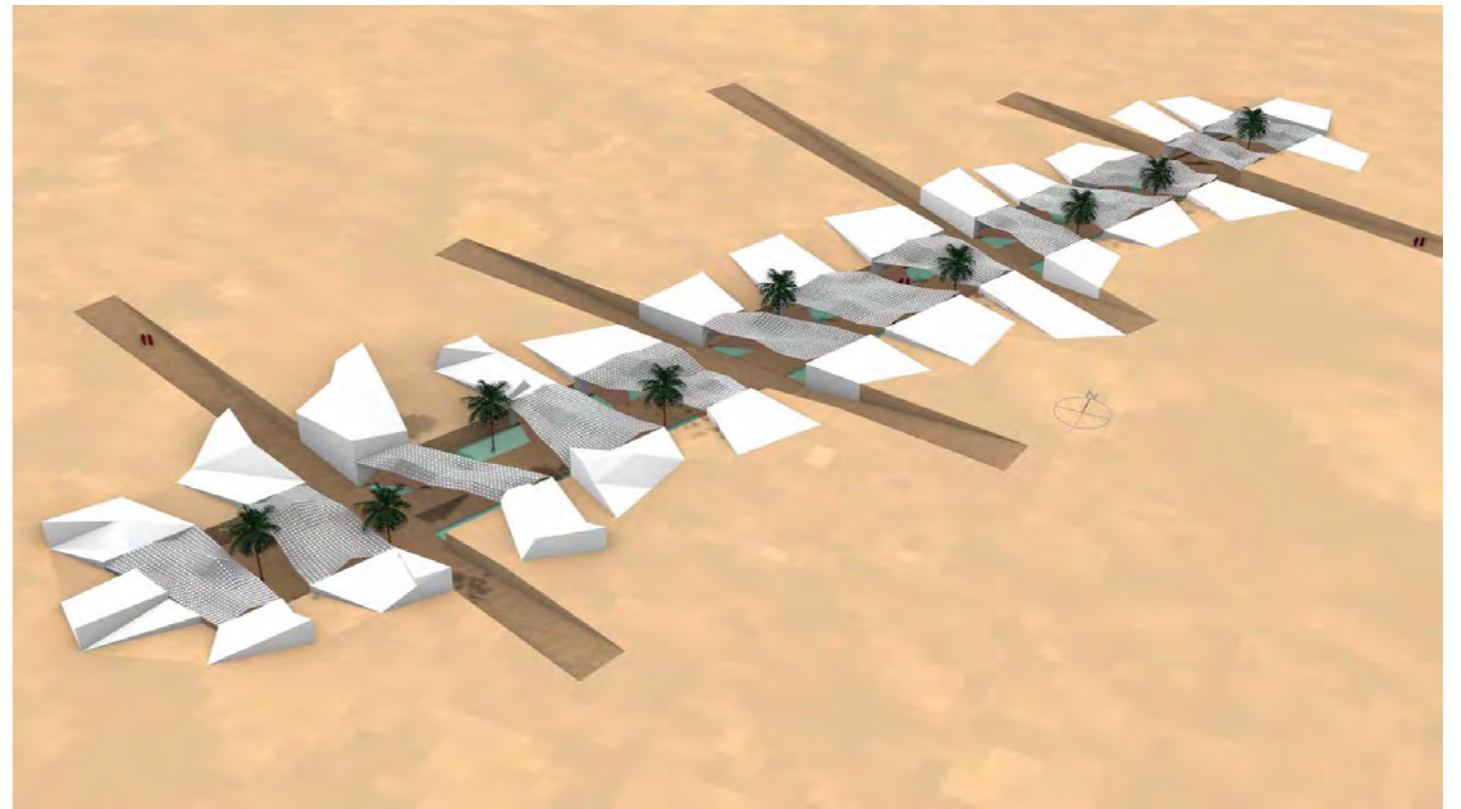
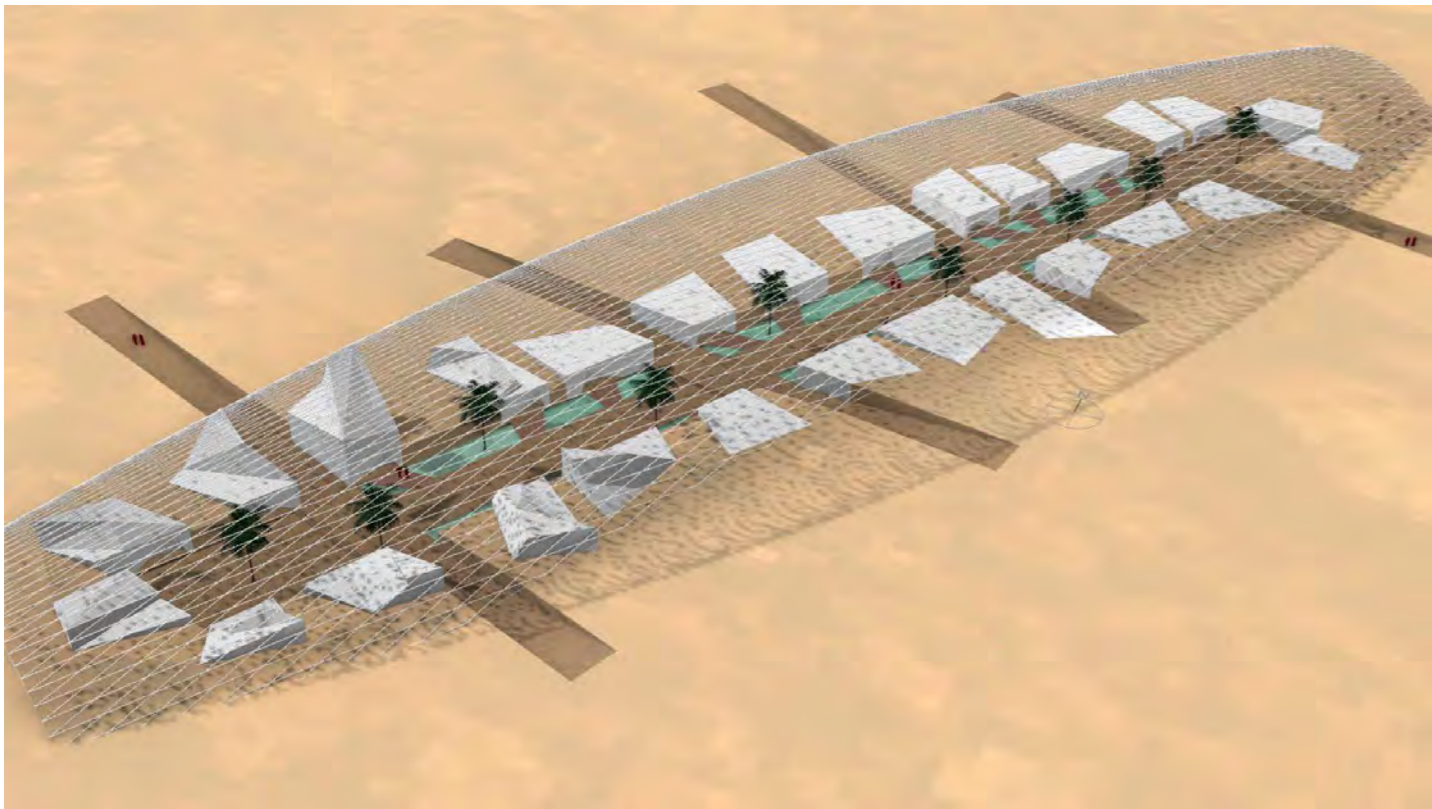
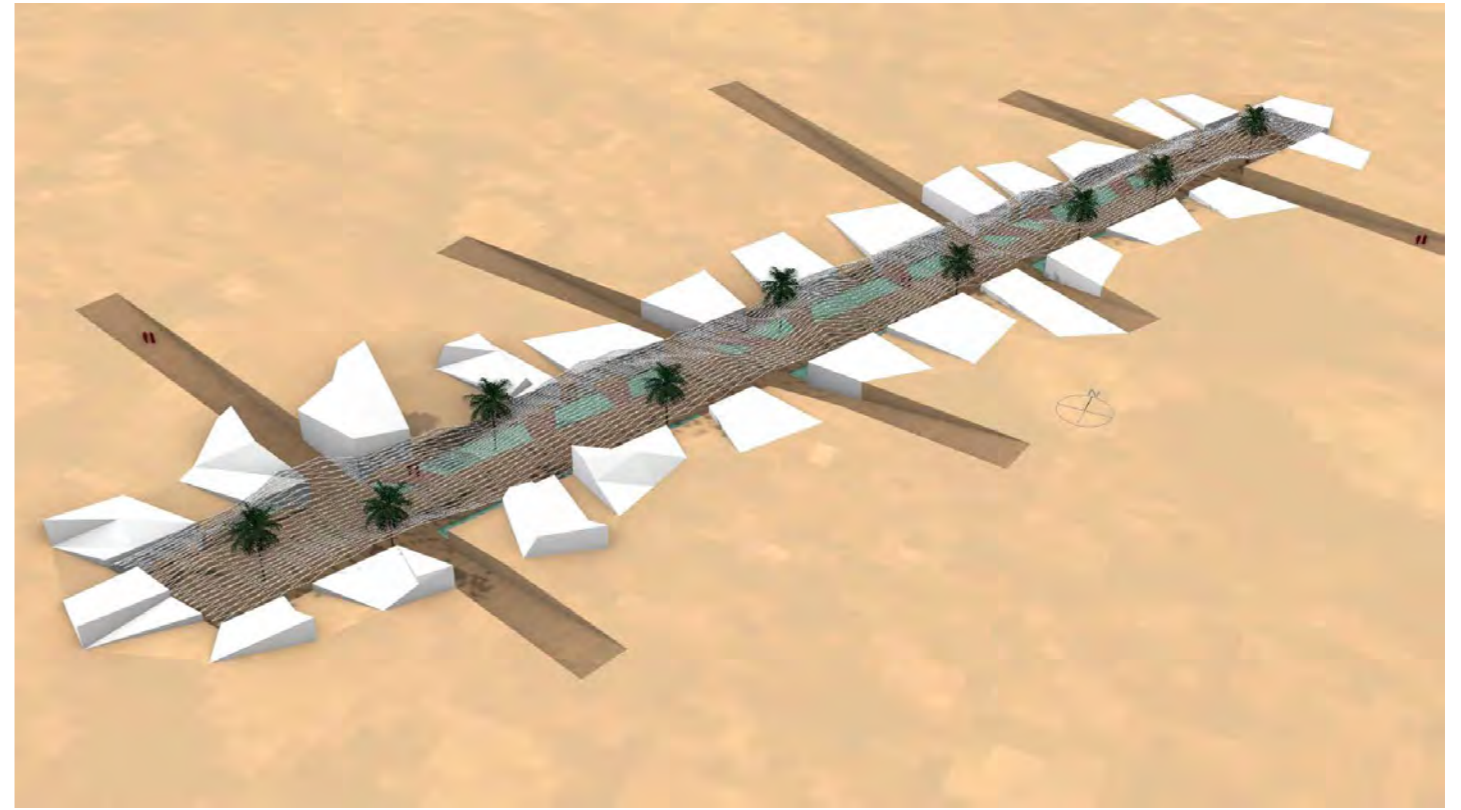
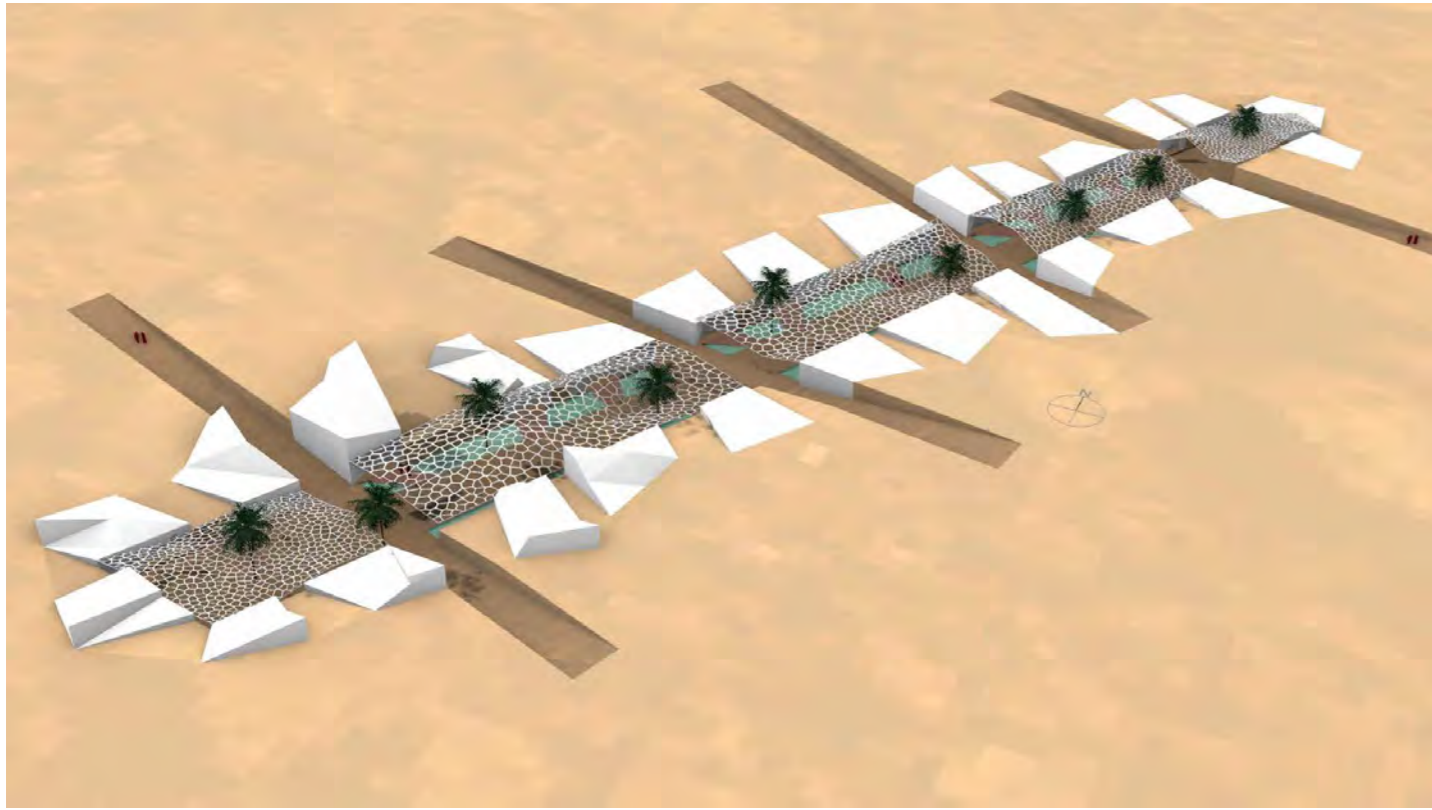
MICHAEL HEIZER
DISSIPATE
1968

