

THE MYCELIUM MODEL

Emerging resilience

Defining The Terms & Approach

“Space is never empty: it always embodies a meaning.”

Henry Lefebvre

Space

What is space? Space is not merely defined by objects surrounding it. Space is also social - defined by user and interactions. Space needs an event in order to be perceived as such. An event is an interaction created between users. Therefore space does not exist without a user and an interaction.

Freespace

Not yet built space? Poorly built space? Unused space? Space without an event? Space without a user? Space with no purpose? Space free of charge? Well organized urban space?

Void

"Space is a living void; it is created with arrangement of voids"². Void is the undesigned state of space.

Approach

Proposal for the Montenegrin pavilion at 16th International Architecture Exhibition in Venice aims to redefine the void in terms of space use. It will research our actions in the void to define the production/consumption of space. Being aware of our behaviour makes us space-conscious. Regaining our spatial consciousness is a step toward creating the Space out of a Void.



Steps define the particular void which is used, hence steps mark the space. This space is theoretically and experimentally proven. It is a statistic. Data to work with. A substrate for the design.

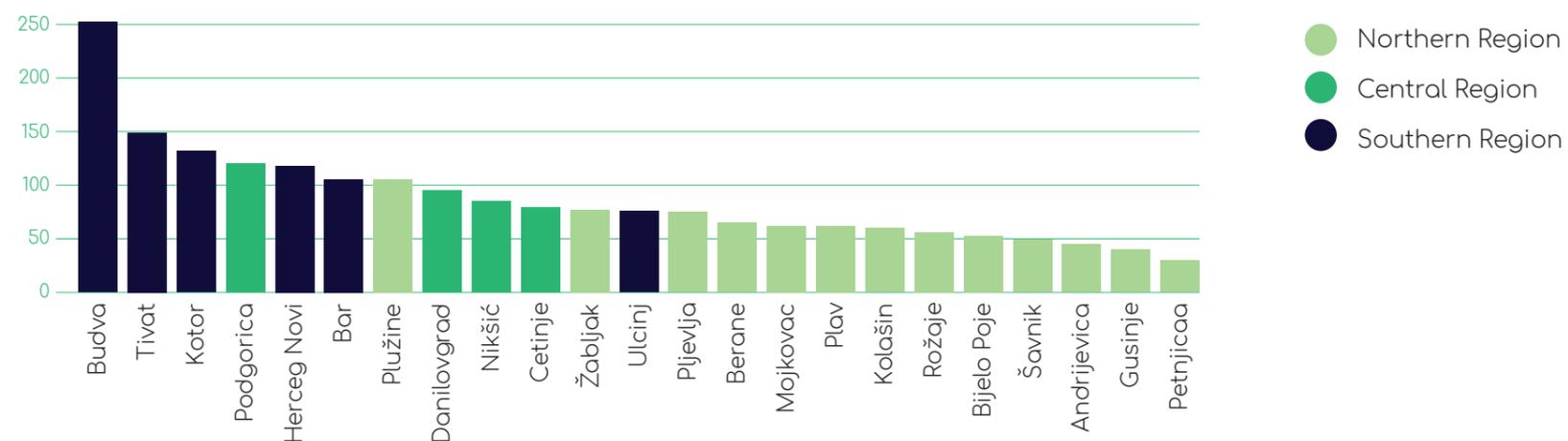
¹ Henry Lefebvre *Production of space*, 1974

² T. Samlioglu, N. Kuloglu, *The concept of void as spatial effect*

Montenegro: Current Allocation Of Resources

Local Development Index Per Region

The municipal government development index depends on five factors: the level of unemployment, per capita income, municipal budget per capita, growth or decrease rate in the number of inhabitants and the level of education of the population on the territory of the municipality.



Population Density Per Region

In the period 2003-2015, 22 312 people moved from the North. This led to the segregation of this region.



- **Northern Region**
 Area: 52,9%
 Population density: 26,6 inhabitants/km²
- **Central Region**
 Area: 35,6 %
 Population density: 56,8 inhabitants/km²
- **Southern Region**
 Area: 11,5 %
 Population density: 91,8 inhabitants/km²

Montenegro: Current Panorama

Social and economic issues are best visible in their projection on actual physical space, through architecture and urbanism. In Southern and Central region we recorded an uncontrolable urbanisation which resulted in loss of freespace. On the other hand, the North suffers loss of population which results in abandoned housing, especially in the rural parts.



