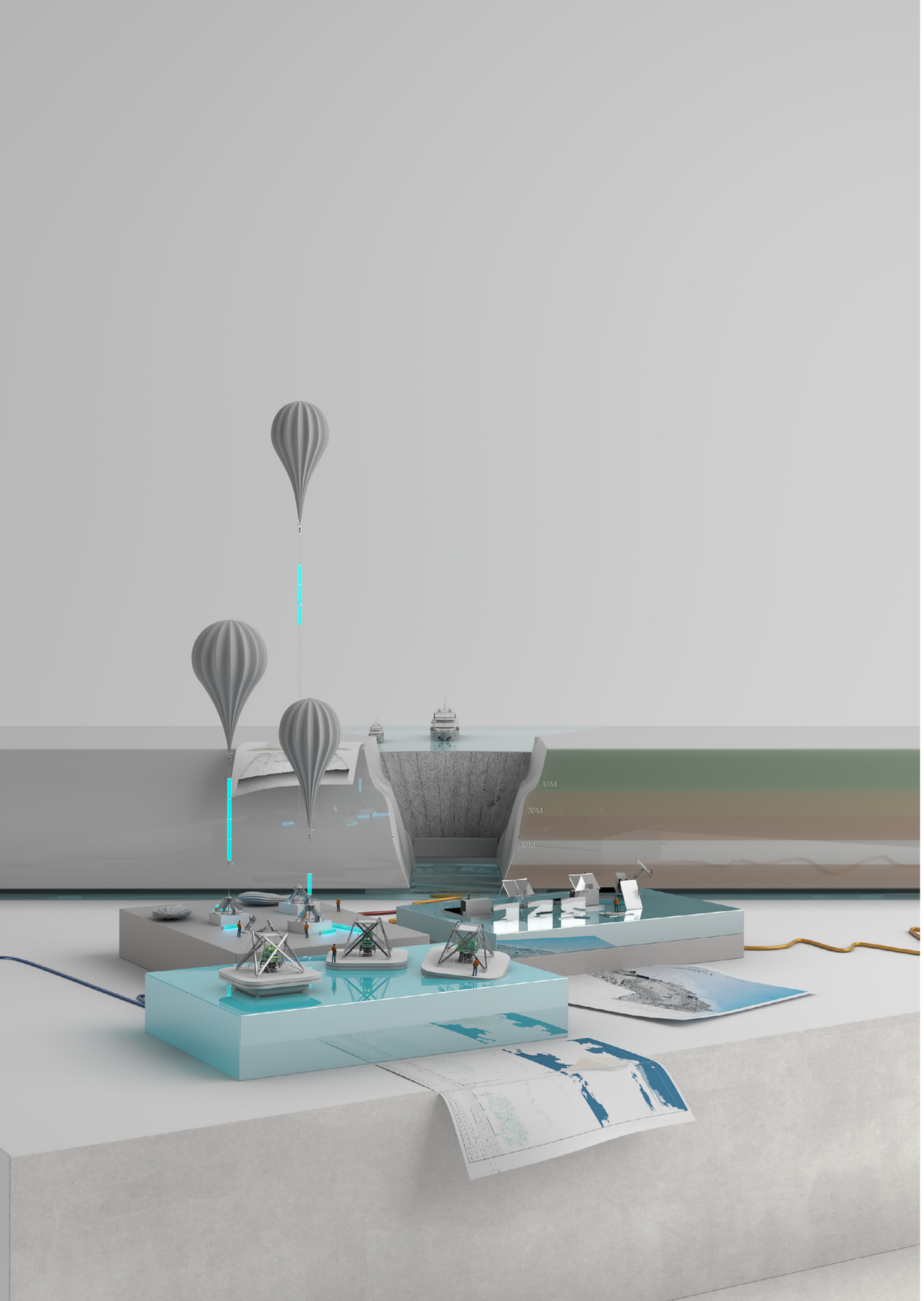
YUANLONG ZHU

M.S. Advanced Architectural Design, Columbia University



01
Information Relays

Telling stories about water

Location: California

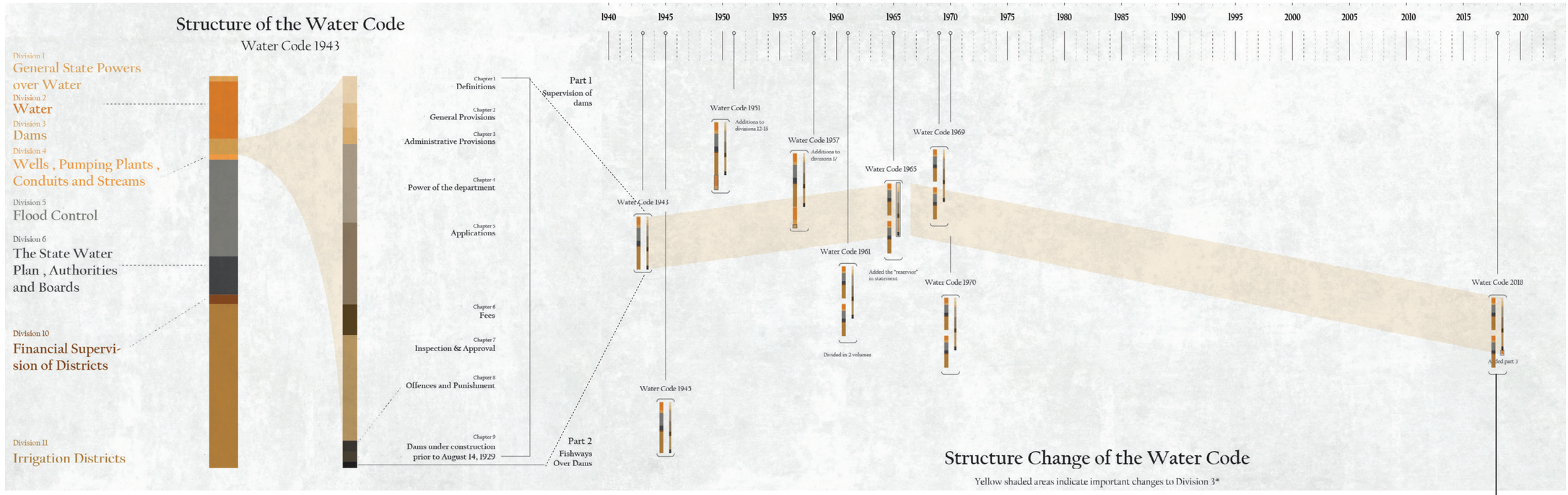
Individual Academic work

Instructor:
Elise M.A. Hunchuck
Marco Ferrari

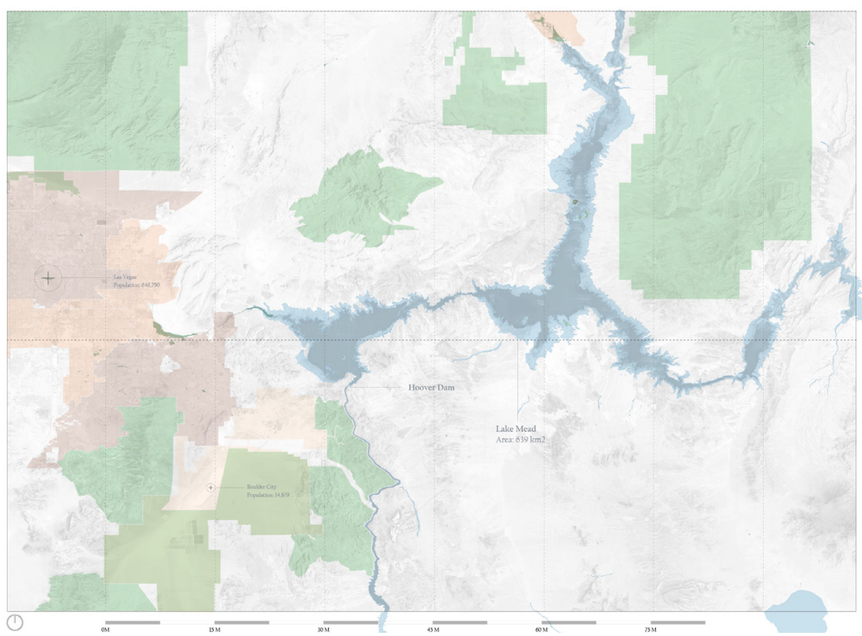
Summer 2023

The Lagging Dam

California's Water Code is a long history of struggling, reconciling, and co-existing with water. Significant historical events, including fights over water rights, the construction of dams and water facilities, the concerns of the environmental movement, and accidents, often spurred changes in California's water code.

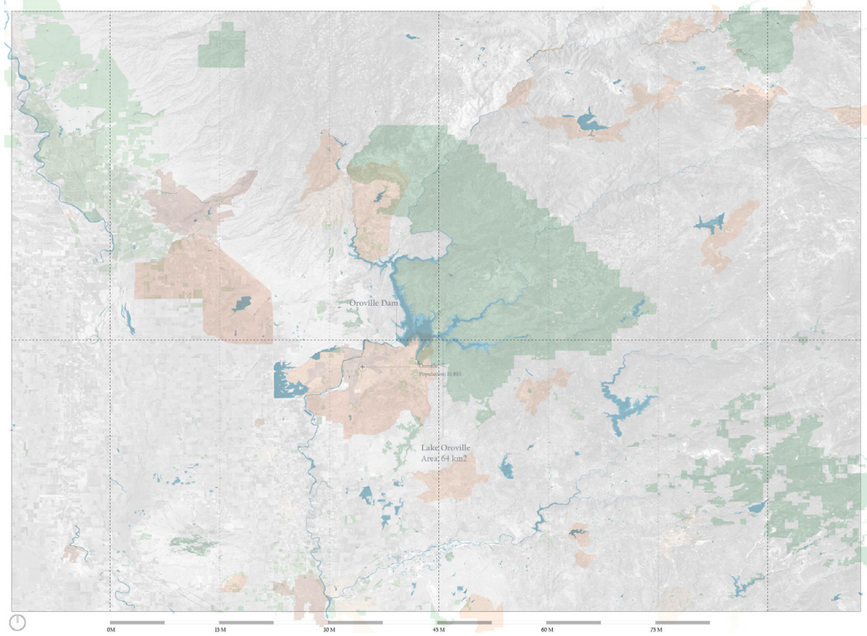


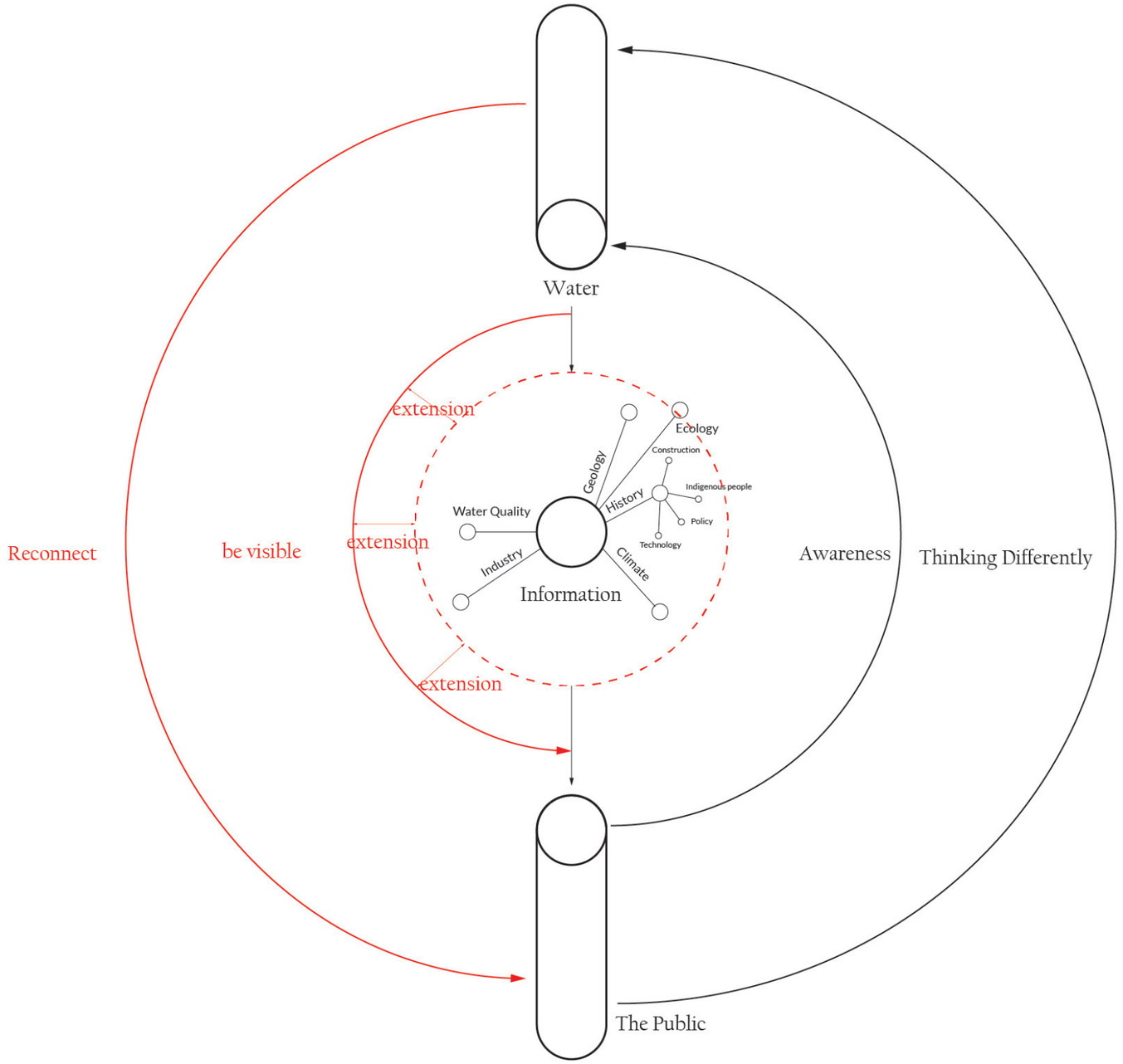
Hoover Dam



After the 2017 failure of the Oroville dam, and the evacuation of the Feather River Basin, public pressure led to the inclusion of a provision in the California water code, dams' chapter, insisting on the need for the public awareness of important information about water.