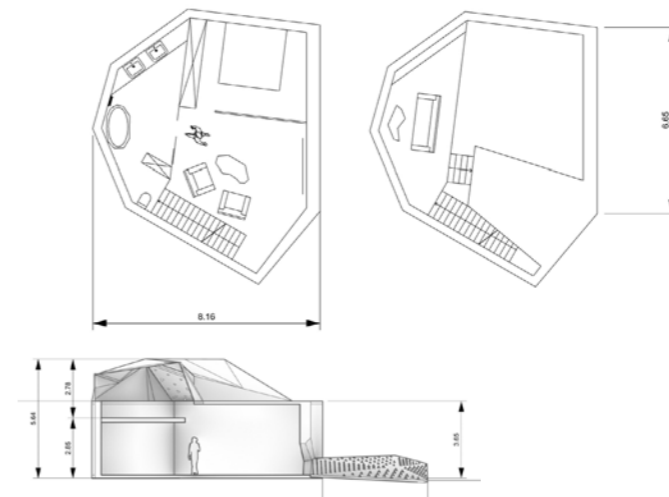
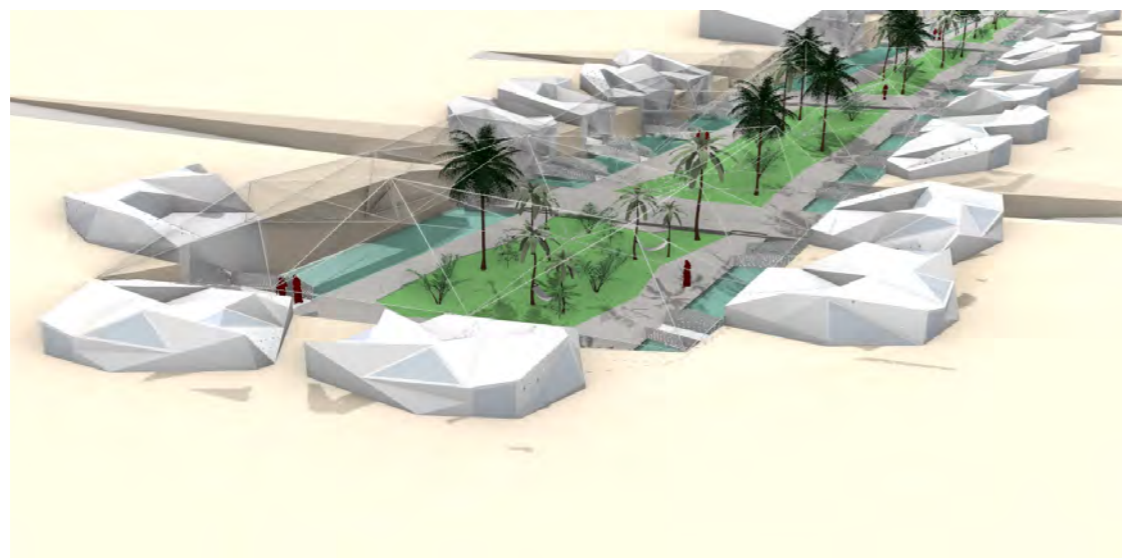
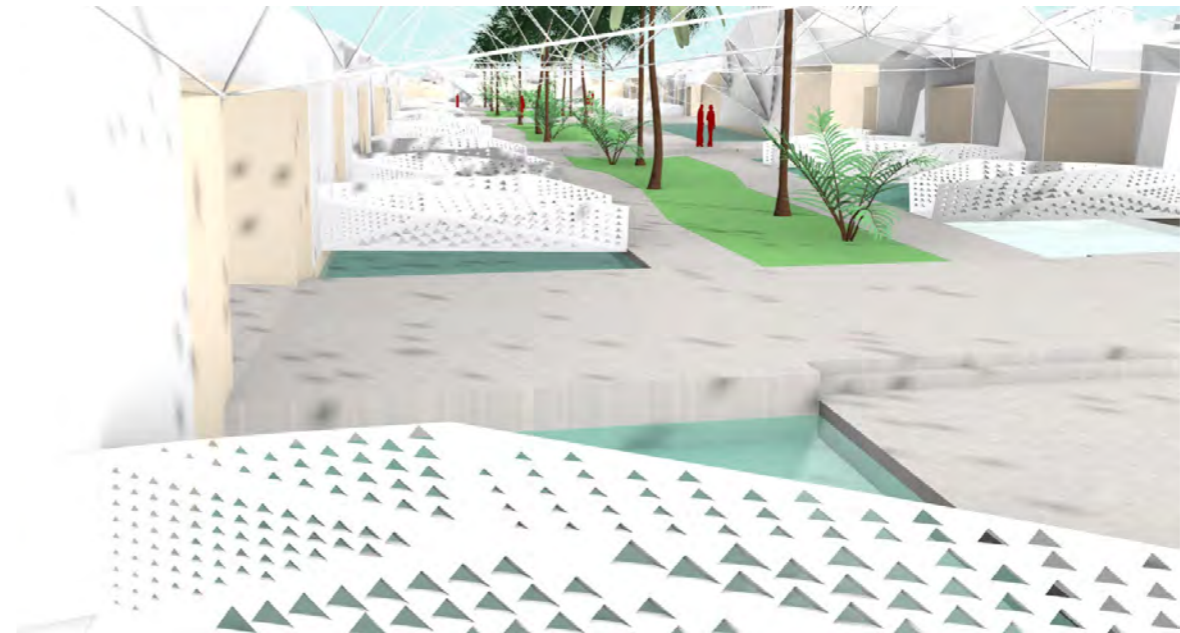
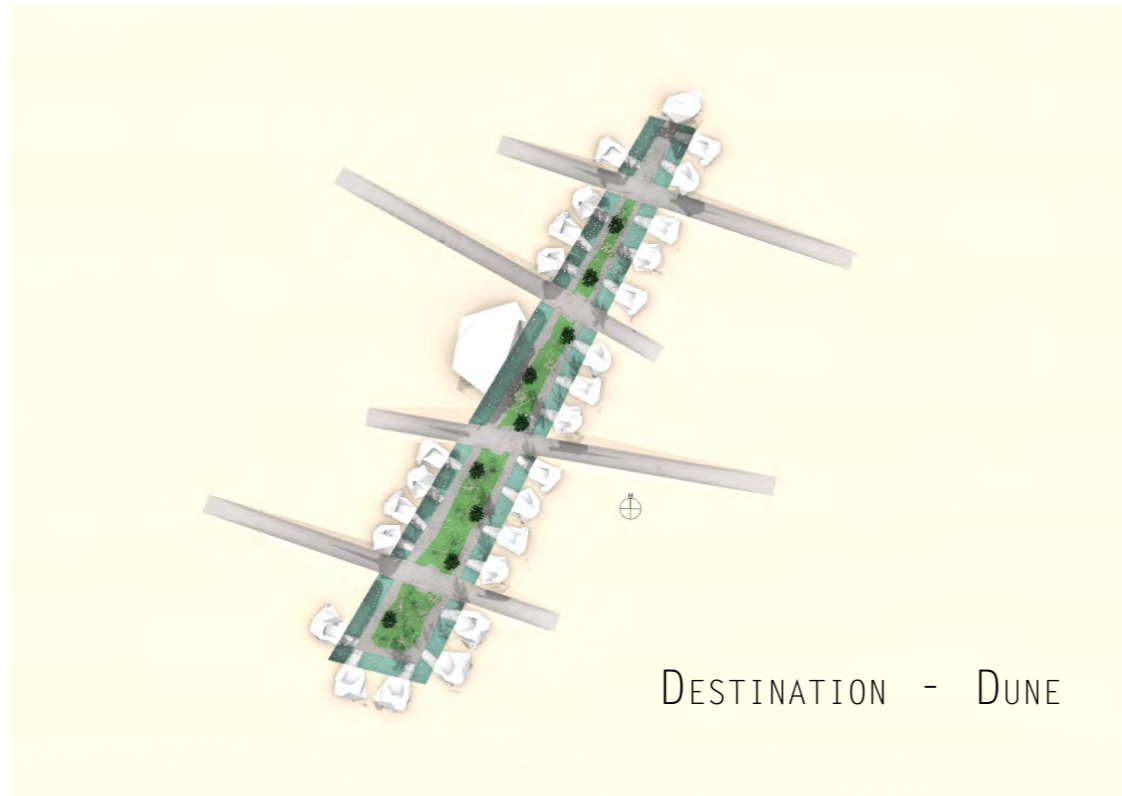