Examples of overconstruction in the Central and Southern Region



Showcase: Partially Abandoned Villages Of The North

Photos below depict examples of two vilages with dwindling population located in the Northern region. Considering the current construction of the highway and Bjelasica tunnel, both vilages will soon be very well connected with ski resorts and national parks.



Village Lubnice
population: 230, 77 houses, 207 in the katun



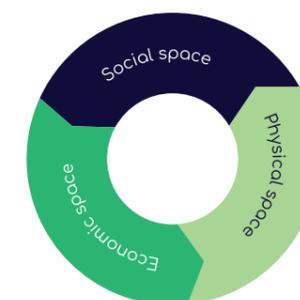
Village Kaludra
population in 2003: 267, population in 2011: 178
64 houses, 100 in the katun

Identifying The Problem: Space For Action

Transdisciplinary research identifies a transdisciplinary problem, and the causal analysis deals with several layers of space:

1. Social space
2. Economic space
3. Physical space/reality

Physical space is seen as a projection of changes in social and economic layers.



Problem #1: Uneven resource allocation

The North suffers loss of population, economic underdevelopment, but extraordinary possibilities in terms of land use as potential base for development.

Problem #2: Wrong scale of things

Large scale building, large scale economy and large scale society are models for solving problems based on data and practices of some other particular entities. They happen to work as ready-made solutions, on entities with similar social, political, economical and urban characteristics.

So far, in theory and practice , we tested 2 of these instant solutions (both taking into considerations only 1 or 2 out of the 3 aspects), both based on borrowed research:

a) Failed Brownfield solution: Unused industrial and military complexes were turned into high density residential complexes causing excess of unused empty apartments and destabilising real estate market.

b) Failed privatization: large touristic complexes built in socialisam, too big for current Montenegrin conditions – now in private ownership, can't fill their capacities thus resulting in desertion, and leaving urban tissue clogged with huge unused structures, only opened during a single season and dependant on weather conditions.

The Mycelium Model: Reactivating The North

The Mycelium Model mimics the mechanisms of organic ecosystems:

A solution also has to deal with 3 aspects: social, economic and physical space. We called it the Mycelium Model.

Mycelium is a vegetative part of a fungus colony. It is a fine net of feeding and communication threads which searches for and exploits resources, in order to gradually advance to its next stage of development and grow fruiting bodies of mushrooms. All mushrooms grown from same mycelium colony are considered to be parts of the same organism. The largest organism of this kind occupies a territory of 970 ha in Oregon, USA and is 2 200 years old. It is considered the largest known organism on Earth. Apart from being very adaptive, mycelium is one of the best known natural recyclers, vital for ecosystems because of its role in the decomposition of plant material.

The Mycelium Model is a hybrid (theoretical and practical) model of transdisciplinary approach to resource identification, scale adjustment and exploitation rotation. It uses knowledge and research methodologies of economy, sociology and urban planning/architecture, to analyze the given situation in terms of assessing the quantity and quality of resources (capital, human, and spatial) and their exploitation given the scale.

Defining new methods and models allows for new forms of activity, but also new forms of contemporary problems. In order to solve these problems in practice, it is necessary to develop collaborative methods based on strongly coupled technological and theoretical foundations.



Case study: North of Montenegro

As previously shown, the North of Montenegro suffers loss of population and economic underdevelopment, but shows extraordinary possibilities in terms of land use as potential base for development.

Key points of land value increase:

1. Montenegro is an ecological country;
2. There are three National parks in the North;
3. Four Ski resorts;
4. Highway under construction;
5. Unused built structures.

Economy of Montenegro largely depends on the service sector, mostly regarding tourism. Opportunity to develop sustainable tourism in the North could save it from the mistakes of transition that left traces in the Southern and Central region (overbuilding, centralization, segregation, illegal construction, etc.).

Encouraging small business owners and supporting a healthy and active lifestyle that contributes to economy, directly creates conditions for repopulating the North. People go where they have reason to be. In case of the North, the Mycelium model is based on:

Architecture/urbanism (land/real estate)

Reusing and repurposing the existing structures – abandoned houses, even whole villages, and adapting them to serve tourism. Minimal construction activity toward additional housing should be well thought-through, carefully designed and legally controlled in order to avoid the Southern scenario. Investment in Infrastructure (roads, electricity, water, TC etc.) should be facilitated, welcomed and encouraged. This is would slowly increase the value of real estate in the North.