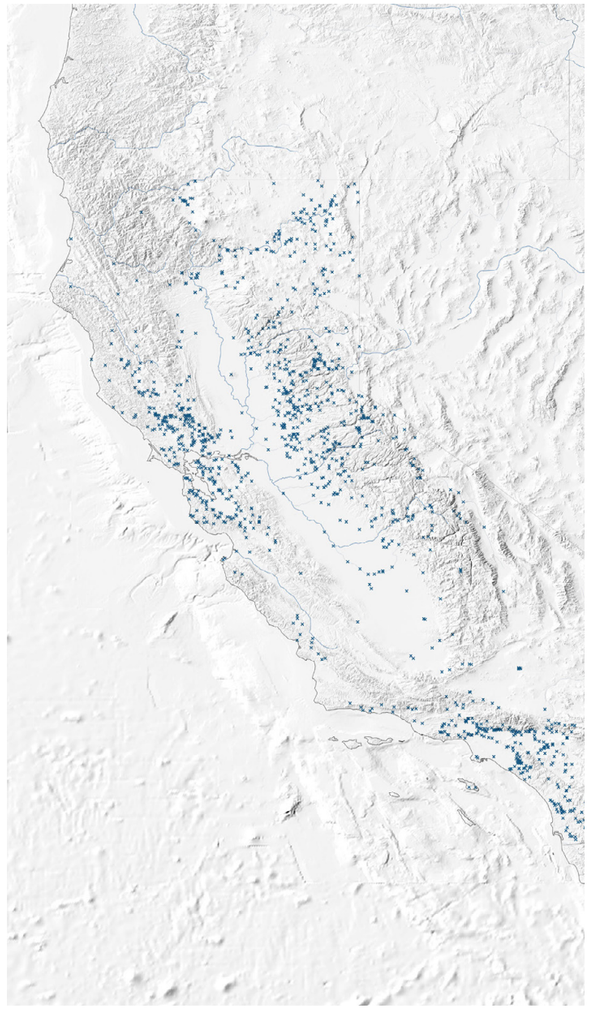
Oroville Dam



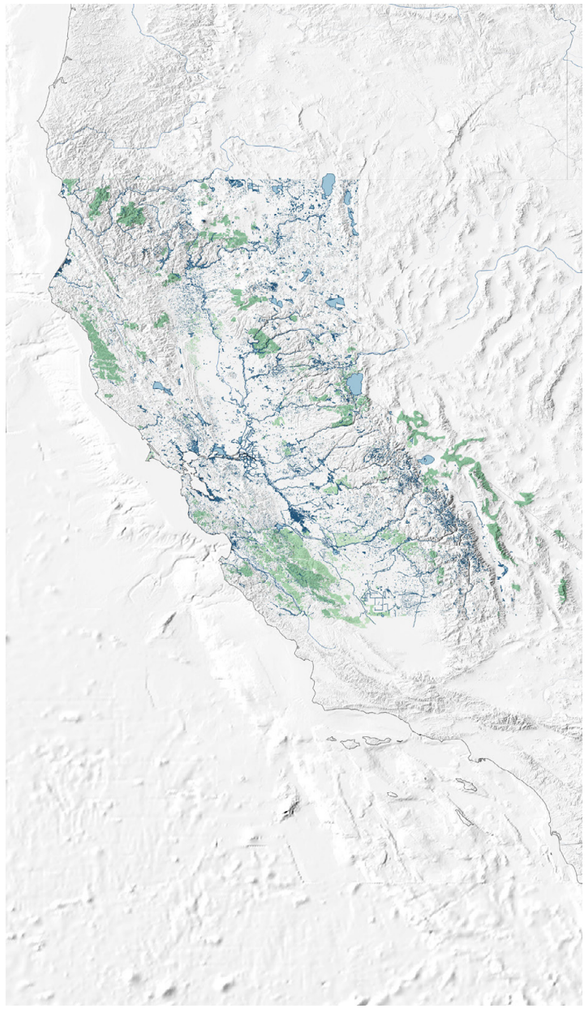


What if we could extend this inclusion and amendment that insists on public information system to the entire state of California, would it lead to more concern?

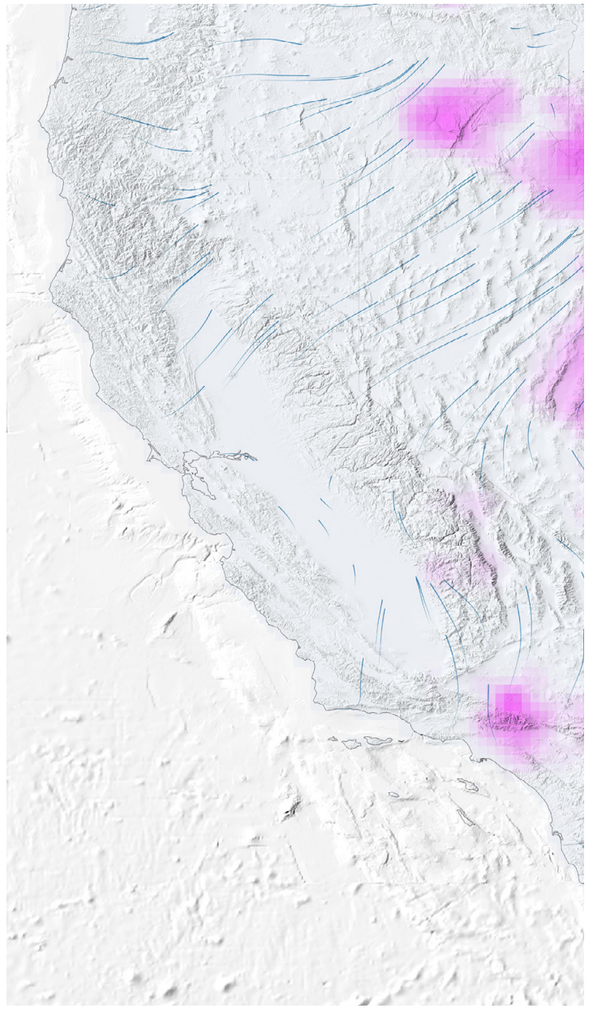
Such the extension, I think can transfer the complex information to be easily understand for the public, then make people to aware it, rebuild the connection and ultimately, make people think water differently.



California Dam Location Map

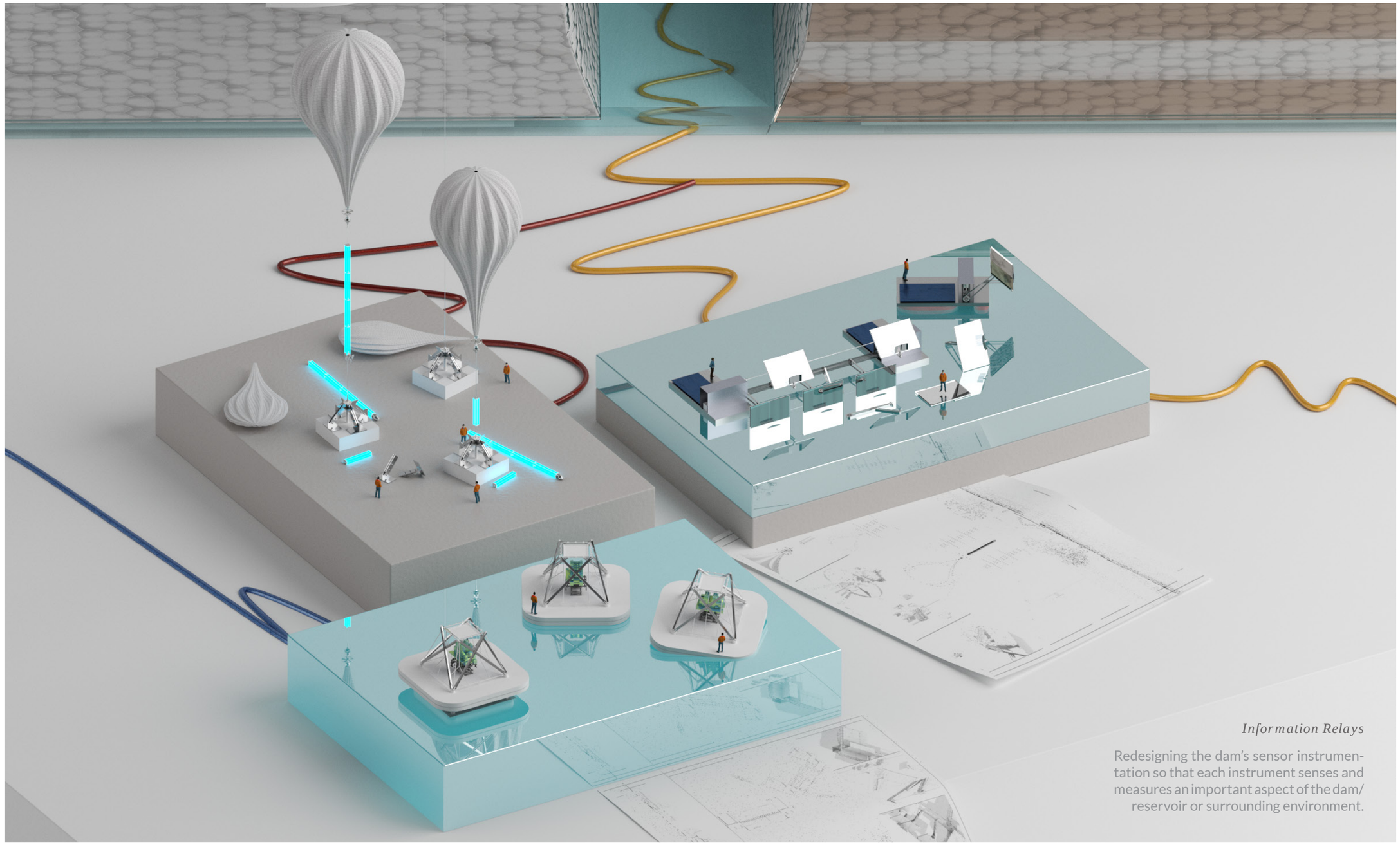


California WaterRelated Map



California Atmosphere Map

much of this information is often invisible or restricted to experts, both because of the complexity of the data, which is challenging to visualize, and because it is often hidden in tiny details that are overlooked, like the water levels, which are often the result of years accumulation.

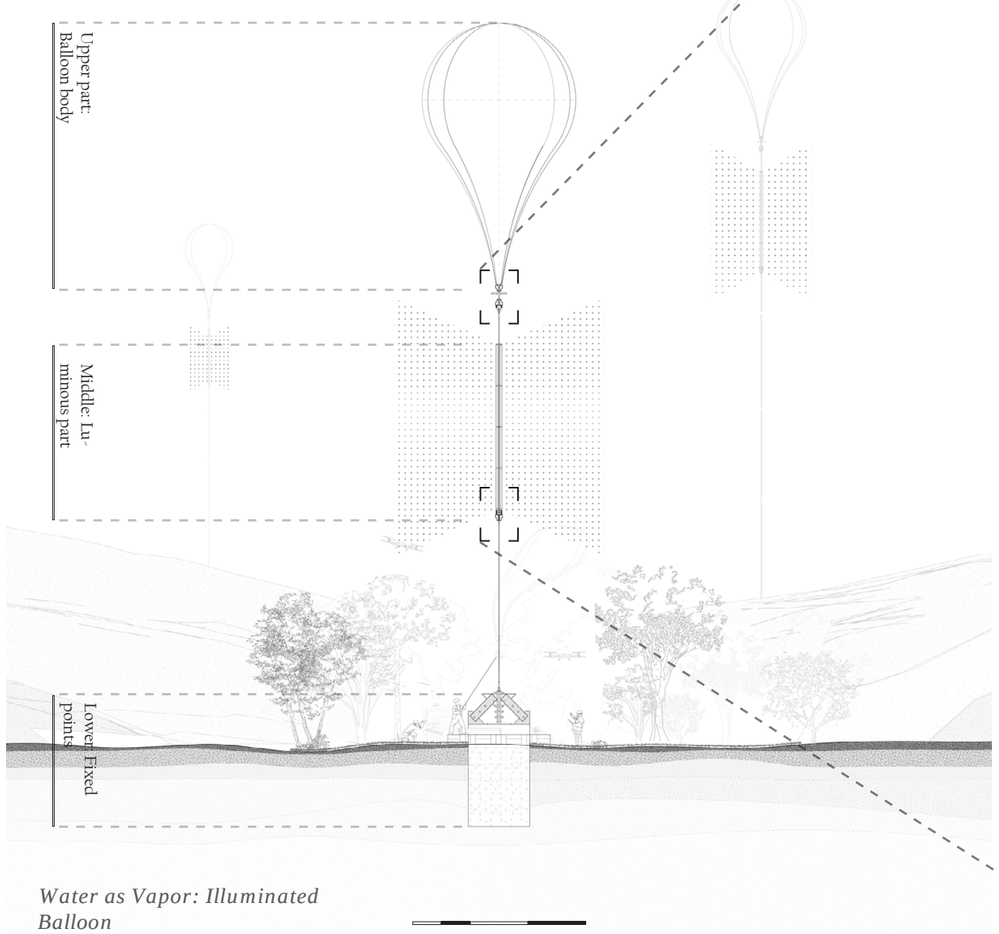


Information Relays

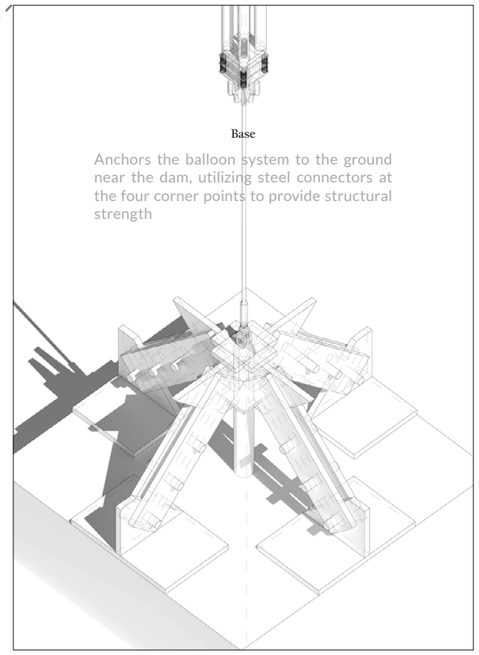
Redesigning the dam's sensor instrumentation so that each instrument senses and measures an important aspect of the dam/reservoir or surrounding environment.