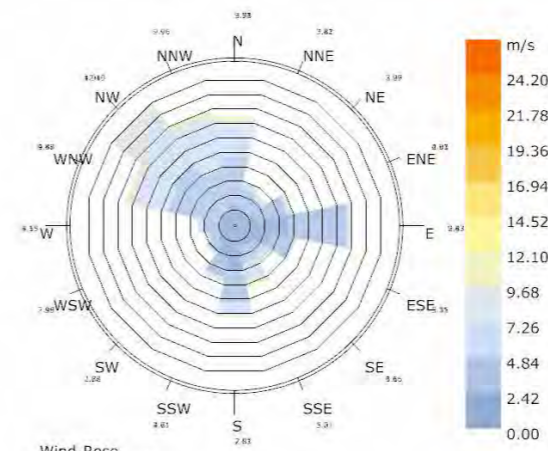
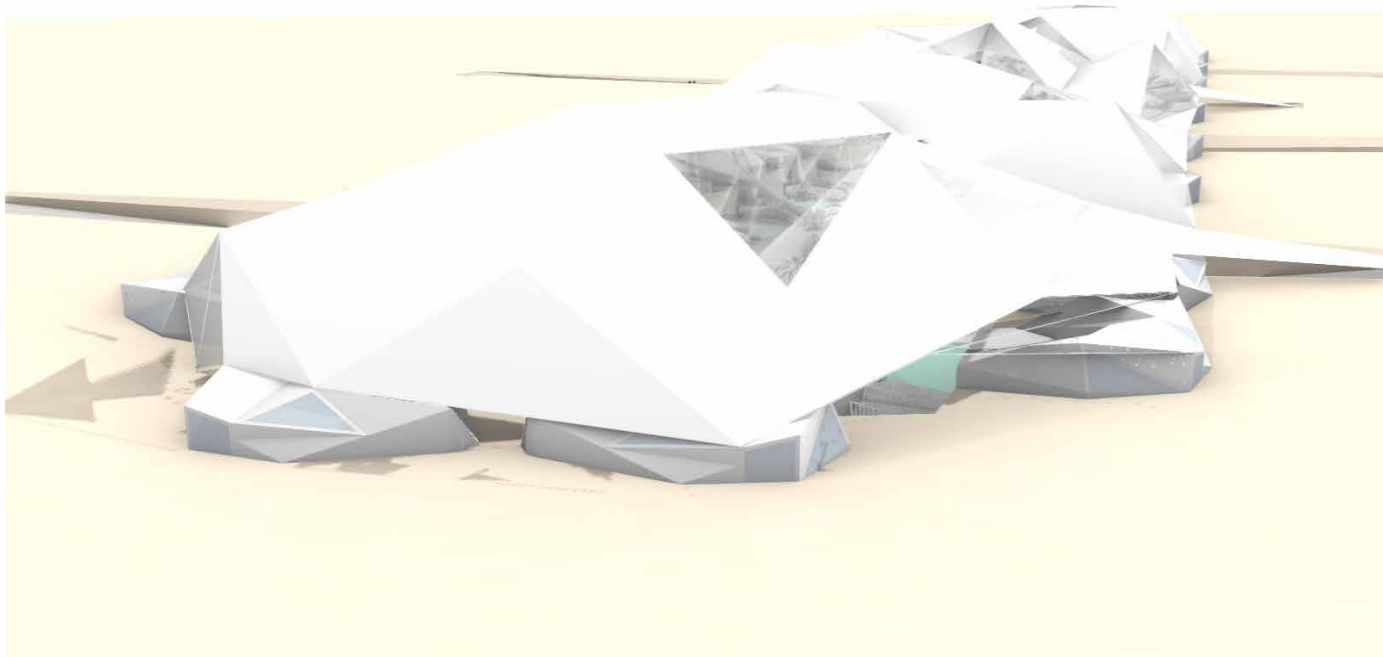
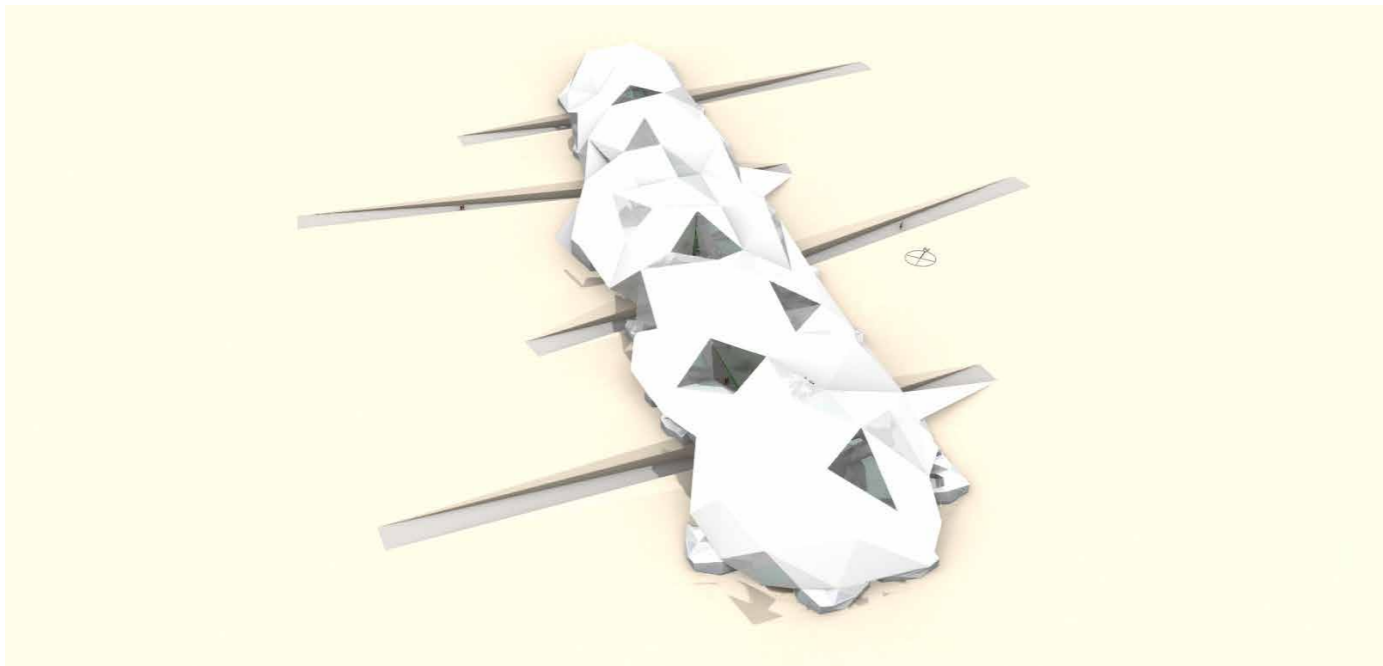
MICHAEL HEIZER
RIFT
1968



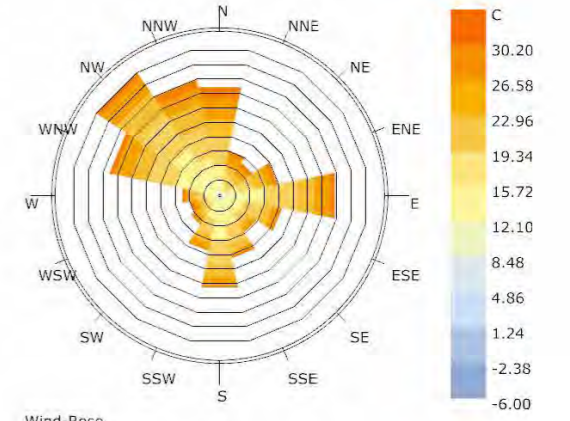
MICHAEL HEIZER
DISPLACED REPLACED
MAS NO. 1
1969



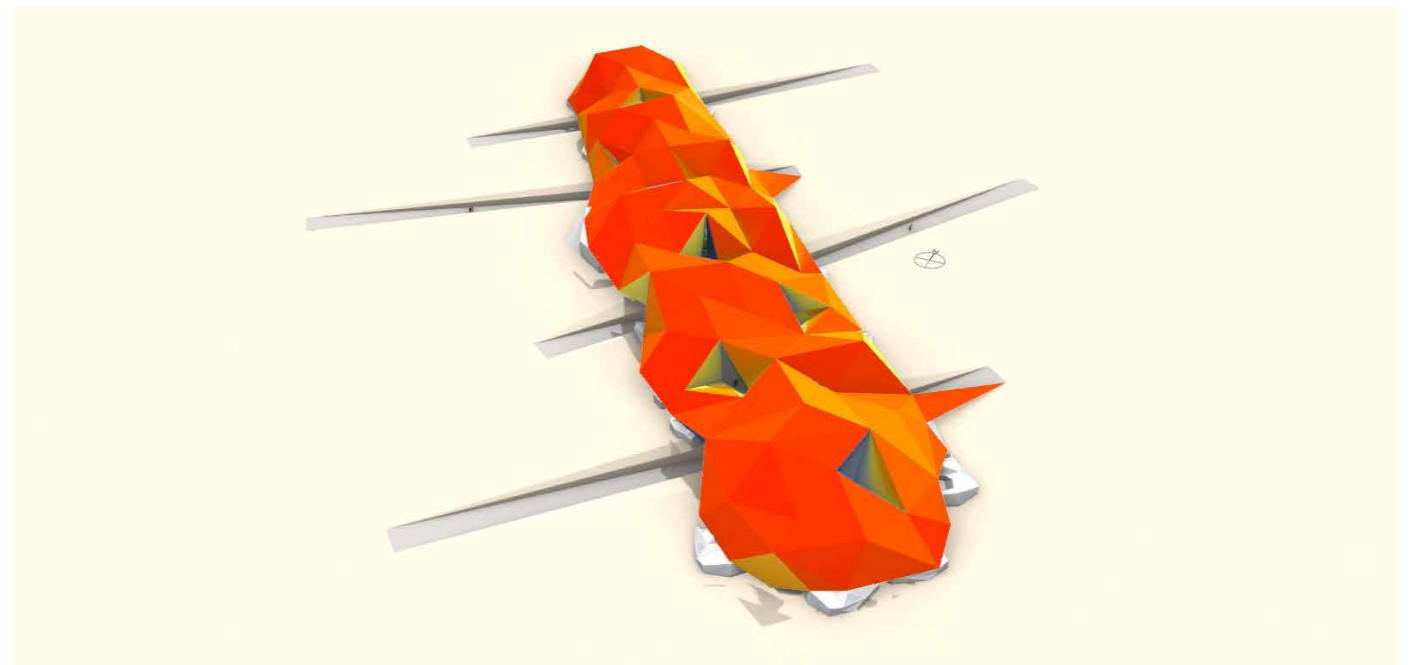
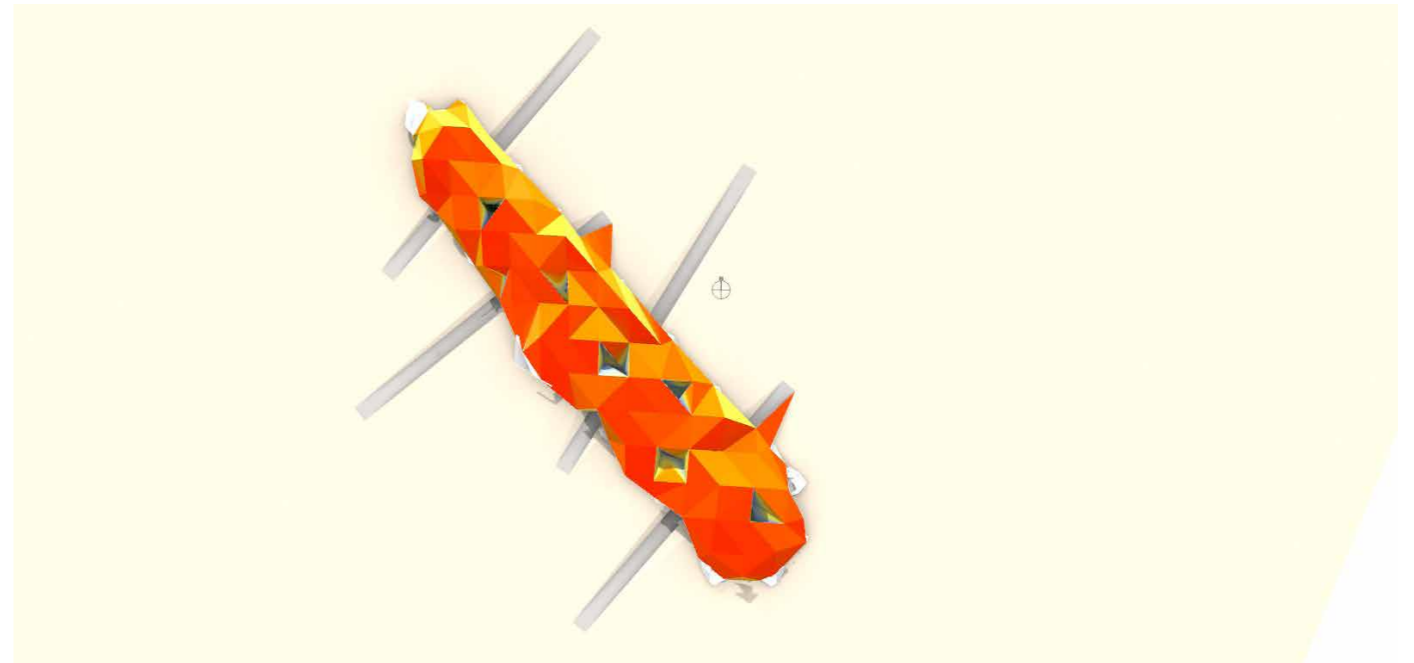