Economy (small businesses and creative industries)

Houses and real estate owners interested in tourism can join together and consolidate power, placing their service or product in a complementary and symbiotic way (one subject produces organic food, one provides accommodation, another provides transportation and siteseeing etc.)

Social studies (collaborative approach)

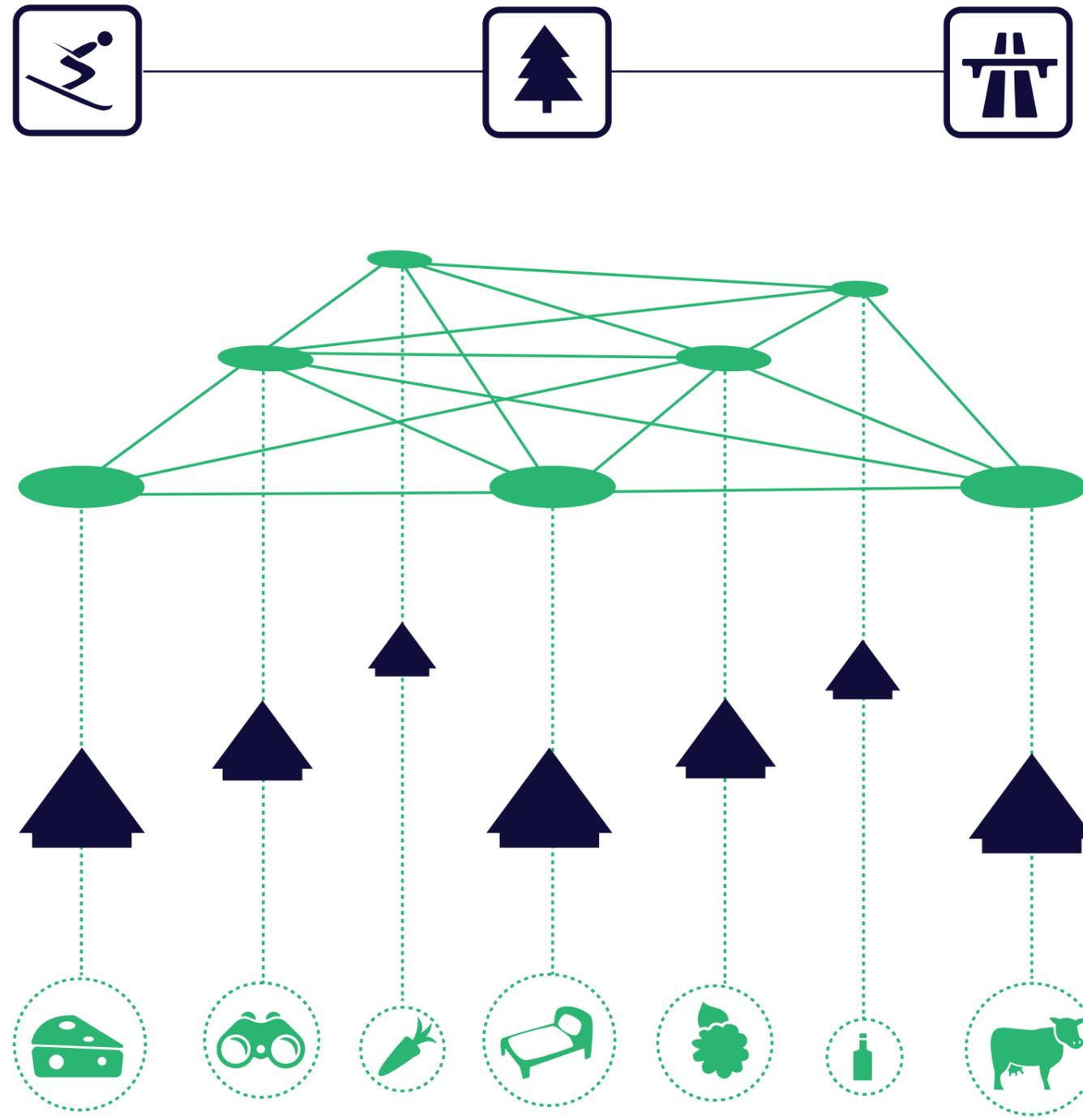
Rebuilding smaller scale societal models and considering alternative ownership for cooperative collectives. Localisation and bottom-up thinking, as well as home-based and flexible working conditions, would result in initiatives for social and biodiversity regeneration.