This transition from information to knowledge is found within the design of the instruments that conduct, contain, and relay measurements, allowing for their observation and communication, and so on.

Atmospheric circulation is critical for dams to adjust storage, and for the public, this invisible circulation is difficult to understand in the same way as temperature and humidity, much less to say that it facilitates the associated dam adjustments.

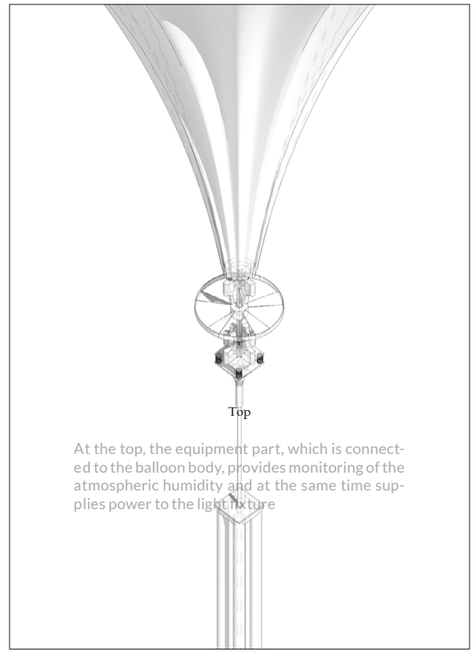


Water as Vapor: Illuminated Balloon



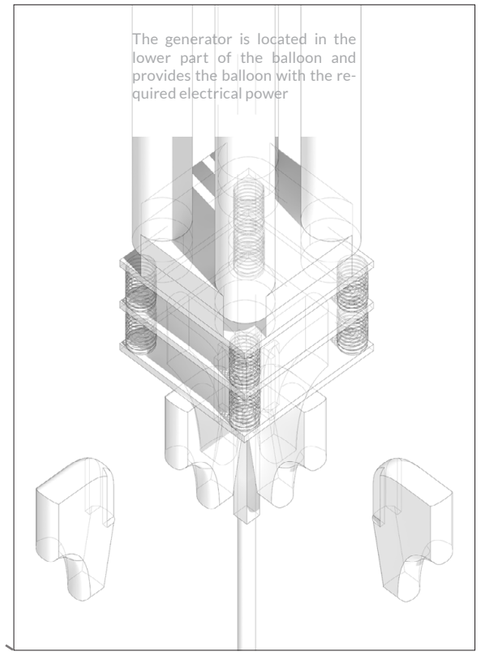
Base

Anchors the balloon system to the ground near the dam, utilizing steel connectors at the four corner points to provide structural strength

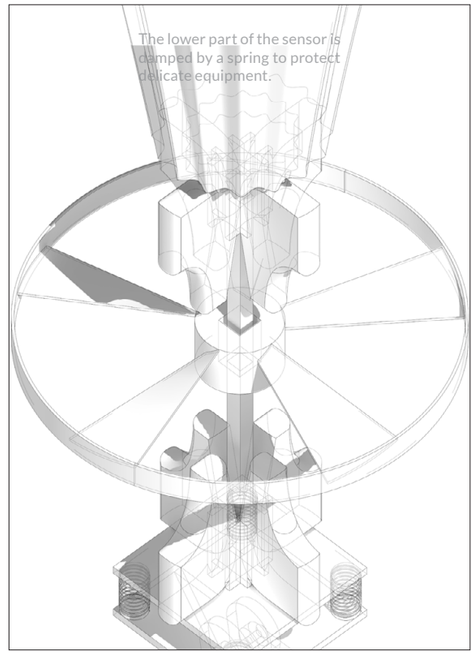


Top

At the top, the equipment part, which is connected to the balloon body, provides monitoring of the atmospheric humidity and at the same time supplies power to the light fixture



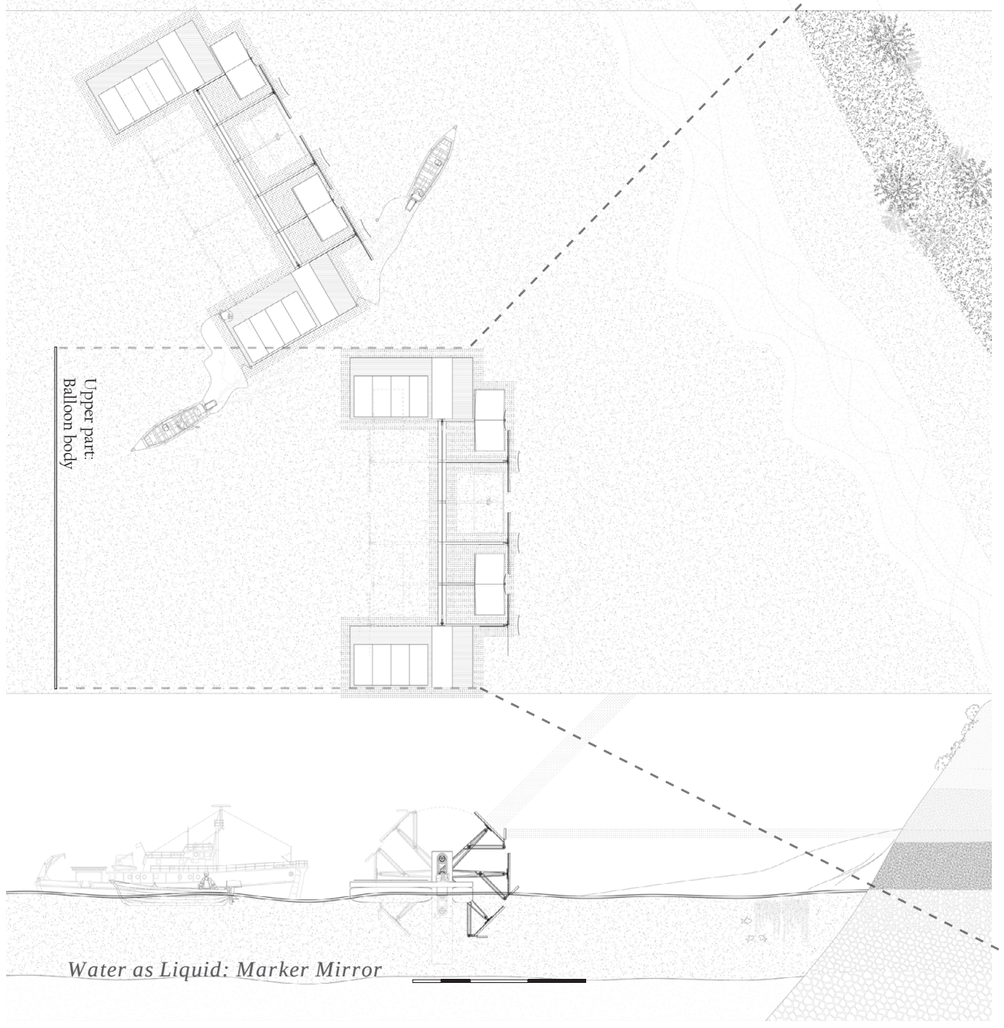
The generator is located in the lower part of the balloon and provides the balloon with the required electrical power



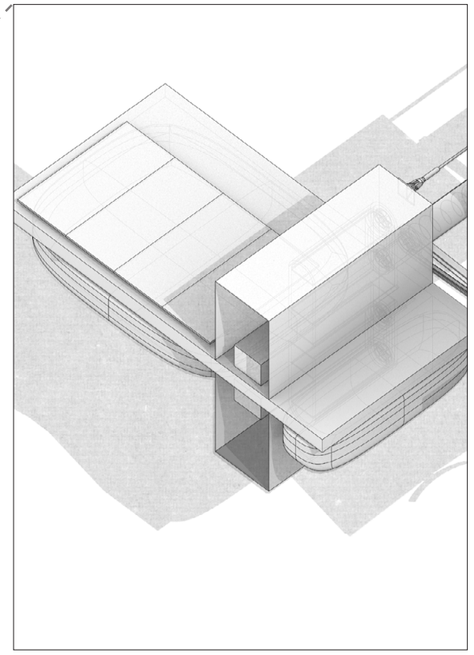
The lower part of the sensor is damped by a spring to protect delicate equipment.

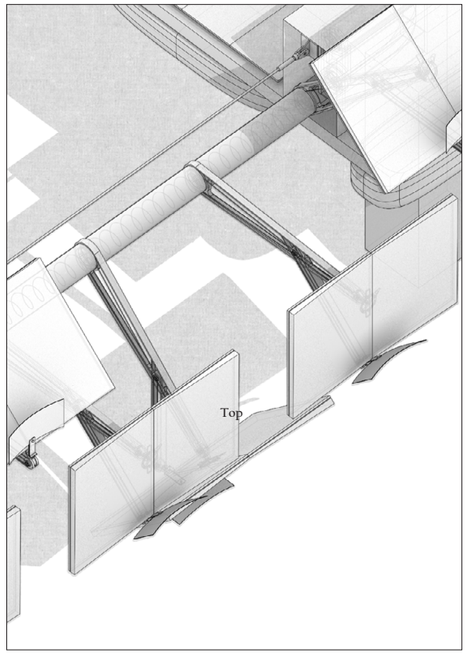
And the water level would be another kind of information; it's, it's visible, but it changes so slowly that if the public notices it's changing, it may already be too late.

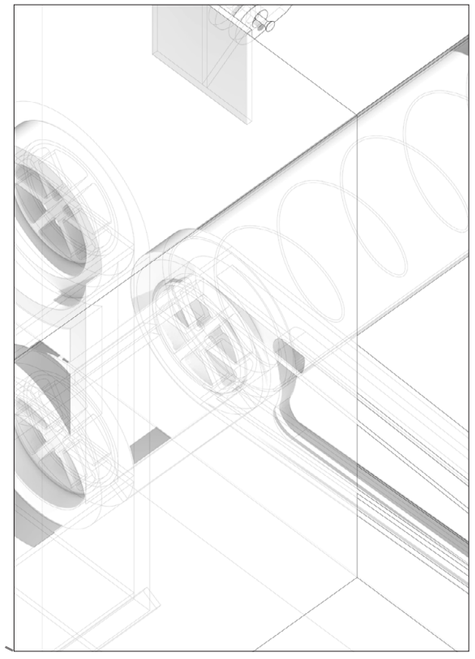
This set of mirror inserts, consisting of a set of mirrors and lenses floating in the water, will follow the sunlight and project the current water level on the mountain, the past water level, and at the same time, will predict the future water level changes based on the sensors in the water, which, as you can imagine, will be much closer to the reality of the predictions, if we pay enough attention to the water level.

