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Transforming the MET Cloisters into Instrument of Manipulation of Time
(UN)SPONTANEOUS WATERSCAPE
GIS+Blender+Grasshopper Research

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COLUMBIA GSAPP 2022 SUMMER
ADVANCED ARCH DESIGN STUDIO
Water is everywhere. It is shapeless, but when it runs through different media, it takes the shape of the media and becomes the proxy for it.

As long as the shape of the terrain forms a three-sided surrounding by barrier islands or peninsula, water will generate salt mash in the bay. This phenomenon also occurs in the Yellow Ocean between China and the Korean Peninsula, and the Mexico bay. Highly populated, the urbanization process and industrialization in these areas is threatening the salt marsh.

Our site, Jamaica bay in the southern coast of New York City, is a beautiful estuary in the Long Island, covered mostly by salt marshes. The ever-going process of degradation is caused by erosion, sea level rise and pollution, which are highly related to human activities. To understand the degradation, we have to understand human’s impact on the flow of water first.
The categorization of spontaneous and unspontaneous is distinguished by the power source of water flow.

If the water is only moving because of gravity, it is a spontaneous water. On the other hand, if the water is moving because of an external force, such as pumping, collecting and blocking, then it becomes unspontaneous water. This outer force includes sewage catch basins, water treatment pumping and water dam. Different human infrastructure change the flow of water by aggregating, accelerating and stopping the flow of water.
Jamaica Bay is a hybrid urban area with both urban infrastructure and salt marshland. The major urban infrastructure in Jamaica Bay is composed of Combined Sewer System called CSO, in which a single pipe that carries both stormwater runoff and sewage from buildings.
A total of 6 hybrid watershed machines as a way of emerge hybrid water action is projected on the site to deal with different problems in the salt marsh degradation - pollution, sea level rise and erosion. They filtrates, replace, mixing, splash and capture the water in a theatrical ways of interacting water.
POSITIONING MACHINE

Machines are architecture objects as well as technical objects which actively interact with landscape.
PURIFIER
Attachable to roof
Awareness: Pollution before sewage.

BARRIER
Reduce soil erosion
Accumulate salt marsh boundary
SPASHING PUMP

Sediment replacement
Lift the salt marsh

TREADMILL

Carries sediments to the low marsh.
Balance the equilibrium
MIXER

Revolved by humans and wind.
Add nutrient and oxygen

WAVE ATTENUATOR

Reduce soil erosion at shoreline
Rearrangeable configurations
Humans have been inventing machines to produce labour, profits and values. However, machines in our project are invented as imaginations for a different kind of labour on landscapes. Instead of exploiting the landscape, the ‘labour’ is actually a playful way for human and all species to experiment, interact with landscape.
In the geology perspective, overmining and shortsighted-policy of industrialization in the Amazon forest not only damaged the land as itself, but also went into the demarcated indigenous territories. As land cover of agriculture expands into the deep rainforest, severe deforestation impact has been left upon the virgin forest.
Carbon Captor - the axon

The carbon capturing device, Carbon Captor, works in the way which both incorporate water and air. It is using a material with two characteristics under certain humidity. In the case of ambient air, the material absorbs CO2 from ambient air, whereas in the case of the material is infiltrated with water after one hour, it starts to emit carbon dioxide. Utilizing this trait, this device is using kinetic and airtight techniques to secure the dynamic flow of how the material functions. Water collected from the top of the device will be used for securing and solidifying the carbon that the material has captured. After the tank is sealed airtight, captured CO2 will be injected to a solidify tank, which is filled with silicate rocks, which are sensitive to CO2 and will have chemical reactions between them.
Capturing status

[01] The device expands the mesh maximize its contact area with ambient air. In this process, ambient CO2 will be drawn to and attached to the carbon capture network. As the device expands, rain fall is also collected throughout the process, and will be processed for both drinking and carbon collection purpose. The structure touches the ground with light nodes, which allow the device to be deployable at almost all circumstances.