Kljajić Houses

In the vilage of Lubnica, a homeowner transformed his house in popular tourist accomodation. This example confirms our research hypothesis and shows not only that it's possible but it is already happening, even if it's not reaching it's full potential yet.

Besides the beautiful view on the Jelovica mountain, the house offers a complete experience of the ancient way of life in a mountain vilage. The tourists are invited to join their hosts in picking raspberries, making beehives, making juices.





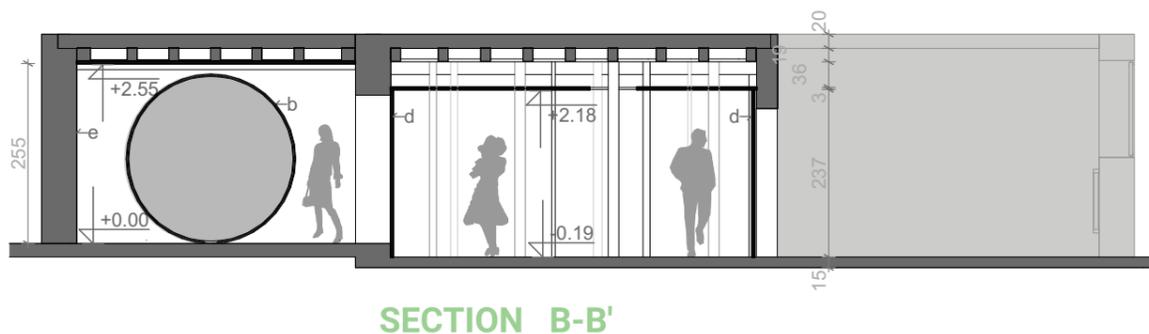
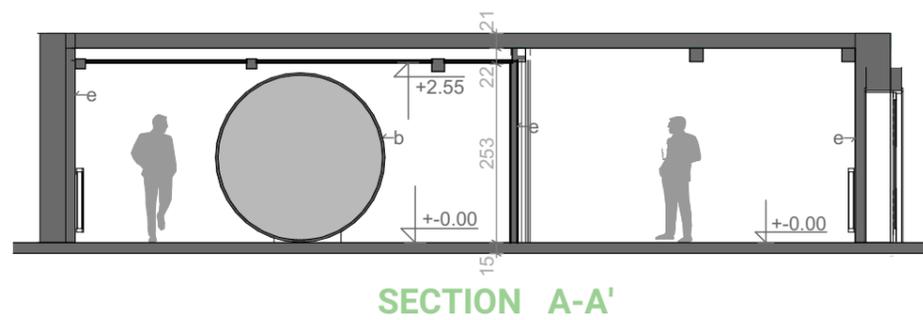
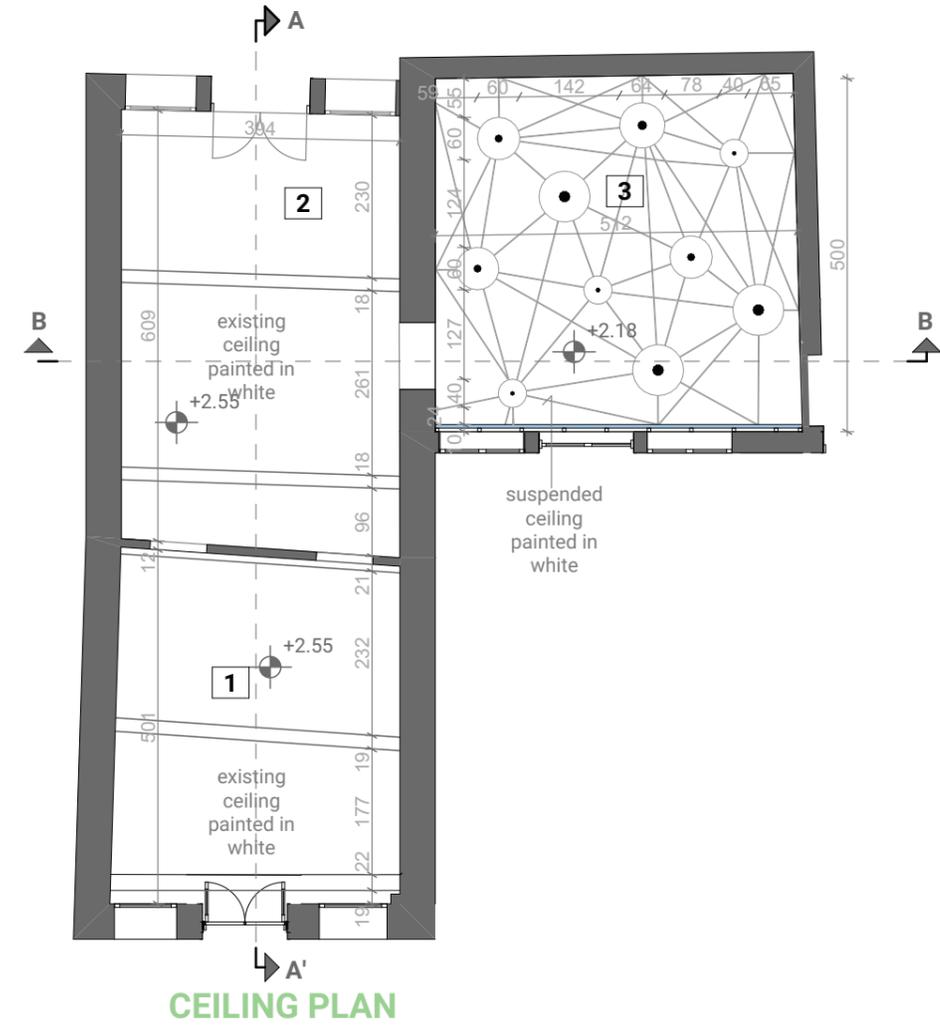
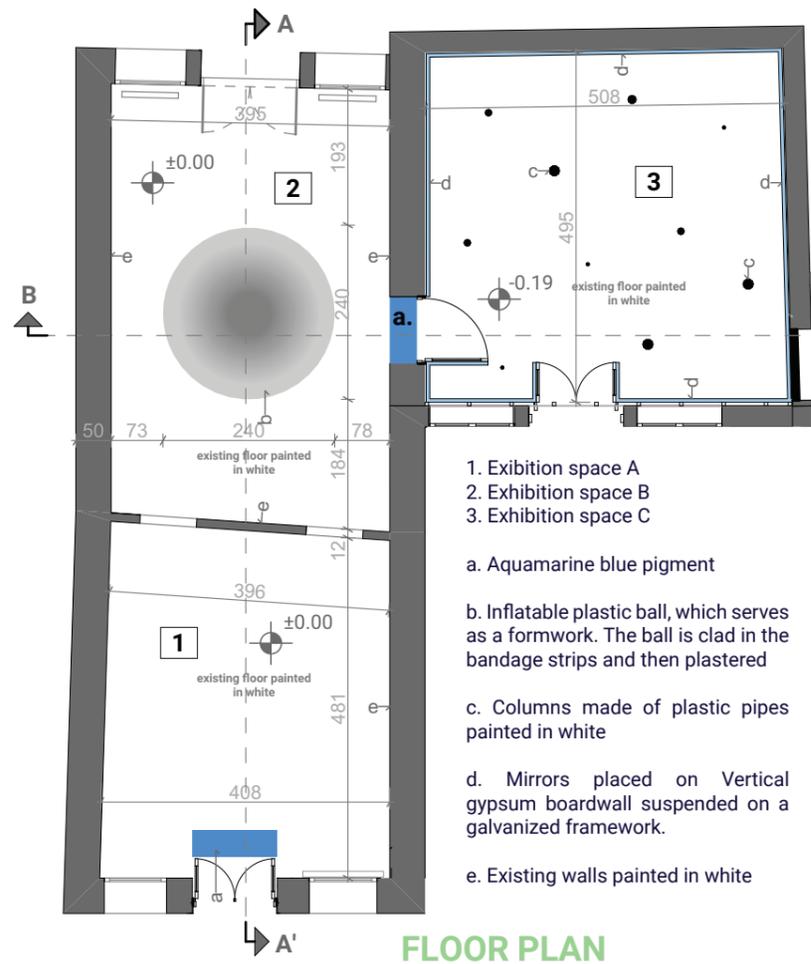
Development triggers

