rural-genesis '26

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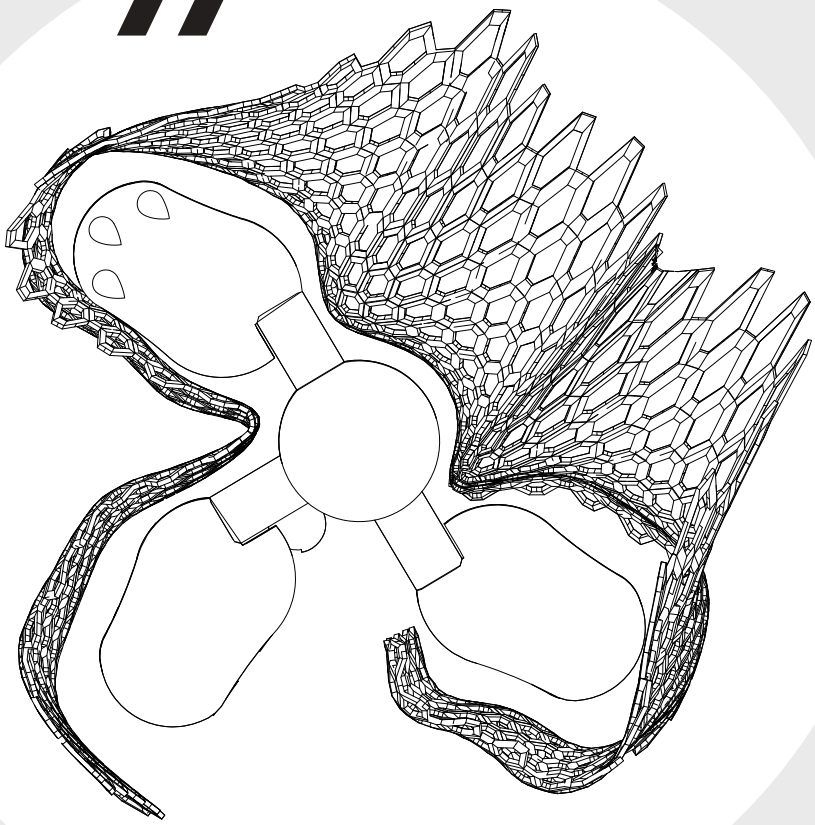


OBRUK

THE ANATOMY OF A SYSTEM:
ADAPTABILITY OF A SPATIAL DESIGN

Istanbul Technical University
Interior Architecture Fundamental Studio

From Storage to Ritual: Awakening the Passive Void

-Divle Obruk Peyniri. (n.d.). Peynirler. Retrieved from https://www.divleobrukpeyniri.com.tr/kategori/peynir

-Pencil sketch of Divle Obruk cheese [AI-generated image]. Created with Google Gemini.

OBRUK

ZEYNEP INCI UÇAN

Traveling, scuba diving, surfing, and experiencing different environments play an important role in shaping my design perspective.

I am deeply passionate about diving and enjoy exploring different cities and cultures with friends, believing that shared experiences enrich creative thinking.

I approach design without fear of experimentation, constantly seeking new methods and perspectives while allowing these dynamic, outdoor experiences to inform the way I think about space and design.

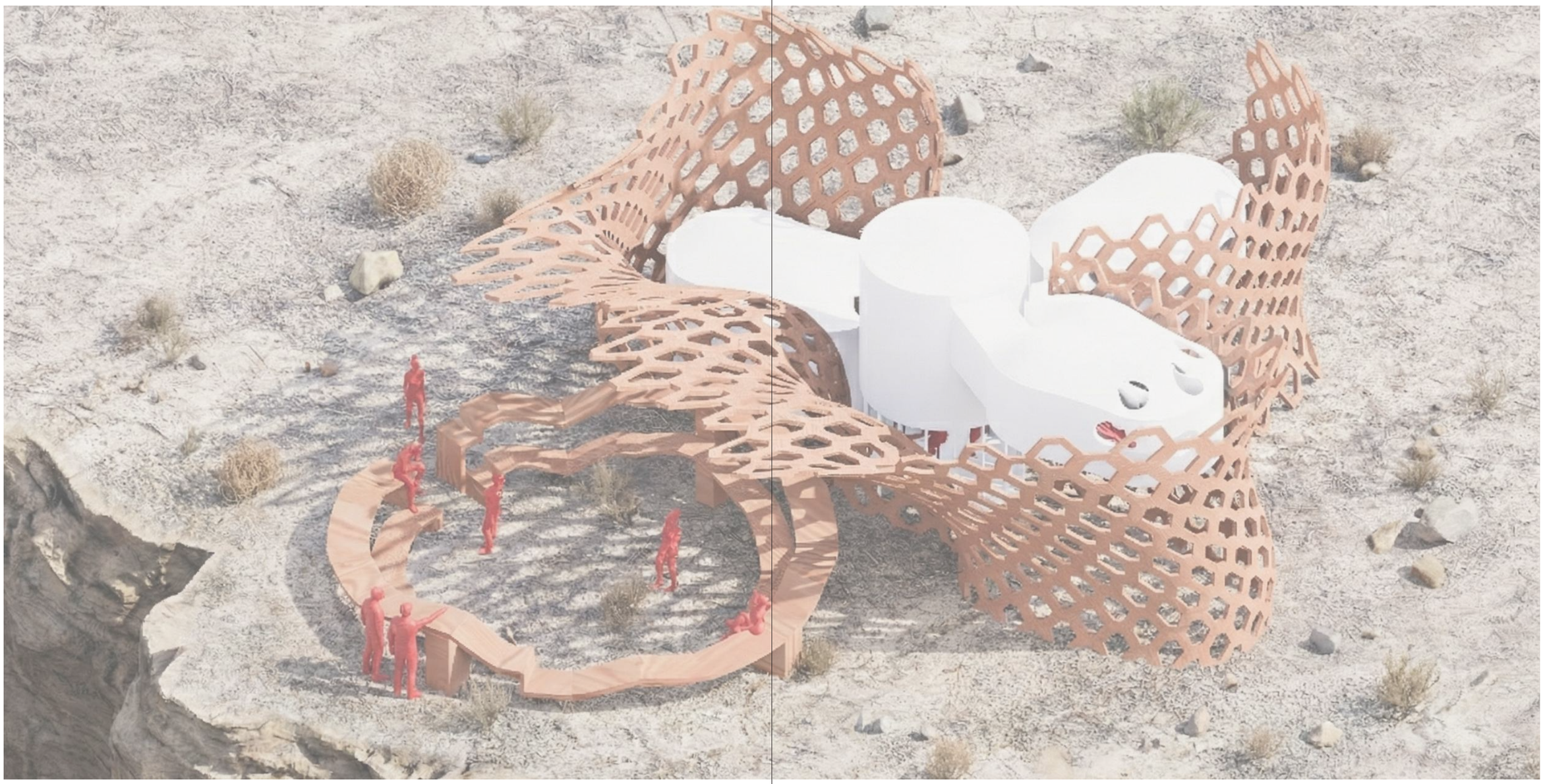
ZEYNEP KIRICI

During my undergraduate education in Architecture, despite frequently hearing the question “Why do you even need this?”, I chose to pursue a double major in Interior Architecture simply because I enjoy it.

Throughout this journey, I could not stay still; I joined the executive board of the ITU Architecture Club and later took on the role of club president.

Driven by my interest in the relationship between people and space, I enjoy working with light and scale, as well as exploring and producing sustainable, future-oriented design approaches. Having an agenda full enough to leave little room for free time is a strong source of motivation for me.

rural-genesis



OBRUK

project description

"**Rural Genesis**" transforms the **Divle Obruk** from a static geological vessel into a metabolic production reactor through a symbiotic vertical intervention. Extracting its base module geometry directly from the **organic footprint** of the **Divle cheese** itself, the design establishes a central structural spine that penetrates the sinkhole's 35-meter depth. This vertical nucleus organizes the chaotic natural void into a cohesive system, linking the deep production workshop at **-35.00m**—where the specific **microclimate of 4-6°C and 90% humidity** acts as a natural refrigerator—to the upper habitation layers. The architecture acts as a permeable extension of the sinkhole, utilizing a **"Hygroskin"** shell to filter light and regulate air, ensuring the built form respects the cave's delicate ecosystem.

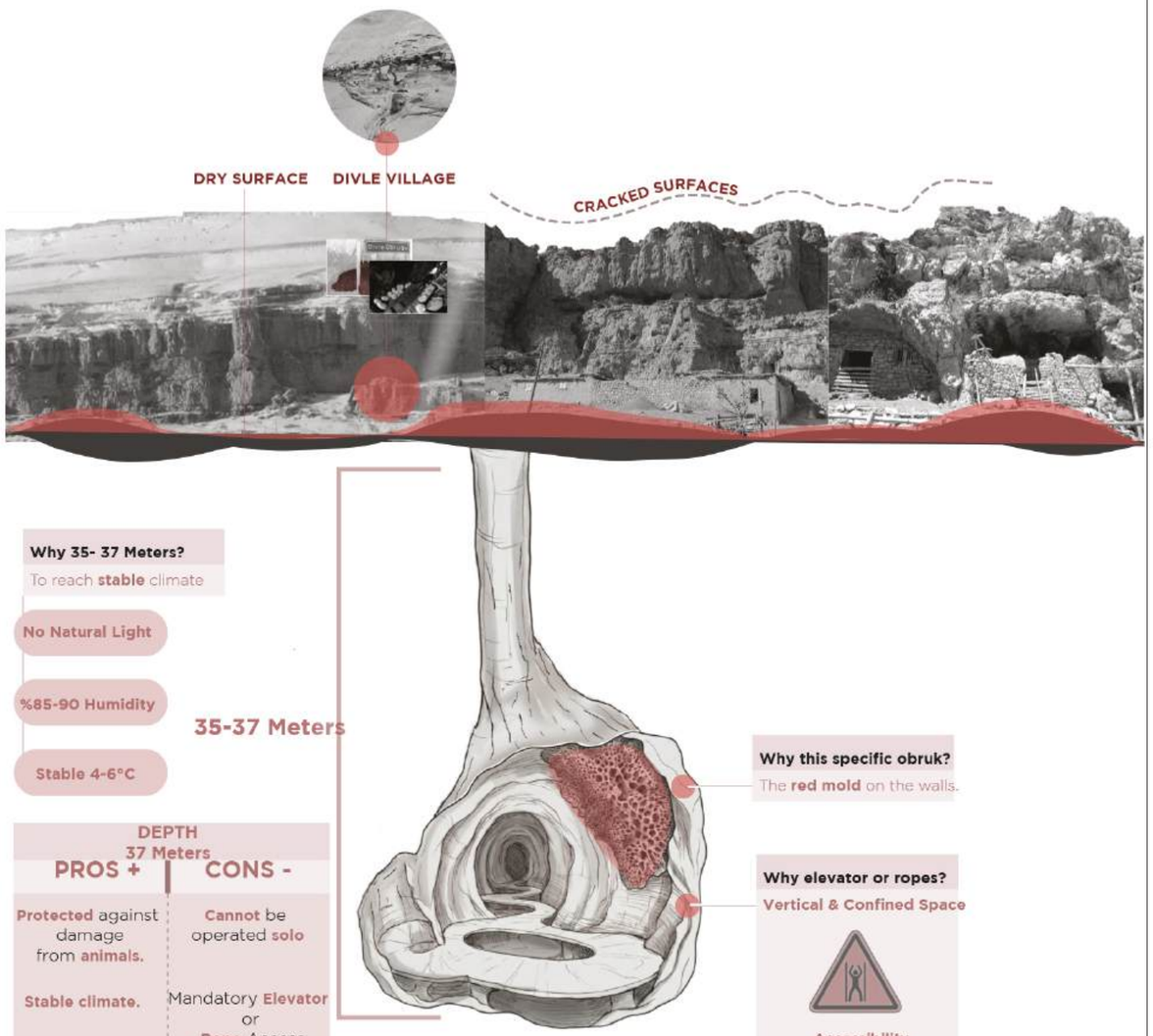
Challenging the **"passive waiting"** of traditional static Cypress shelving—which biologically conflicts with the cheese by promoting unwanted white mold—the proposal introduces a **dynamic "hanging maturation"** system crafted from local Juniper wood. This material shift harnesses Juniper's antifungal properties to foster the cheese's iconic red crust, while the hanging mechanism awakens the unused vertical void. By replacing static shelves with a system that mandates periodic rotation, the design institutes a **"ritual of human touch,"** converting the storage period into an active maintenance task. This approach not only optimizes capacity and airflow but creates a **tactile relationship between the user and the product**, ensuring the preservation of the unique **"terroir"** essential to Divle's identity.

OBRUK

The character of **Divle Obrugu** stems from a **35-meter 'living' 'chimney'** architecture , not a recipe.

This 'reactor', with its stable **4-6°C** and **90%+ humid microclimate**, 'tames' the cheese, stamping it with t he geography 's 'terroir'.

The bond is symbiotic: **Without the Obruk, this cheese would not exist; without the cheese, this Obruk would be merely a geological formation**.



Production & Scale & Storage

-Filling them into sacks in **2-2.5 kg** packages.

-Annual production cannot exceed **40-45 tons**

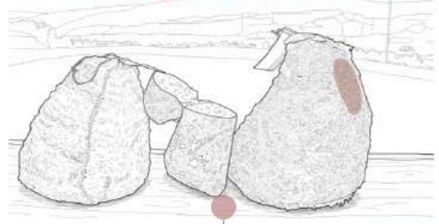
Material

- Wrapping with **goat , cow, and sheep skins**
- Placing them on **wooden** shelves.
- Lowering them into the sinkhole via **rope**