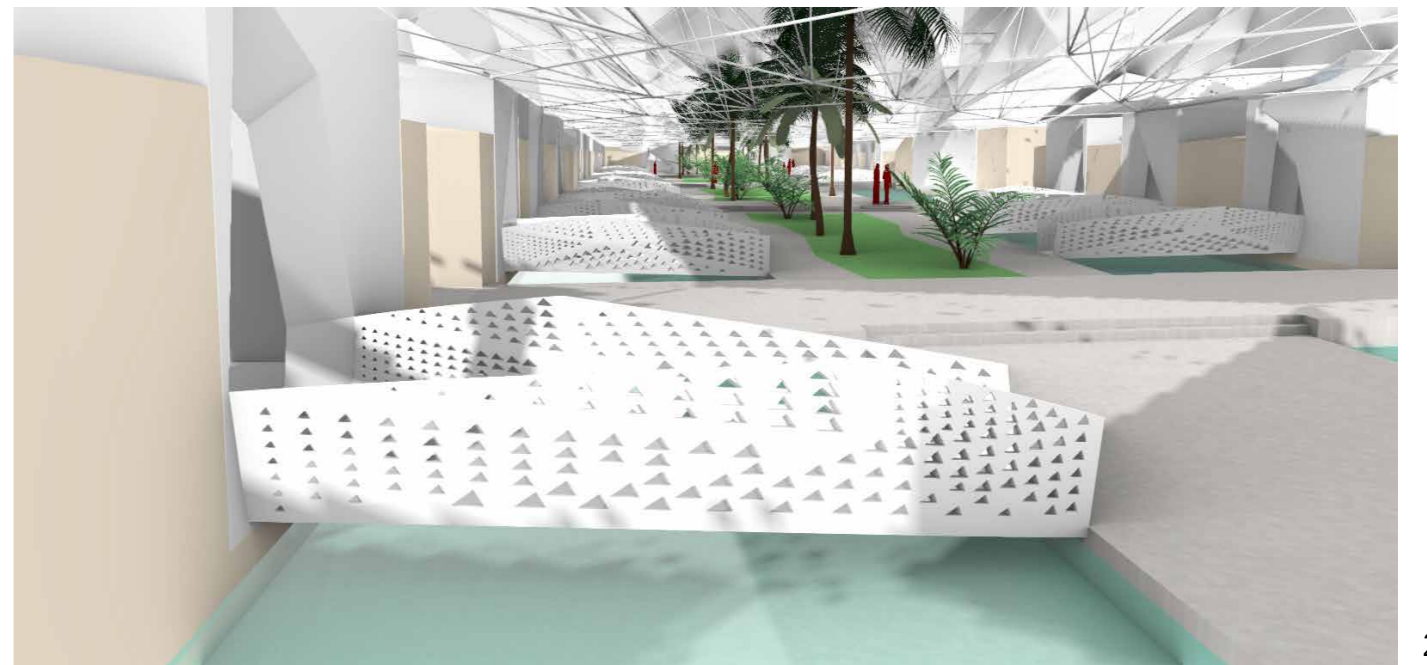
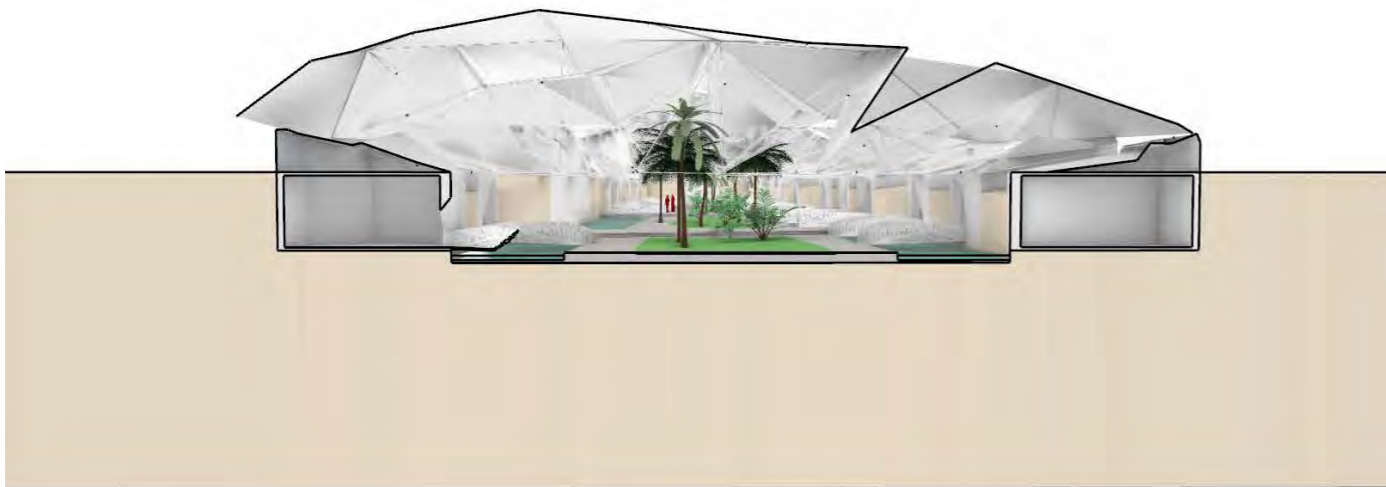


Wind-Rose
 ABU DHABI_ARE
 1 JAN 1:00 - 30 DEC 24:00
 Hourly Data: Wind Speed (m/s)
 Calm for 1.60% of the time = 140 hours.
 Each closed polyline shows frequency of 1.2%. = 109 hours.



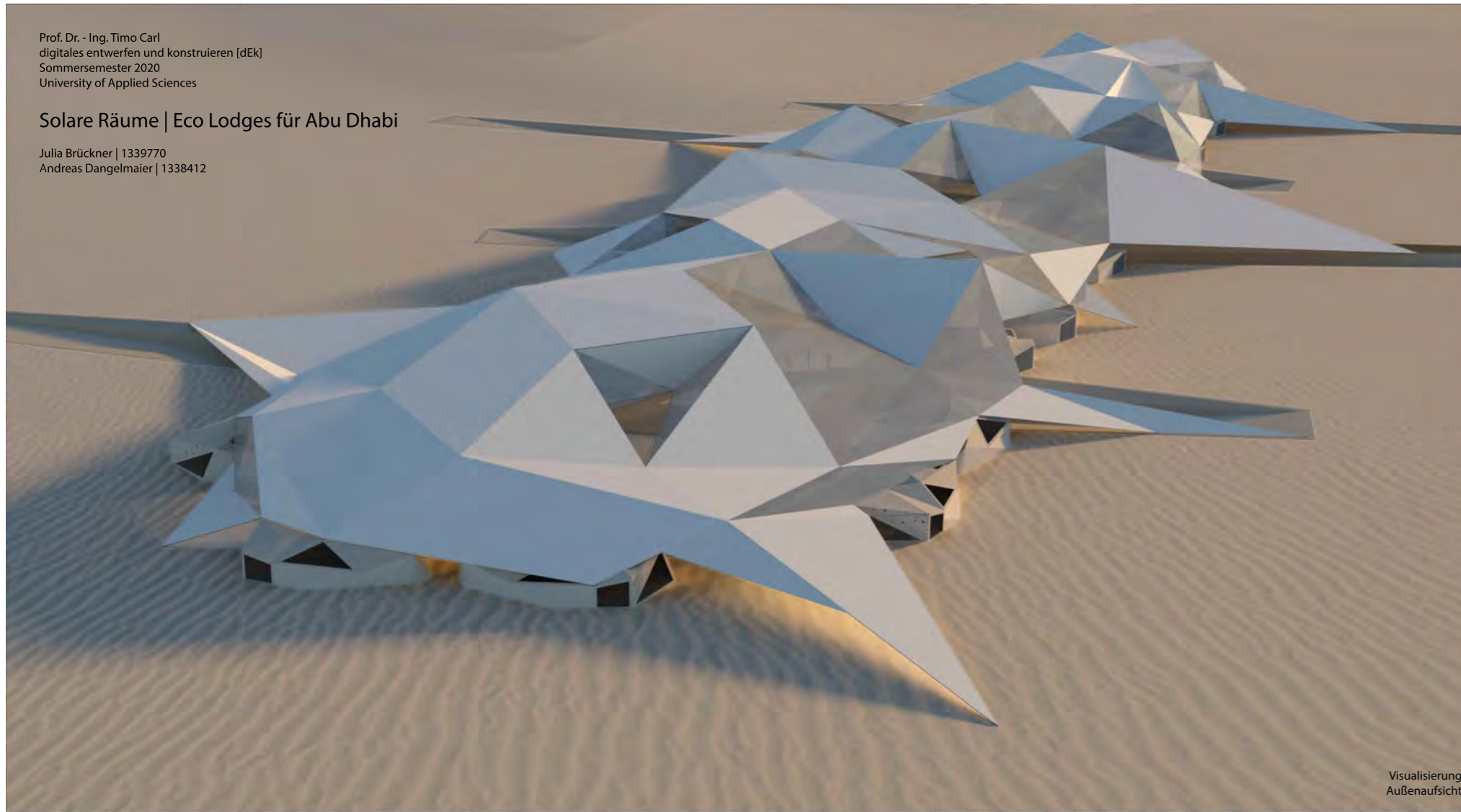
Wind-Rose
 ABU DHABI_ARE
 1 JAN 1:00 - 30 DEC 24:00
 Hourly Data: Dew Point Temperature (C)
 Calm for 1.60% of the time = 140 hours.
 Each closed polyline shows frequency of 1.2%. = 109 hours.



