

PORTFOLIO

MANOJNA ACHARYA KATTE

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THE CLOUD

Second sun (LA, 2016)

Technology seminar, UCLA Instructor- Peter Andras Vikar

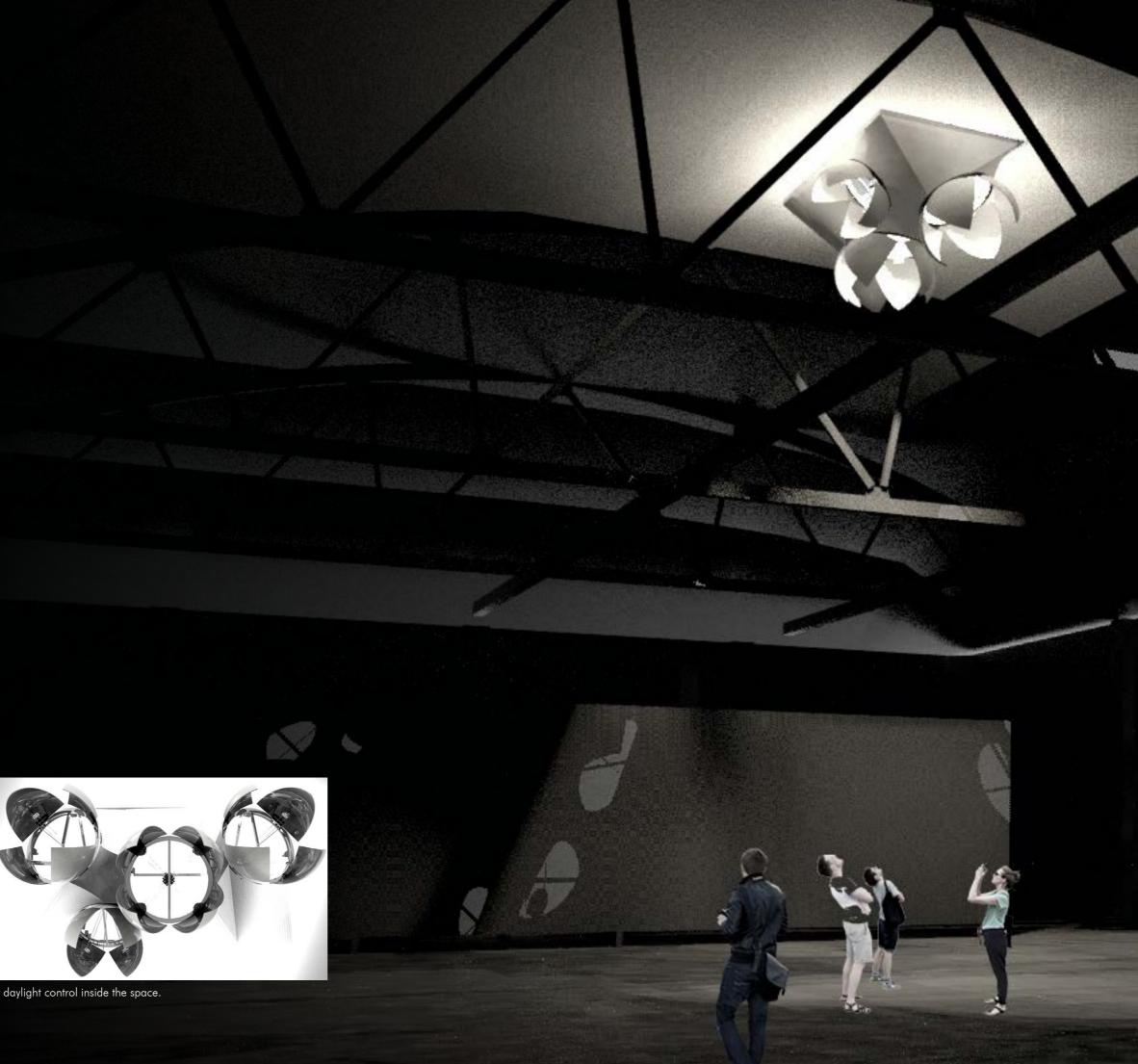
Team-Manojna A, Yifan C, Alisha C, Qisen D, Jiantong G, Sana N, Sangeetha R, Xialou X, Jinghao X, Yuhao Yang, Xueyou Z, Junzhishan Z