DIVLE OBRUK CHEESE

Cave Storage Period

4-6 Months



Key Flavor Influences

Flavor Source **Season** → APRIL - MAY — Optimal Flavor

Flavor Source **Flora** → Thyme + Wormwood — Distinctive Flavor

Other Contributing Factors

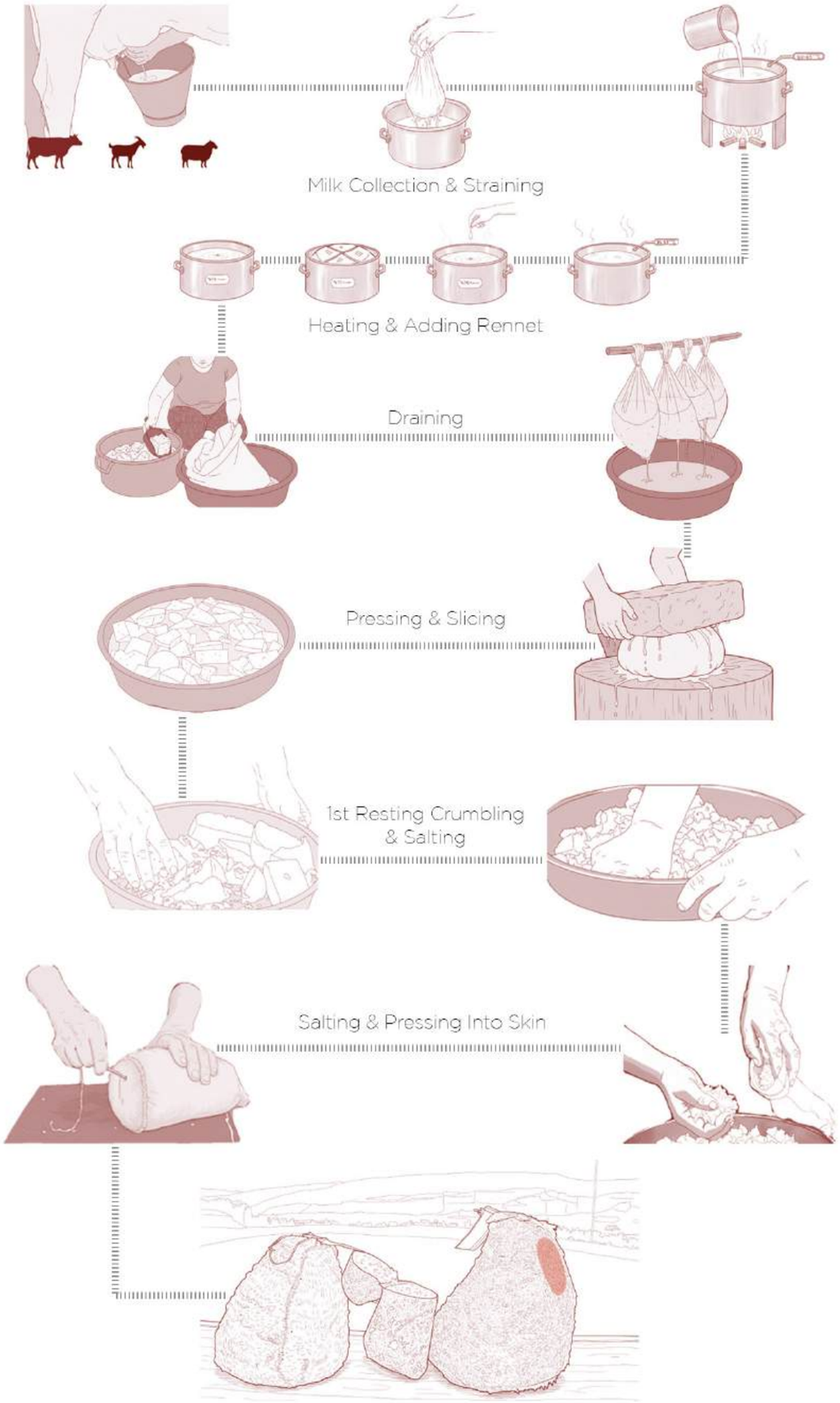
Slope Aspect & Dairy Flavor

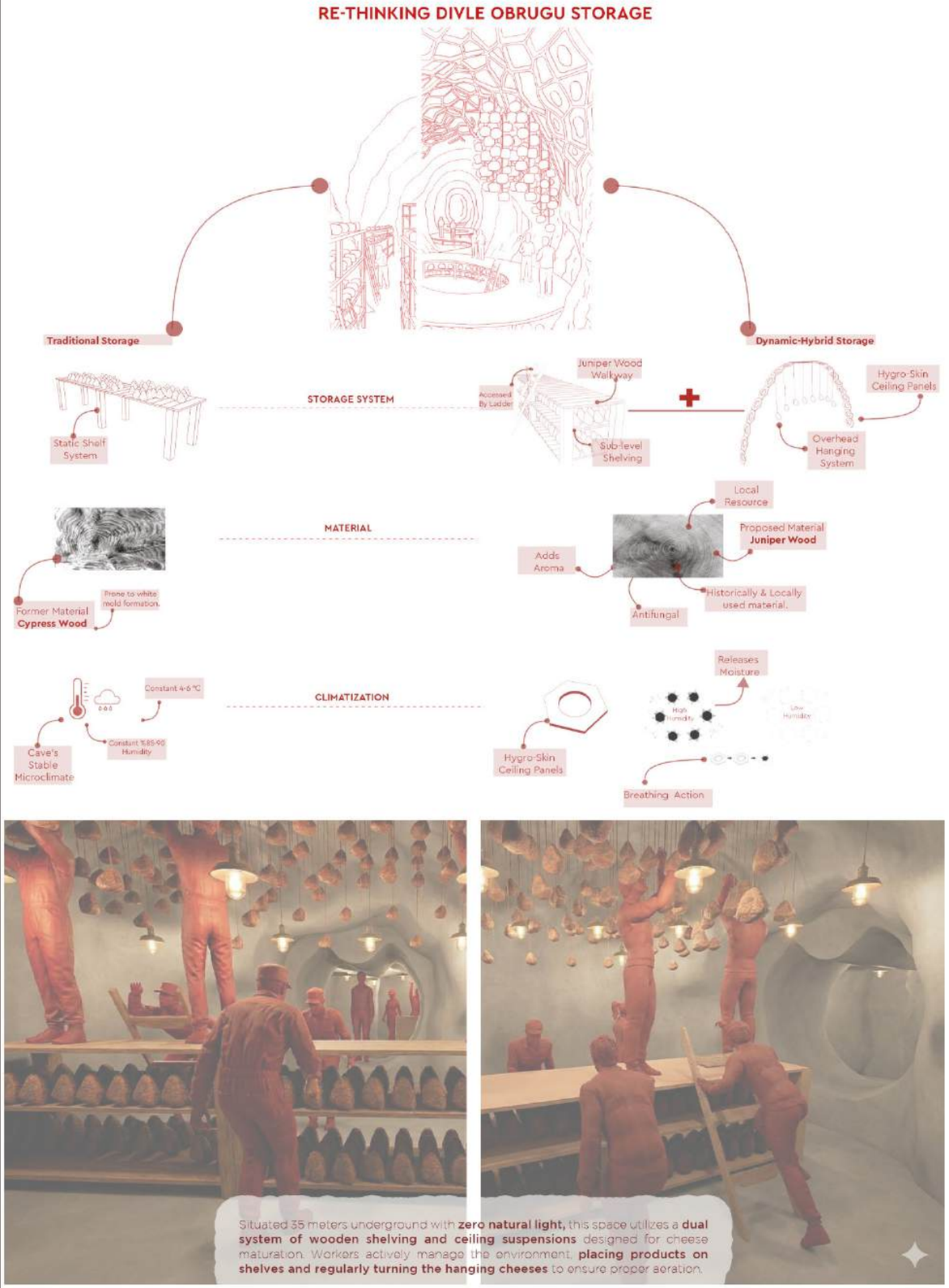
North-facing slope ~ More flavorful **cheese.**

South-facing slope ~More flavorful **yogurt.**

Consumption & Storage

1 Peel skin back.
|
2 Take a portion.
|
3 Reseal by stiching/taping the skin


Milk Collection & Straining
Heating & Adding Rennet
Draining
Pressing & Slicing
1st Resting Crumbling
& Salting
Salting & Pressing Into Skin


RE-THINKING DIVLE OBRUGU STORAGE
Traditional Storage
Dynamic-Hybrid Storage
Static Shelf System
STORAGE SYSTEM
Accessed By Ladder
Juniper Wood Walkway
Sub-level Shelving
Overhead Hanging System
Hygro-Skin Ceiling Panels
MATERIAL
Former Material
Cypress Wood
Prone to white mold formation.
Local Resource
Proposed Material
Juniper Wood
Adds Aroma
Antifungal
Historically & Locally used material.
Cave's Stable Microclimate
Constant 4-6 °C
Constant %85-90 Humidity
CLIMATIZATION
Hygro-Skin Ceiling Panels
Releases Moisture
High Humidity
Low Humidity
Breathing Action
Situated 35 meters underground with zero natural light, this space utilizes a dual system of wooden shelving and ceiling suspensions designed for cheese maturation. Workers actively manage the environment, placing products on shelves and regularly turning the hanging cheeses to ensure proper aeration.

EXPERIENTIAL SEQUENCE

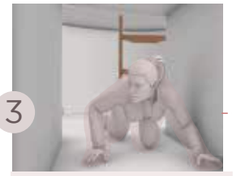
1

Arrival at **Karaman-Divle** Village

2

First Sight of the Design

3



Crawling to **Luggage Storage Module**

Dropping off Luggage

4

Climbing the **Ladder**

5

Crawling to **Dining Module**

6

Entering **Dining Module**

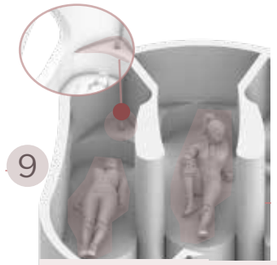
7

Crawling to **Sleeping Module**

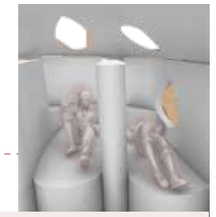
8

Climbing to **Sleeping Module**

9



Placing **Valuables** in **Niches**

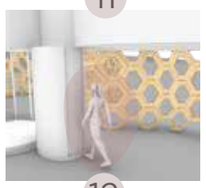


Sleeping/Resting

10

Descending the Ladder

11



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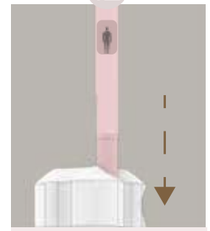
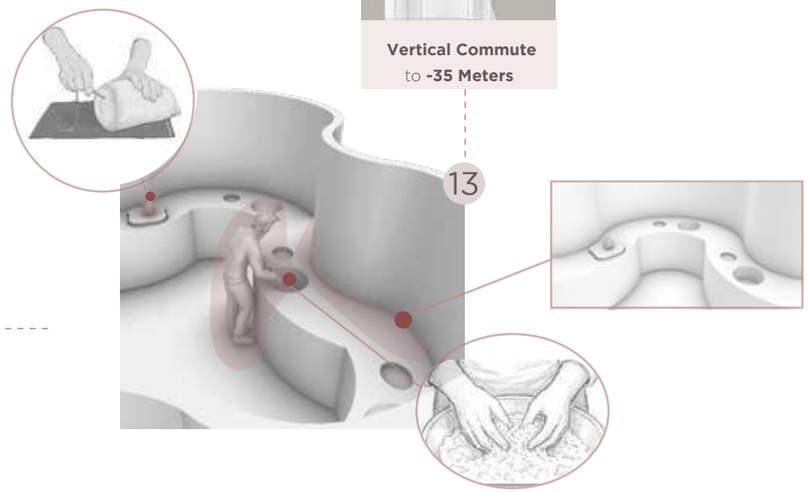


Vertical Commute to **-35 Meters**

13



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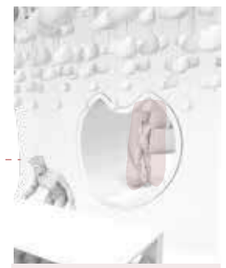


Entering **Obruk**

15

Ladder Descent To **Sub- Level Shelves**

16

Circulation on **Elevated Walkway**

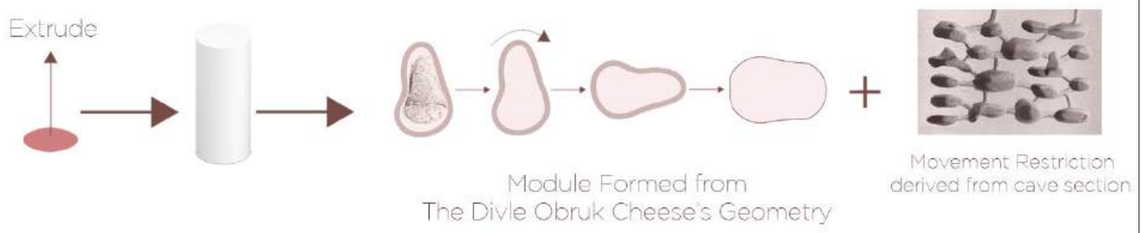
17

Periodic Rotation Ritual

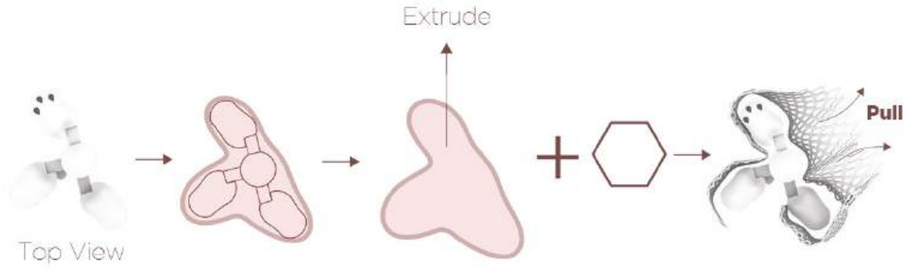
18

Shelf Maturation Check

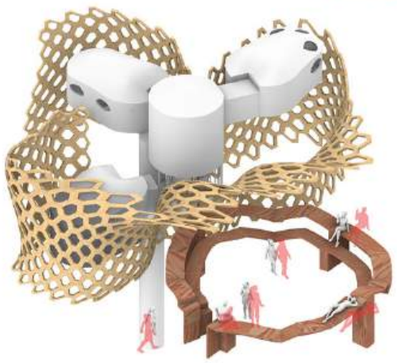
Form Development Diagram

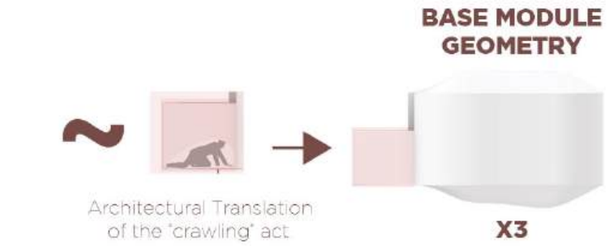


OBRUK epitomizes a symbiotic vertical intervention that redefines the Divle sinkhole not merely as a geological void, but as a living production reactor. Deriving its base module geometry directly from the organic form of the Divle cheese itself, the design establishes a central structural spine that penetrates the sinkhole's depth. This vertical nucleus functions as the heart of the "Rural Genesis," organizing the circulation and distinct atmospheric layers—from the deep workshop module at -35.00m to the upper habitation units—into a cohesive system where the agricultural product, the architectural form, and the experiential journey of the user converge.

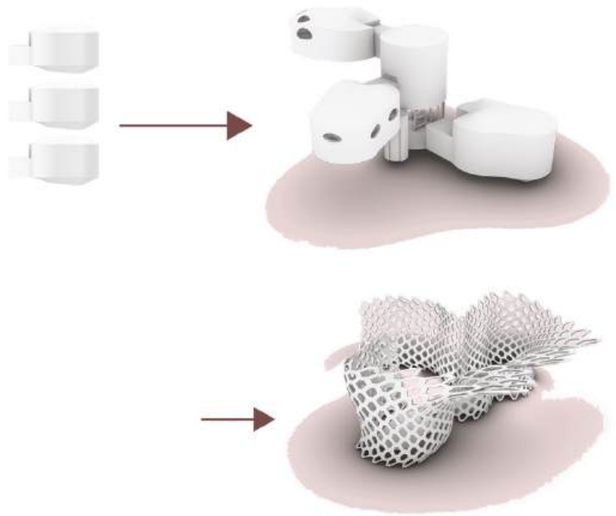


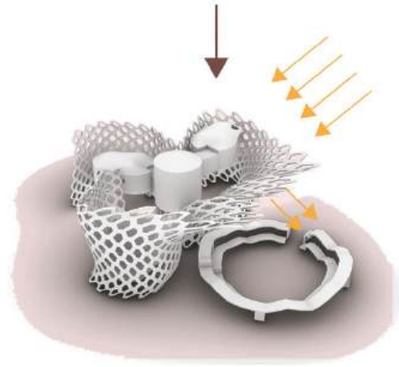
FINAL RESULT





The Crawl Way

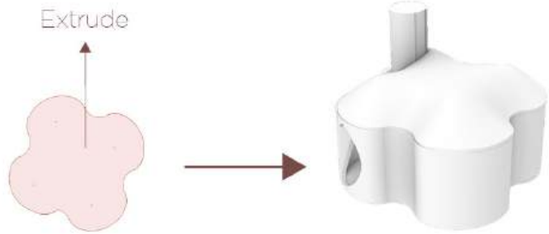




CONTINUOUS SKIN EXTENSION

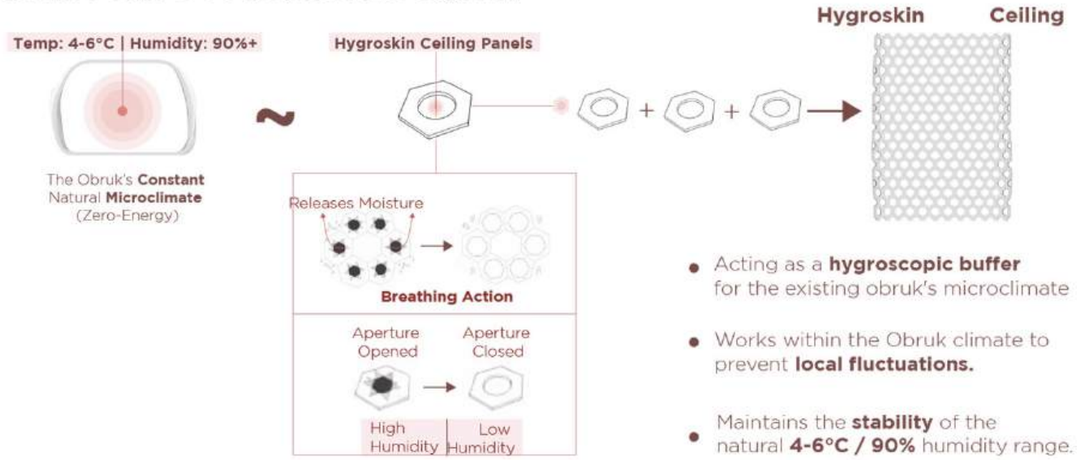
Extension of the outer shell creates a semi-open shelter with natural light filtration.

The design process begins by extracting the base geometry directly from the organic form of the Divle Cheese. These generated modules are clustered around a vertical circulation spine (The Central Way), establishing the project's structural core. Finally, a continuous skin extension made of local Juniper wood wraps the volumes. This permeable shell not only unifies the form but also creates a micro-climate by filtering natural light and facilitating ventilation for the semi-open spaces.

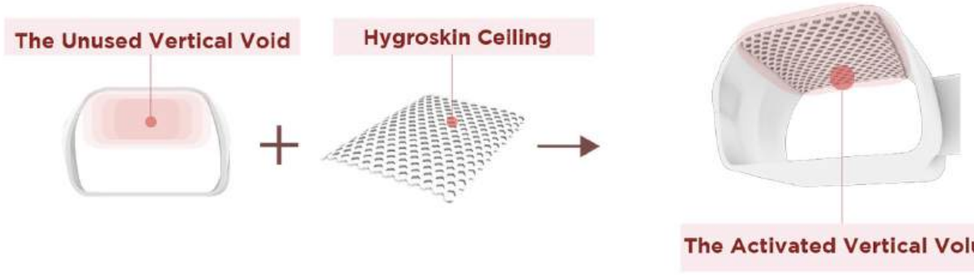


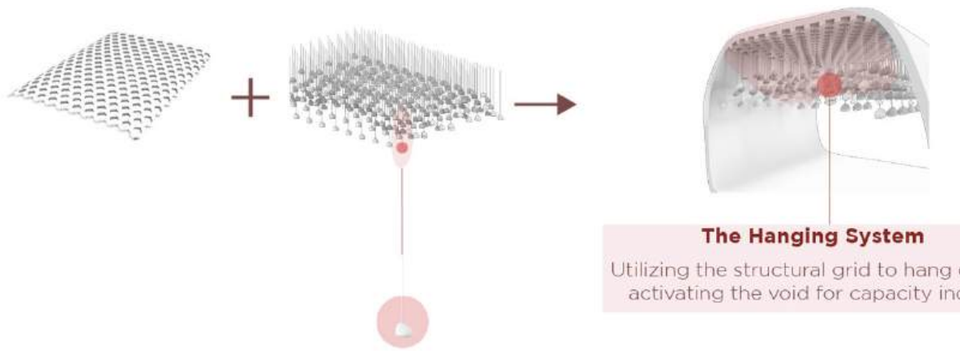
WORKSHOP MODULE

Obruk Form Development Diagram



- Acting as a **hygroscopic buffer** for the existing obruk's microclimate
- Works within the Obruk climate to prevent **local fluctuations.**
- Maintains the **stability** of the natural **4-6°C / 90%** humidity range.

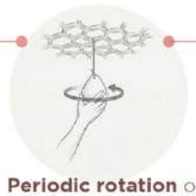




Utilizing the structural grid to hang cheeses, activating the void for capacity increase.