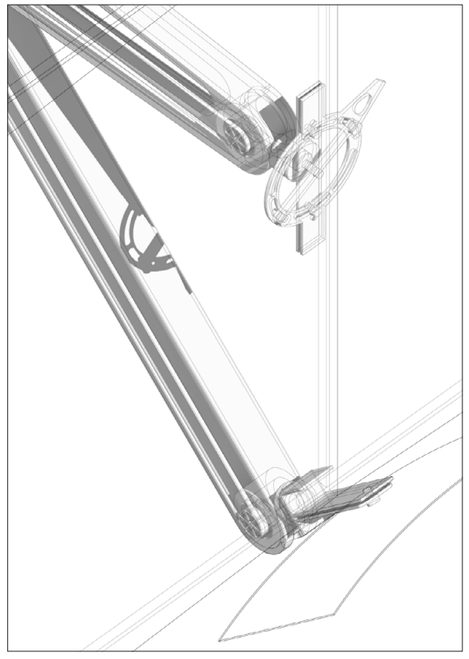


Water as Liquid: Marker Mirror



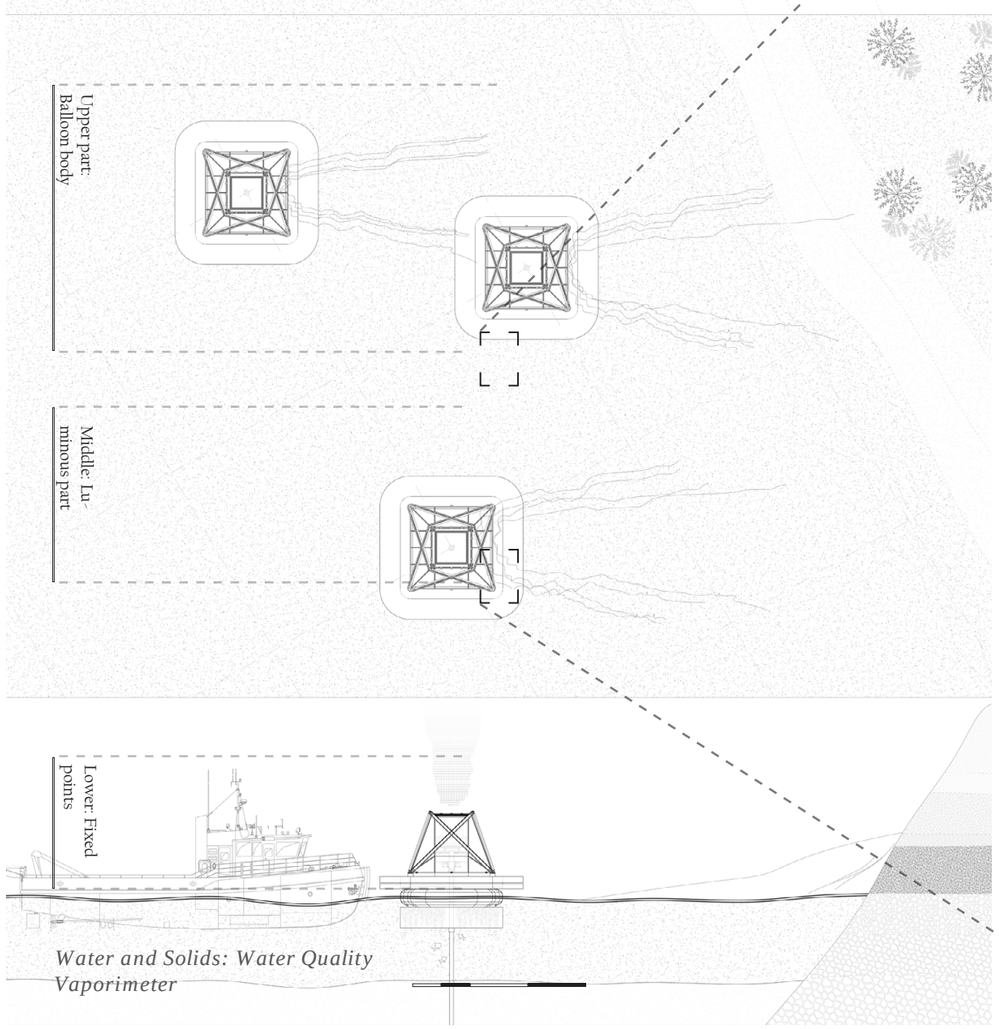


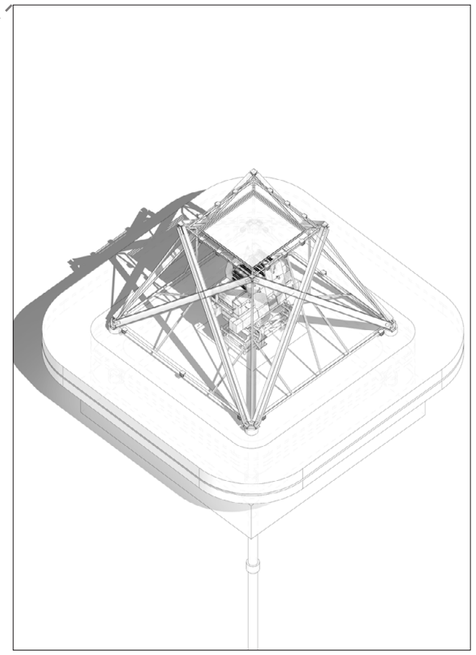


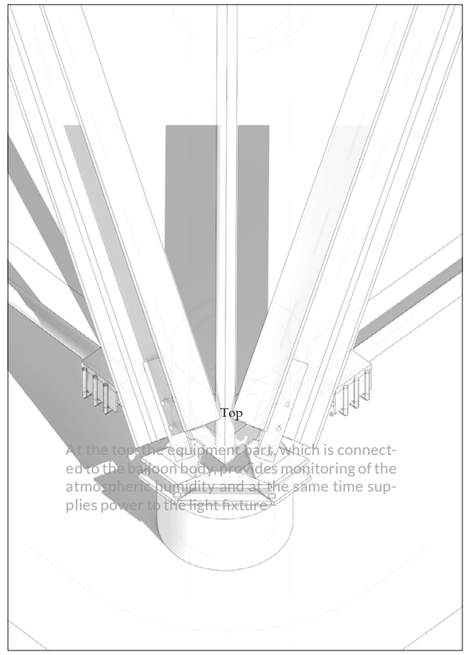


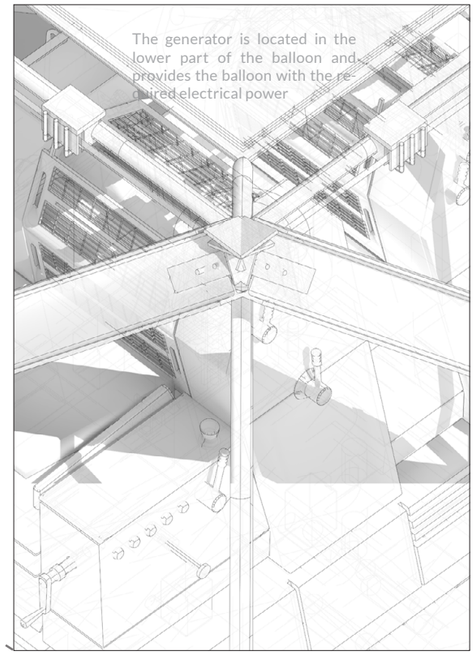
This transition from information to knowledge is found within the design of the instruments that conduct, contain, and relay measurements, allowing for their observation and communication, and so on.

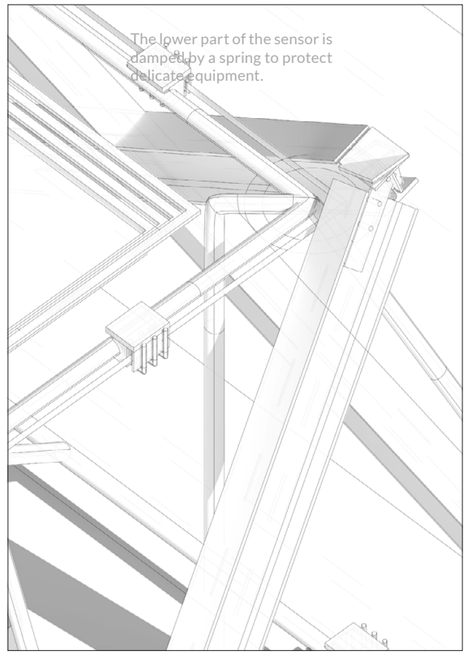
Atmospheric circulation is critical for dams to adjust storage, and for the public, this invisible circulation is difficult to understand in the same way as temperature and humidity, much less to say that it facilitates the associated dam adjustments.











02

Breaking the Resource Paradox

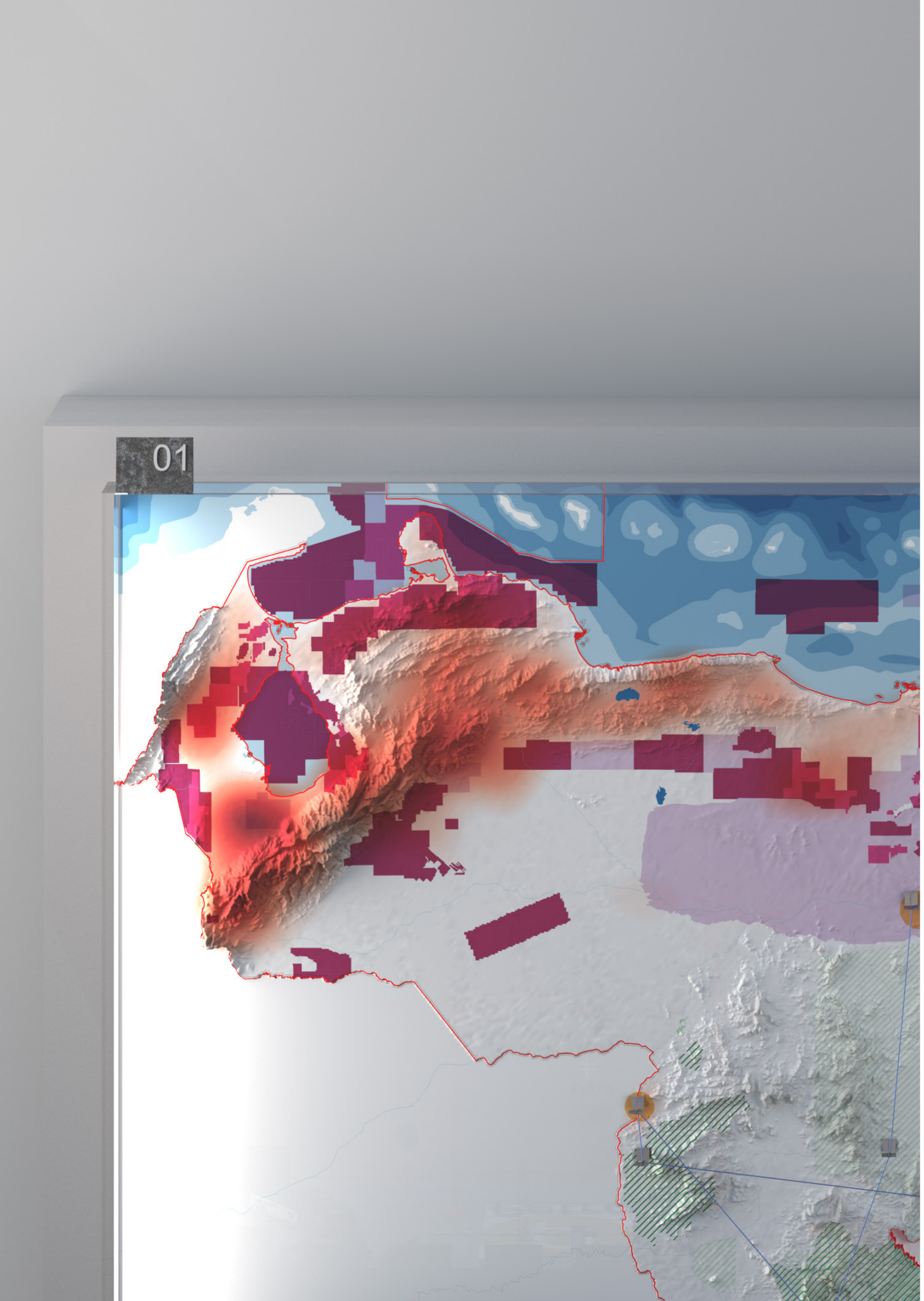
Using Climate as a Lever for Energopolitics

Location: Venezuela

Individual Academic work

Instructor:
Mireia Luzarraga
Alejandro Muiño
Alonso L. Ortega

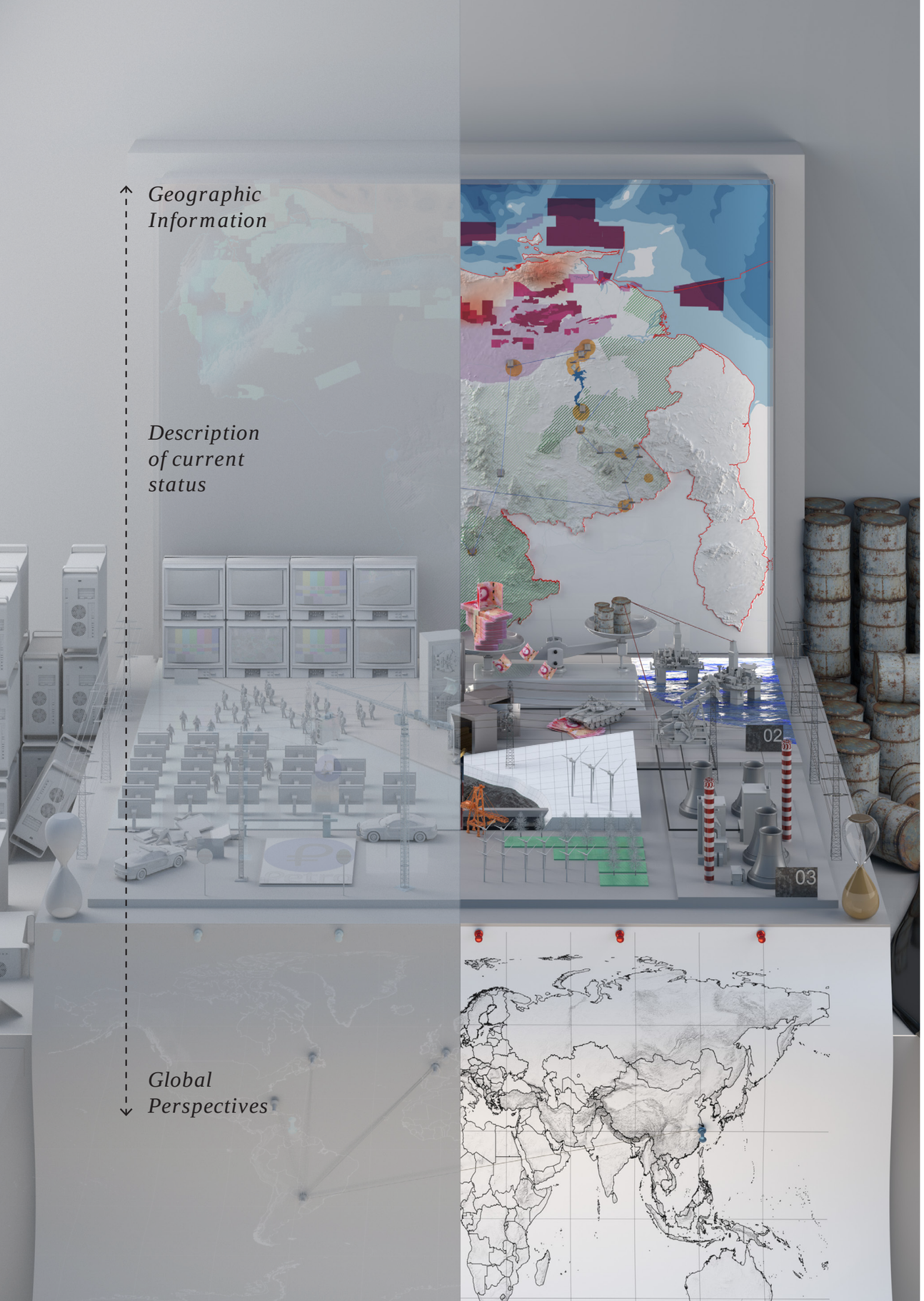
Fall 2023



Venezuela has the world's largest proven oil reserves, But it suffers from the curse of oil , or a paradox.*

This map depicts the entire national border of Venezuela. The red to purple color blocks indicate the status of its oil extraction, the orange-red gradient color block, represents the distribution of the population.

