Meta Aeron is a transcription work of Aeron Chair, an icon of office chair. By implementing metamaterial technology, the Meta Aeron achieves the same motion of the original Aeron Chair.
Metamaterial allows manufacturer to control softness of material. Different parts of a single 3d printed window chassis now can have different softness. This will replace the function of silicone gaskets that are typically used in modern window system.
This project features a unitized curtain wall system for an office building on 504 9th Ave. in Manhattan. The main goal was to provide convincing detail for motorized-glass louver system. The Curtain Wall Unit has a nominal dimension of 4500mm x 2000mm with triple-glazed unit and curved glass louver.
Bar-Coded: Machine Vision

This project started with an idea to encrypt vision into something that human mind cannot perceive, but machines can.

With right translating code, robots will have no problem translating the video back to the original one.

Bar-Coded is a program that translates video into barcodes.

**Brief**
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**Project Info**
ADR 2 / Columbia GSAPP

**Instructor**
Violet Whitney

**Date**
Jan 2020 - Apr 2020

**Format**
Standalone software
Written in MAX 8

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**Script written in MAX 8**

**Interpolated**

**Bar-coding Process**

**Barcode chart**

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**Screen shot of Bar-Coded**

**Original Webcam Input**

**Pixelated Webcam Video**

**Bar-coded Pixel**

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</table>
Public Schools in metropolitan cities around the world, especially ones in Manhattan, lack one important thing in common - its connectivity to nature. Therefore, this school mainly focuses on how to connect the children inhabiting this school with a natural environment including natural sun lighting and easily-accessible greenspace.

**Brief**

Current Status

Multi-layered outdoor space
Removing Center of 'H'

Lowering Right wing

Pushing down s-e end

Connecting two wings with Gardens

Installing elevator cores
With the use of wooden panels on the interior walls, the classrooms and auditoriums provide warm atmosphere to the entire indoor space. In the Auditorium, original window system is replaced with the inhabitable window system where children can step on and look out to the street.
Getting enough natural sunlight is another essential value when it comes to bringing nature into the school. This Light Diffusive Ceiling System connects throughout the entire length of the school and is connected with slanted translucent Sail Cloth. When the sunlight hits the sail cloth, the sunray is diffused and keeps on reflecting and diffusing inside the ceiling cavity, to provide natural and smooth lighting.
Takara Beautilion is the symbol of Japanese Metabolist Architecture at its peak. The architect and the founding member of the Metabolism movement, Kisho Kurokawa, had a strong idea that buildings should be built like a living organism. In this project, Takara Beautilion is deconstructed and re-interpreted.

**Brief**

Takara Beautilion is the symbol of Japanese Metabolist Architecture at its peak. The architect and the founding member of the Metabolism movement, Kisho Kurokawa, had a strong idea that buildings should be built like a living organism. In this project, Takara Beautilion is deconstructed and re-interpreted.

**Part 1: Re-drawing Osaka**

Neo Osaka

This work started with looking at the pods that are attached to the modular spine structure of Takara Beautilion. The pods have a very distinctive look with a cube with rounded corners, sometimes with windows, and the legs which make them look like small spaceships. If the pods were to be spaceships, wouldn’t the spine be the mother ship that small spaceships can dock into? The idea was developed a retro-futurism art represented in a form of traditional Japanese tapestry. These two posters were named Neo-Osaka, a home to space nomads.
Takara Beautilion has 3 types of modular pods that are attached to the main structure, and if looked from far, the arrangement of different pods forms certain ‘rhythm’. This interactive model aims to amplify the rhythmic feature of the building and transform this into a musical toy. Depending on the arrangement of users, there is unlimited possibility of creating a new rhythm.

Part 2: Re-thming Osaka

Interactive Beat Maker
PAL: Provisional Accommodation Locomotive
Temporary Subway Housing for Homeless

Brief
Homeless people in U.S. is surging more than any time in history. As of January 2019, New York had an estimated 929,091 experiencing homelessness on any given day. However, the amount of homeless people that conventional shelter can provide is limited to very small amount. This project proposes using an old & abandoned city infrastructure to perform as a new way of providing shelter to the most vulnerables.

Old City Hall Station
In this project, the old City Hall station is renovated to be used as a platform where homeless people can hop on PAL, the temporary shelter train and spend a night or two as well as providing foods.

Dark Days (2000) is a documentary about homeless people living in the dark underground tunnel. This documentary shows how much vulnerable their life is. These people had to find a shelter to protect themselves, eventually leading them to dark underground.
In the PAL Unit, each walls are packed with different functions from folding bed to storage and even Television. By making the amenities modular, it can be repaired and replaced relatively easily, eventually lowering maintenance cost.