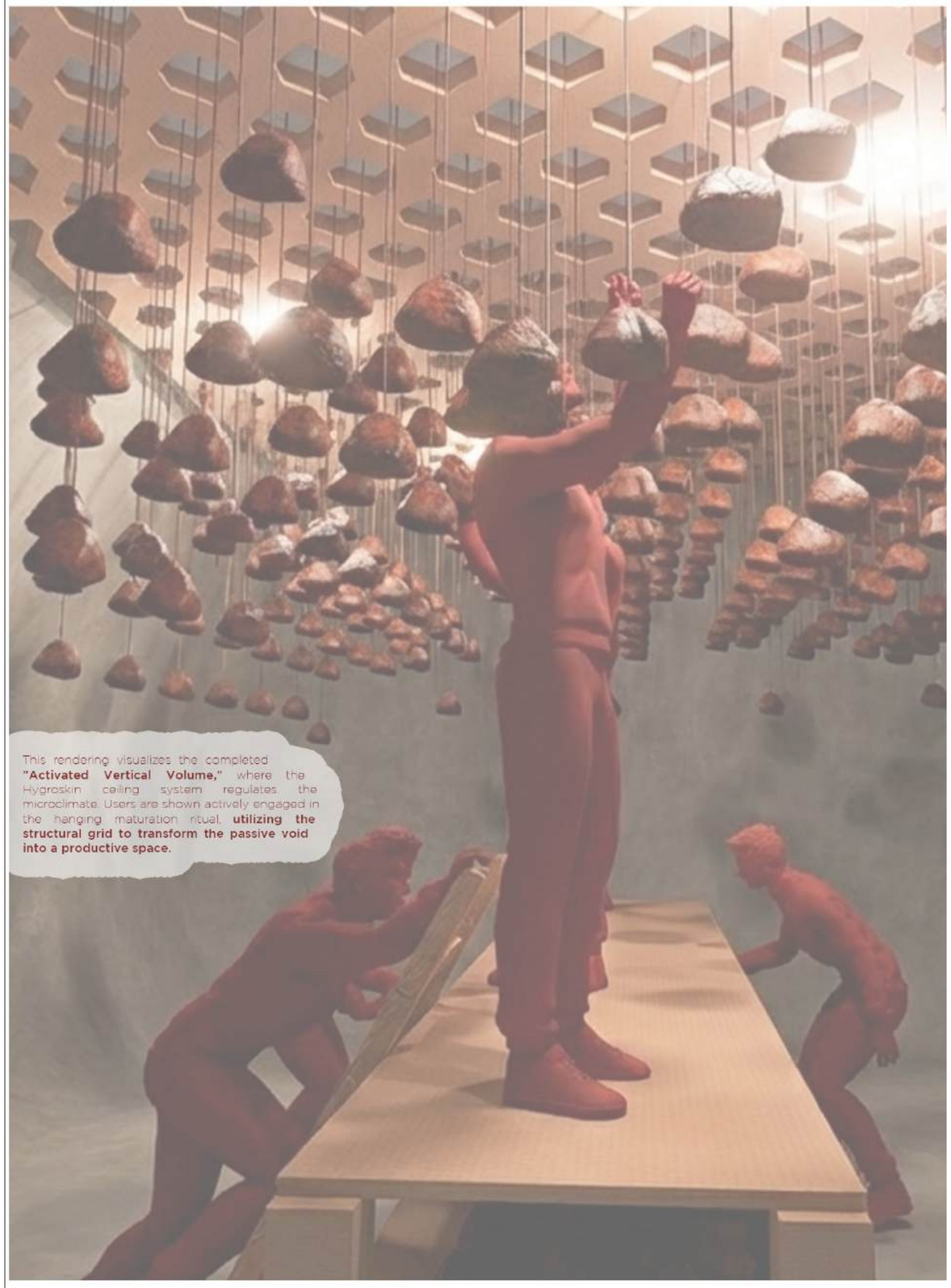
FUNCTIONAL EVOLUTION: THE HANGING MATURATION RITUAL

- **Activates** the void for significant **capacity increase** beyond traditional shelving.
- The hanging system **directs users** toward physical access and periodic rotation, transforming the **passive waiting period into an active maintenance ritual** that defines a **tactile relationship** between the user and the cheese.



Periodic rotation of hanged cheeses by the user.

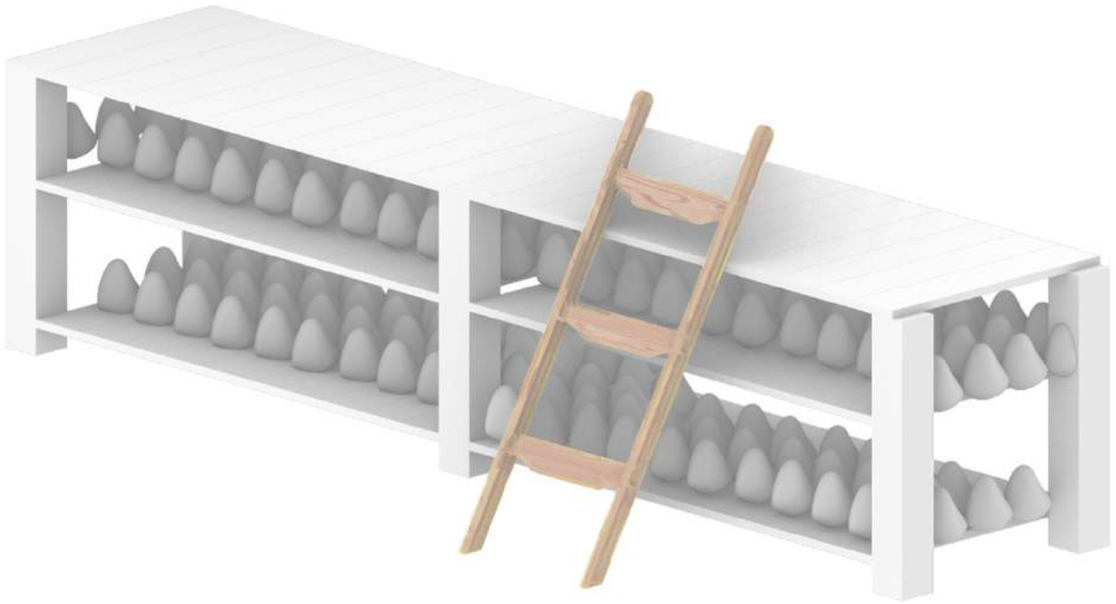
INTRODUCTION OF A SECONDARY TASK



This rendering visualizes the completed **"Activated Vertical Volume,"** where the Hygroskin ceiling system regulates the microclimate. Users are shown actively engaged in the hanging maturation ritual, **utilizing the structural grid to transform the passive void into a productive space.**

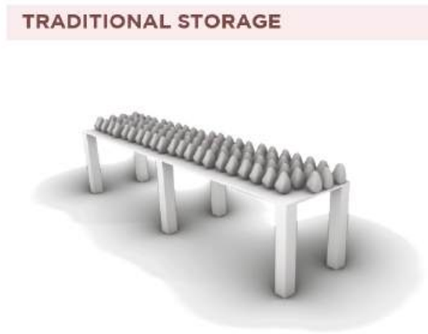
Integrated Juniper Hybrid Path

A hybrid spatial structure merging an elevated sanitary walkway with an integrated maturation system.



Crafted from local Juniper wood, this hybrid module activates the vertical void to optimize airflow and capacity while fostering the cheese's iconic red crust.

Obruk Void Optimization Logic



TRADITIONAL STORAGE | **HYBRID ACTIVE MODULE**

MATERIAL

Cypress Wood

To increase capacity in the last 5-6 years, **Cypress wood** shelves were introduced.

Juniper Wood

Historically preferred for its compatibility with the cave's flora.

Biological Conflict

Cypress promotes unwanted **white mold formation**, inhibiting the development of the **cheese's iconic red crust.**

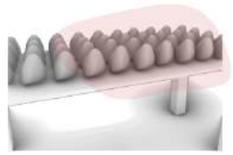
Terroir Preservation

Juniper's natural **antifungal** properties prevent white mold, fostering the correct **reddening** essential for the **cheese's identity.**

CAPACITY

Quality Drop

Recent capacity increases caused **overcrowding,** negatively impacting **airflow** and resulting in **uneven reddening** of the skins.



Vertical Activation

Utilizing the **"Vertical Void"** with **sub-level shelves.**

Increases capacity without overcrowding, allowing sufficient **airflow** for proper crust development.

CIRCULATION

Obstructed Flow

Workers are forced to **step over** cheeses on the floor, compromising **hygiene and safety.**

Elevated Walkway

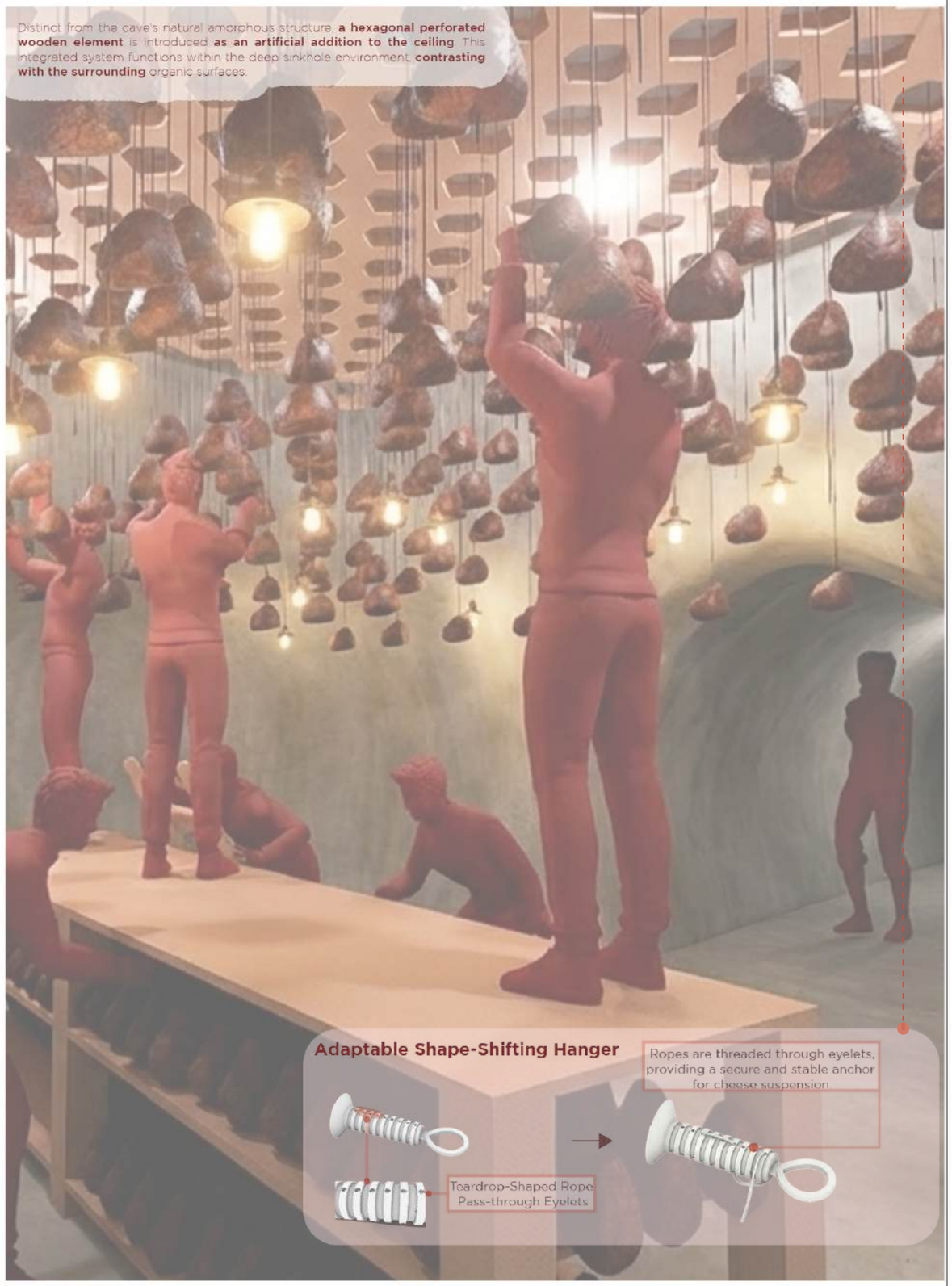
A dedicated **Juniper path** creates a **sanitary** separation between **circulation and storage.**

Access

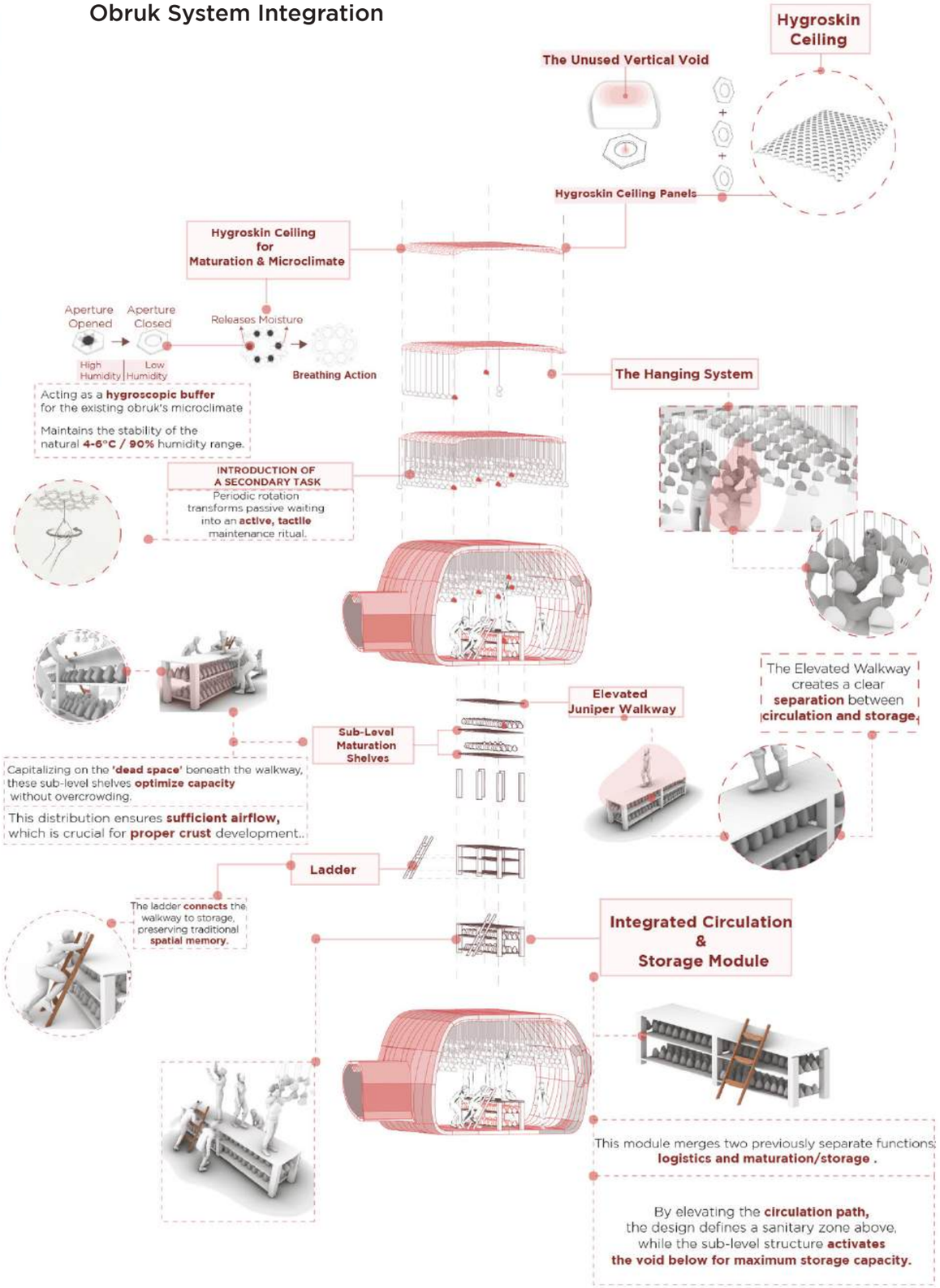
Reliance on standard **ladders** in a **cluttered** environment.

Retained Memory

The **ladder** is preserved as a **spatial reference** to the traditional method but is now **integrated** into a defined structural system.



Obruk System Integration



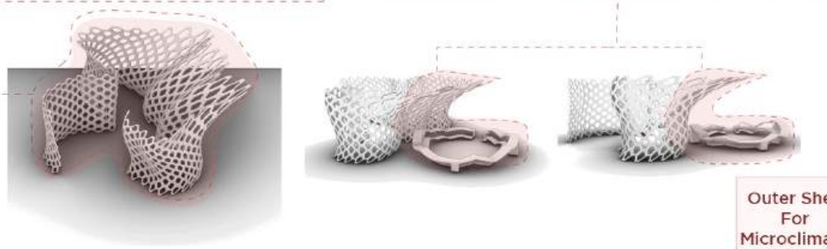
Exploded Perspective

MICROCLIMATE SHELL

Composed of **hexagonal moisture-regulating plywood panels (Hydroskin)**, this **amorphous** outer skin acts as a climatic buffer, **stabilizing humidity and temperature** within the living units.

MICROCLIMATE SHELL

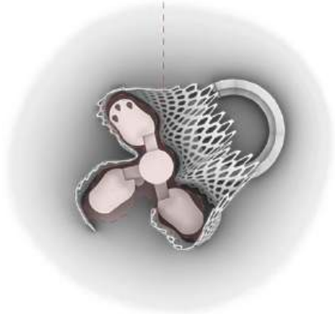
Mirroring the **obruk's unique stable microclimate**, the envelope protects the interior while morphing into a **shading** canopy over the socialization unit.