Solidify status

[02] In order for the device to be sustainably reusable, the device will have to solidify the carbon it captured after a certain period of time. Every 5 days, the device draws electricity from the energy device. This power will be used for powering rotation of the central core. After the device is sealed airtight, water will infiltrate the carbon-saturated mesh, changing the material’s characteristic to acarbon-dissolvable. Carbon thus is let out to the airtight tank, and then injected by vaccum to the silicate rocks attached to the bottom of the device.
Scene 06 - Description / Title

The device blends with the environment with its unique aesthetics. The structure will be light and portable. We encourage the villagers from Yawanawa to actively incorporate with deploying the device to facilitate the carbon capture process.

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Details / Zoom Ins

[01]
The spinning panels will close when the tank has to be airtight and emit the carbon.

[02]
Carbon Capture net in the daytime

[01]
Carbon capture net in the microscope aspect. Carbon dioxide is captured and temporarily stored in the mesh.

Scene 05 - Description / Title
Climate device axon

1. Solar energy system: The solar energy system consists of organic photovoltaic foil panels that absorb sunlight and convert it into electricity. The electricity is then sent to the controller, which distributes it to the gear box and the controller. The gear box is connected to the low-speed shaft and high-speed shaft, which regulate the speed of the blades according to the wind. The charged parts are then transferred to the controller from which it is then transferred to the flowing battery.

2. Wind energy system: The blades capture energy through the wind force in which the blades are connected to the gear box. The gear box is connected to the low-speed shaft and high-speed shaft, which regulate the speed of the blades according to the wind. The charged parts are then transferred to the controller from which it is then transferred to the flowing battery.
**Site Strategy - Section**

Our site section strategy includes a network containing both device, and a projected underground growth of mycelium. The mycelium network will ultimately bridge the gap between the deforested area.

Both device collaborate with each other in terms of reciprocal energy use and the loop of carbon.

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[01] Longitudinal Section Drawing
Carbon dioxide is emitted by the city, it will be captured by the carbon capture device and solidify.

[02] Moment Section, Sao Paulo
Energy device is deployed in the city. Organic cable and energy network will be generated to transmit the electricity to the rest part of city and the carbon devise.

[03] Moment Section, Yawanawa
Carbon capture device secures the ambient carbon in the air and facilitate fungi growth.
Sao Paulo - Energy Device

[01]
The device consists of two renewable energy systems. Solar energy system: The solar energy system consists of Organic photovoltaic foil panels with absorb the sunlight and the charged particles move to the controller.

Wind Energy system: The blades capture energy through the wind force in which the blades are connected to the gear box. The gear box is connected to the low speed shaft and high speed shaft which regulated the speed of the blades according to the wind.

Yawanawa - Carbon Captor

[02]
During the nighttime in the forest, trees will stop absorbing carbon dioxide, and in reverse, emit CO2 instead. In this case, the carbon capture device will keep functioning to absorb carbon dioxide in the air. This panorama shows the carbon particles in the air and how the carbon capture device is functioning to cut down carbon dioxide.

https://panoraven.com/en/slider/M6IT3YMSoT

Yawanawa - Mycelium Network

[03]
This panorama shows how nutrient is transmitted underground. Golden ones are the existing tree roots while the silver, smaller network represents the mycelium network. As mycelium farming and replanting proceed in the site, soil will be remineralized in both the forest and the deforested areas.

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GLAMPING ACCOMODATION & ECO LODGE

Situated on the slope of Amazon rainforest, the glamping accommodation is a combination of indigenous lifestyle, ecological friendly construction and bird friendly sanctuary.

The design utilizes the sectional difference of the slope to accommodate programs of need and strategically implementation of the carbon capture device.
Wildlife Sanctuary and Education Center

Situated on the end of one tributary in the Amazon forest, the wildlife sanctuary and education center is a place where the ecosystem meets with the human world.