Additional Notes:
In economics, this phenomenon can be explained by the term "Dutch Disease", which refers to the apparent causal relationship between the growth of economic development in a particular sector and the decline of other sectors



Extensive
oil
extraction

single source

Excessive
infrastructure
development

Oil economy:
Typical way of single-resource-oriented economic model, Oil is directly linked to the $

*rent-
seeking
power*

Infrastructure economy:
Use of infrastructure by State-owned companies to provide services, access to monopoly economic revenues and cheap energy

Sharing System

Political+Worldwide
Balance Consuming

with mutual supervision

Political+City
Reduce Pollution

Resources Council

Political+Nationwide
Resource Distribution

currency Bazaar

Capital+City
Coexistence

Credit for Industry

Capital+Nationwide
Reduce Pollution

06

CO2

Carbon Credit for Individual

Capital+Community
Reduce Pollution

07

National Park Expanding

Ecology+Nationwide
Rebuild Ecology

08

$$$

Ecological protection subsidies

Ecology+Community
Coexistence

09

Military Operation: Enforcement of Rainforest Blockade

Military+Nationwide
Rebuild Ecology

10

Carbon Capture System

Infrustructure +Nationwide
Reduce Pollution

Pokémon™

11

Miniatur-ized Power

12

New crypto-currency computing device

13

$$$

New Eco-logical counting

14

$$$ $$$

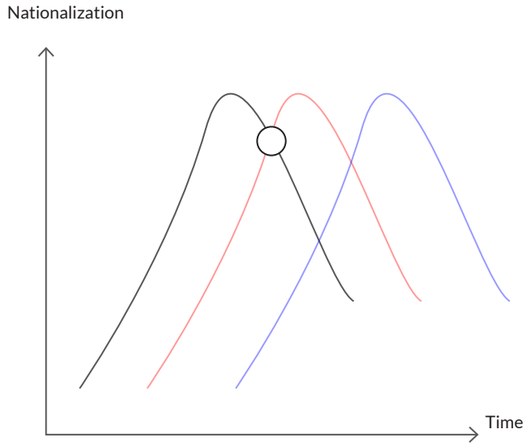
Adding weight to energy consump-

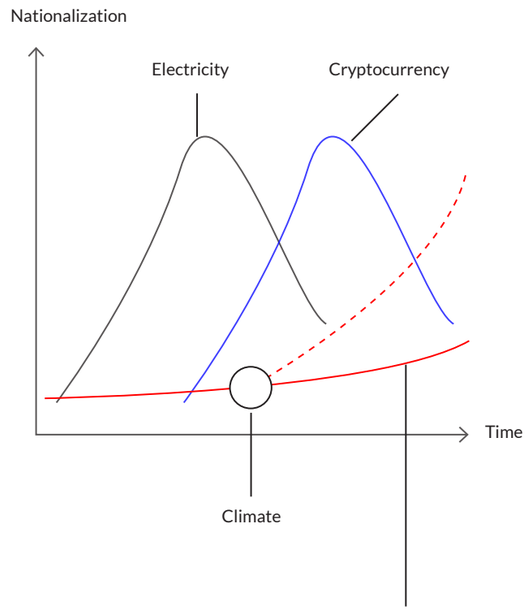
15

A self-sustaining

So, starting from this monotonous cycle, I aim to identify the key to solving the problem or, in other words, the trends for the future development of such countries.

In the Theater of Operations (TO) diagram, I envision numerous solutions from different scales and interest groups. Ultimately, I find that whether starting from electricity, energy, or climate, they all converge on a contradiction—namely, the conflict between the nationalization of resources by the state and the people's responses to this monopoly.





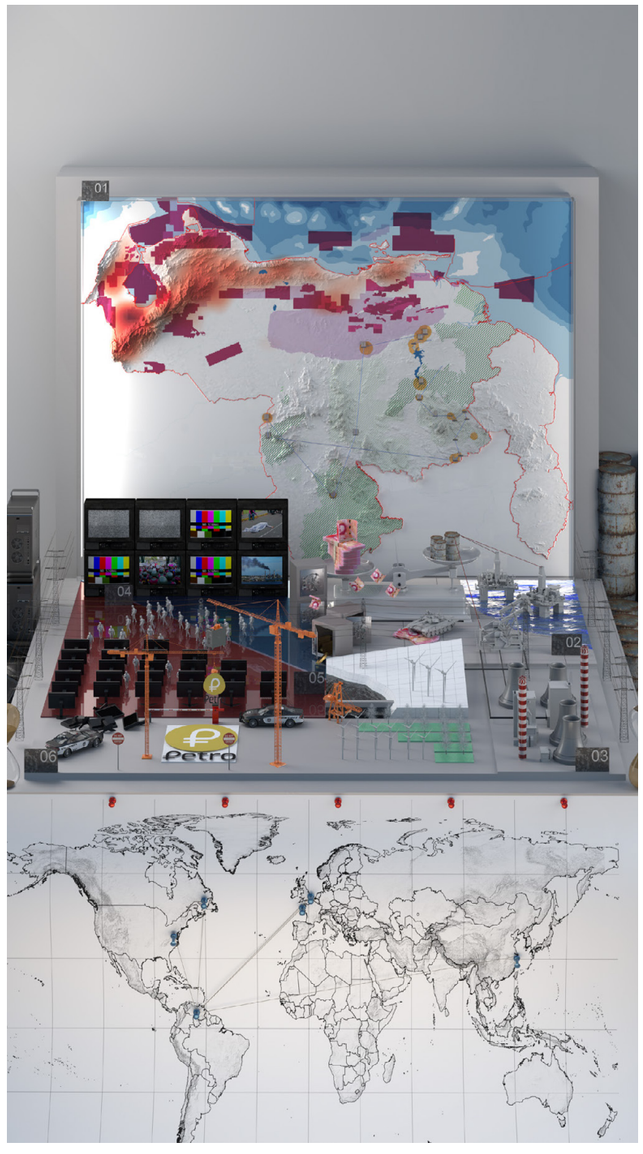
Indeed, the Venezuelan government has taken such an approach. They have introduced Petrocoin, a national-level cryptocurrency, in an attempt to circumvent international sanctions on their oil exports.

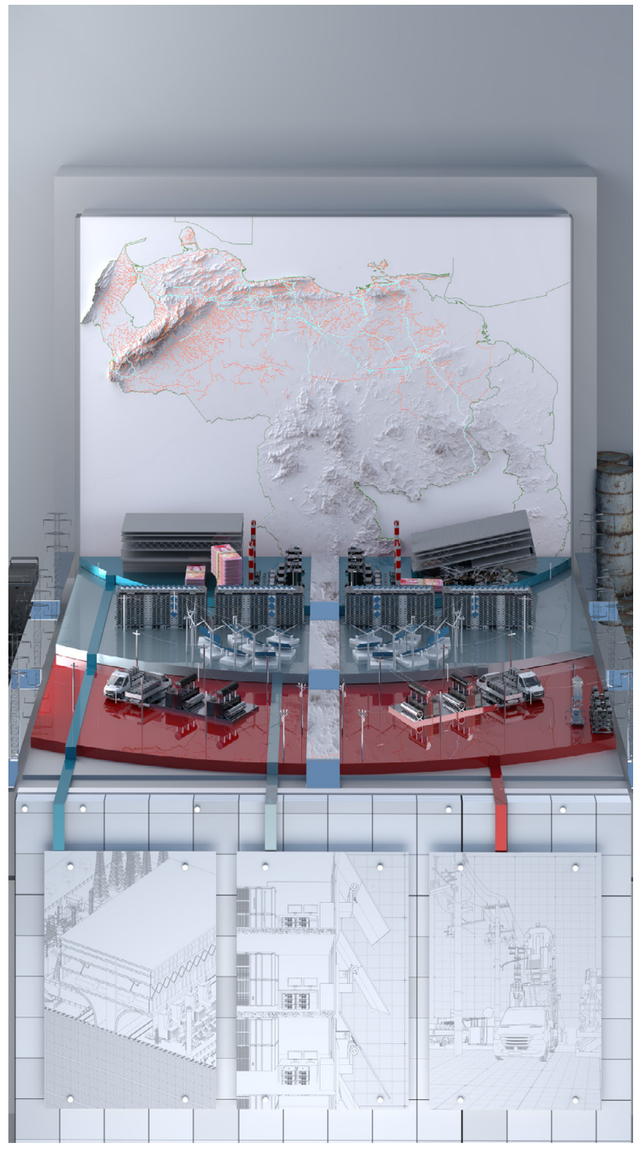
For ordinary people, the initial situation is often chaotic, but soon they develop their responses to the actions of the state. They form their own communities, seize state assets, or devise their own survival methods. In his research on slums, economist Edward Glaeser suggests that slums can sometimes act as a springboard within a city. In the case of Venezuela, residents are obtaining usable electricity through methods such as stealing power and generating their own electricity.

Inspired by these ideas and discoveries, I want to explore a narrative about the future of Venezuela through design. This story will focus on electricity and cryptocurrency, with the former being crucial both now and in the future, while the latter represents a potentially vital resource in the future.

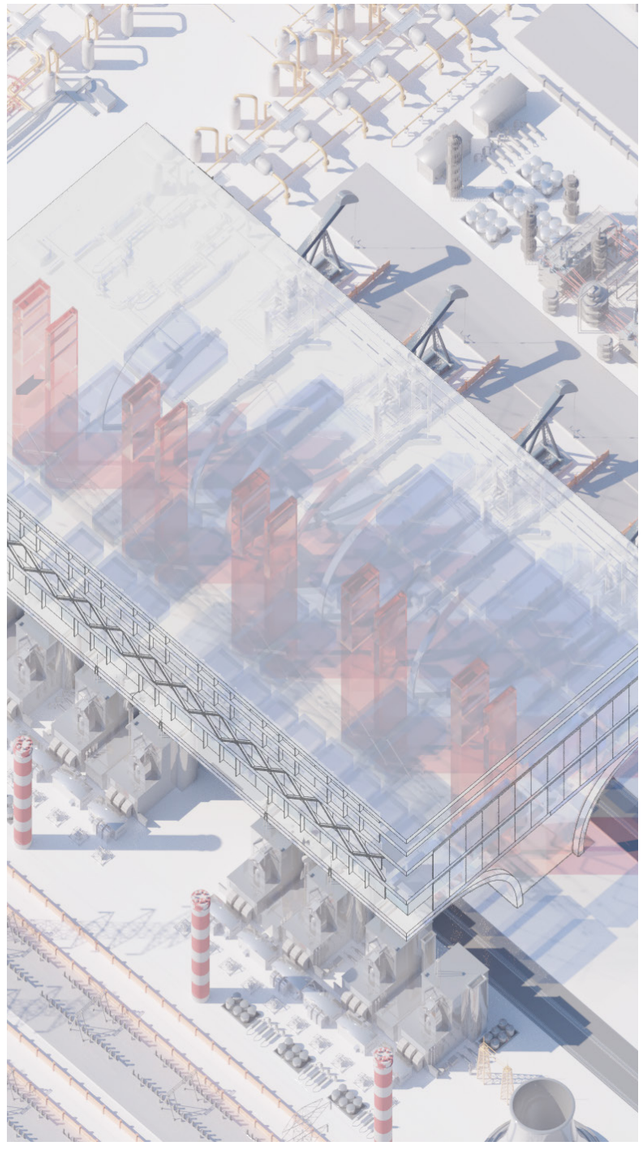
In the changing climate of the future, as an intervening parameter, it influences residents' access to electricity. Climate will speed up residents' access to electricity

This is because climate-dependent renewable energy sources, such as solar power, are challenging for a single country to monopolize. While a nation can control its entire oil supply, harnessing sunlight across the entire country is a more decentralized and challenging endeavor.





