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Portfolio
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Adaptive infrastructure based on outdated energy productions is created to provide a framework of living that would be the new foundation for people to fill in - a model for a new way of living with climate change and uncertain weather patterns.

Los Angeles' physical and social infrastructures need to reflect the reality of energy scarcity. The project takes existing oil extraction practices and reverses them - from carbon extraction to carbon sequestration. It will reclaim the Valero Oil Refinery and drill sites into alternative energy production and experimental carbon capture methods to remove public health risk around the refinery.

Programs of these interventions will demonstrate a new model for living with these alternative modes of energy production and carbon capture - food, housing, etc. Interventions are justified with real-world data and revenue studies to offset costs and generate profit from new energy production and resident health.
Los Angeles county collects 5.3 million metric tons of organic waste per year and turned into biochar, bio-oil and bio-gas.
The project is interested in hybridity as a way of creating new cultural, spatial and aesthetical praxes. By utilizing the agency of hybridity, our project aims to construct a new spatial and institutional stewardship project which brings stakeholders on site together as stewards of the land and water.

The continuum reorients the existing relationship between the stakeholders on site and their surrounding environment. Through hybridity, our project brings about synergies between the stakeholders so that we have this new common yet hybrid realm where the individuality of each stakeholder is combined to create a higher space of commonality.
Housing now, more than ever, requires added access to the outdoors. The project tackles this current need through the idea of fragmentation at both the urban and unit scale. Eight types of standardized housing units, ranging from one to four bedroom flats and duplexes, are stacked strategically to provide private terraces, while courtyards are carved out of the building’s mass to allow for shared outdoor spaces.

The building’s mass was designed iteratively using a sectional analysis of different unit aggregation strategies to create a seamless yet alternating sequence of exposed and sheltered courtyards. Elevated streets connect the housing units to the courtyards bringing about a rich private-public rhythm.
This Page
Top: Catalogue of section cuts analyzing conditions of exposure and shelter produced by aggregation of units.
Bottom: Area of Exposure/Shelter Diagram

Opposite Page
Top: Massing model testing unit aggregation, porosity and lighting.
Bottom: Axon Collage
This Page
Catalogue of 8 housing unit types: single to four bedroom and single and double level.

Opposite Page
Top: Duplex Unit Upper floor
Bottom: Courtyard
The Illumination School reorients the educational experience around a series of six glass tubes serving as organizational cores: the existing masonry is removed and the wood-framed glass cylinders are inserted to provide lighting, vertical circulation, and unique learning spaces.

The existing building houses open plan classrooms and other school facilities, while the tubes—sunlit spaces with views into the courtyards, school, and city—create unsupervised zones for students to explore their curiosities.
This Page

Structural diagrams of wood-framed glass cylinder and existing structure

Opposite Page

Top: Photos of Existing PS 12 Elementary School
Bottom: Sunlight Exposure Analysis model

This Page

Structural diagrams of wood-framed glass cylinder and existing structure
This project attempts to generate new kinds of social interactions in the hyper-congested and dehumanizing urban condition of Manhattan by turning the rooftop of office buildings into urban campsites using inflatable structures.

Inside the inflatable structure, users enclose and claim their space using curtain stands and cloths. This act of claiming their own space in this public space forces the users to recognize the existence of others in the space and establish certain spatial relationship to one another.

The inflatable structure is deployed only during night and retracted during day, and by this act of disappearance, this intervention does not impede the sunlight reaching the ground level and avoids contravention of the building code while activating the supposedly forbidden and untouchable space in the zoning envelope.
This project envisions a sustainable future of Jamaica where culms of bamboo are used as the main construction material.

Bamboo’s structural durability, incredible speed of growth, and maleability makes it an ideal material to replace the concrete and steel constructions that we see in Jamaica today.
DESERT OASIS

Columbia GSAPP, Spring 2021
Techniques of Ultrareal
Critic: Joseph Brennan, Phillip Crupi
Collaborators: Ryan Alexander, Yifei Yuan