As the whole form unfolds through the site, it blends into the landscape. As the structure splits into two parts but connects in the center, the building manipulates water as a way of leveraging flood and drought in the Amazon forest as well as providing a shelter for animals.
1-Community Theatre
2-Public Patio
3-Glamping Accommodation
4-Mycelium walkway
5-Virgin Forest
6-Transit Center
7-Bridge
Details / Zoom Ins

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[02] Carbon Capture net in the daytime
[01] Carbon capture net in the microscope aspect. Carbon dioxide is captured and temporarily stored in the mesh.
Archive of Time
Transforming the MET Cloisters into Instrument of Manipulation of Time

Instructed by Juan Herreros
In Collaboration with Valentina Jaramillo

COLUMBIA GSAPP 2023 SPRING
ADVANCED ARCH DESIGN STUDIO
Marked red elements in the floor plan, the Met cloister is exposing spaces rather than objects, which makes it unique and different from other museums. Fragments coming from different parts of Europe are made into 4 gardens and 4 chambers. Which are articulated with new museum functionality.

History of homogenization

Homogenized Space
It was very evident that the space of the Met cloister museum is a place dominated by the homogenization of all its elements. The experience is a contradiction between fragments and homogenized space, which takes away the real value of the ruins, making it a frankenstein.

Behind the walls of a homogenized space, the current MET Cloisters has killed the diversity of a collection of architectural fragments that comes from different time. By manipulating an alphabet of architecture operation of contradiction, this project recovers the power of the fragments and gives back the dignity of coming from otherwhere in time.

The monastery is a place with a very diverse program, a strong instrument of manipulation of time. Behind those walls of cloisters we have these hybrid or non-homogeneous programs. This kind of reading, teaching, cultivating and producing is what the cloister had killed. Through the articulation of architectural spaces, we would bring back the spirit of slowness and introspection.
Building Fragments

+ Chamber & Ribbed Vault: X2
+ Windows: ×14
+ Walls: ×9
+ Doors: ×8
+ Columns and Capitals: ×154
+ Stairs: ×3

Bloom & Foliage

+ Cloister Garden
+ Fort Tryon Park

Compiled Fragmentation

Fragments from different locations are displayed separately inside the MIT cloister. The mauzoleum is dedicated to create a homogenous environment for all the collections to "lie in".
To be slow means to dilute our focus, to be true, to be frank with history. This brings us to Violet le Duc, who bring the theory of preserving architecture using its historical form but contrasting the original material with a contemporary one. As back in time in monasteries, the slowness was understood as the practice of peripateticism. It means to go slowly, to practice introspection, to go from indoor to outdoor, to experience time, and to dialog with environments.

Our main strategy is taking out all the fragments from the cloisters museum, and reconstruct the European monasteries’ historical typology, by articulating the spaces through a continuous circulation, giving an experience of slowness.
This project tries to share the experience of introspection and socialization. Through the transitions of indoor and outdoor, we want to exaggerate the difference between introspection and publicness.
Our main strategy is taking out all the fragments from the cloisters museum, and reconstruct the European monasteries’ historical typology, by articulating the spaces through a continuous circulation, giving an experience of slowness.

Through this approach the design this project tries to share the experience of introspection and socialization. Through the transitions of indoor and outdoor, we want to exaggerate the difference between introspection and publicness.
Operations and design

Insistancy in contrasting situation. Everything is red is contrasting with the black. They are not looking for homogeneity again, its seeking the significance of architecture operation of contradiction, and understanding the geographical conditions where the museum stands.
The manipulation of time is about being, the seasonal changes is about the connection between architectural spaces and the surrounding, whereas by connecting our project with the surrounding of Fort Tyron Park, it becomes a presence in a bigger context of the city, generate through the green corridors and the relationship with the park. It’s like the extension of the park through the city.
SPRING - Cuxa Cloister

SUMMER - Bennefont Cloister

Autumn - San Guilham Cloister

Winter - Trie Cloister
Environmental Corridor