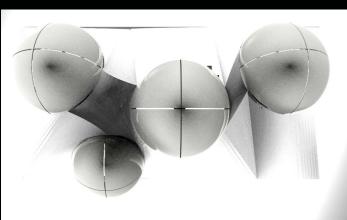
The existing skylight at IDEAS campus is revisited as a 'design site' where light effects, daylight control, thermal performance and user driven experiences can take place. These active light devices are considered as autonomous machines that are a permanent part of architectural assemblies and are capable of overwriting the paradigm of sun-angles, distort parallel light-rays, alter solar-gain; become a 'Second Sun'.

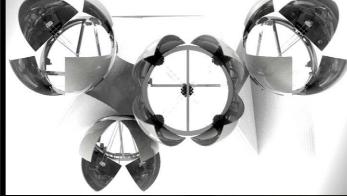
DESIGN

After ananlyzing data-driven actuated components that function as hybrid objects between physical and digital domains, 1:1 scale prototype of the kinetic model was designed and fabricated with the following functionalities-

- Angular orientation of openings carefully designed to provide optimal sunlight indoors, informed by the designed robotic sun path simulation on KUKA robots.
- Performative motion of the photo-sensitive petals that open and close, adding an element of surprise
- Raspberry-pi powered manual and automated modes with colorchanging LEDs

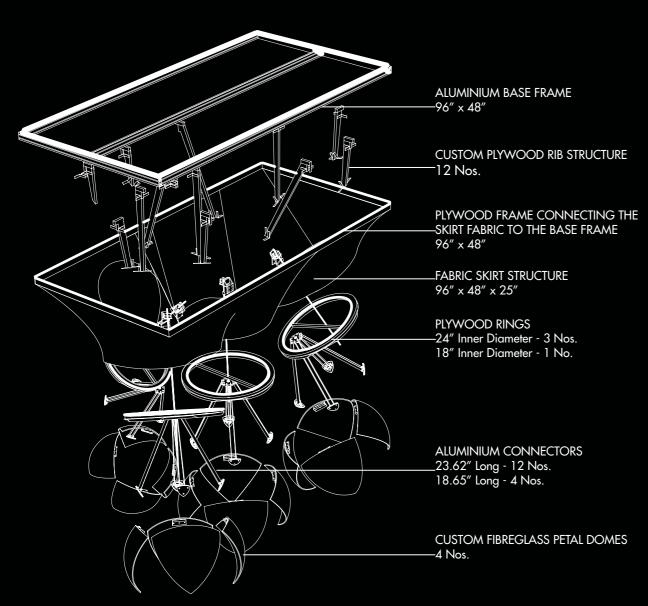






Fully shaded to varying degrees of open positions of the petals allow for daylight control inside the space.

ASSEMBLY OF PARTS



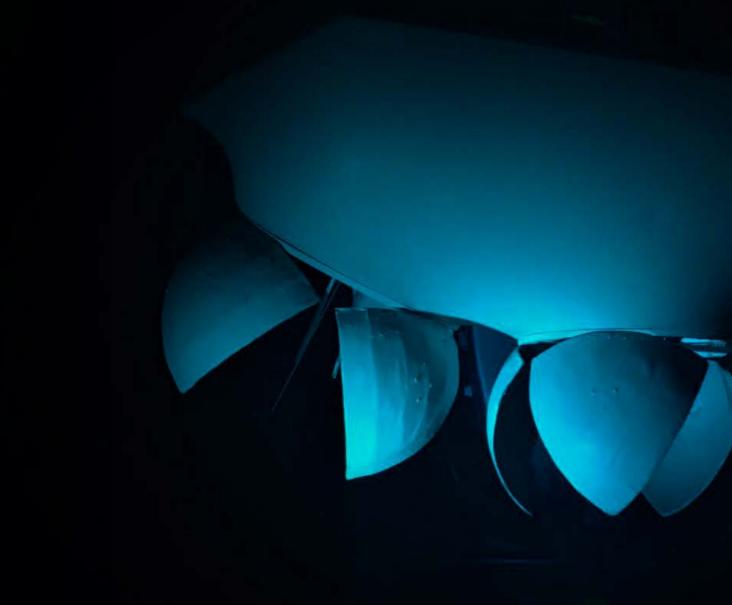
3D-PRINTED PARTS



TRIANGULAR JOINTS
Connecting fiber glass petals to central connector rods.