status quo *options* *envisage*



Phase 1

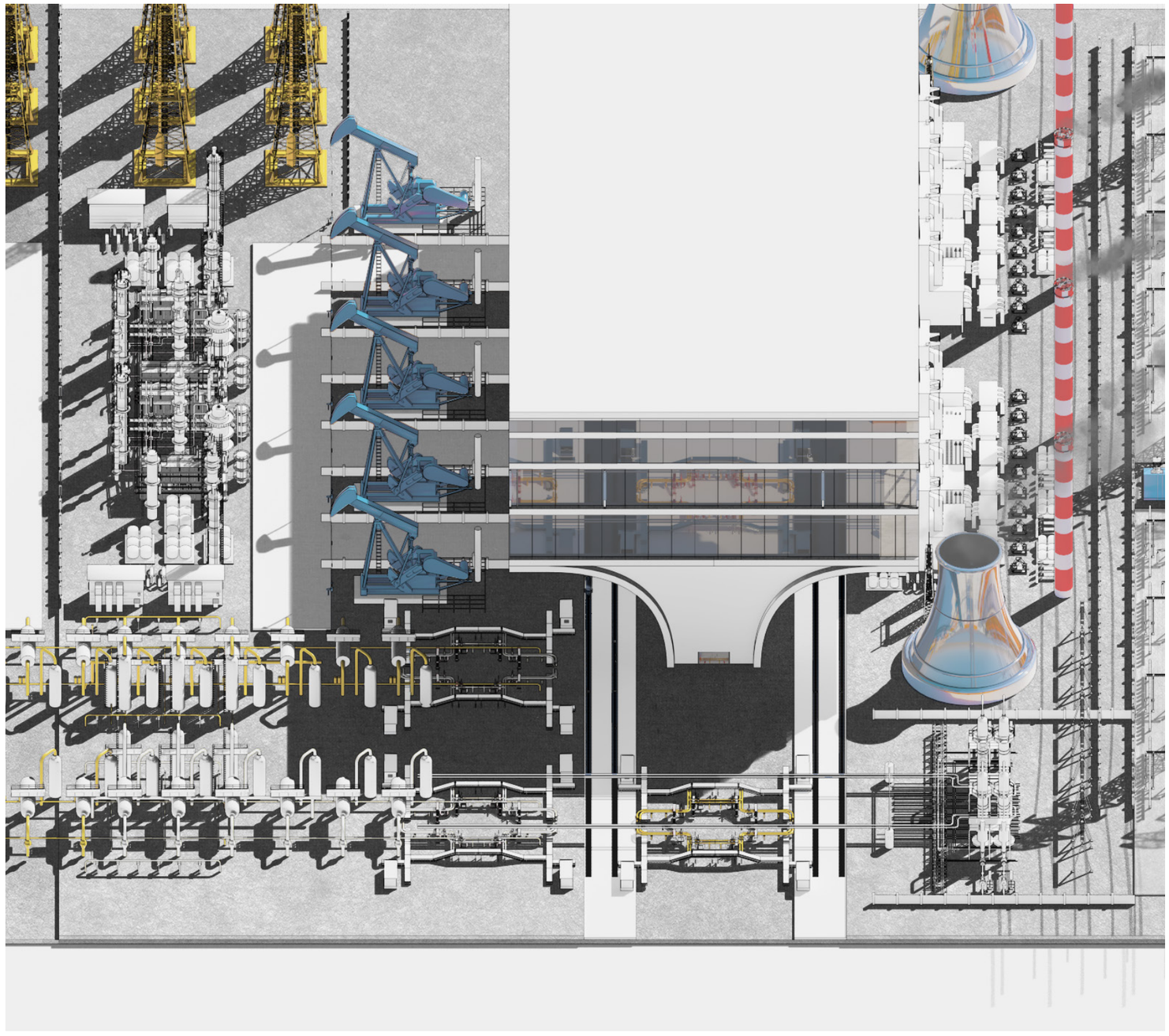
Responsible for testing and performance tuning of new vehicles, with a huge ceiling for natural light to shine on any instrument

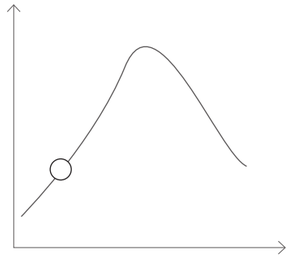
Phase 2

Research center for debugging the production logic of plants using the latest technology and materials

Phase 3

Responsible for the validation of new vehicle technologies and experimental assembly for testing in R&D centers

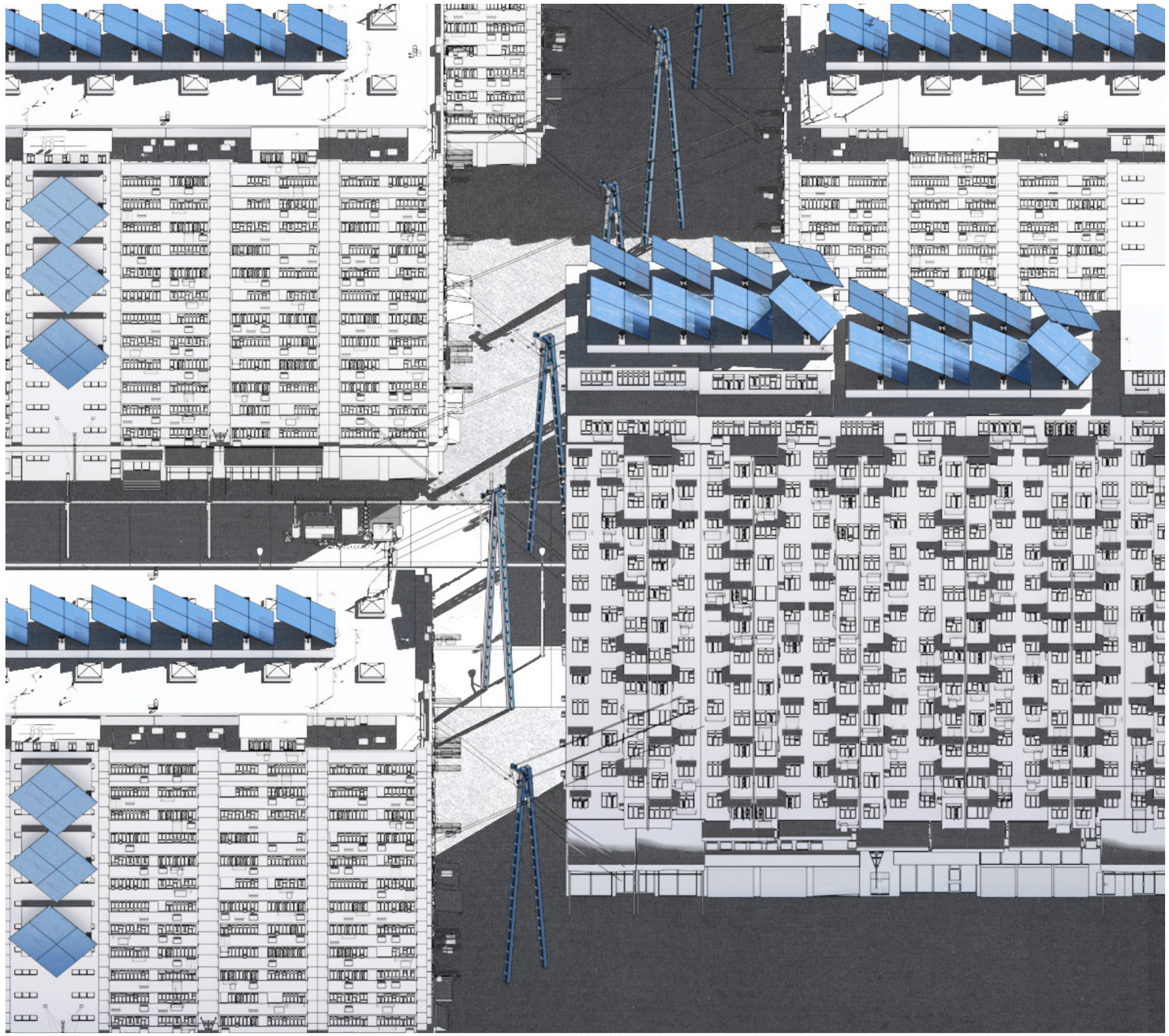


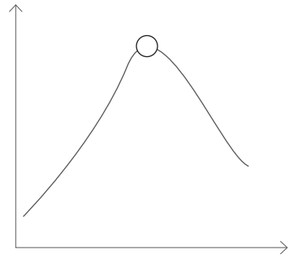


Phase 1

In the first phase, facing a financial crisis, the Venezuelan government decides to mobilize the entire nation to develop the Bitcoin industry. Taking advantage of abandoned hydroelectric systems, they opt to rely entirely on the oil system for power generation. This electricity is then transmitted to a cryptocurrency production facility constructed above the power center.

The oil is extracted, refined, and ultimately transported to fuel power plants. The centralized production model reduces power loss during transmission. Subsequently, a significant amount of electricity is transmitted to the cryptocurrency center.

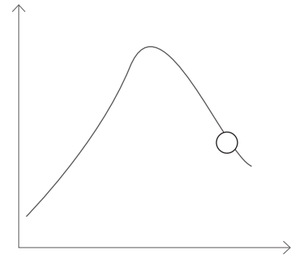




Phase 2

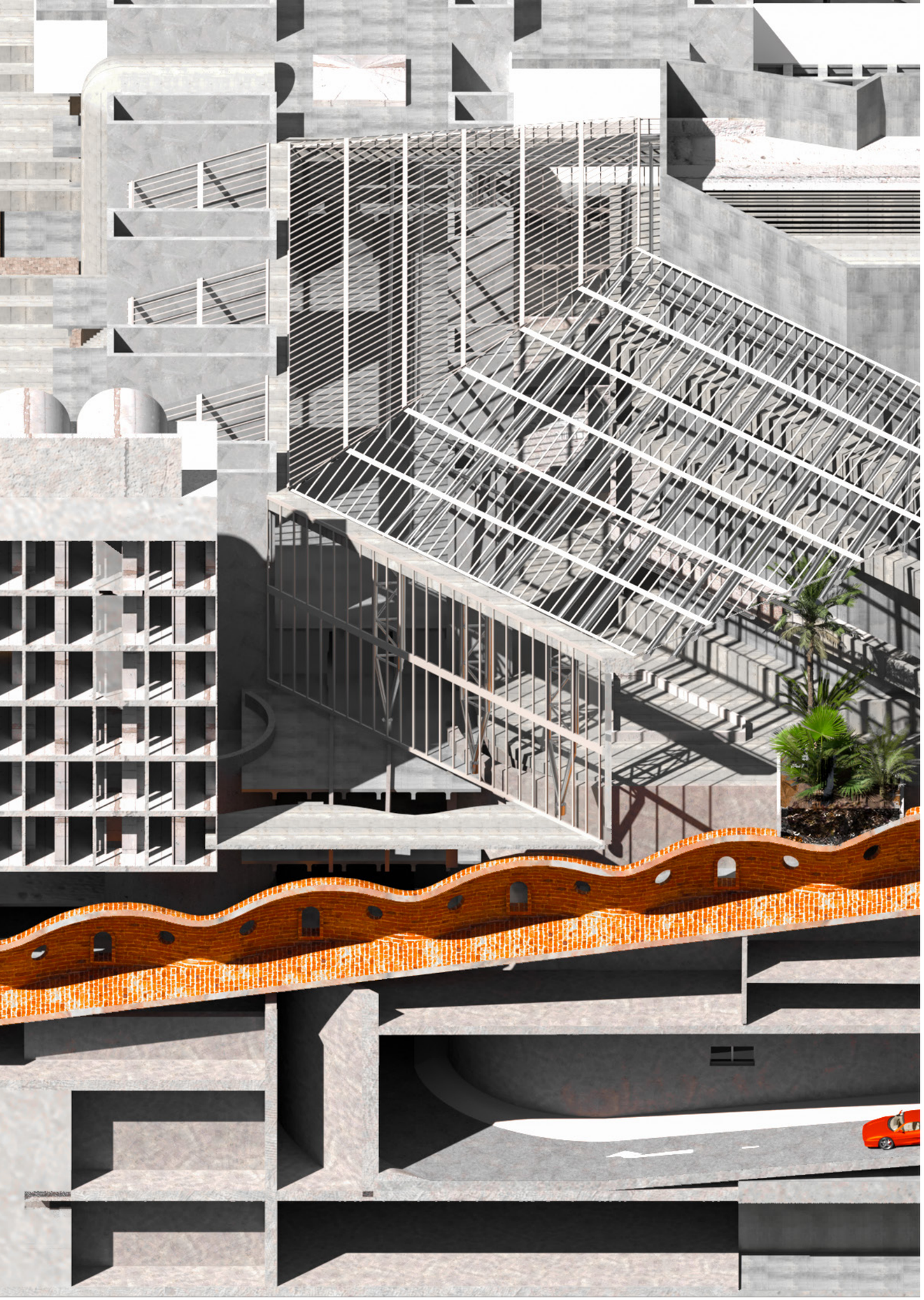
In the second phase, urban residents notice a sharp decrease in the available electricity. Consequently, they begin to explore ways to expand their access to power within their homes. In the equatorial country of Venezuela, the most readily available resource is solar energy. Therefore, a large number of solar panels are added to residential spaces by the residents.

To address the uneven distribution of electricity among residential buildings, residents spontaneously start using centralized communication stations for the supply and storage of power.



Phase 3

The third phase, rural inhabitants gradually realize they can no longer rely on the existing national power grid. Consequently, they start seeking their own ways of generating electricity. Naturally, they also spontaneously devise methods to pilfer electricity from the national grid using new devices. Throughout the villages, various self-powered facilities are scattered. Some of these facilities utilize the waste heat generated from cryptocurrency calculations to drive small turbines, storing and supplying electricity to the entire village grid. These facilities become the new "currency banks" in the rural towns.



03

Reimagine Everydayness

Location: London

Collaborative Academic Work

Instructor:
Emanuel Admassu

Collaborator :
Duncan Tomlin

Spring 2023

Echoes of History

Ru ware, originating from the central region of China about 1,000 years ago, was made from special materials and initially used by the royal aristocracy of the Song Dynasty. Gradually, it permeated the daily lives of common people.