ICT and virtual space - a global presentation of the offer

Repurposing the existing housing

Collaborative distribution of goods and services

The Montenegrin Pavillion



BILL OF QUANTITIES

1.	Procurement and installation of mirrors placed on Vertical gypsum boardwall suspended on a galvanized framework.	42.00 m2	25.00 eur	1050.00 eur
2.	Procurement and installation of single door with suspended mirror.	1 piece	300.00 eur	300.00 eur
3.	Procurement and installation of columns made of plastic pipes painted in white	10 pieces	10 eur	100.00 eur
4.	Procurement and installation of suspended ceiling with perforations	25.70m2	13.00 eur	334.10 eur
5.	Procurement and painting of walls, floors and ceiling in white	234.95m2	4.00 eur	939.8 eur
6.	Procurement and installation of electrical installation and lights	lump sum	350.00 eur	350.00 eur
7.	Procurement of Shallow box filed with aquamarine pigment	2 pieces	200.00 eur	400.00 eur
8.	Procurement and treatment of Inflatable plastic ball, which serves as a formwork. The ball is clad in the bandage strips and then plastered	1 piece	700.00 eur	700.00 eur

4173.90 eur

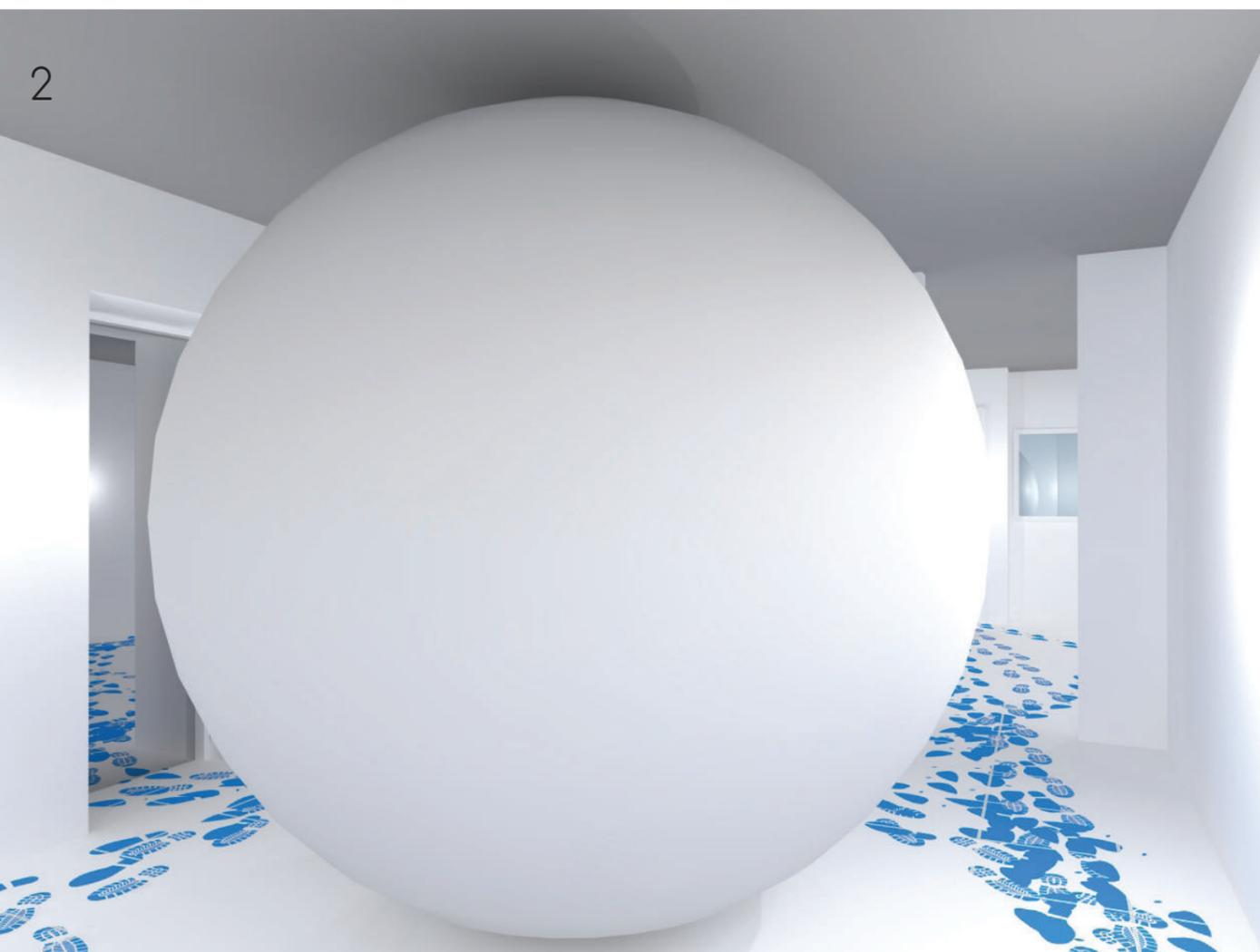


Exhibition space 1: Research

Empty white room. Visitors step into pigment at the entrance and spread it around the empty white space by walking. This exhibition space represents the reducing intact freespace which is, fortunately, still available in the North. On the conceptual level, we address 2 large research topics:

1. Collecting Data: Mapping exactly which parts of empty white space (void) is being used (thus creating a particular space which has a purpose), via crowdsourcing.

2. Awaking spatial conscience: Does the visitor perceive that his doings create this particular space and its purpose? Does he/she realize their impact (footprint) on the space.



Exhibition space 2: Avoiding Discomfort

White room filled with a single large ball. Space consumption is irrational, visitors have limited space for movement in space and discomfort when passing by the ball.

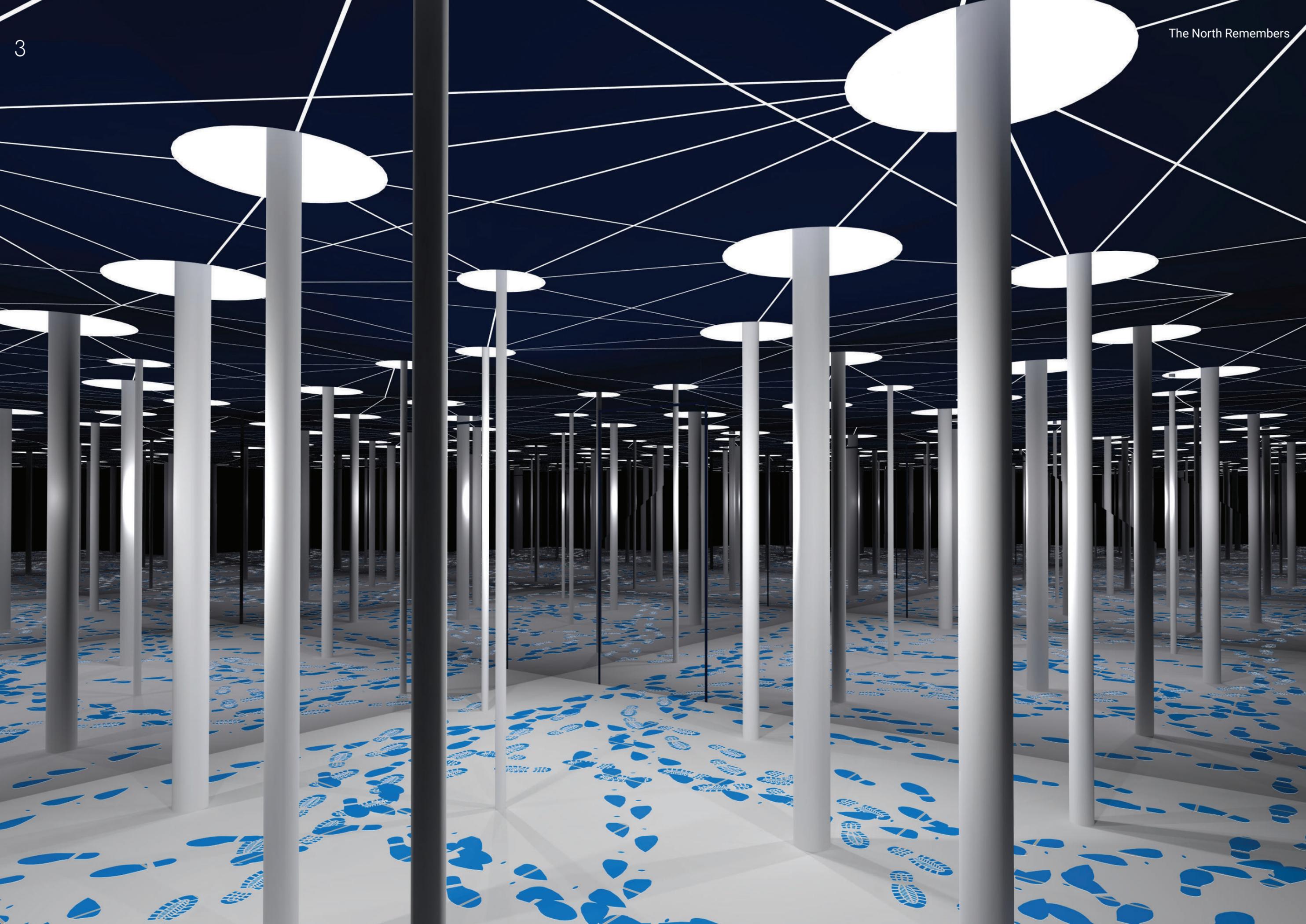
The area of Montenegro is small (13 812km²). Space is a non renewable resource.