MOTOR MOUNTS
Used for mounting the motors on the base frame





FABRICATION PROCESS



1. Fabrication-Fibreglass and resin domes



2. Building base structures-Aluminium frame to attach to ceiling. Wooden legs and rings to attach domes



3.Forming the volume-Fabric stretched over the frames



4. Strengthening- Wood glue hardened on fabric



5. Assembling-Attaching motors to frames & petals to base using 3D-printed joints



6.Hoisting-Using Kuka robot

IMAGINE

Urban Intervention, Culver city Metro Station (LA, 2016)

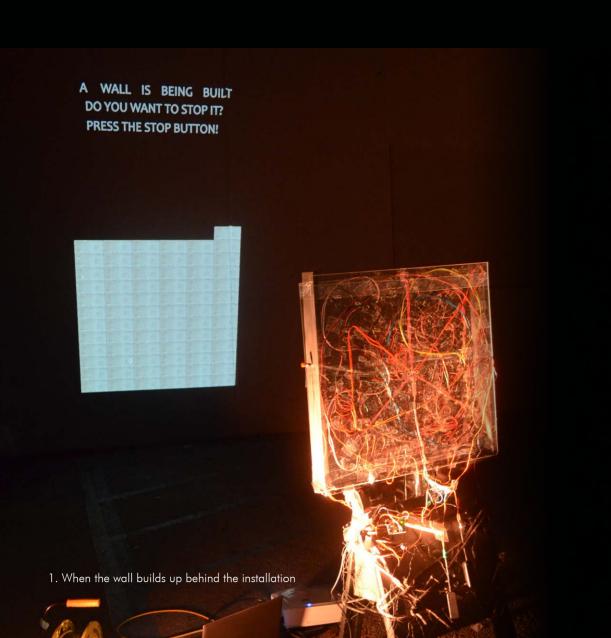
Link to video: PROJECT IMAGINE

Winter studio, UCLA Tutor- Mark Mack, Steve Lee Team- Manojna Acharya

Imagine is an urban intervention that was created at the time when strong messages of fear and hate were propagated by President Trump through his speeches. The interactive installation assesses the willingness of people to come together and stop walls from being built. In the process, also addressing the stigma associated with migrant workers and minorities who are seen as the 'Other'.

Imagine has two components-

- 1. A decoy device which looks like an assemblage of elements from a construction site with a stool, nails, ropes, duct tapes and wires symbolic of workplaces of majority of Mexican male migrants in the U.S. Hidden within this decoy, is a peace symbol that would light up if the audience performed an action.
- 2. A video projection- an animation of a wall being built, coupled with audio extracts of hateful speeches from the President's political rallies. The audience is asked if they want to stop this message, they could press two stop buttons on the either ends of the decoy. This requires two people to come together. When the stop buttons are pressed, the video switches to an animation of the wall crumbling down. The audio switches to -Imagine, John Lennon's song and a peace symbol lights up on the decoy.







Stage design proposal for musician Anoushka Shankar (LA, 2017)

Winter studio, UCLA Tutor- Mark Mack, Steve Lee Team- Manojna Acharya

Located within the vibrant Arts Disctrict in LA, the ,ultipurpose space, Lot 613 became the site for our winter studio. Continuing to explore the studio's theme to engage with the city of Los Angeles where performance and entertainment could merge with the architecture, creating more exciting urban experiences. The final design proposals were performed/presented on site at Lot 613, open to public.

'Space Petals' challenges the proscenium stage set-up typically accompanying classical performances, as it separates the musician from the audience and creates a mundane environment without much dynamism. Anoushka Shankar is a prominent Indian classical musician and is the inspiration for this project. While her music itself has transcended the realm of traditions and customs, little has been done to the stage design, lighting, back-drop or props.

To create an expanding universe by breaking the gap between the performer and the audience and allowing for a transcending experience. To develop an interactive environment with\ sound-sensitive space-petals and platforms that light-up in sync with each musician.

COMPONENTS

- in sync with the music
- Kinetic wheels- Discs operating on Iris mechanism, assisting in opening and shutting of panels
- Pipes- Pipes connected to sensor motors which respond to music. They act as pull and push mechanics between two rows of panels, thus creating alternating open and shut rows of panels.