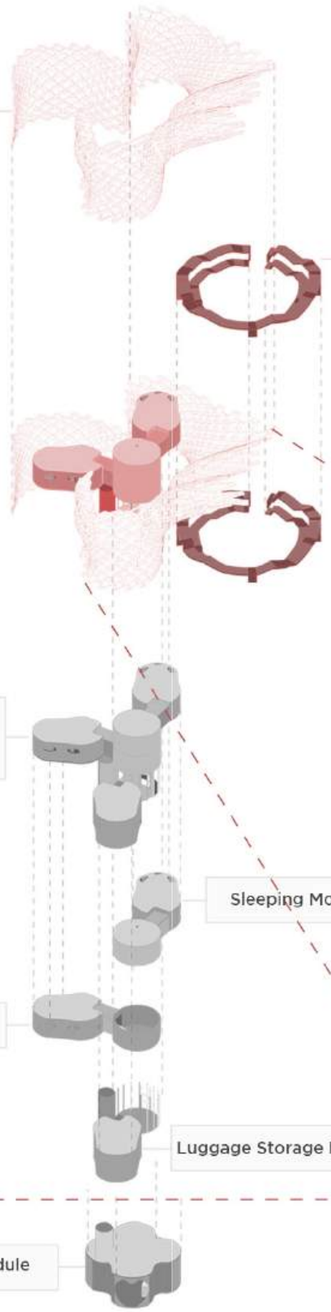


Outer Shell For Microclimate

MICROCLIMATE SHELL

The **twisted** geometry traces the **living modules' footprint**, twisting upwards to match their **changing angles**.

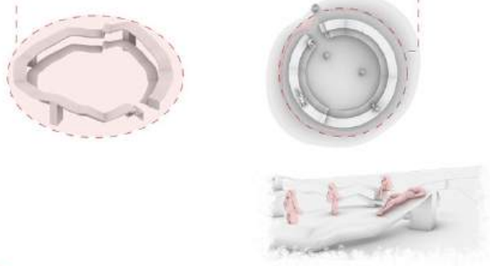




SOCIALIZING MODULE

SOCIALIZING MODULE

Mimicking the **intertwining and irregular pathways of the sinkhole (obruk)**, this module is designed as a **fluid, amorphous landscape**. Rather than dictating a single posture (like sitting), the continuous form encourages **unstructured interaction** -allowing users to lie down, lean, or gather spontaneously.



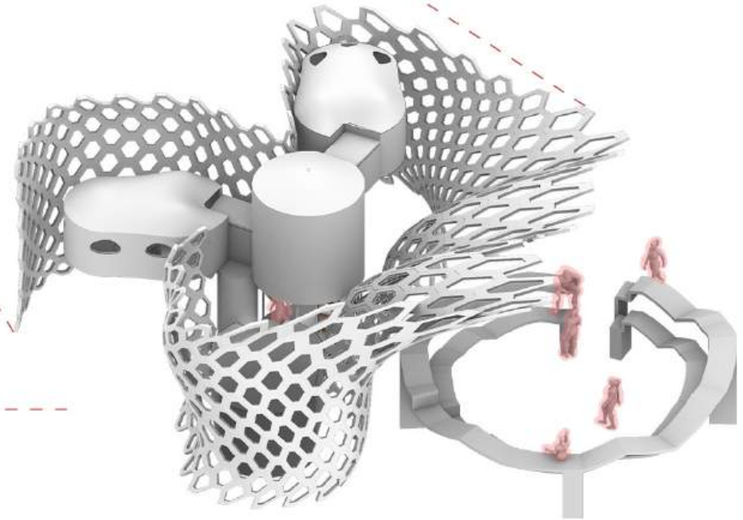
Inner Shell / Living Unit

Sleeping Module

Dining Module

Luggage Storage Module

Workshop Module



Circulation Perspective

THE CRAWL WAY

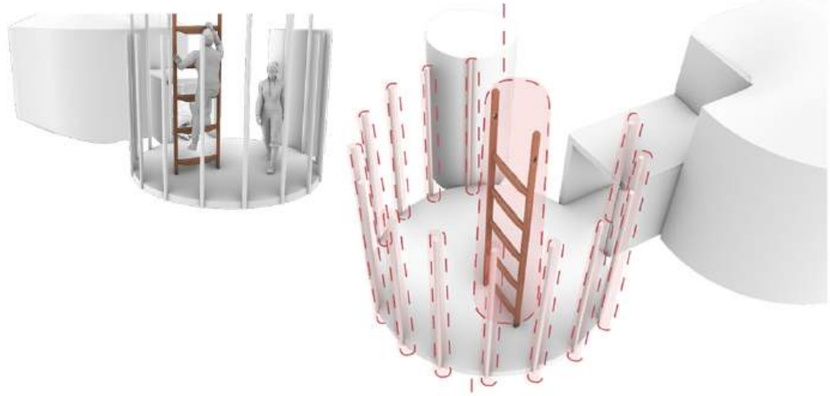
Referencing the **restricted circulation** of the obruk -where workers had to **crawl or jump** over cheese sacks- the design mimics the **physical challenge** and **spatial tension** of the original sinkhole context. Accessing the modules requires crawling.

ELEVATOR

Original location retained. Serving as the **main connection** to the **Obruk** and **workshop** levels. The elevator massing is transformed from **angular to cylindrical** to integrate seamlessly with the **organic design language**.

LADDER

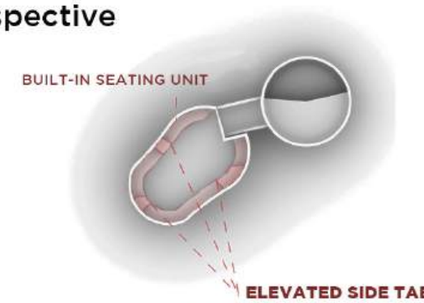
Referencing the traditional storage system within the obruk —where wooden ladders were used to reach upper shelves— this design utilizes ladders for vertical circulation between the living modules, mimicking the original obruk/storage mobility pattern.



STEEL ROD STRUCTURES

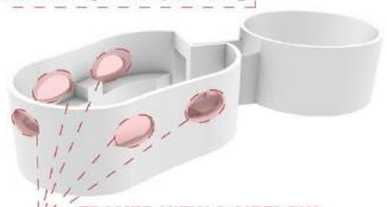
The plywood mass is supported by a system of vertical steel rods. The rhythmic spacing of these structural elements creates a semi-open design language, providing both stability and visual permeability.

Exploded Perspective



ELEVATED SIDE TABLE

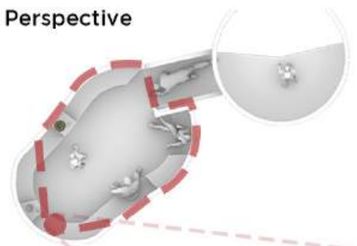
Integrated dining surface designed for space **efficiency** in compact living

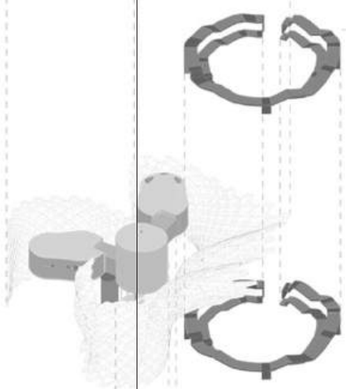


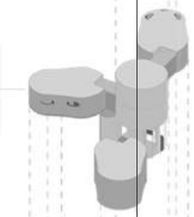
FRAMED VIEW & AIRFLOW

Natural Ventilation & Framed Views

Human Perspective







Amorphous/Organic Roof Shape Blending with **Subterranean** Context

Elevator Access to **Workshop (-35m)**

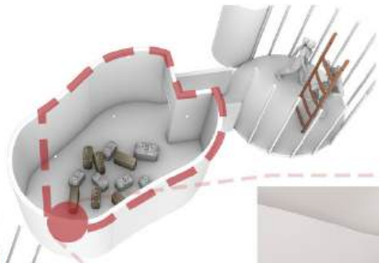
Human Perspective

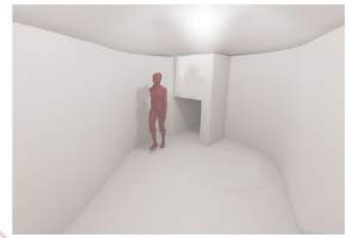
Vertical partitions provide visual **privacy** between adjacent sleeping units.

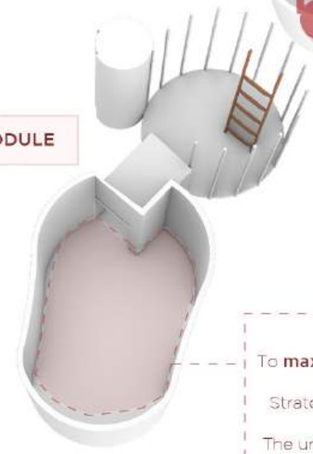
INTEGRATED BEDSIDE LEDGE

Extruded volume serving as a **bedside surface** for **night-time essentials.**

SLEEPING MODULE

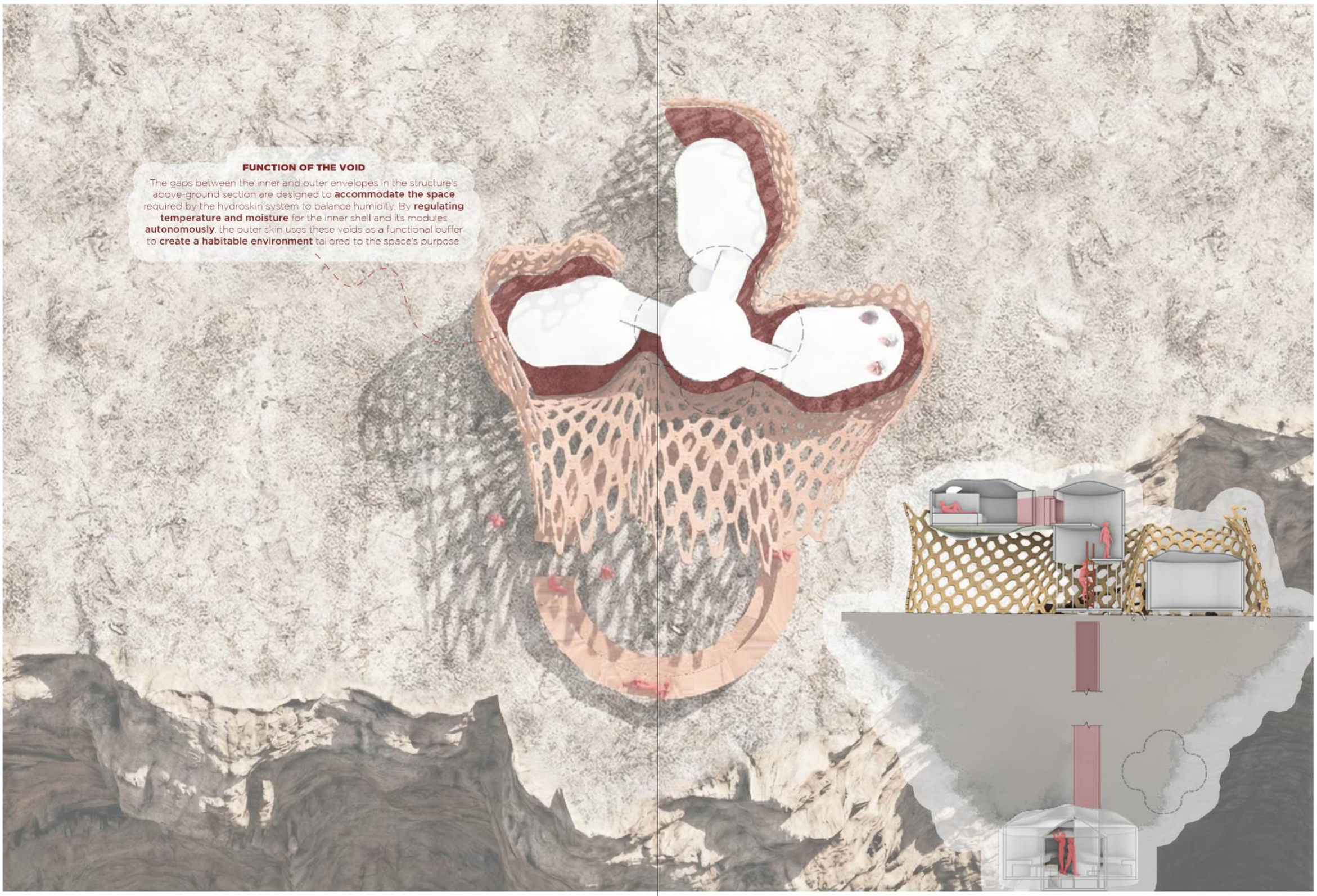




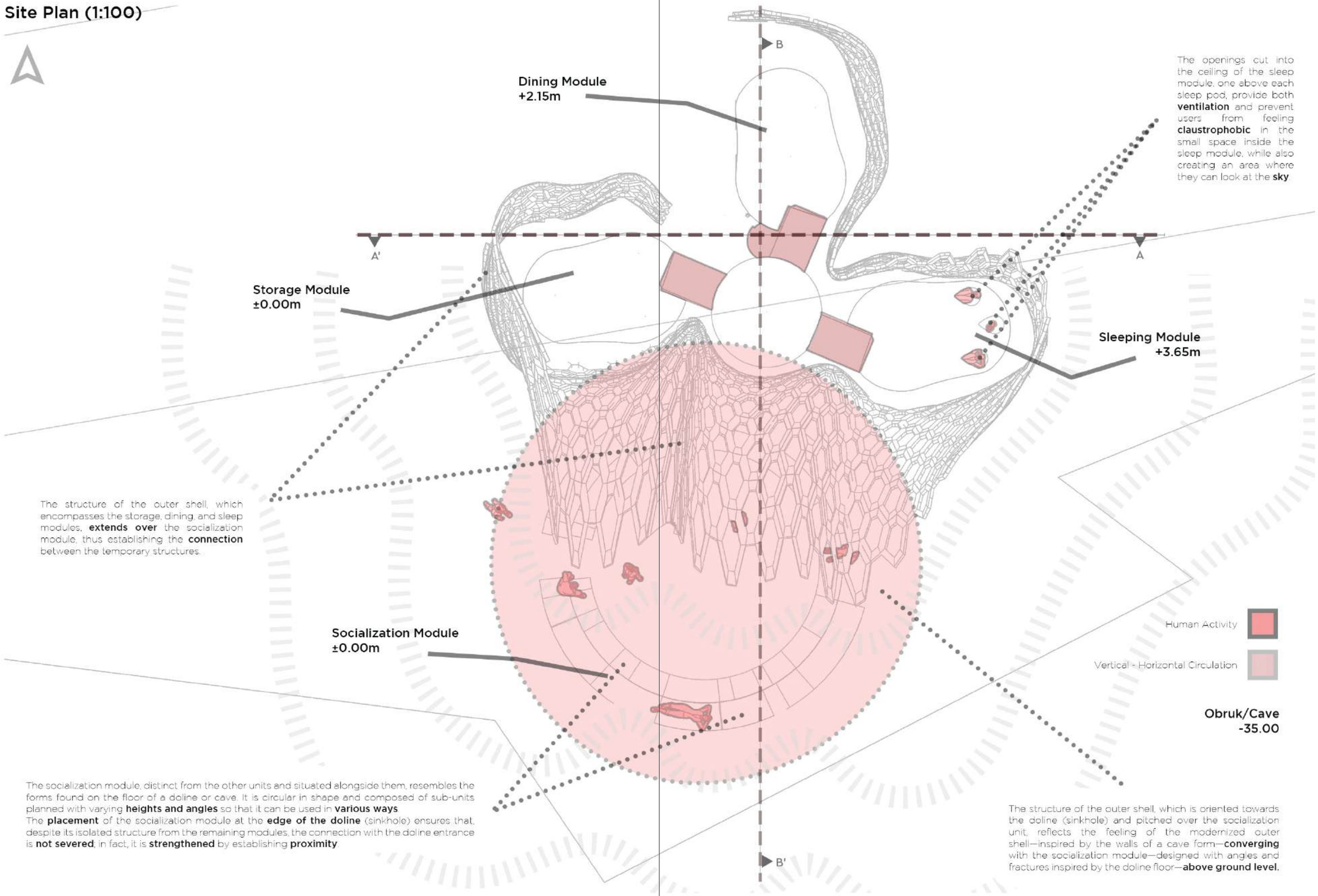


LUGGAGE STORAGE MODULE

To **maximize usable** space within the private modules, this unit serves as a secure **drop-off point for luggage** upon arrival.
Strategically positioned **on the ground floor**, it **eliminates** the need to carry luggage upstairs.
The unit is designed as a **blind volume** to **ensure security** and visual **solidity**.


FUNCTION OF THE VOID
The gaps between the inner and outer envelopes in the structure's above-ground section are designed to **accommodate the space** required by the hydroskin system to balance humidity. By **regulating temperature and moisture** for the inner shell and its modules **autonomously**, the outer skin uses these voids as a functional buffer to **create a habitable environment** tailored to the space's purpose.