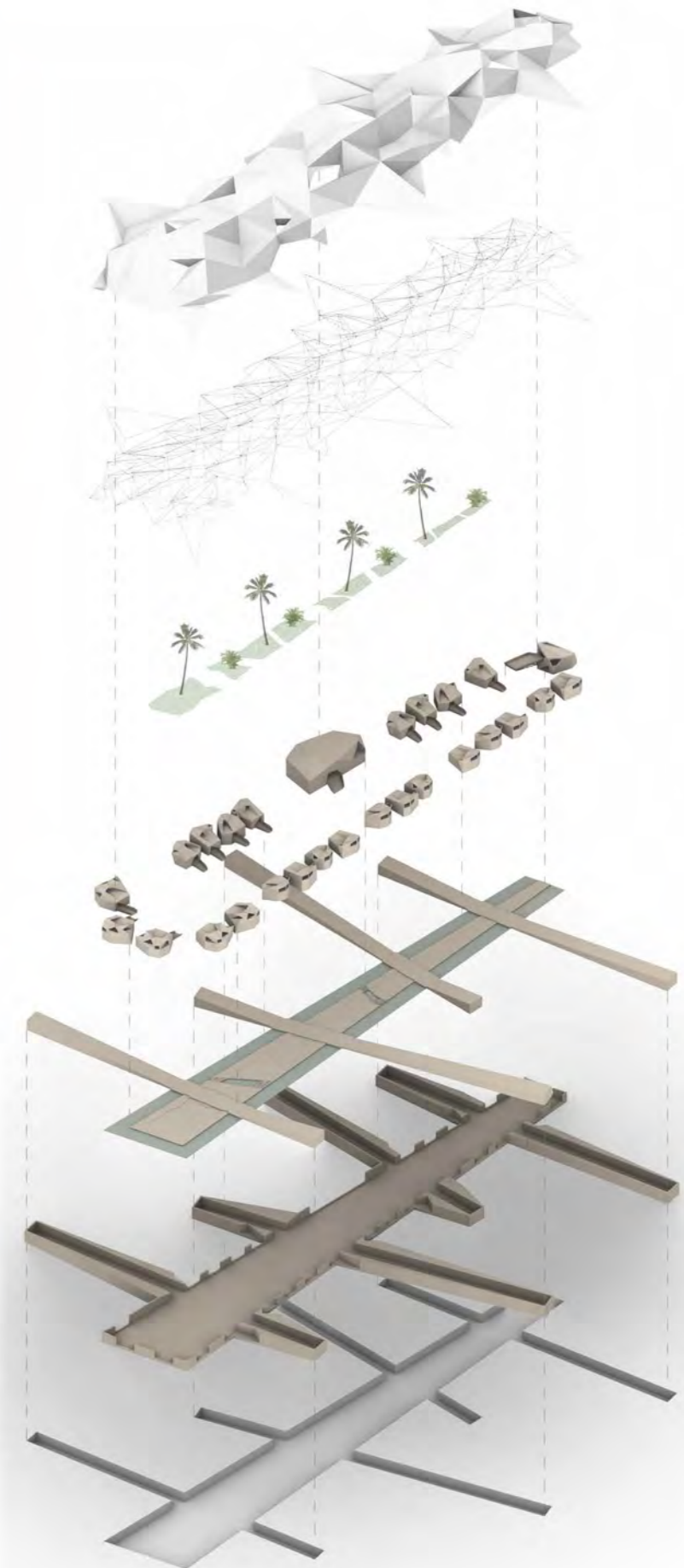


Solare Räume | Eco Lodges für Abu Dhabi

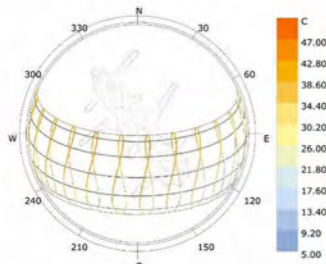
Julia Brückner | 1339770
 Andreas Dangelmaier | 1338412



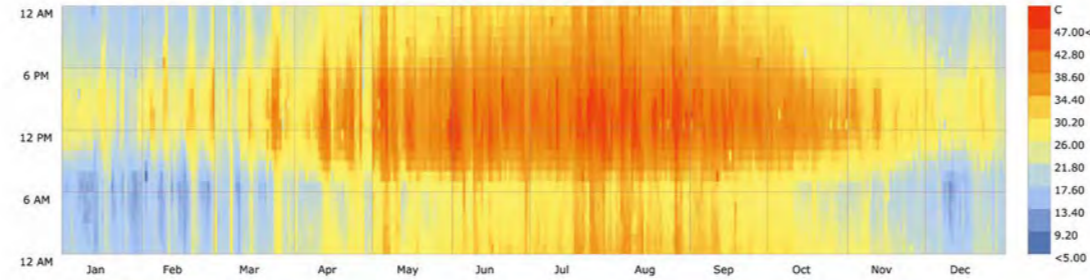
Visualisierung
 Außenaufsicht



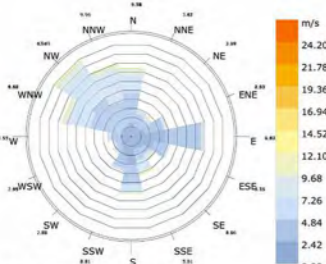
Explosionsaxonometrie



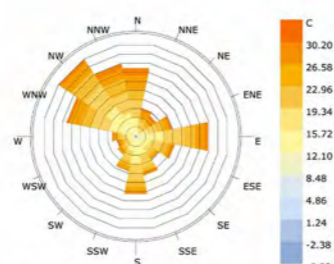
Sun-Path Diagram - Latitude: 24.43
 Hourly Data: Dry Bulb Temperature (C)
 ABU_DHABI_ARE



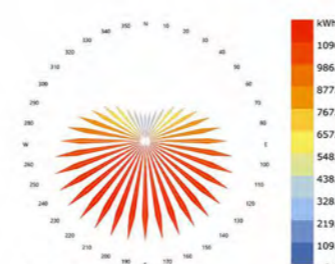
Dry Bulb Temperature (C) - Hourly
 ABU_DHABI_ARE
 1 JAN 1:00 - 31 DEC 24:00



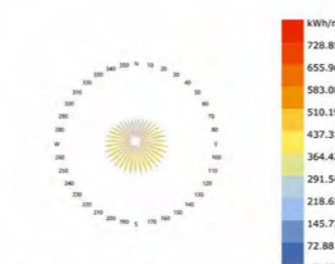
Wind-Rose
 ABU_DHABI_ARE
 1 JAN 1:00 - 30 DEC 24:00
 Hourly Data: Wind Speed (m/s)
 Calm for 1.60% of the time = 140 hours.
 Each closed polyline shows frequency of 1.2%. = 109 hours.



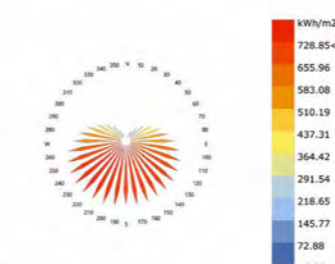
Wind-Rose
 ABU_DHABI_ARE
 1 JAN 1:00 - 30 DEC 24:00
 Hourly Data: Dew Point Temperature (C)
 Calm for 1.60% of the time = 140 hours.
 Each closed polyline shows frequency of 1.2%. = 109 hours.



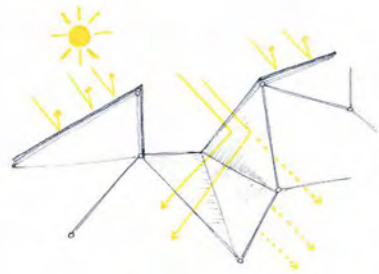
Total Radiation(kWh/m2)
 ABU_DHABI_ARE_1985
 1 JAN 1:00 - 30 DEC 24:00



Diffuse Radiation(kWh/m2)
 ABU_DHABI_ARE_1985
 1 JAN 1:00 - 30 DEC 24:00



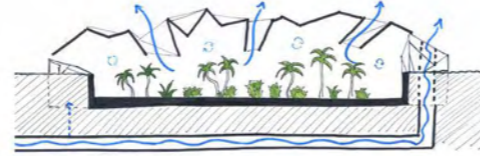
Direct Radiation(kWh/m2)
 ABU_DHABI_ARE_1985
 1 JAN 1:00 - 30 DEC 24:00