Modular Wall system

Water Storage
Septic Tank
Shared Space
Shelter Unit
Shock Absorber
Sound Barrier
AC Vent
PAL Chair is a foldable chair that is mounted inside the PAL module. It can be folded into the wall mount system. CNC-ed from a single 2’ x 4’ sheet of plywood, it can be easily mass-produced and assembled. No screw driver or drilling is needed. To emphasize how easy it can be assembled, this manual followed the style of IKEA product manuals.
This Community Center in Melrose, Bronx aims to become a local hub for water filtration and urban farming in heavily packed city context, as well as a conventional function of community center such as gym, class rooms.

**Project Info**
- **Instructor**: Sarah Kahn
- **Team (Plus - Minus 14)**: Jinseon Koh, Jiul Yu Bianca Lin, Jo Hee Lee
- **Site**: Bronx, NY
- **Size**: 58,408 sqft

**Brief**

This Community Center in Melrose, Bronx aims to become a local hub for water filtration and urban farming in heavily packed city context, as well as a conventional function of community center such as gym, class rooms.

- **Controlled conditions provide non-weather-reliant operation**
- **Utilising a series of natural filters**
  - **Bio-treatment water tower**
  - **Southern-sun reception**
- **Outdoor farming**
  - Mixture of Outdoor + Greenhouse + Indoor farming
  - Treated Greywater + Rainwater used for non-potable purposes
  - Treated-water pump
  - Greywater recycling + Rainwater harvesting
  - Lessen dependence on municipal supply
- **Taking advantage of major southern-sun reception**

**Sustainability**

Rainwater + Greywater collection and treatment
- Greywater recycling + Rainwater harvesting
- Treated Greywater + Rainwater used for non-potable purposes
- Lessen dependence on municipal supply

**Diagram**

- Site Plan
- Sustainability Diagram

**Diagram Legends**

- Rainwater + Greywater collection and treatment
- Greywater recycling + Rainwater harvesting
- Treated Greywater + Rainwater used for non-potable purposes
- Mixture of Outdoor + Greenhouse + Indoor farming
  - Educational value regardless of weather seasons
By having cantilevered space, this community center allows visitors walk through the block also creating architecturally interesting feature by having exposed atrium space that goes from the underground to the roof. The basketball court is exposed to the street, which allows visitors watch the game even without entering the building.
This community center is not only equipped with indoor farming facilities, but also a cooking class kitchen on the third floor. The atrium in the center of the kitchen brings natural light as well as ventilation into the building. Having a curved corners, the team focused on how to minimize using the curved glass on the facade to minimize the cost.
<table>
<thead>
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<th>Project Info</th>
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<tr>
<td>Core III / Columbia GSAPP</td>
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<td>Program</td>
<td>Size</td>
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Film: Quietly Controversial
Learning from Insects: Indigenous Futurism

Project Info
ADV IV / Columbia GSAPP
Date
Jan 2021 - May 2021
Program
Community Center
Instructor
Vanessa Keith
Site
New York, NY
Size
38,760 sqft
Public Schools in metropolitan cities around the world, especially ones in Manhattan, lack one important thing in common - its connectivity to nature. Therefore, this school mainly focuses on how to connect the children inhabiting this school with a natural environment including natural sun lighting and easily-accessible greenspace.
**Floating Island**

**[01]**

The floating island mission is to compensate for the loss of the precious mangroves forests and raise the public's awareness of the significance of preserving these coastal guardians. How to reclaim the lost forests? How to deal with extreme climate changes such as unprecedented-scale hurricanes and floods? With these intents in mind, we orient our project as a mobile forest which would be capable of deploying at a particular sea area and further protecting the fragile coastal environments.

**Floating Tiles**

**[02]**

Floating Tiles are a device designed to revive bleached coral reefs, and restore coral ecosystem. The main tile in the center lifts up the cooler water from deeper ocean and redirect the flow towards bleached coral reefs. This device will be especially useful for the coral reefs that are closer to the surface of ocean. Surrounding tiles will provide a seaweed farm for regional deacidification, coral gardening zone, and coral observing deck.
Floating Tiles

This modular device will be centered around the main tile with coral cooling function. Its shade will be covered with PV panels, generating electricity of 5 household usage amount daily, which will power water cooling fan and drones. The electricity generated will power the water impeller and charge drones.

[01]
130 x 87 = 13,050 Watt
13,050 Watt x 12hr = 156,600 kWh / day
*average household usage = 28,9 kWh / day

12hrs of operation / day = 12 kWh / day
52800 gallons of cool water pumped up

[04]
Buoy from harvested sargassum

[05]
Drone for monitoring sargassum, surface water temperature

[06]
Underwater drone for monitoring coral reefs, and temperature.
Floating Tilos

The water impeller will function 12hrs a day to offset the heat gain from the sunlight and global warming. 52800 gallons of water is pumped up from the deeper ocean. Pumped up water will be redirected to the coral reef zones that are located closer to the surface of the ocean. This process will also accelerate the undersea water flow, benefitting the coral reefs in deeper level.

The original design was proposed by the great barrier foundation research group. Recently they installed temperature monitoring device to figure out when and where to cool down the temperature.

Details / Zoom Ins

[01] Drone / Charging deck
[02] Coral reef cooler
[01] Temperature monitoring