Site Plan (1:100)

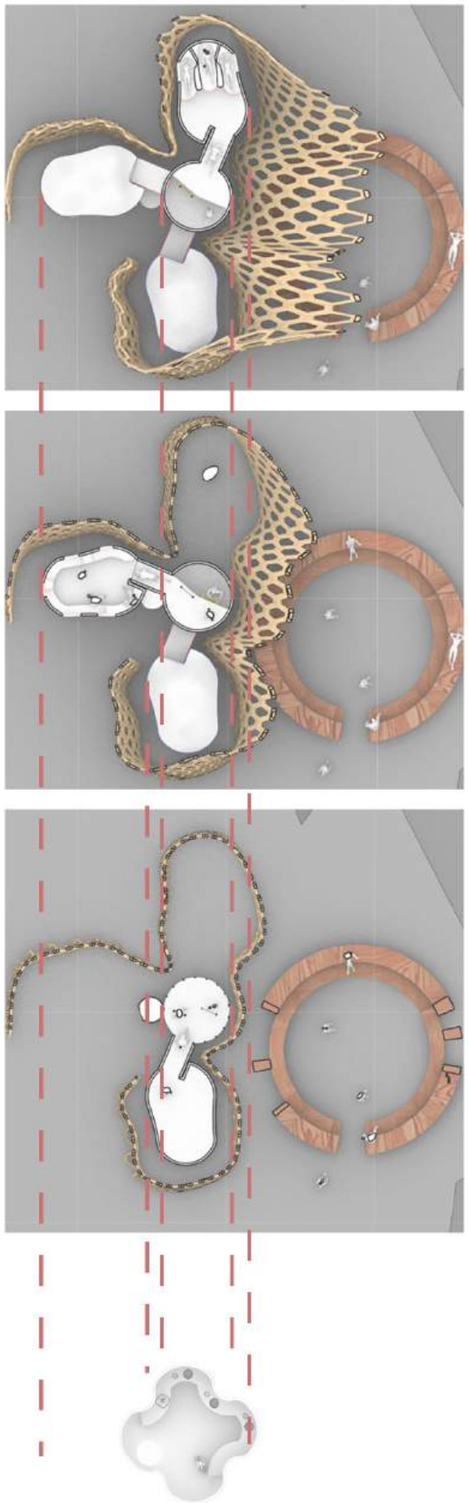


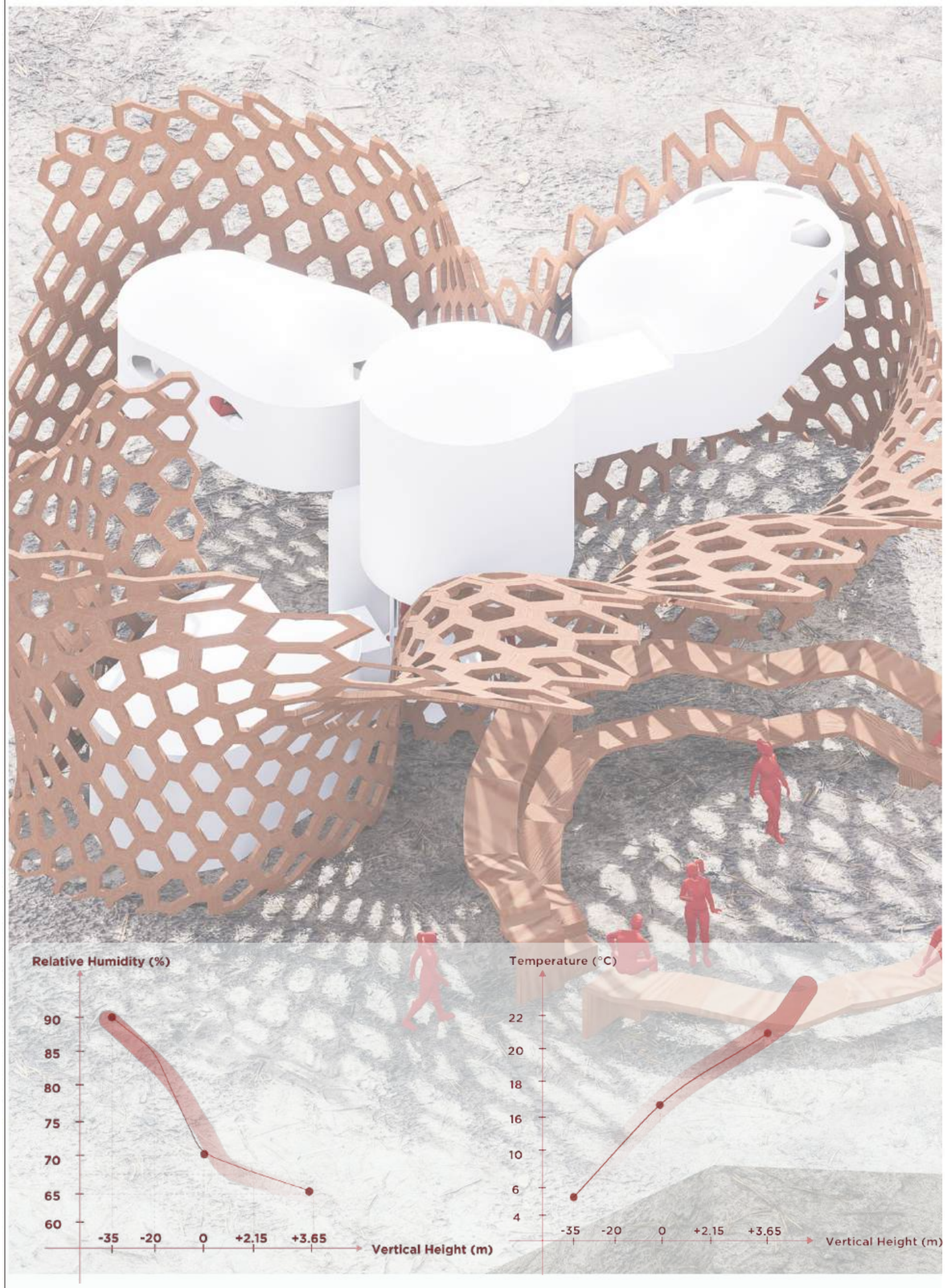
The openings cut into the ceiling of the sleep module, one above each sleep pod, provide both **ventilation** and prevent users from feeling **claustrophobic** in the small space inside the sleep module, while also creating an area where they can look at the **sky**.

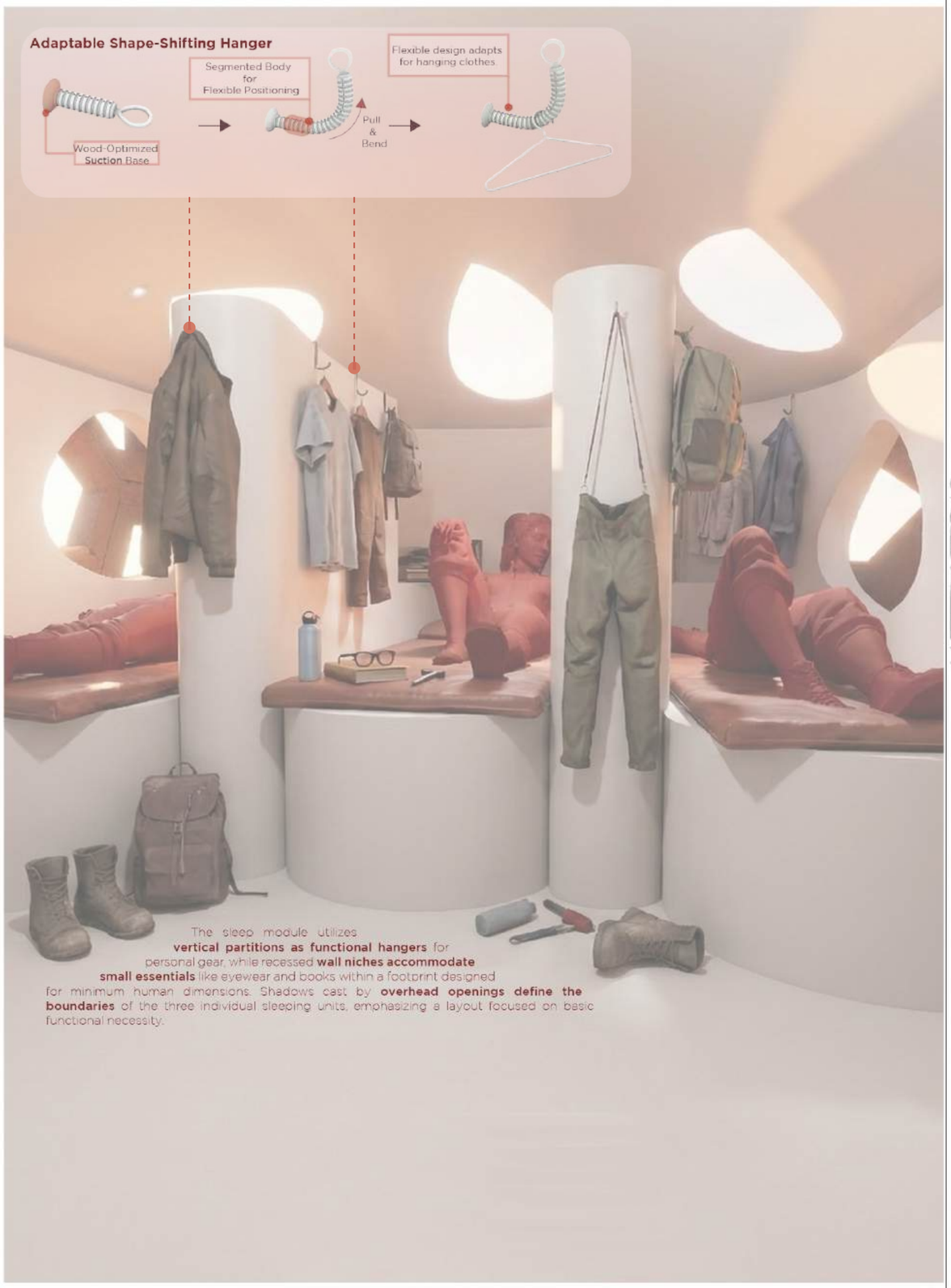
The structure of the outer shell, which encompasses the storage, dining, and sleep modules, **extends over** the socialization module, thus establishing the **connection** between the temporary structures.

The socialization module, distinct from the other units and situated alongside them, resembles the forms found on the floor of a doline or cave. It is circular in shape and composed of sub-units planned with varying **heights and angles** so that it can be used in **various ways**.
The **placement** of the socialization module at the **edge of the doline** (sinkhole) ensures that, despite its isolated structure from the remaining modules, the connection with the doline entrance is **not severed**; in fact, it is **strengthened** by establishing **proximity**.

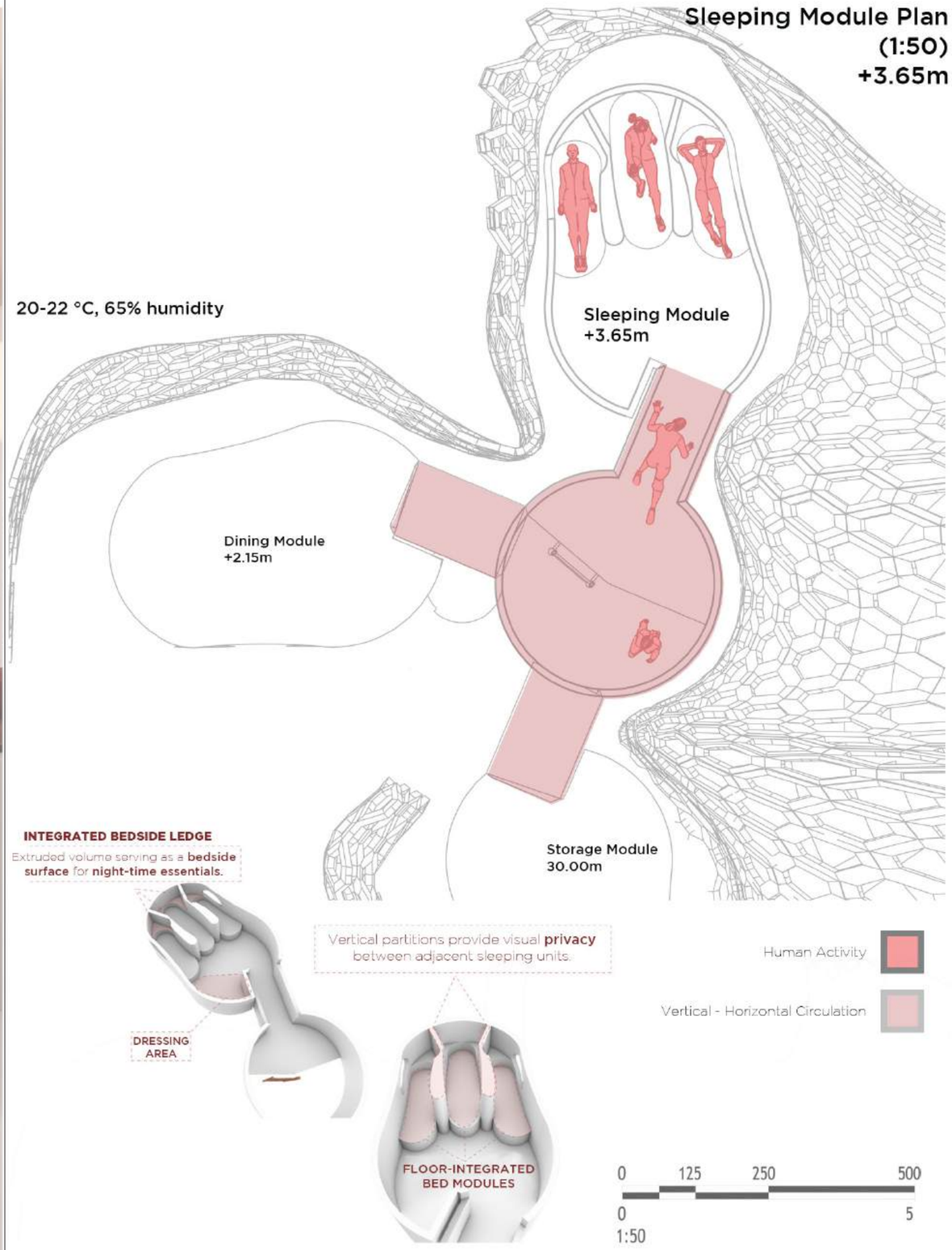
The structure of the outer shell, which is oriented towards the doline (sinkhole) and pitched over the socialization unit, reflects the feeling of the modernized outer shell—inspired by the walls of a cave form—**converging** with the socialization module—designed with angles and fractures inspired by the doline floor—**above ground level.**



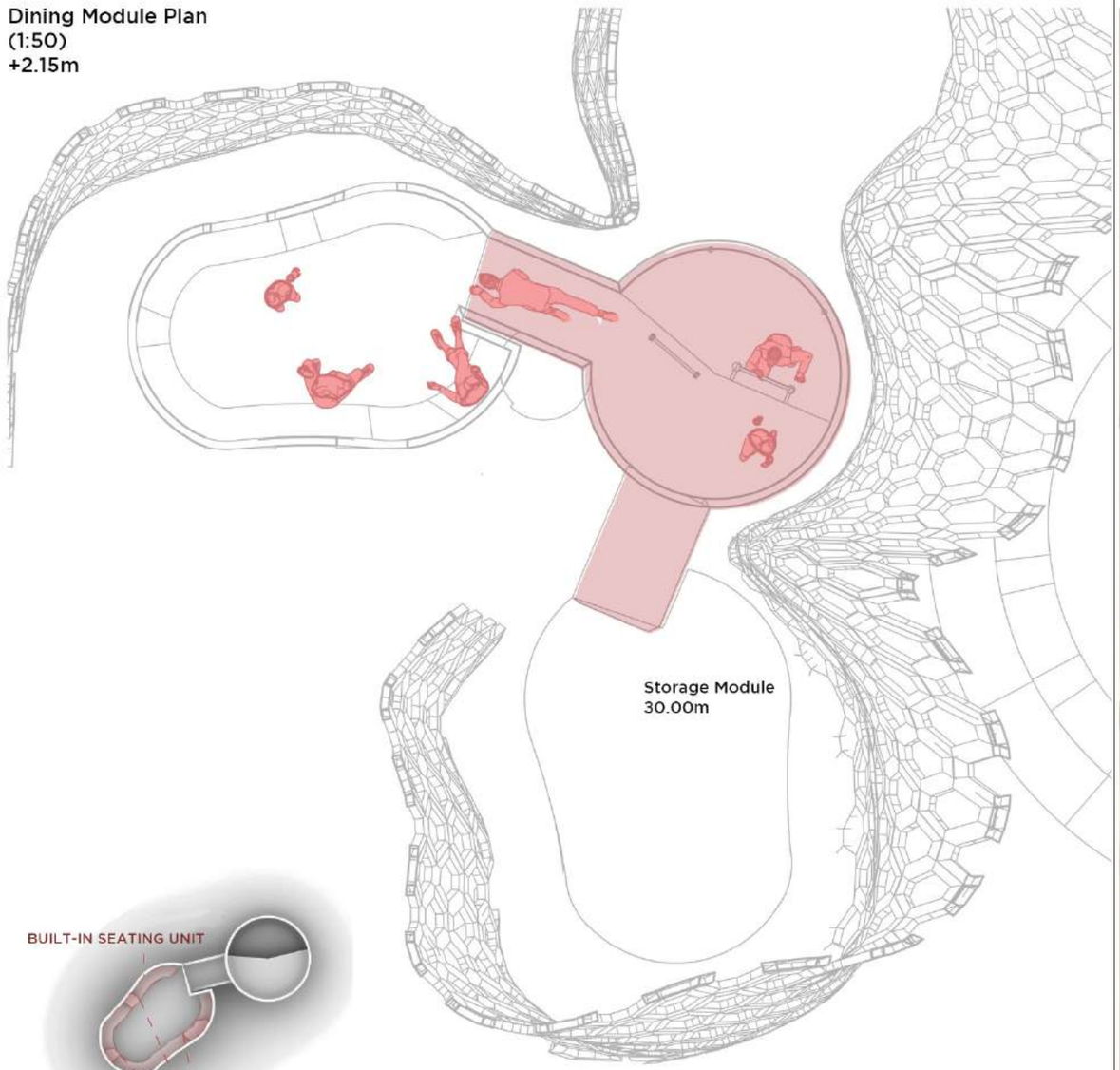

Relative Humidity (%)
90
85
80
75
70
65
60
-35
-20
0
+2.15
+3.65
Vertical Height (m)
Temperature (°C)
22
20
18
16
10
6
4
-35
-20
0
+2.15
+3.65
Vertical Height (m)

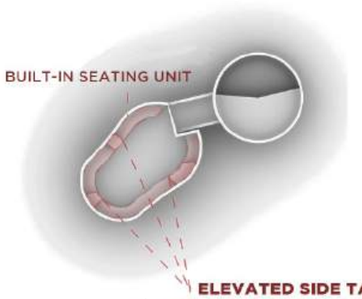


The sleep module utilizes **vertical partitions as functional hangers** for personal gear, while recessed **wall niches accommodate small essentials** like eyewear and books within a footprint designed for minimum human dimensions. Shadows cast by **overhead openings define the boundaries** of the three individual sleeping units, emphasizing a layout focused on basic functional necessity.