Verschattungskonzept



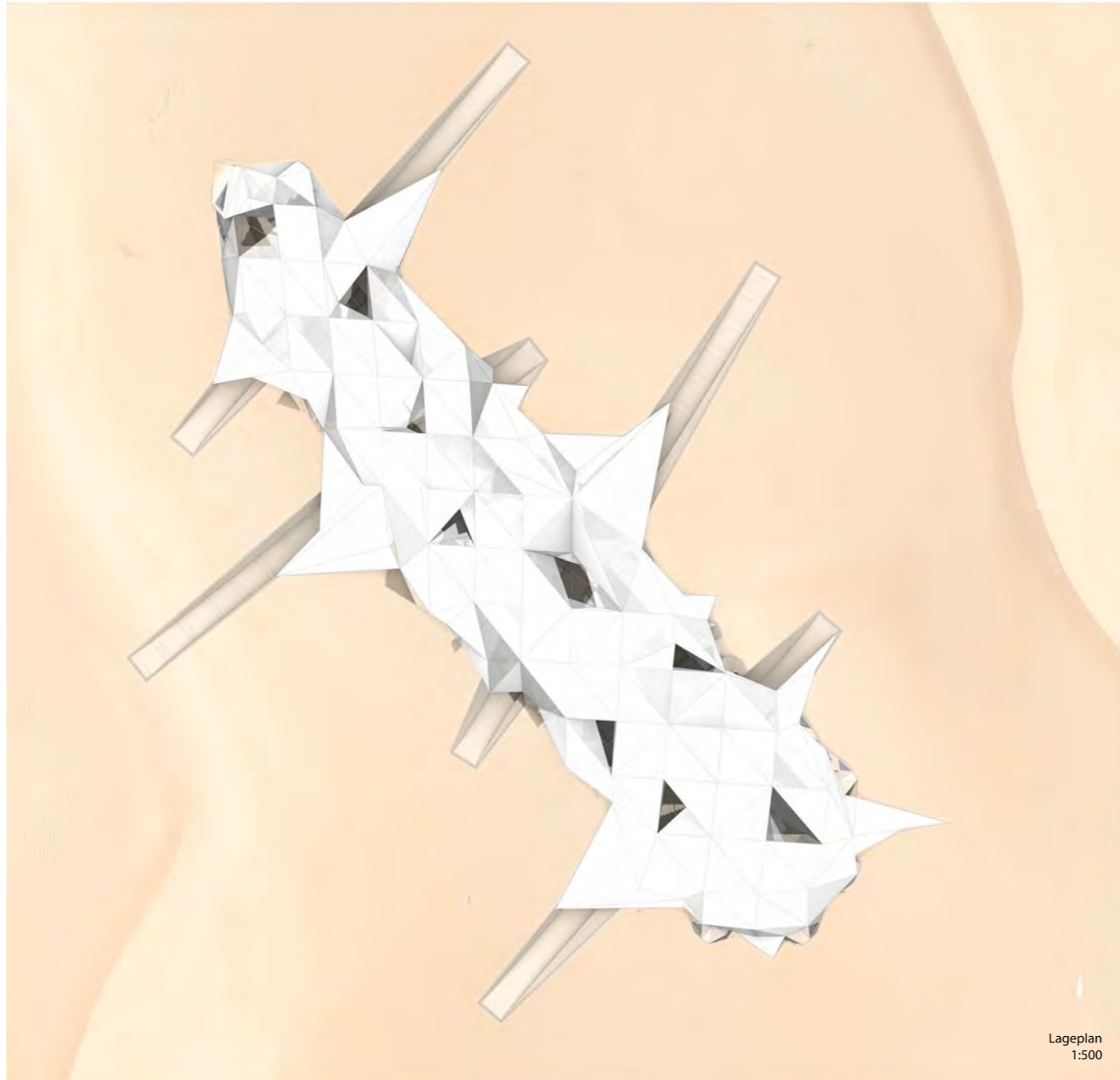
Kühlungskonzept



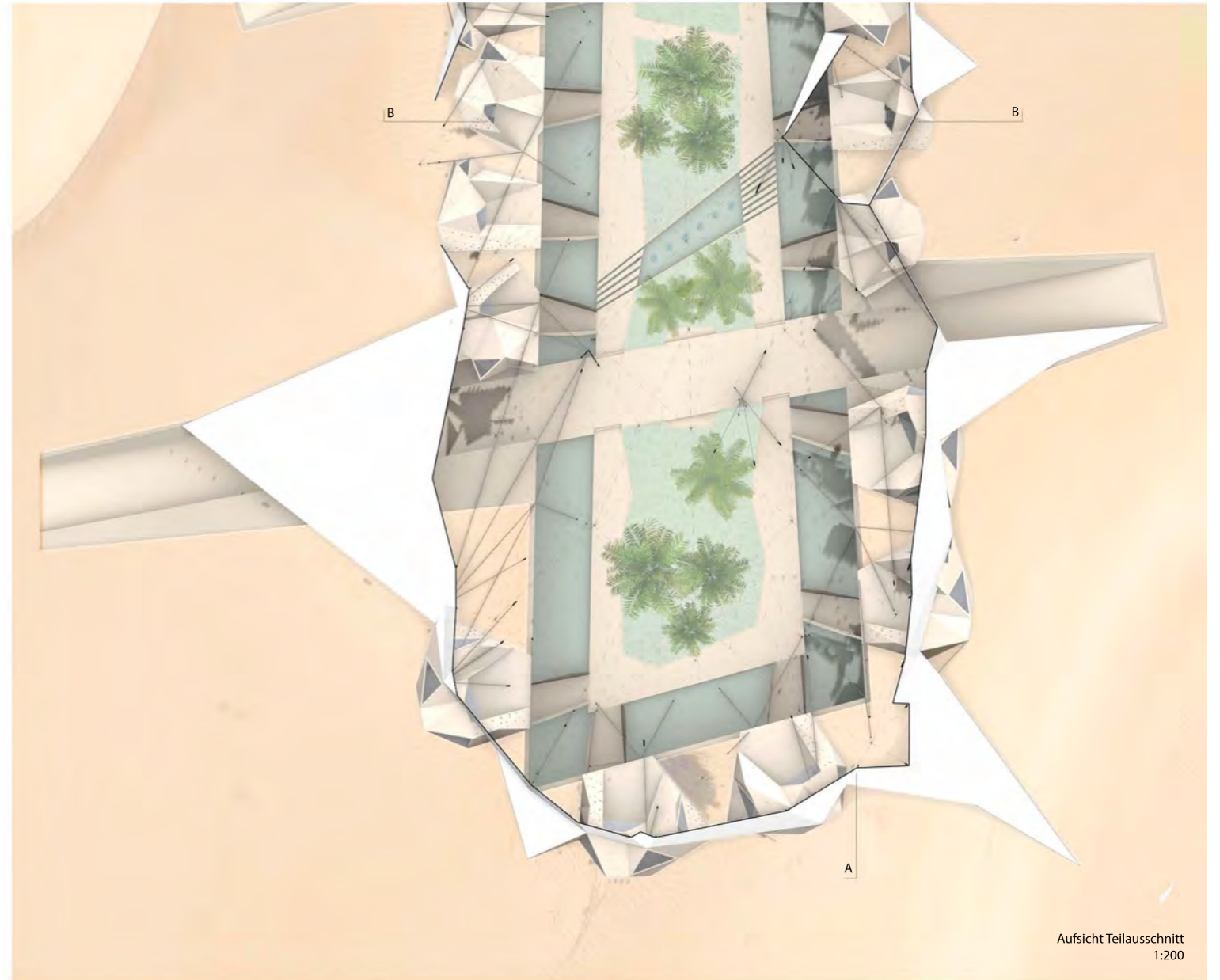
Lüftungskonzept



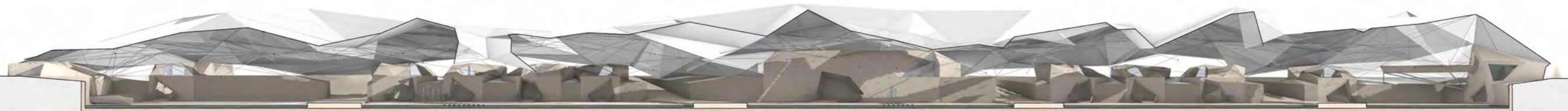
Schnitt BB
1:200



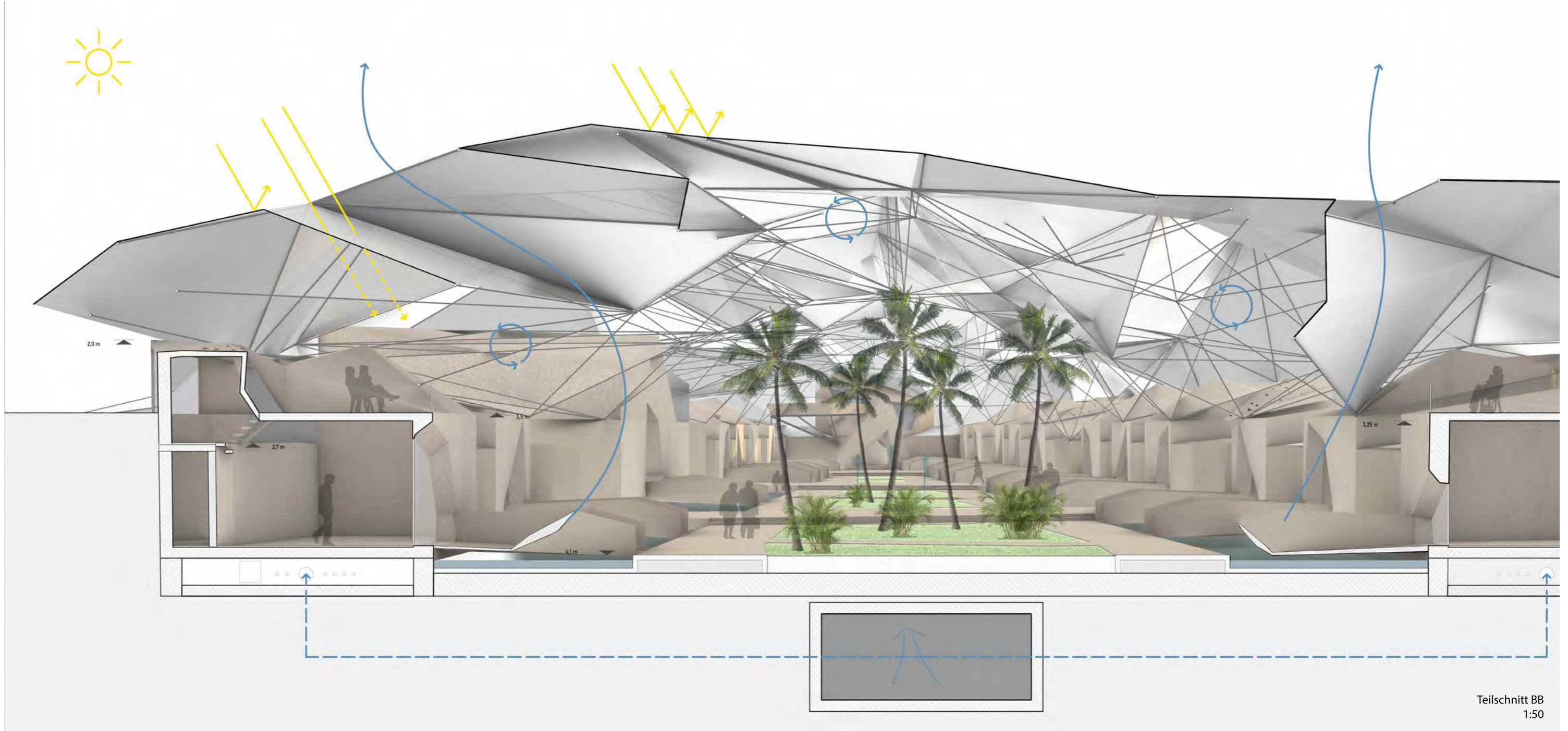
Lageplan
1:500

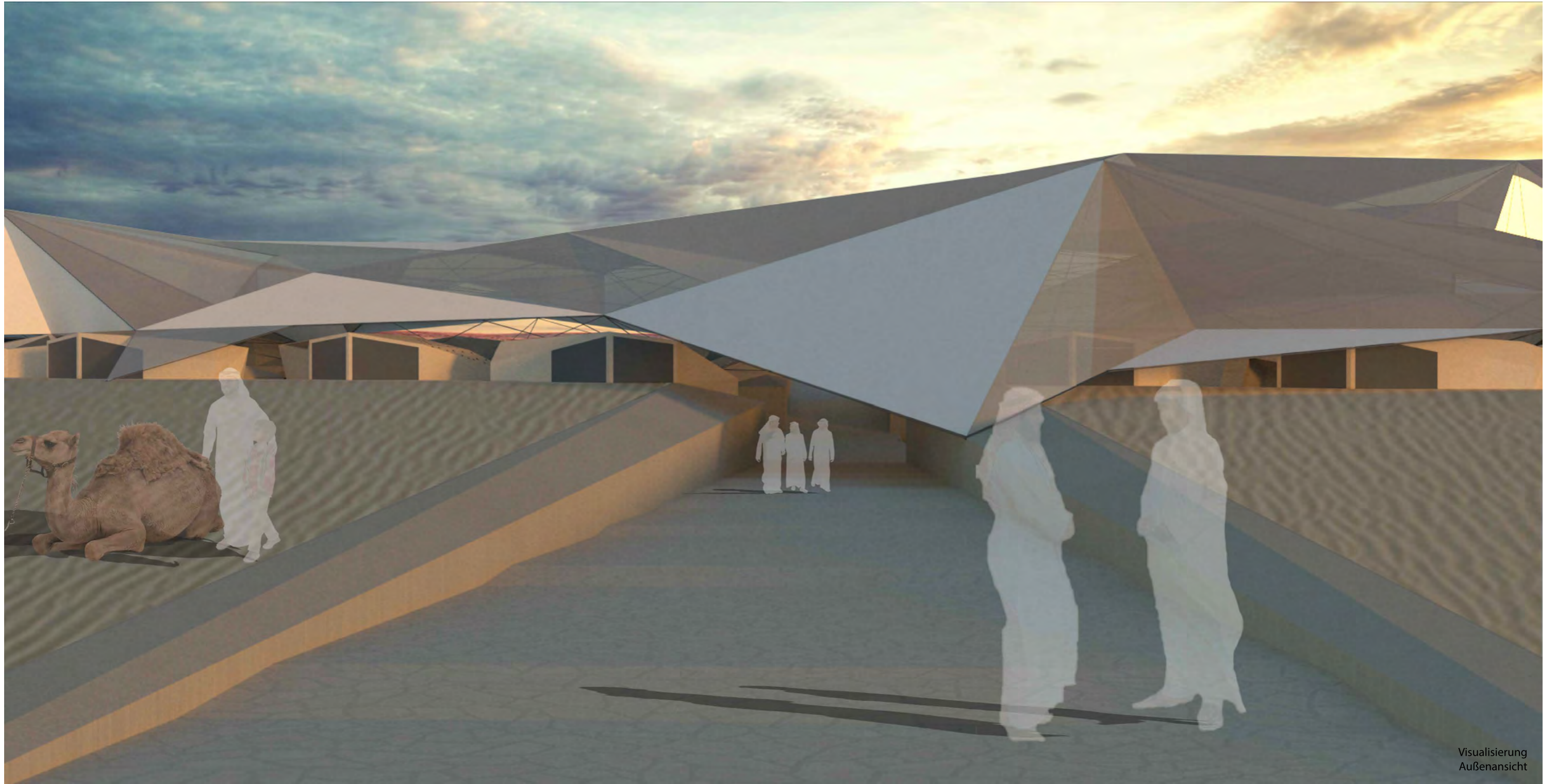


Aufsicht Teilausschnitt
1:200



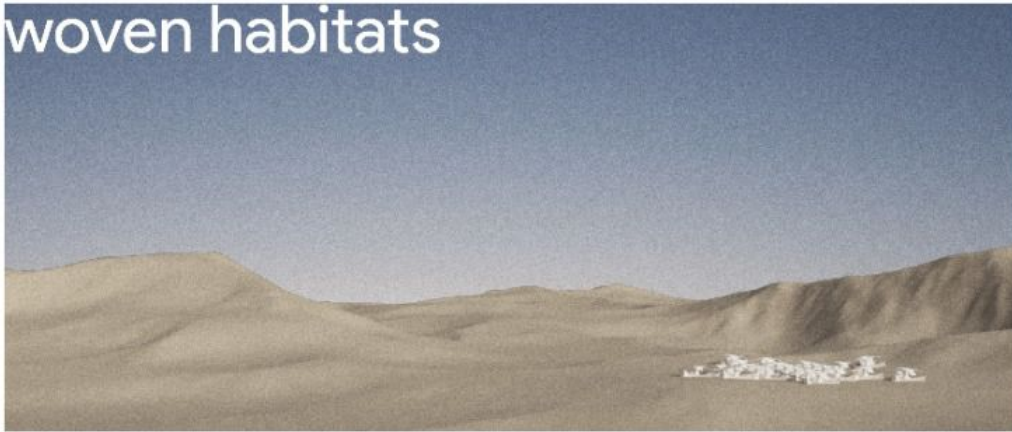
Schnitt AA
1:200





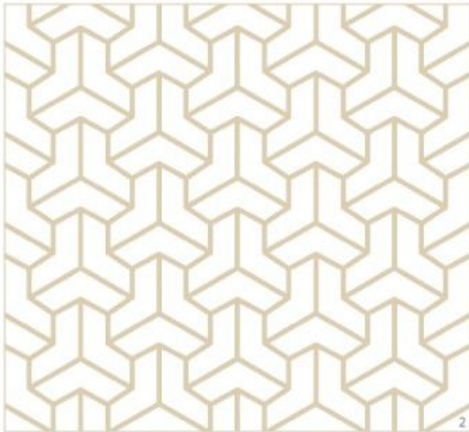
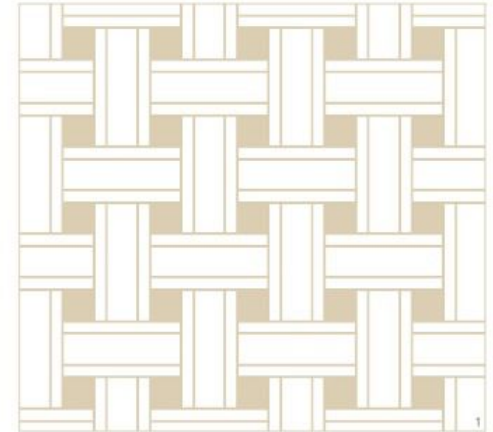
Visualisierung
Außenansicht

woven habitats



inspiration

geometry
space concept
cluster
climate design
stargazing

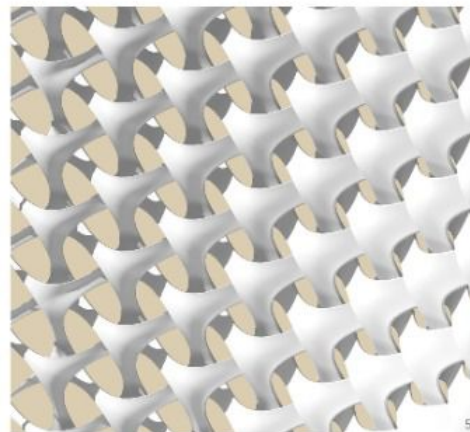
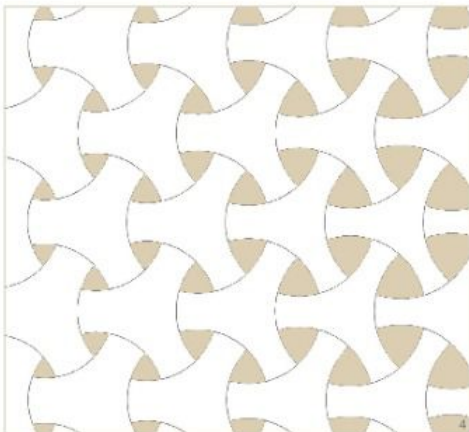
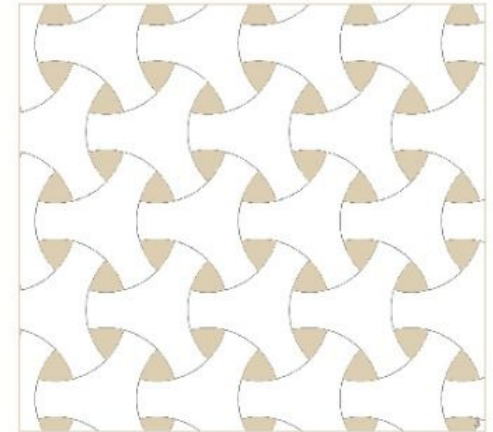


inspiration

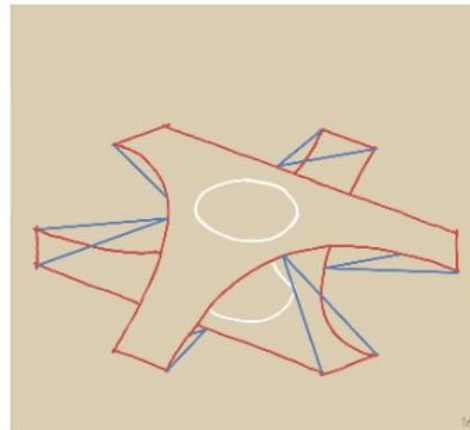
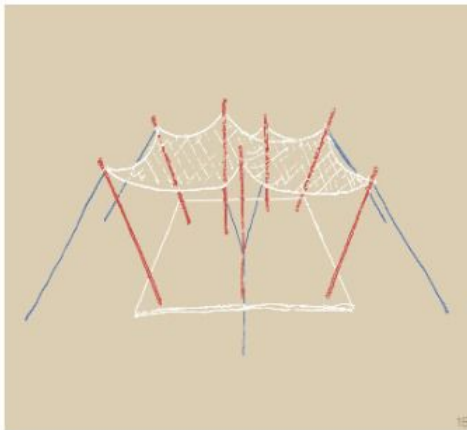