Montenegro has a low population (620.000 inhabitants). Human resources are valuable.

Montenegro has one of lowest GDP in region. Something to improve.

Large companies, monopoly of the market and large built structures are inappropriate for Montenegrin conditions.

Adjusting scales of economy and building industry to fit actual human scales can help envision new models of cooperation for sustainable and resilient communities.



Exhibition space 3: Inside An Organism

Infinity room (effect produced by parallel mirrors on 4 walls) filled with pillars whose approximate volume corresponds to the volume of the ball in exhibition space 2. Lighting is regulated with potentiometer and varies from strong to dim, pulsating to mimic a living organism.

Concepts:

- 1. Synergy** – Larger number of smaller scale participants have greater effect than the sum of their individual effects (in economical and urban growth)
- 2. Ecosystem** – all participants are connected and mutually dependent. We put a visitor inside a living organism (mycelium and mushroom colony) and include him/her into a collaborative process
- 3. Community pillars** – many separate bodies with a common interest of progress through adaptation, are far more agile and transformable than laggard megastructures. They support the common interest (ceiling) and visions of future rest upon them.
- 4. Infinite possibilities** – Infinity room. Smart use of space and resources combined with thorough expert research can amplify the benefits of building tailor-made models based on bottom-up approach. In this space, visitors' movements are free, he/she is able to use the space better and experience less pressure than in the previous exhibition space.
- 5. Lines of communication** – Illuminated notches on the ceiling form a network (ICT and virtual space) representing mutual connection, dependency and collaboration.

Resume

A visitor's path is strictly defined moving through Exhibition spaces 1 through 3. Advancing the levels of awareness, he/she moves through the changing ambiances of the three exhibition spaces, creating a cycle that can be repeated.

1. Abstract space, a hypothetical tabula rasa (available to anyone to arrange and consume according to their own skills, knowledge and wishes – recorded in footprints). Understanding space and the impact one's doings have on it.
 2. Ambient of discomfort in dense spaces of Central and Southern cities – fallen victims to socio-economic, political and architectural consequences of transition. Acknowledging the past mistakes, understanding the causes of inefficiency and waste created by large structures.
 3. Ambient of undiscovered and forgotten rural north of Montenegro (abandoned villages, many empty houses, unspoiled nature, forgotten cuisine, unique traditional products). A freespace we must use wisely.
1. Return to the very beginning – an abstract white space with no limits, this time with new knowledge and skills that can be shared with everyone.

Research Proposal

The exhibition space of the Montenegrin Pavillion deals with redefining our understanding of space, as well as researching it as an everchanging, evolving concept. It invites everyone to participate in transdisciplinary research that will produce much needed data and lead to the creation of a paradigm-shifting methodology (hybrid methodology that includes theory and practice in real-time and specific place, tailor-made for particular conditions that define Montenegro as socio-economic, political and urban entity).

Some of the directions this research may take:

- **Demographic Mapping** – Creative ways of collecting what we lack most at this point - data. Data about allocating people as most valuable space-generating resource.
- **Causal analysis of particular problem** – Comprehensive transdisciplinary approach to causes of problems, rather than dealing with consequences.
- **Spatial practices analysis** – Research of particular practices unique to Montenegro, their origins and use in reinventing sustainable communities.
- **Redefining the methodological research paradigms** – Social transformation, as a dominant generator of space, can contribute to the improvement of the conventional paradigm of sustainable spatial practices research of cities in the 21st century.
- **ICT and power of virtual space in sustainable urban planning** – ICT and Virtual space can be used to redefine the methodological research paradigms in the process of revitalizing the existing practices as well as producing new spatial practices of resilient communities.