Dining Module Plan
(1:50)
+2.15m





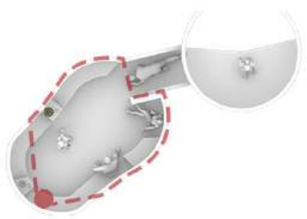
ELEVATED SIDE TABLE
Integrated dining surface designed for space **efficiency** in compact living

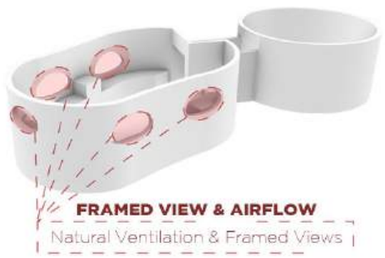
Human Activity

Vertical - Horizontal Circulation

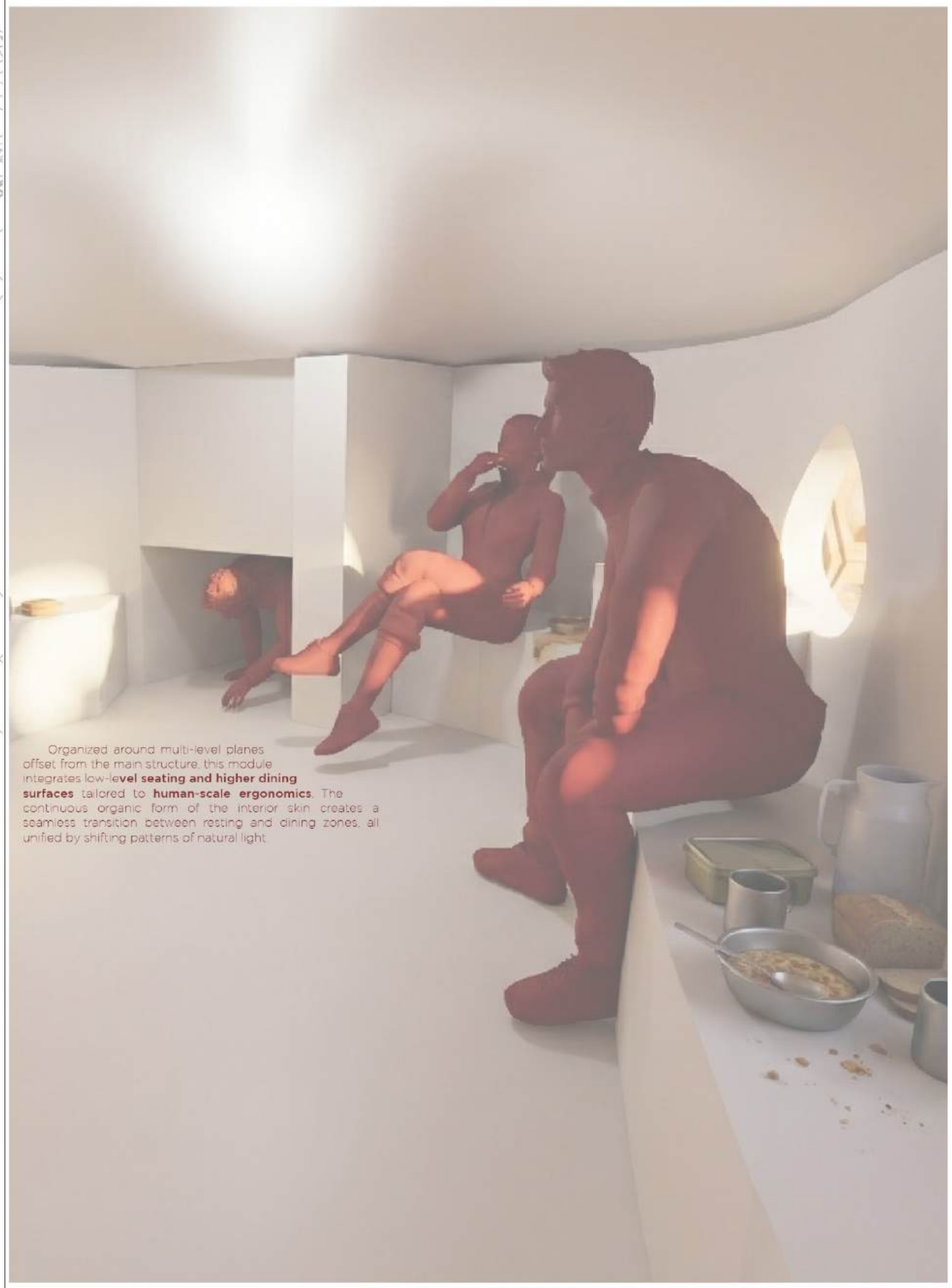
0 125 250 500
0 5
1:50

Human Perspective

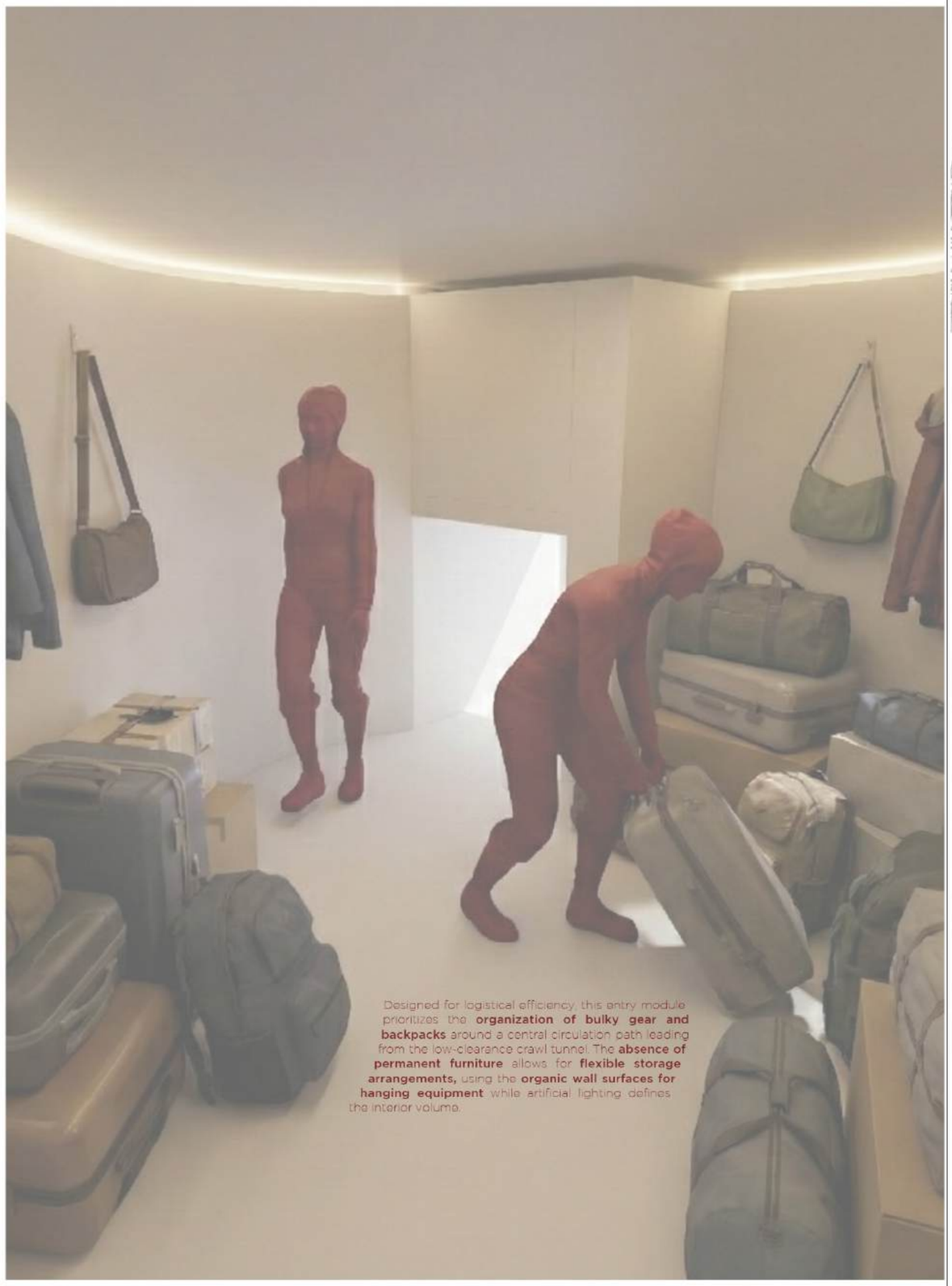




FRAMED VIEW & AIRFLOW
Natural Ventilation & Framed Views

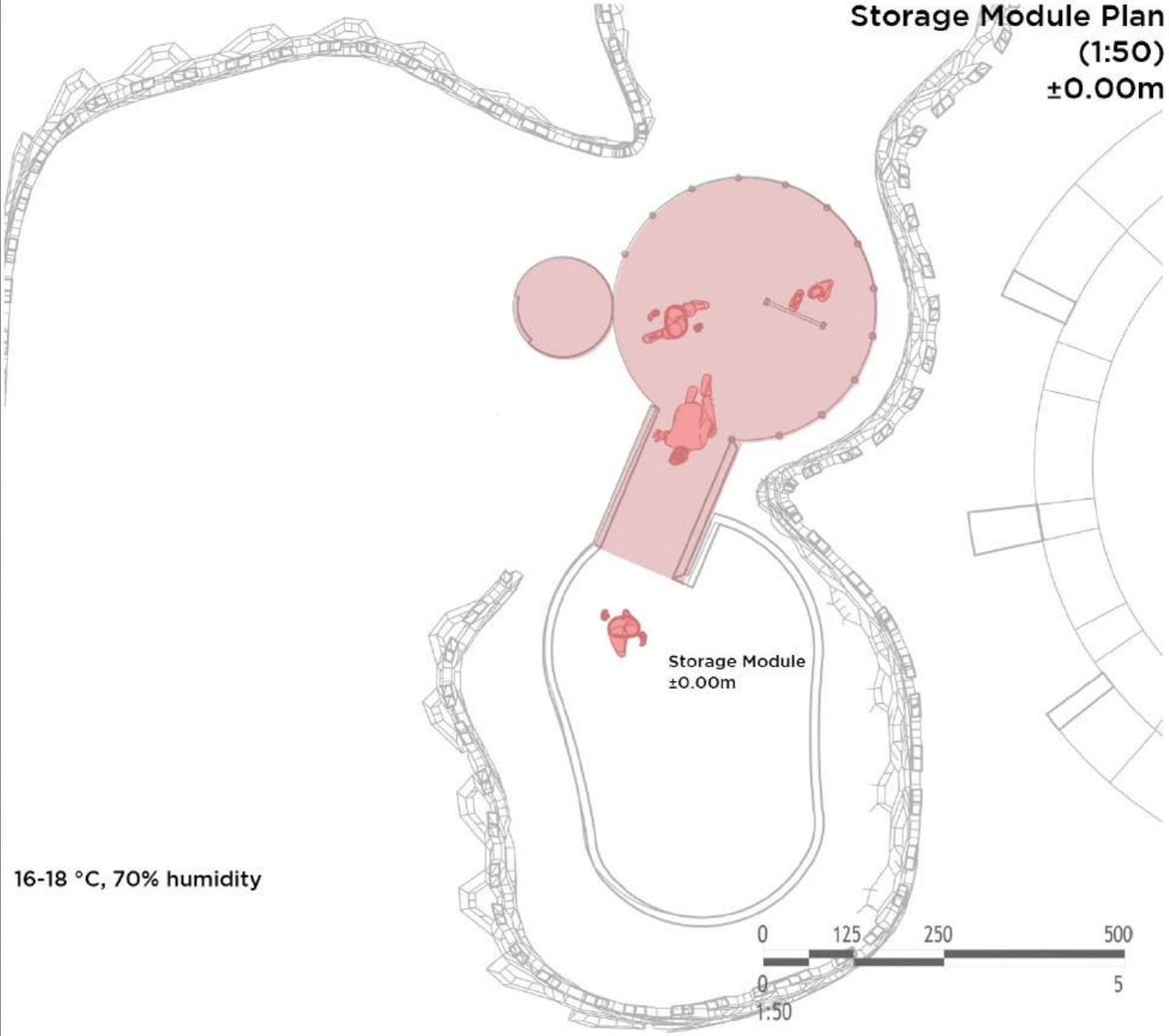


Organized around multi-level planes offset from the main structure, this module integrates low-le**vel seating and higher dining surfaces** tailored to **human-scale ergonomics**. The continuous organic form of the interior skin creates a seamless transition between resting and dining zones, all unified by shifting patterns of natural light

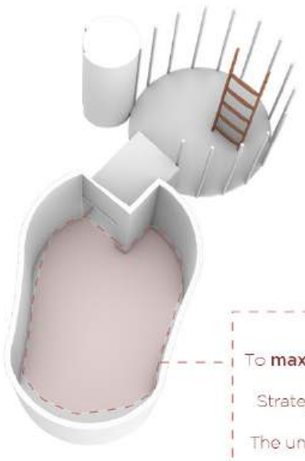


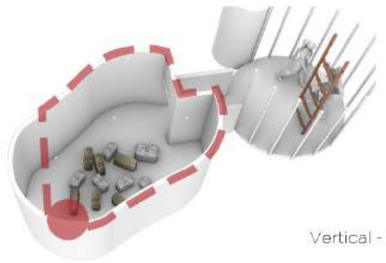
Designed for logistical efficiency, this entry module prioritizes the **organization of bulky gear and backpacks** around a central circulation path leading from the low-clearance crawl tunnel. The **absence of permanent furniture** allows for **flexible storage arrangements,** using the **organic wall surfaces for hanging equipment** while artificial lighting defines the interior volume.