MOMA PS1-MOTION IN ARCHITECTURE

Tech Seminar (UCLA, 2017)

Tutor- Steve Lee

Team- Manojna Acharya, Loveleen Brar

TIME AND SPATIAL SEQUENCE

Although mostly designed as static elements, architecture is always perceived as a spatial sequence within a certain time-frame related to human bodily movements. We go through a sequence of spatial transitions from node to node all the time which is constructed by intentional and unintentional activities. This exercise explores the interrelationship between movement and space in order to enhance spatial design.

CHOREOGRAPHY IN ARCHITECTURE

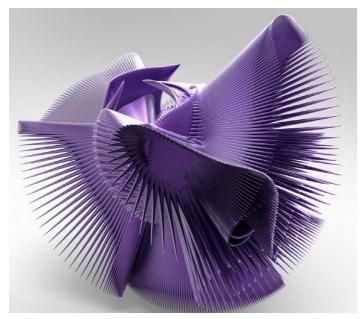
By tracing the bodily expressions and group movements in choreographic forms, design strategies are created using dramatic architectural forms or expressions as individual objects or as groups.

CHRONOPHOTOGRAPHY AND DIGITAL TOOLS

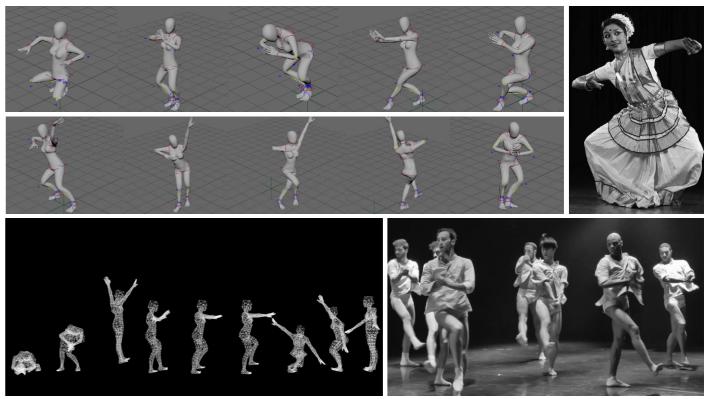
Chronophotographic techniques developed by Etienne-Jules Marey in relation to recent digital techniques including IK, FK modeling, animation and blend shaping in Maya, aid to create animated spaces with still and active objects.

ARCHITECTURAL FORMS

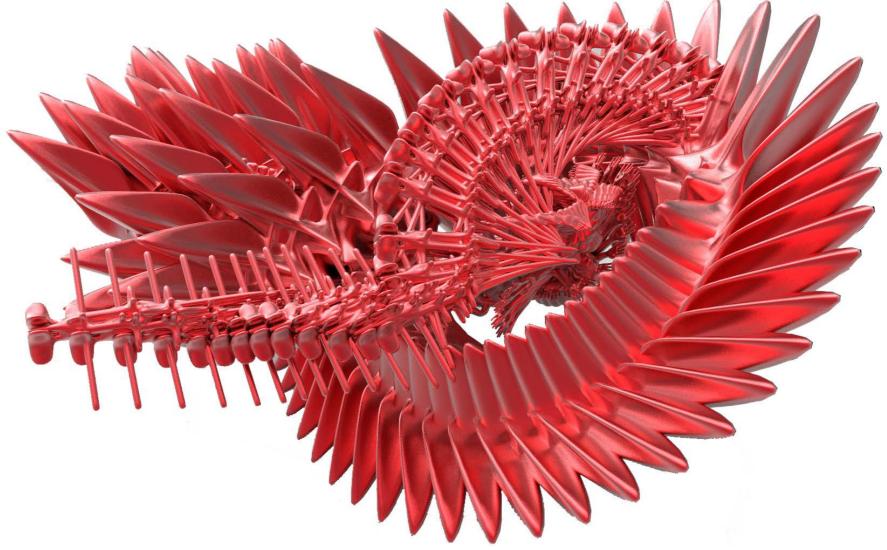
The resulting animated forms were used to create spatial interventions, taking the forms of furniture, canopy, sculpture, entrance, pylons etc.