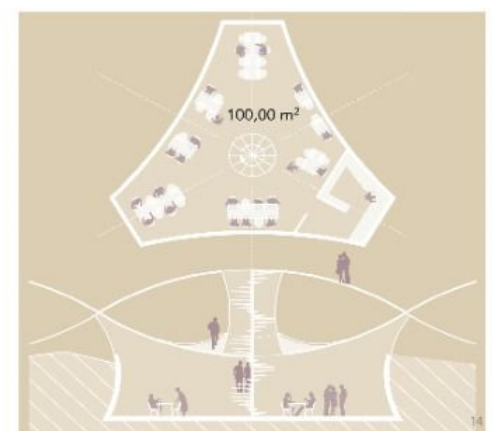
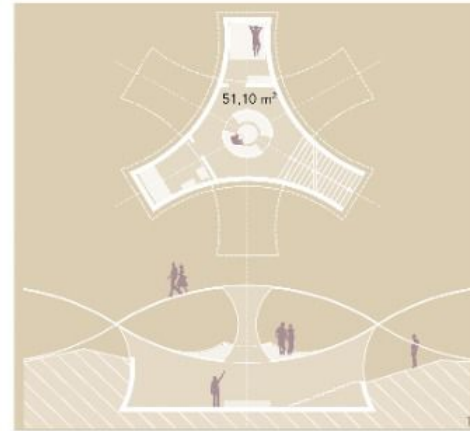
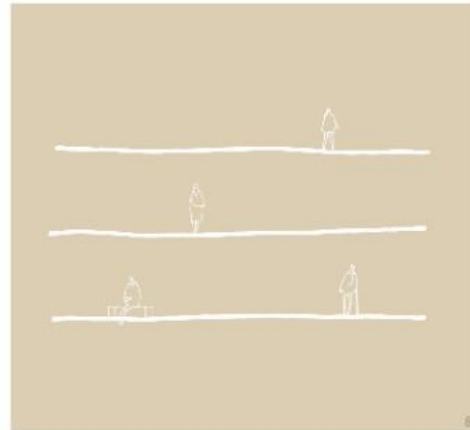
geometry
space concept
cluster
climate design
stargazing

A good life is like a weaving. Energy is created in the tension. The struggle, the pull and tug are everything. - Joan Erikson

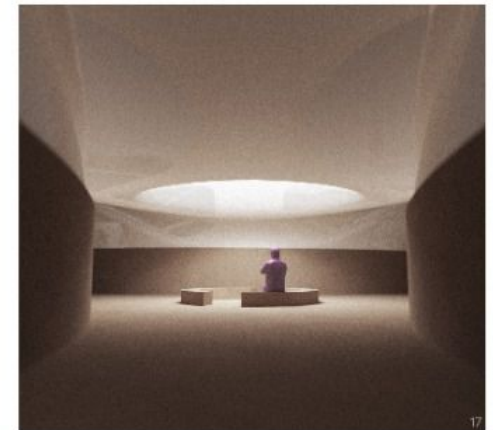
The basic **Inspiration** for this approach is a weave. A self-penetrating Fabric [1]. Another one is an arabic pattern [2]. Repeating Modules indicate infinity. The combination of both generates a new kind of **Geometry**. To disturb the uniformity [3] of this pattern we have added a gradential flow [4]. This causes the space to transform in its density [5]. Connecting the opposite surfaces [6] to each other creates a force locking connection for each module [7].