400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000

1753

The British Museum

The British Empire

Song dynasty
960 1279

Qing Ci

Ru Ware

Qing dynasty
1644 1911

Edo period Japan
1600 1868

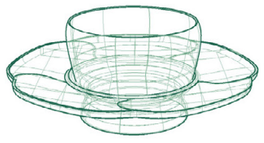
Seiji

Kyō ware

Goryeo
918 1392

Gangjin Kiln

Goryeo celadon alms-bowl



Bowl Stand Ru Ware
Type: Celadon

Art Style
Connection
Object
Country/Culture
Start
End
Action by British Museum
War
Trade
Trade Route
Dissemination of Skill
Kilns Ports

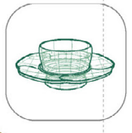
Qing dynasty

War Reperation

Government Loan

Interest

The British Empire

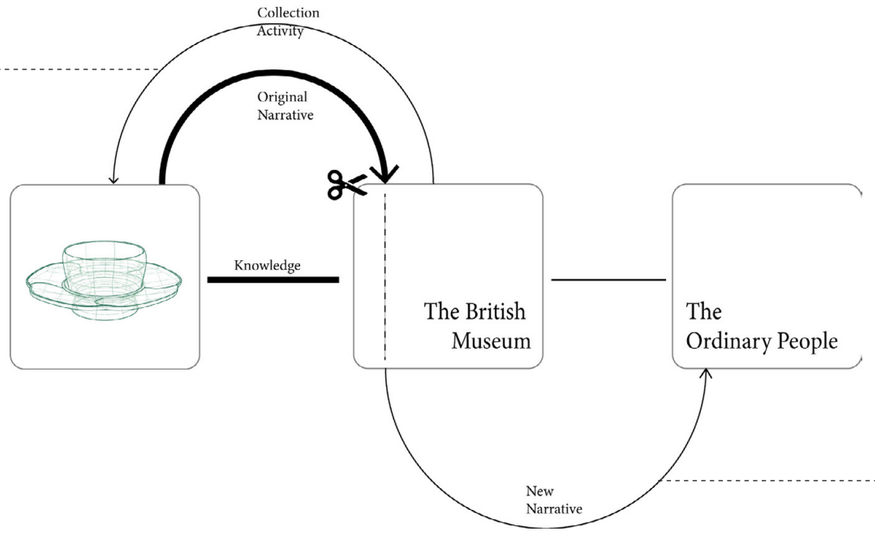


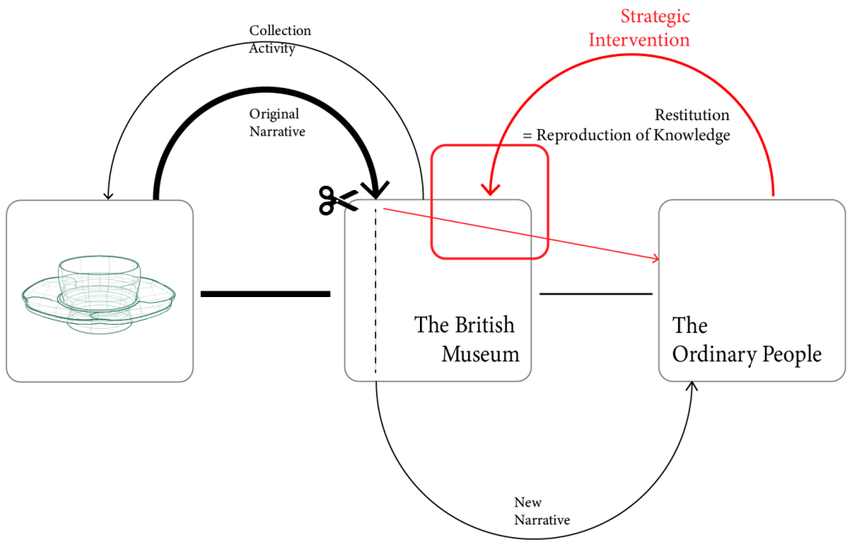
Agent
Percival David Foundation of Chinese Art

The British Museum

The Night Revels of Han Xizai
or The Night Entertainments of Han Xizai, 1723
Gu Hongzhong
10th-century (original)
12th-century (remake)

One of the earliest known paintings by Castiglione in China in a blend of Chinese and European styles, 1723
©The Palace Museum



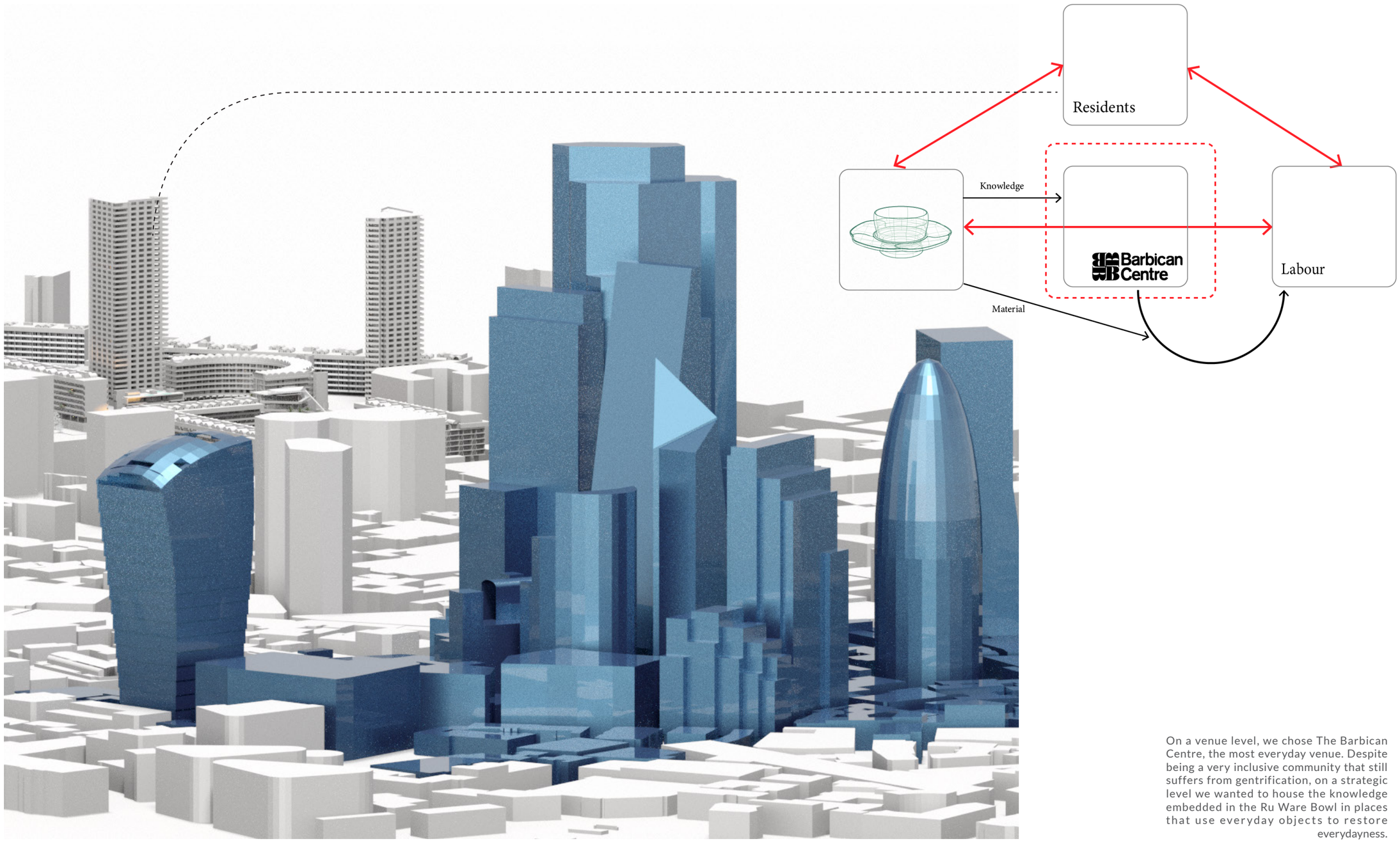


© The Citi exhibition
China's
hidden century
Exhibition / 18 May 2023 – 8 Oct 2023

Edited Narrative

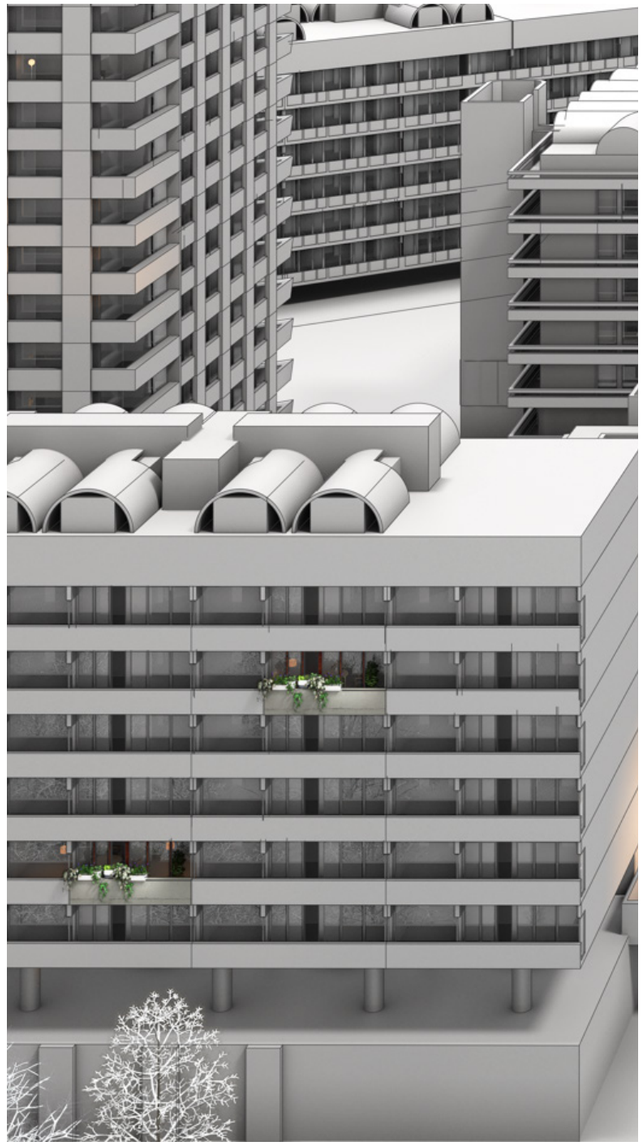
We have observed this type of narrative editing as part of the museum's construction of a national imagination. However, in the eternal. When the physical entity of the artifact disappears, its original narrative is completely lost.

To detach the artifact from the museum's narrative, we aim to reconstruct the process of repatriation of the artifact, turning the physical return into a return of knowledge.

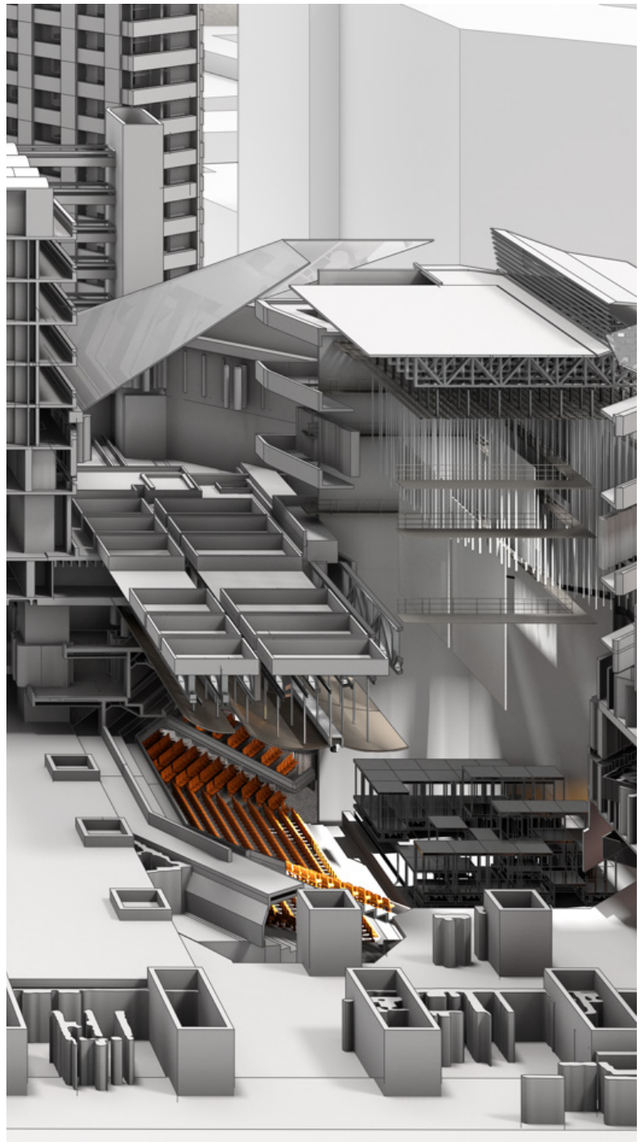


On a venue level, we chose The Barbican Centre, the most everyday venue. Despite being a very inclusive community that still suffers from gentrification, on a strategic level we wanted to house the knowledge embedded in the Ru Ware Bowl in places that use everyday objects to restore everydayness.