Choreopgraphic movements and patterns of Mohiniattam and contemporary dance styles were chosen for the study. Maya animation technique involving parent and child objects was used to attach objects to the moving figure, creating architectural forms captured through snapshots of the animation.



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MOMA PS1

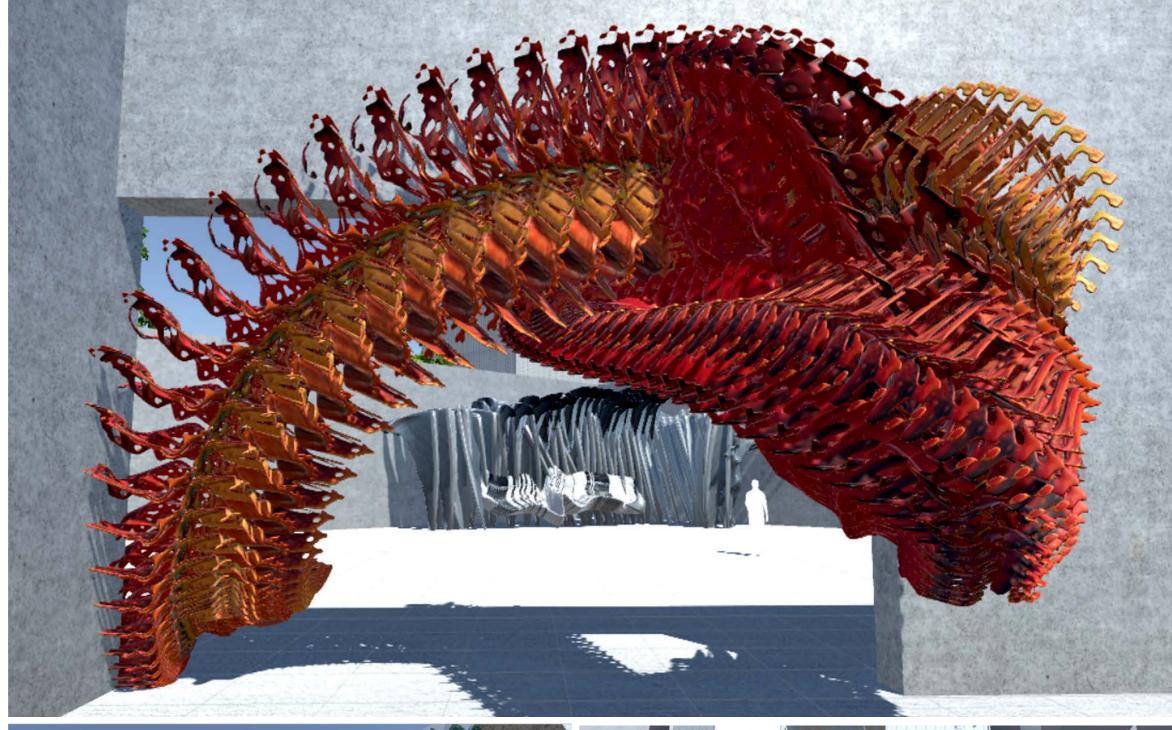
A choreography of animated forms was composed, combining individual animated objects with the other group members, creating an immersive environment in Unity 3D. MOMA PS1 was considered as a site for urban intervention, crafting spatial sequences within the site.

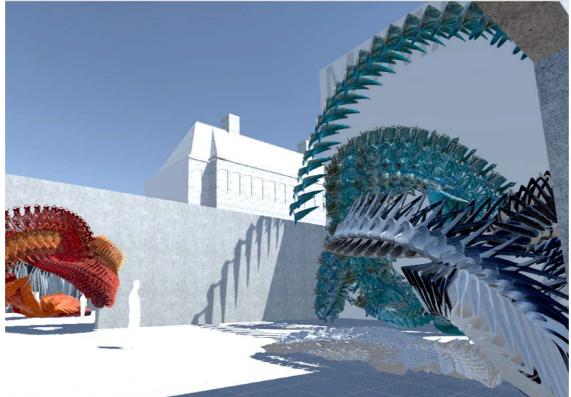














MAKE CITY

Graduate final project (UCLA, 2017)