Storage Module Plan
(1:50)
±0.00m



16-18 °C, 70% humidity





Human Activity

Vertical - Horizontal Circulation

LUGGAGE STORAGE MODULE

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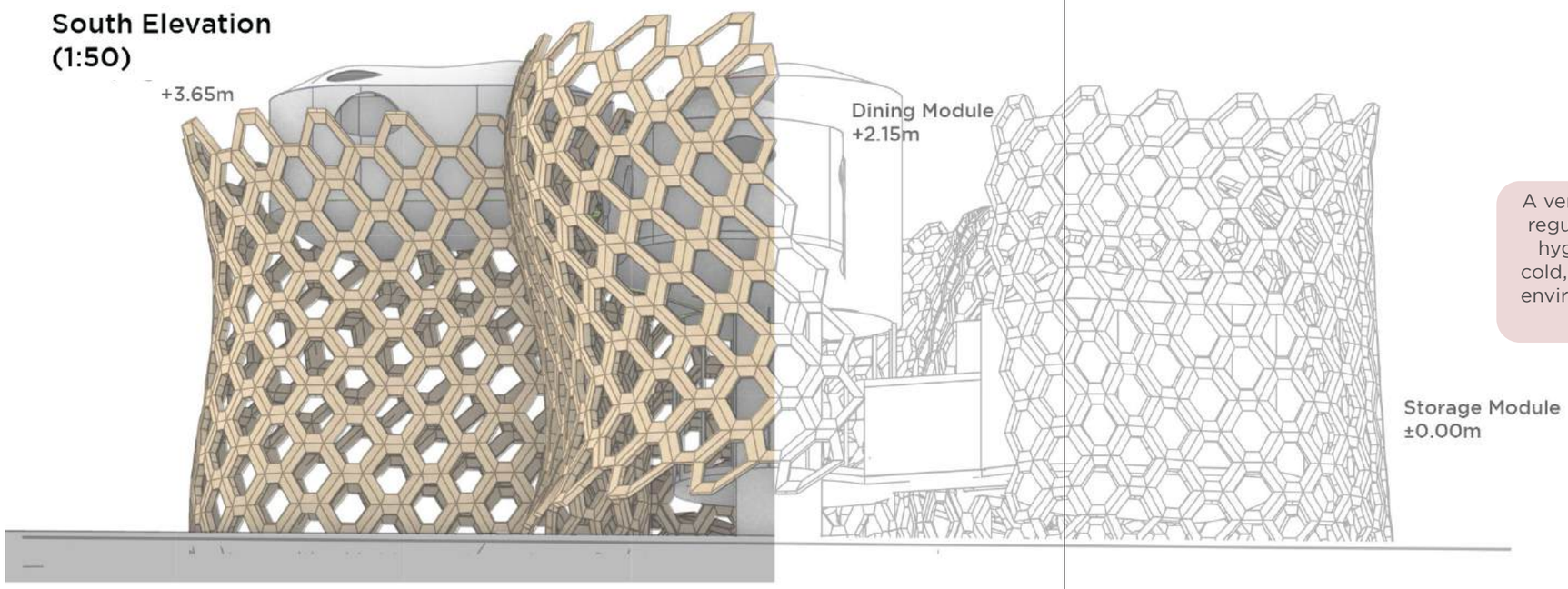
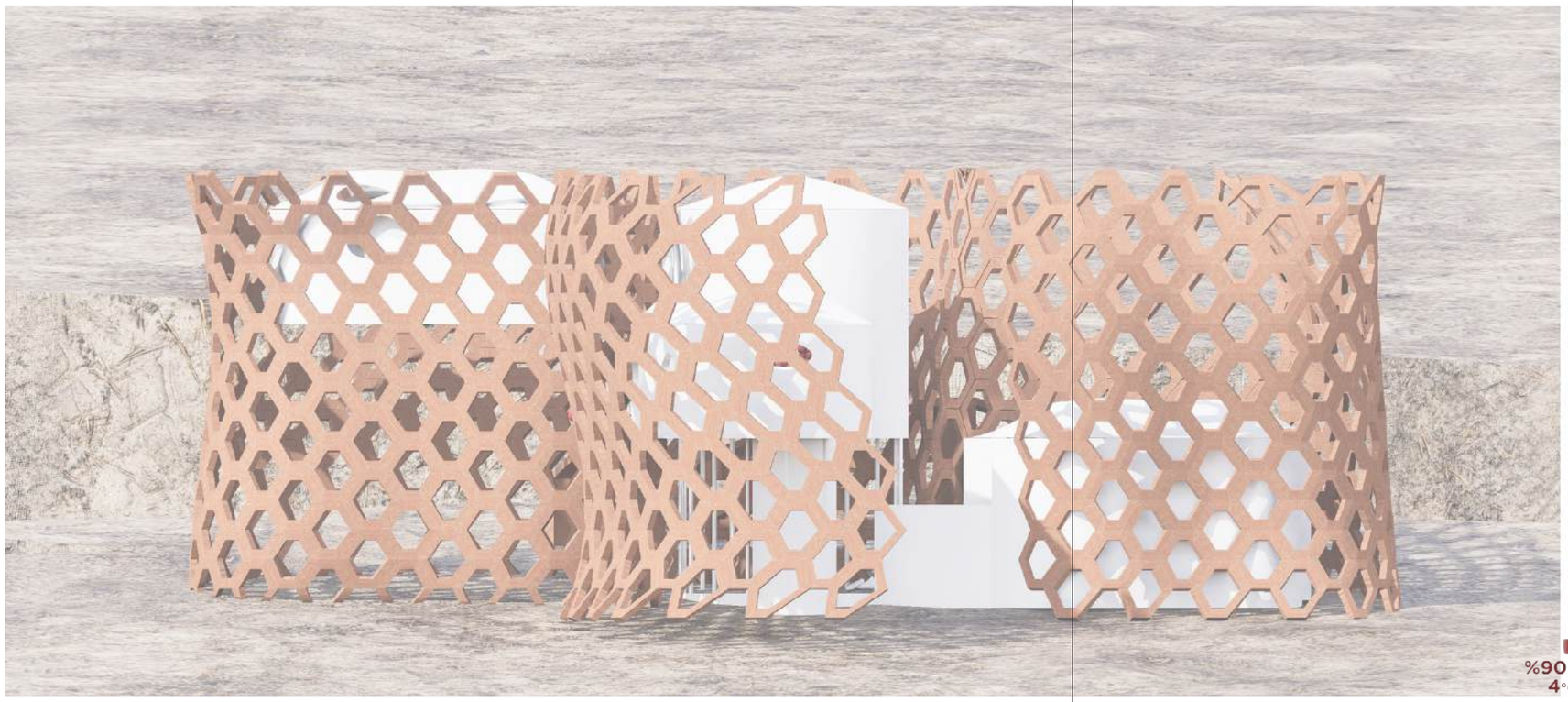
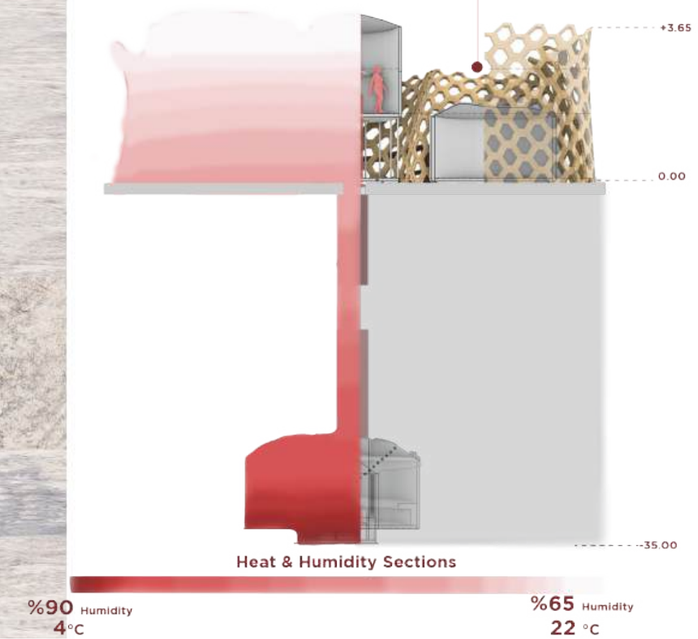
Strategically positioned **on the ground floor**, it **eliminates** the need to carry luggage upstairs.
The unit is designed as a **blind volume** to **ensure security** and visual **solidity**

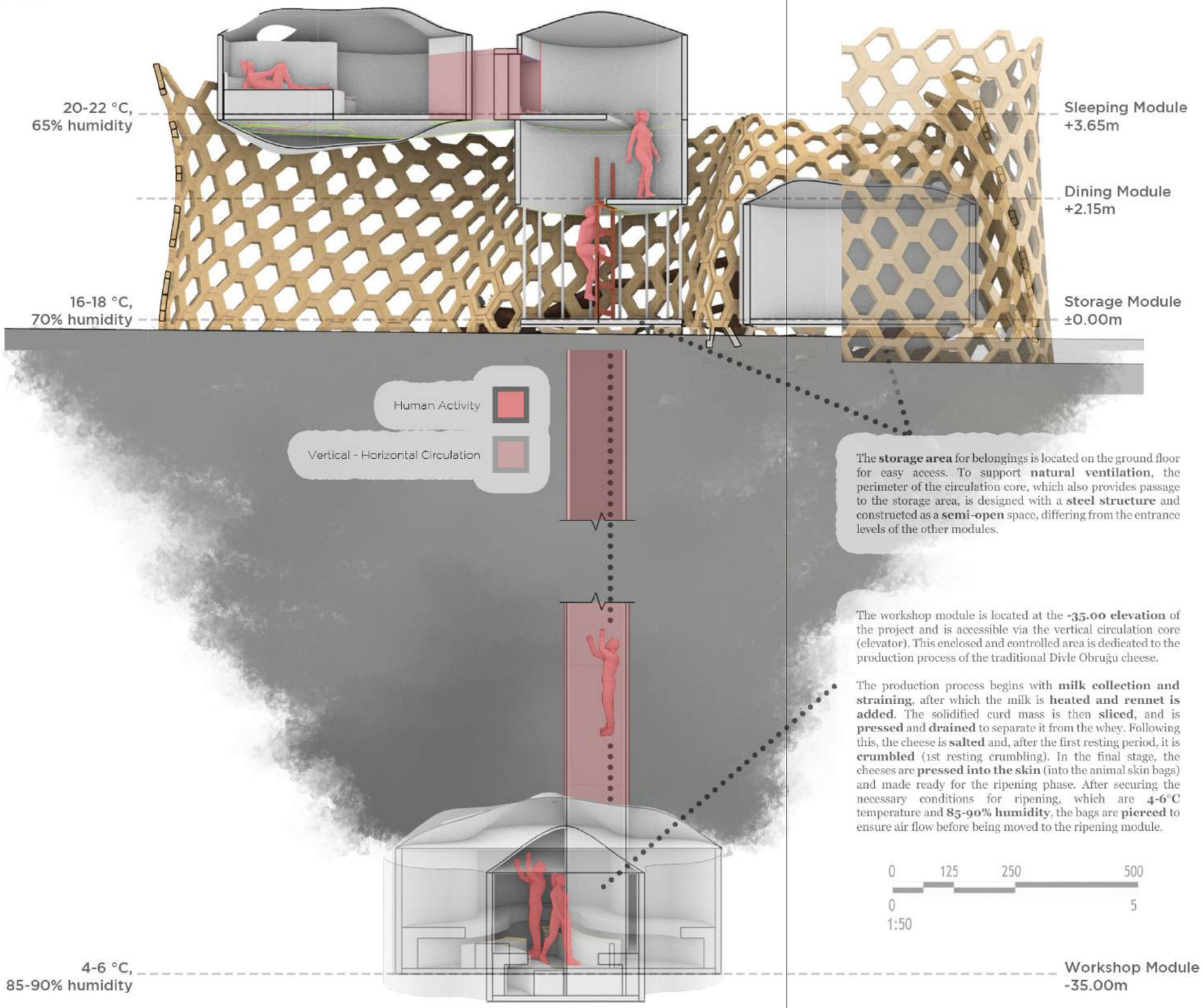


A vertical gap designed for autonomous climate regulation. By integrating the stack effect with hygromorphic response, the void transforms cold, humid cave air into a temperate habitation environment ,anchoring the microclimate through integrated skin interaction.





A-A' Section (1:50)

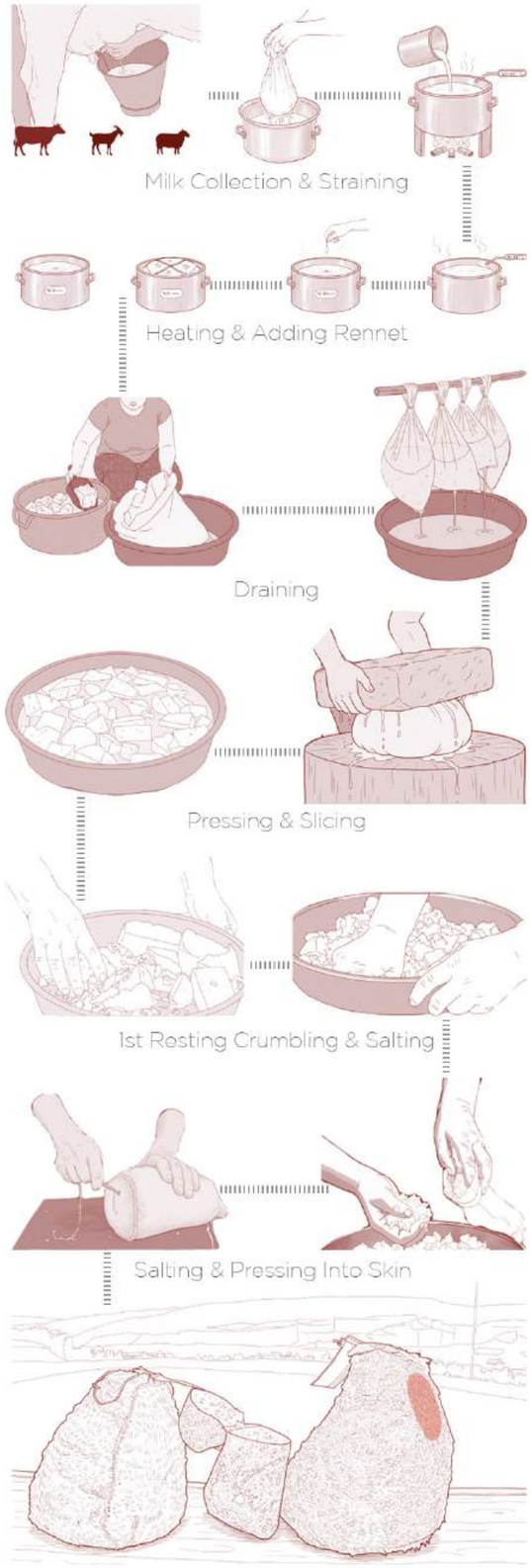


The **storage area** for belongings is located on the ground floor for easy access. To support **natural ventilation**, the perimeter of the circulation core, which also provides passage to the storage area, is designed with a **steel structure** and constructed as a **semi-open** space, differing from the entrance levels of the other modules.

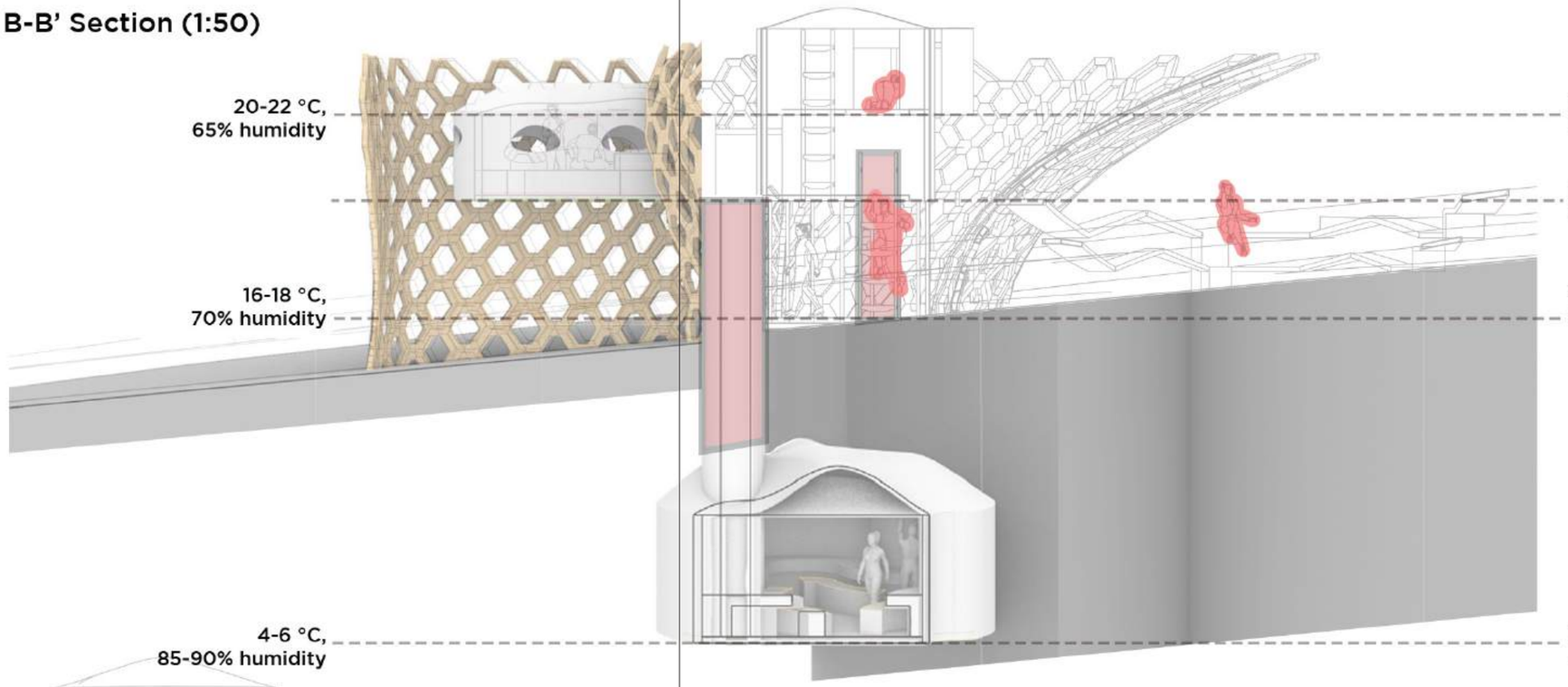
The workshop module is located at the **-35.00 elevation** of the project and is accessible via the vertical circulation core (elevator). This enclosed and controlled area is dedicated to the production process of the traditional Divle Obruğu cheese.

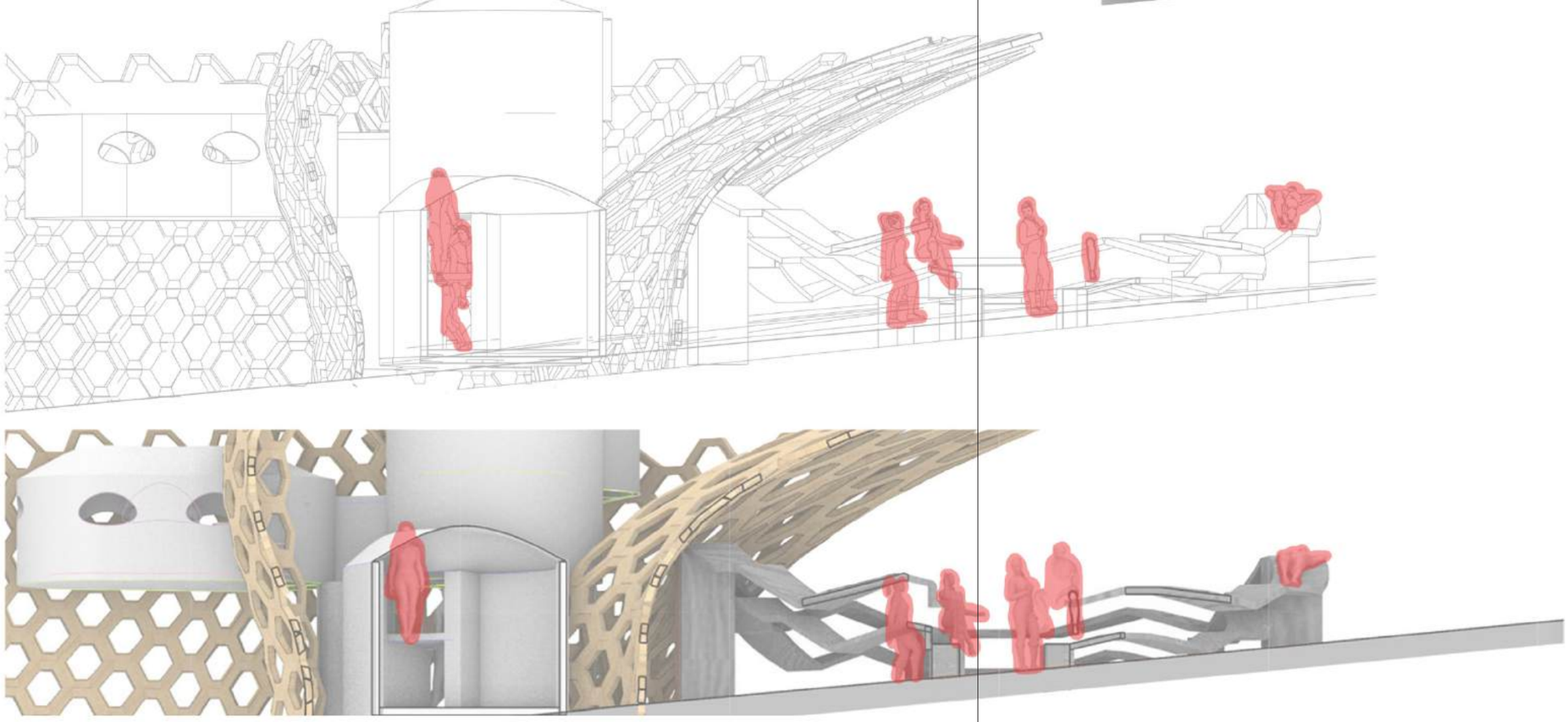
The production process begins with **milk collection and straining**, after which the milk is **heated and rennet is added**. The solidified curd mass is then **sliced**, and is **pressed** and **drained** to separate it from the whey. Following this, the cheese is **salted** and, after the first resting period, it is **crumbled** (1st resting crumbling). In the final stage, the cheeses are **pressed into the skin** (into the animal skin bags) and made ready for the ripening phase. After securing the necessary conditions for ripening, which are **4-6°C** temperature and **85-90% humidity**, the bags are **pierced** to ensure air flow before being moved to the ripening module.