Reimagine
Everydayness

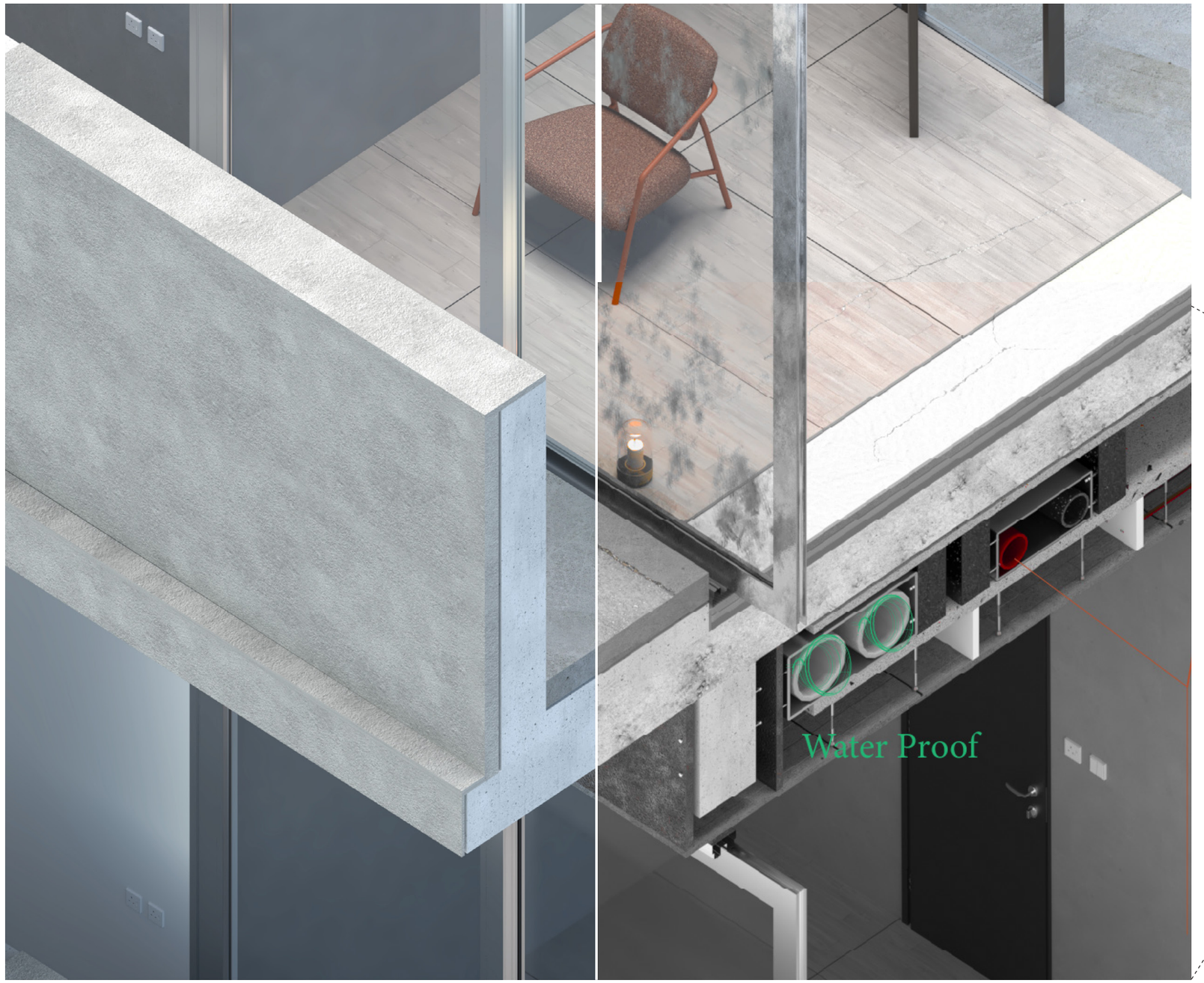


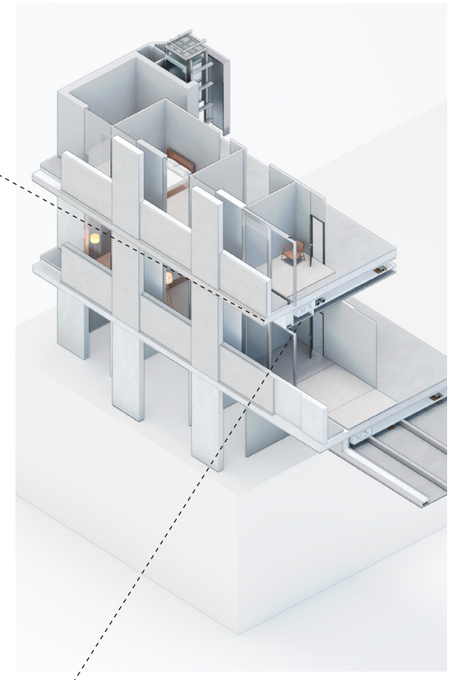
Residential Intervention



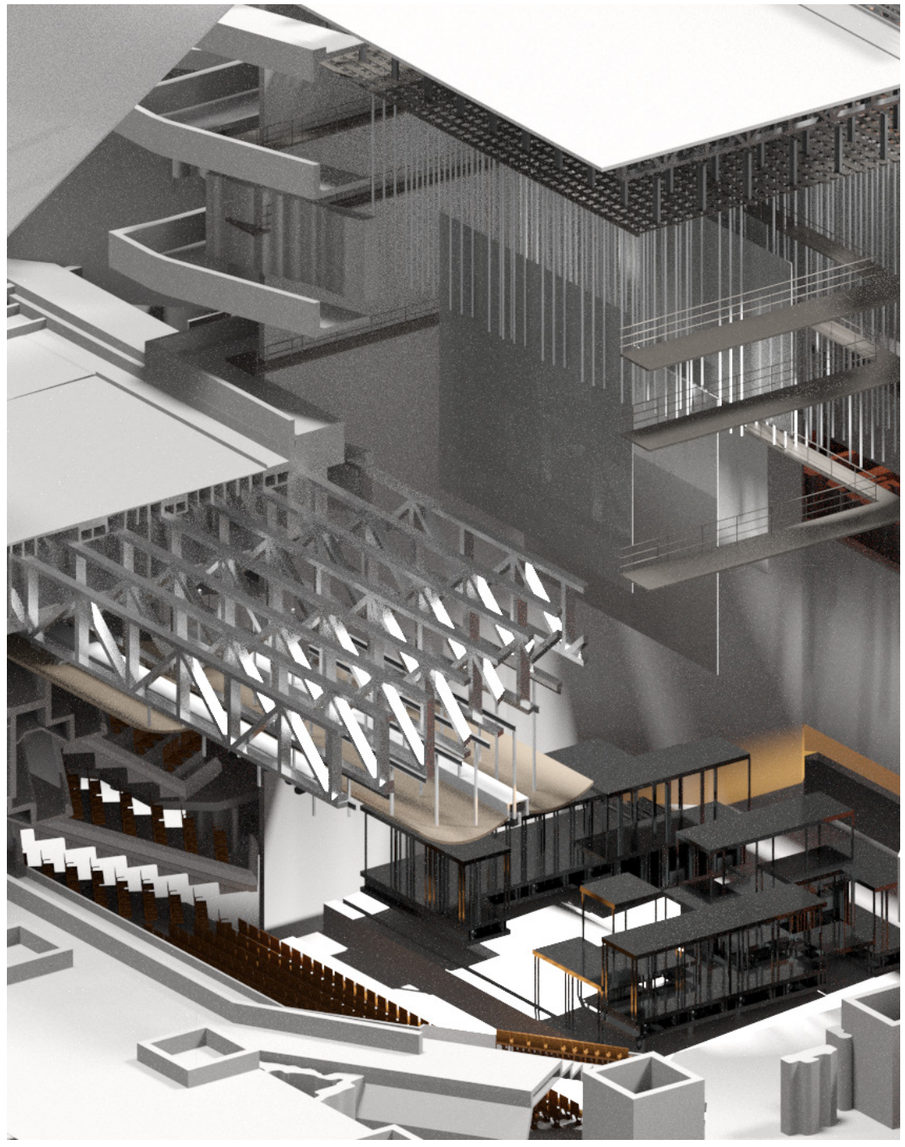
Specific artificial exhibition scope

Energy/Plant Adaptation



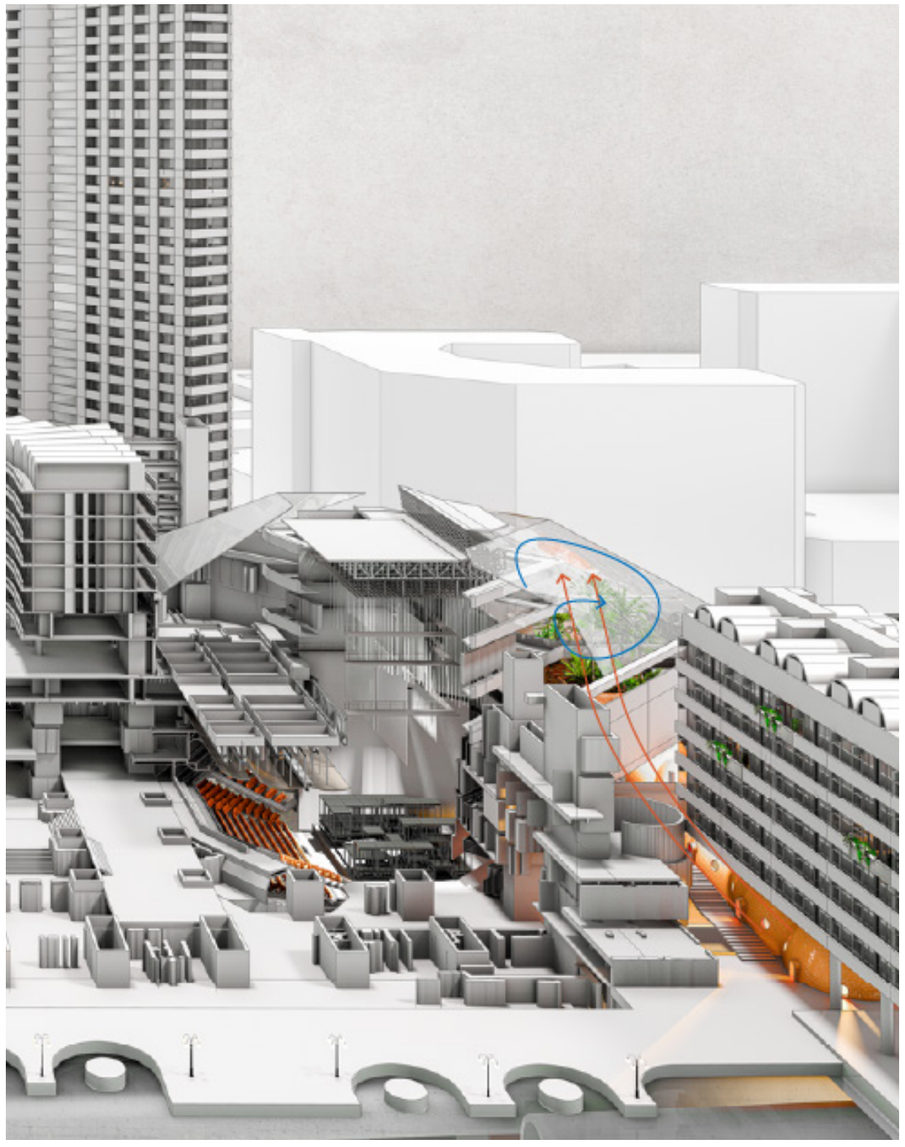


The new kiln added allows people to produce the architectural components they need on their own, reducing the damage caused by multiple labor-intensive processes. Due to the unique properties of ceramics, it can serve as anything from thermal insulation components to waterproofing components and various other building parts.



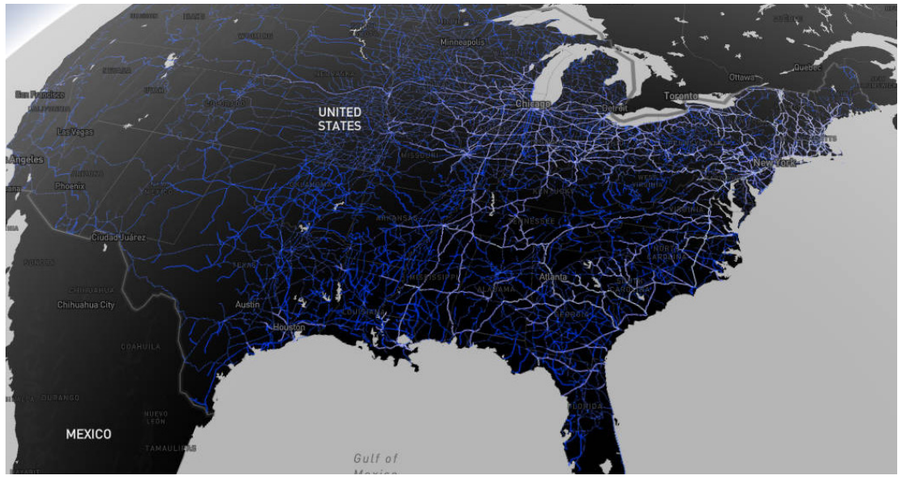
We also hope to transform the Barbican's performance center. Due to gentrification, the theater itself has become an awkward space. We hope to convert this theater into a museum, a performance space that allows for more diverse interactions between people and artifacts.

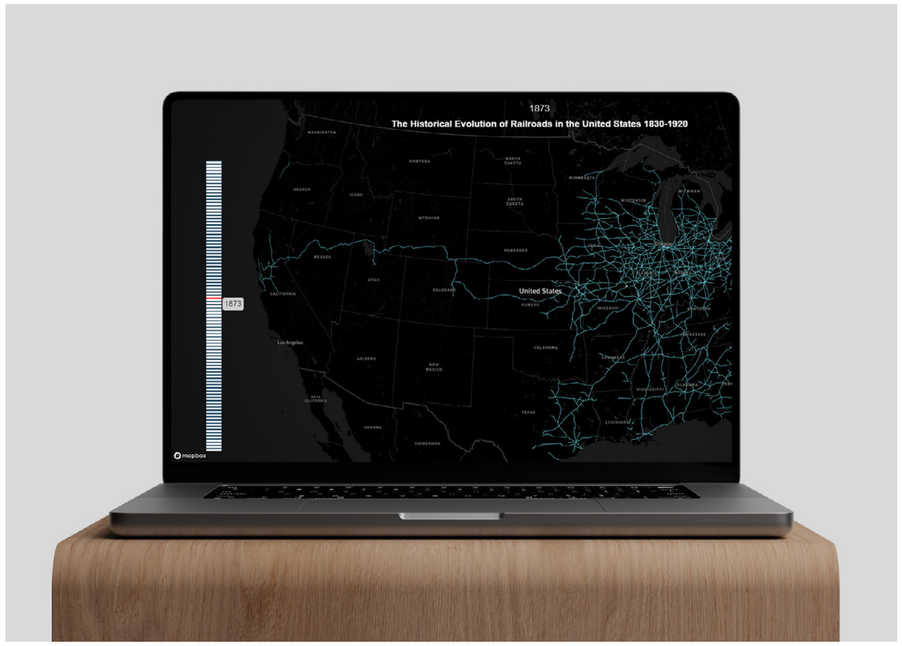
Specific artificial exhibition scope



The addition of the new kiln will also provide enough heat for the greenhouses in the complex to allow the plants in the greenhouses to be sustainable.

Energy/Plant Adaptation





PUBLIC DATA AND DATA PUBLICS

Instructor:
Jia Zhang

A Historical Presentation of American Railroads

Study of infrastructure

GAP III: DESIGN SEMINAR

Instructor:
Wael Morcos

Graphic Design: Magazine