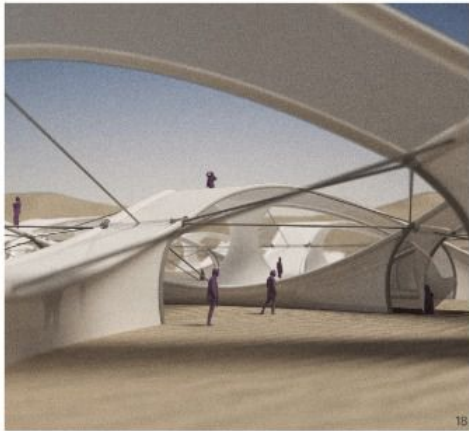
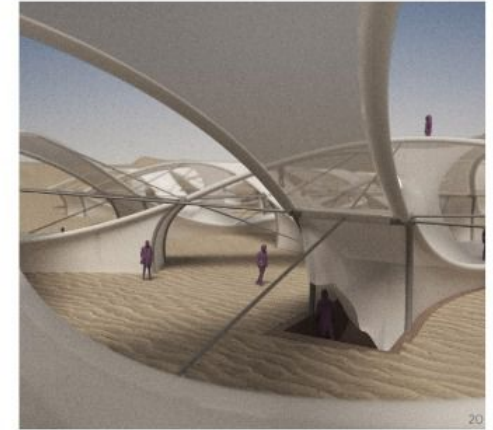
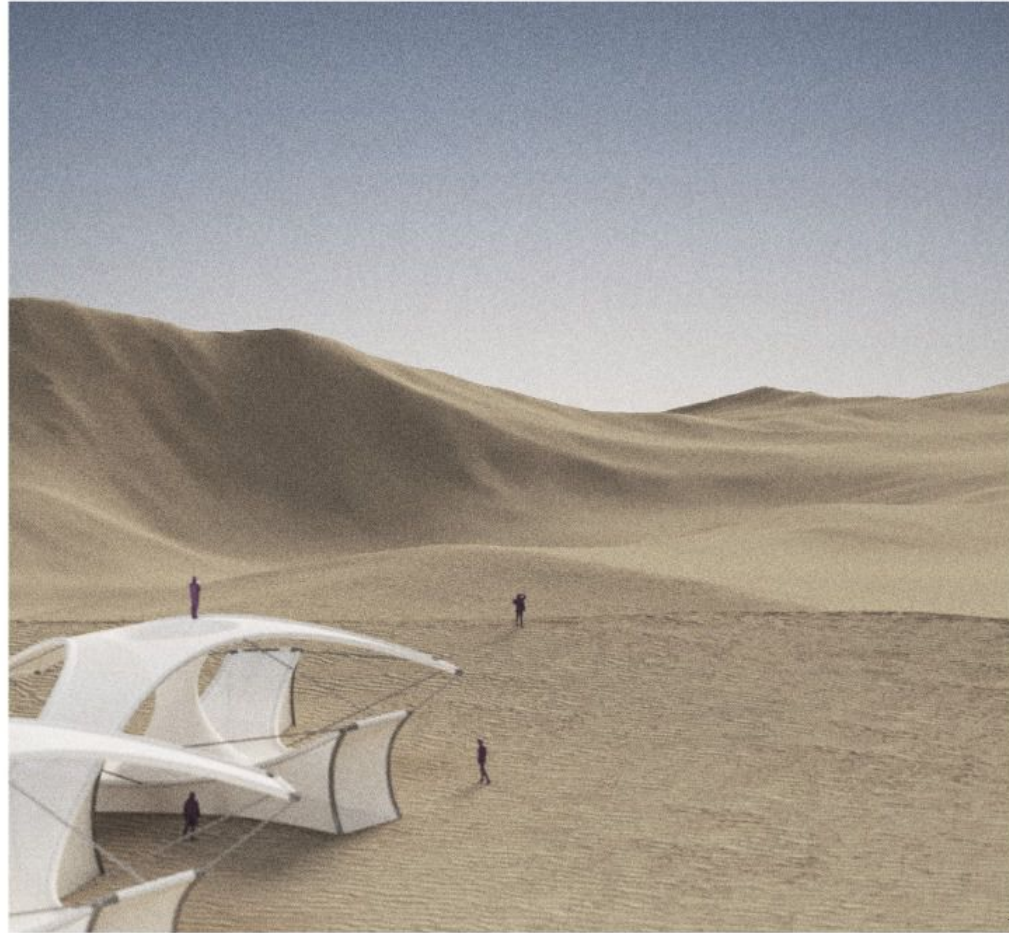
inspiration
geometry
space concept
cluster
climate design
stargazing



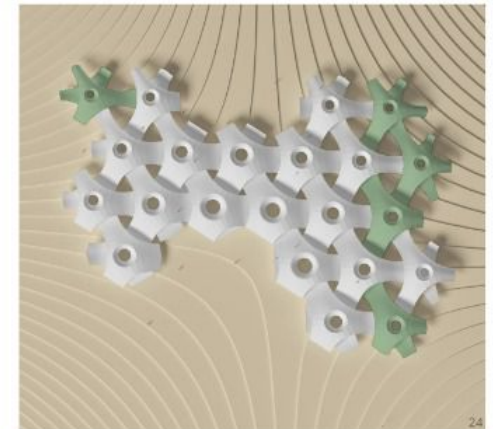
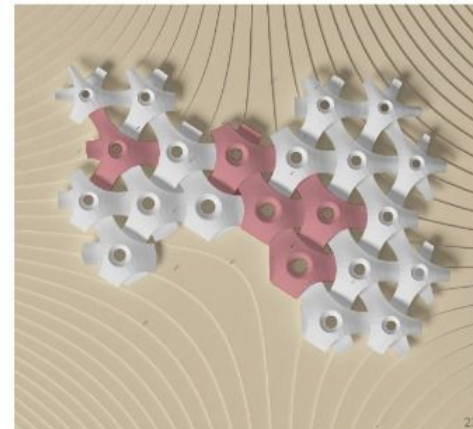
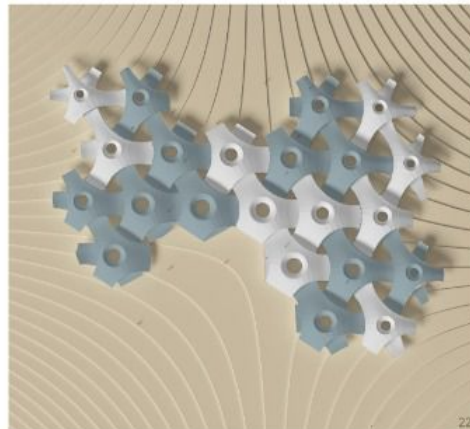
Following the previous thoughts we have taken the **concept** of stacking floors [8] and wove them to a fabric **space** [9]. The 3 layers consist of a clay tub lying in the floor [10], a roof that can be walked on [12] and the space in between [12]. The gradient [5] of the fabric allows the size of individual modules to be adjusted infinitely, so that the footprint of private spaces [13] and common hubs [14] can be customized. The structure of the individual module is based on the logic of a Bedouin tent [15]. This breaks down the geometry into **compression rods** and **traction cables** which are connected with a non stretch textile [16]. This allows for a construction that is gentle on the material and quick to assemble and disassemble.



Spaces underneath the modules are meant to be ones to calm down and relax. With just one lightsource [17] through the module itself. Walking up and down the fabric and its levels leads to a feeling of exploring and discovering the desert and its nature, in a small scale [18]. This project is not in competition with the incredible beauty of the surroundings, rather it subtly underlines the power of the desert and its inhabitants [19]. As soon as the fabric moves to a different location, only clay tubs [10] will remain as a testament to the use, without polluting the environment. The fabric contains **clusters** [21] of **private hubs** [22] which are connected by **public spaces** [23]. Modules that supply **water and energy** [24] are moved to the periphery. The order shown is only a suggestion and can be customized easily.

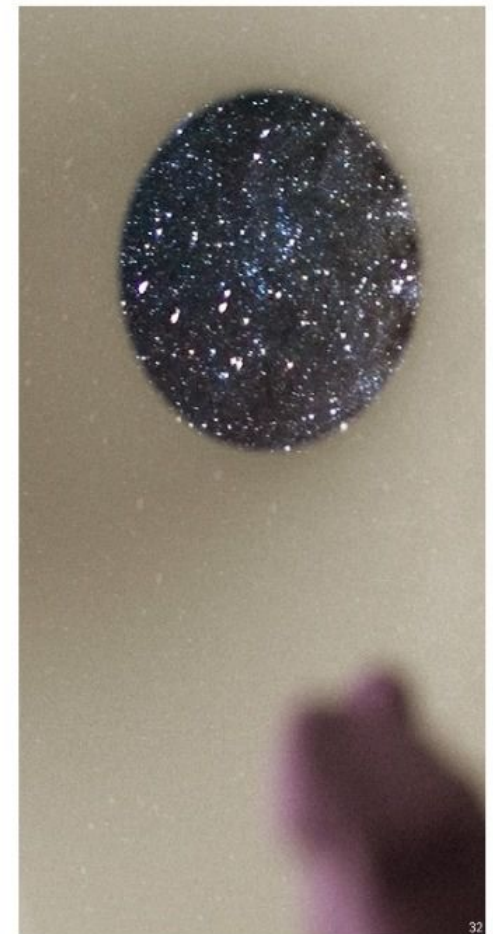
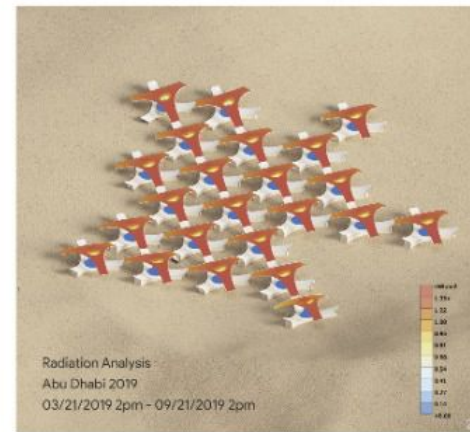
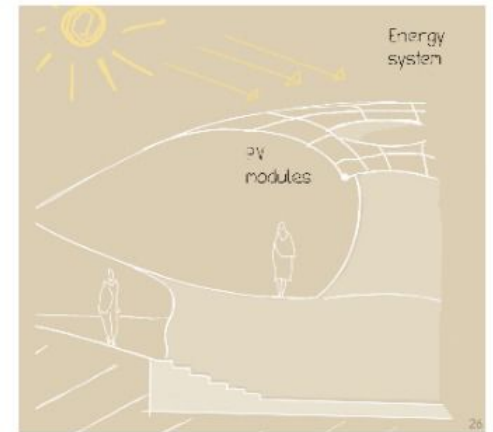
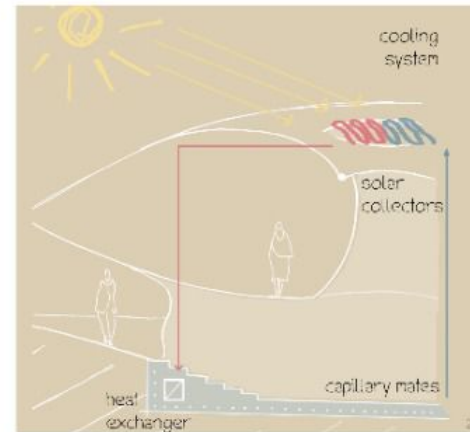


inspiration
 geometry
 space concept
cluster
 climate design
 stargazing



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 geometry
 space concept
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The **climatedesign** concept is split into 4 parts. As an ecological temperature solution, solar cooling systems [25] are used in the private and public modules, via solar collectors and a chiller. Due to the high sun entry value in abu dhabi [29], sufficient electricity generation [26] via PV cells in the upper shell is guaranteed for the cluster. The interlacing of the modules creates extensive shading [27] through two layers. Water harvesting modules [28] located in the periphery supply the cluster with additional drinking water via mist catchers. At night the fabric turn into a place where you can practise **Stargazing** either together with other inhabitants from the top layer of the modules [31] or in a private atmosphere from your privat hub through the surface connection [32].



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