0 125 250 500
0 5
1:50



B-B' Section (1:50)





Human Activity

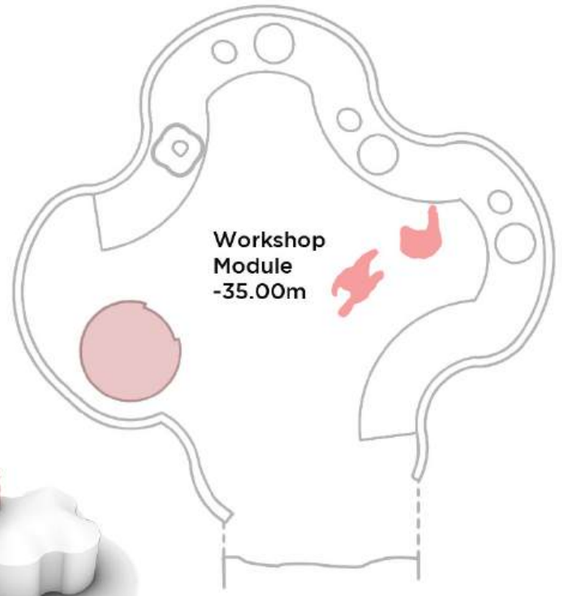
Vertical - Horizontal Circulation

0 125 250 500

0 5

1:50

Workshop Module Plan (1:50) -35.00m



4-6 °C, 85-90% humidity

Amorphous/Organic Roof Shape Blending with **Subterranean** Context

Elevator Access to **Workshop (-35m)**

Human Activity

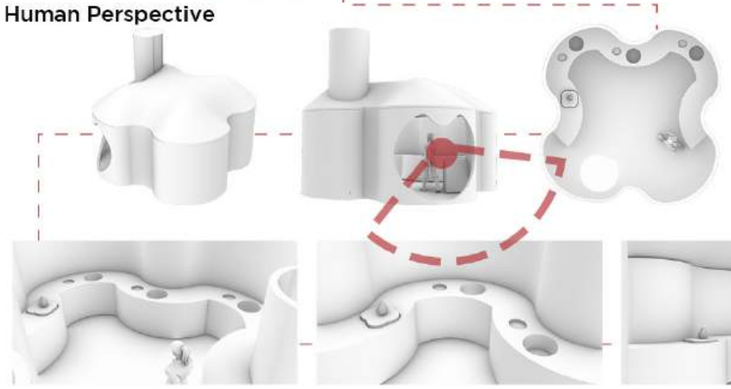
Vertical - Horizontal Circulation

0 125 250 500

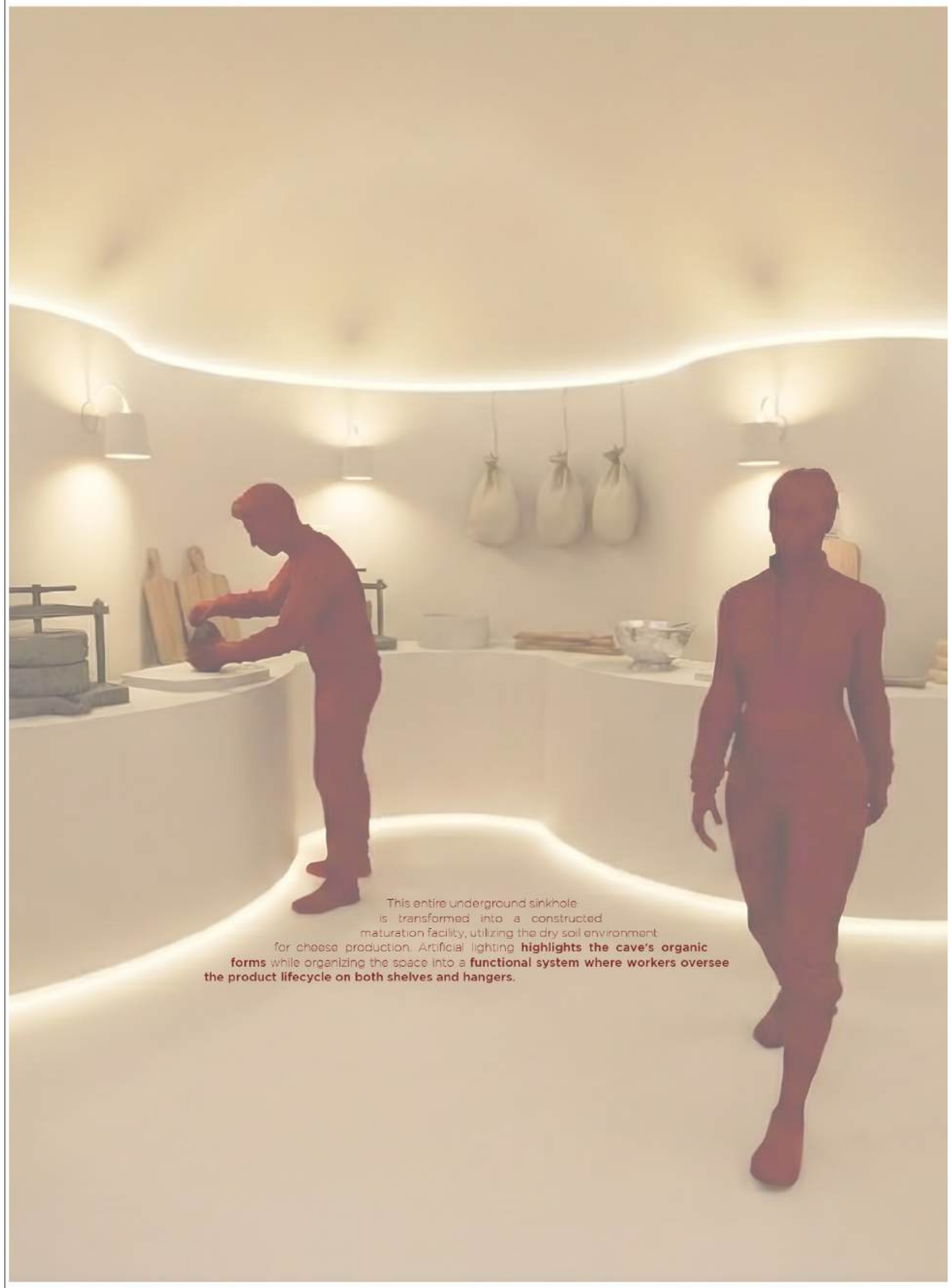
0 5

1:50

Human Perspective

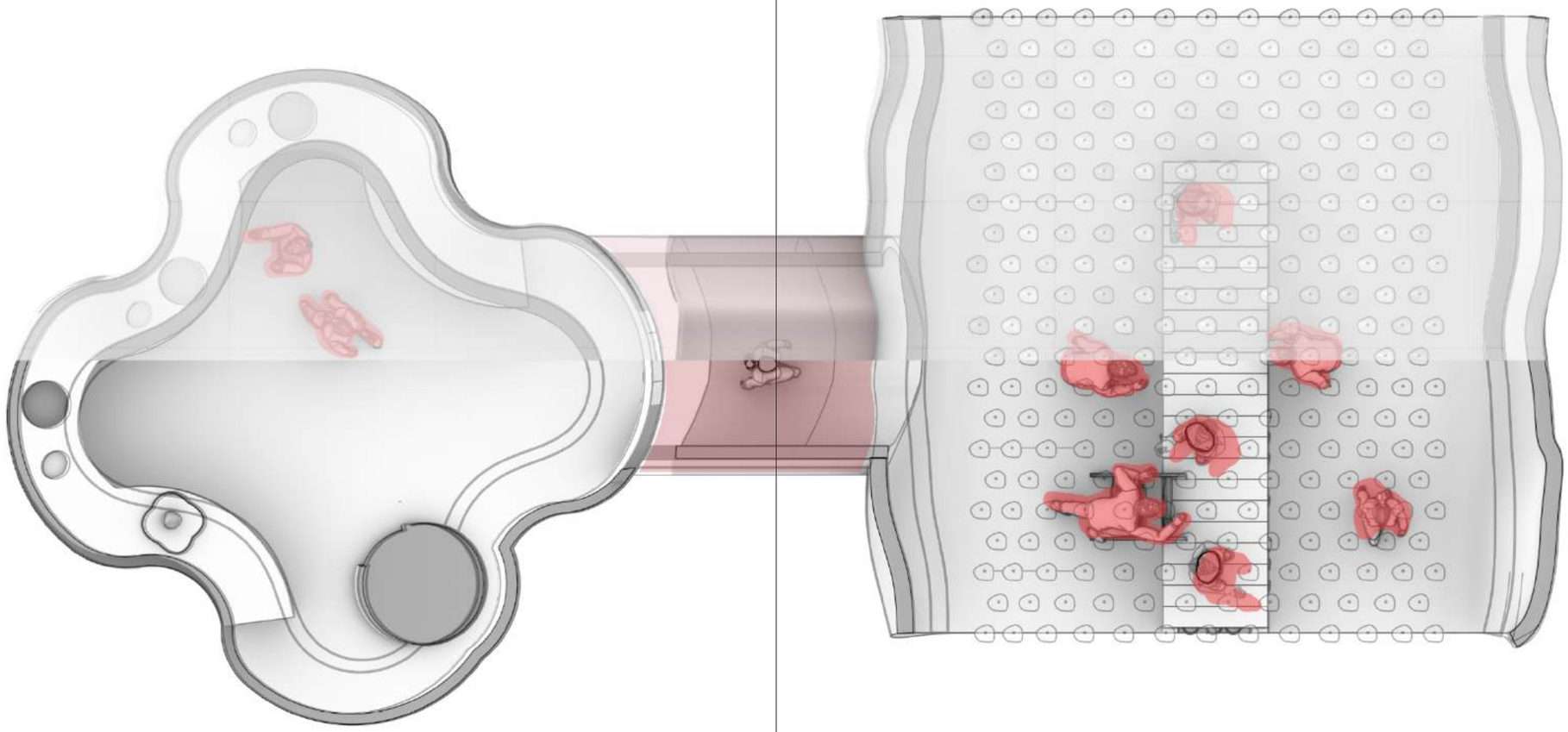


Providing **horizontal circulation** from the workshop connection, this corridor serves as the **vital link to the deeper underground sections.** It **bridges the natural sinkhole formation with the artificial systems** added by humans specifically for the cheese production process.



This entire underground sinkhole is transformed into a constructed maturation facility, utilizing the dry soil environment for cheese production. Artificial lighting **highlights the cave's organic forms** while organizing the space into a **functional system where workers oversee the product lifecycle on both shelves and hangers.**

Workshop and Obruk: Unified Plan
(1:50)
-35.00m



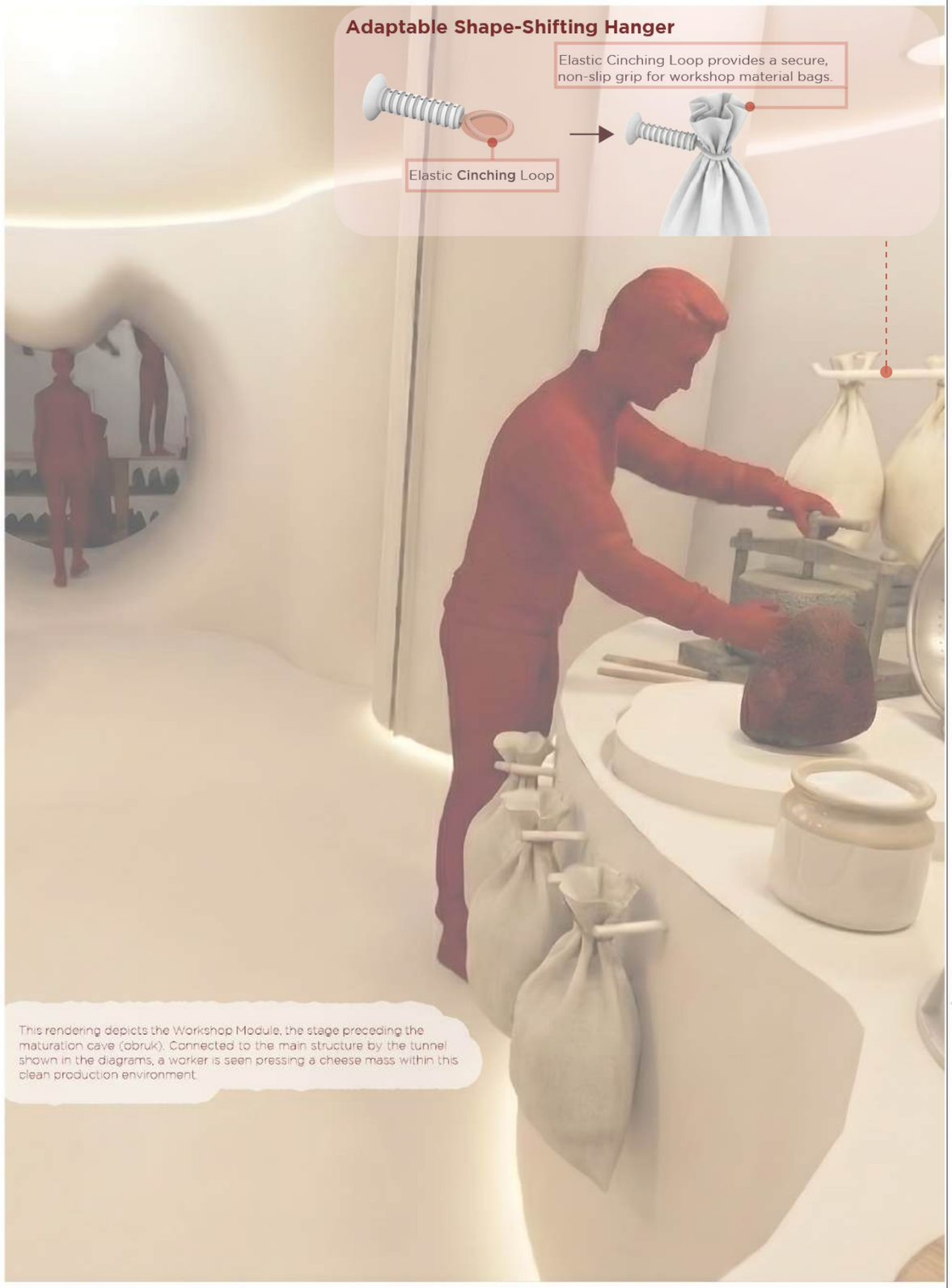
Human Activity

Vertical - Horizontal Circulation

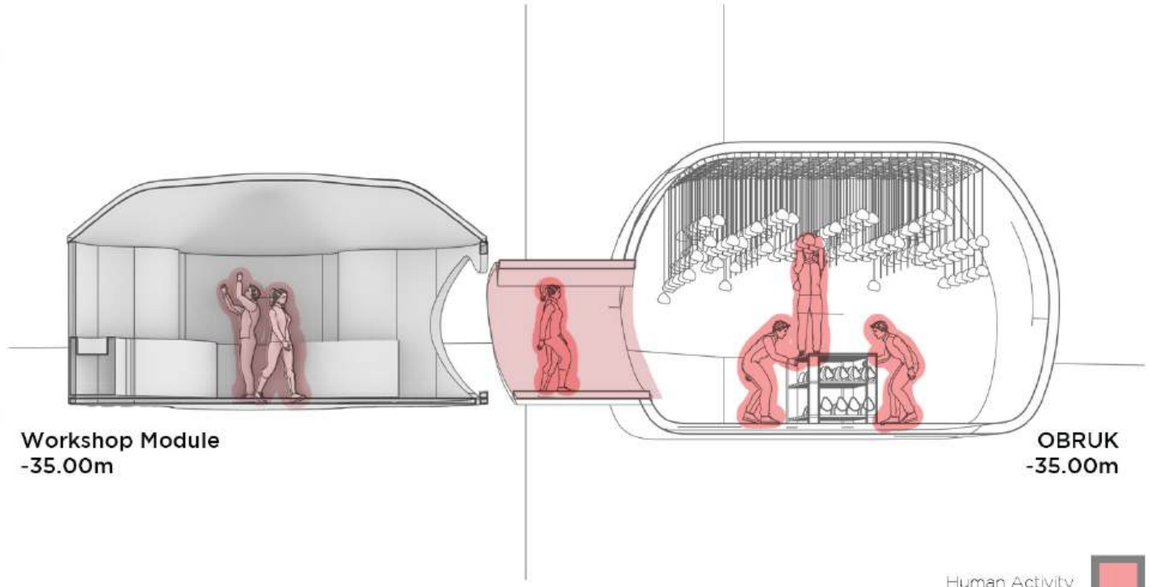
0 125 250 500

0 5

1:50



This rendering depicts the Workshop Module, the stage preceding the maturation cave (obruk). Connected to the main structure by the tunnel shown in the diagrams, a worker is seen pressing a cheese mass within this clean production environment.



Human Activity

Vertical - Horizontal Circulation

The tunnel that provides horizontal circulation and **connects the obruk to the structure**

2025-26 Fall
Istanbul Technical University
Interior Architecture Fundamental Studio
Rural-Genesis: The Anatomy of a System Adaptability of a Spatial Design