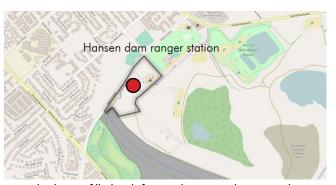
Tutor- Mark Mack Robotics:Shih-Yuan Wang Team- Manojna Acharya

LINK FOR MORE INFO

Based on Archigram's 'Instant City Manifesto', Make City is a contemporary response. It brings with it, all aspects of a big city to a small town or suburb. However, unlike the former, instead of bringing just the temporary pre-existing aspects of a city, it also brings in the imaginary aspects of what an ideal city would have in it. This involves green, healthy landscapes, that over time, become a permanent part of the suburb. Eventually, these pockets make their way back into the 'city', spreading across many derelict spaces in the city, thus bringing to completion, the 'Ideal city'.

Make City has two main components, 3D-printed modules and bamboo modules that are assembled on site in collaboration with unemployed youth and Kuka robots and drones. The 3D-printed modules serve as temporary festival shelters and travel with the festival onto new sites. The bamboo towers form workshop spaces that are used to help local communities cultivate hydroponics so they can benefit from growing their own vegetables in the bamboo sticks. They are left behind, and either remain as hydroponic towers or fall to the ground and organically grow into grass mounds.

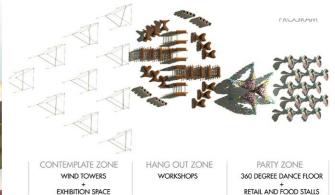




LA's suburbs are filled with foriegn-born populations, with various nationalities, making it a potential ground for melting pot of cultures



Site location: Hansen Dam, San fernando valley, LosAngeles



Materplan





Assembled to form different festival spaces



Robotic simulation of the aggregation of 3D-printed units with TACO KUKA grasshopper plugin.



Aggregation pattern (3d printed modules)



Aggregation pattern (Bamboo modules)





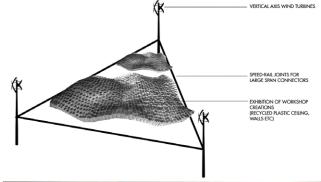


Growth of Make city's permanent bamboo structures left behind on various suburban sites, eventually growing into the city of Los Angeles.





Site conditions when the festival arrives and long time after it leaves





Art exhibitions take place under canopies made from recycled plastic collected through the festival. Supported on poles with wind turbines that generate part of electricity for the festival, adding to the sustainable efforts.



MARS HABITATION

AA Visiting School (Jordan, 2018)

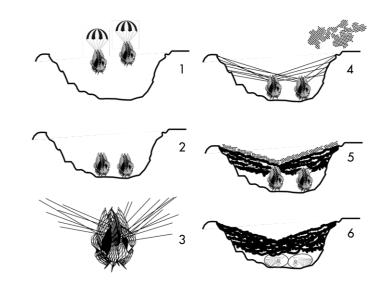
Program Co-ordinator: Kais Al-Rawi

Instructors: Barry Wark, Andreas Koerner (Biophile)
Team: Manojna Acharya, Facundo Taborda Gauna,

Shaha Maiteh, Wael Dawoudi

AA's design-research programme in Jordan focusng on Mars, involved participants researching the natural ecology of the Red Planet and speculate on the design of future interventions that couple cutting-edge technology with research into natural morphologies and phenomena on Mars. After a visit to the UNESCO World Heritage Site Wadi-Rum desert, which has a landscape identical to Mars, our design was inspired by the natural forms and textures found at the desert, as well as other natural formations and phenomena occuring in nature, like the stalagmite, ant-colonies and swarm behaviour of hear

Making use of the local regolith found on the rock beds of Mars, the project aims to build sheilds with the help of swarm robots. Pods land inside existing canyons, shoot out low-weight wires on to the walls of the canyon. The pod contains swarms of tiny robots that then fuse regolith together to form a mortar. This mortar is sprayed on to the wires forming a canopy. The canopy shields the astronauts from radiation and sand storms, allowing them to seek shelter and set up further infrastructure within the canopy.

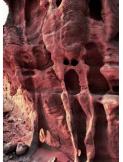


Sequence of descent of pods, shooting wires, spraying by swarm robots



Simulation of spraying process in houdini

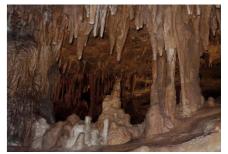




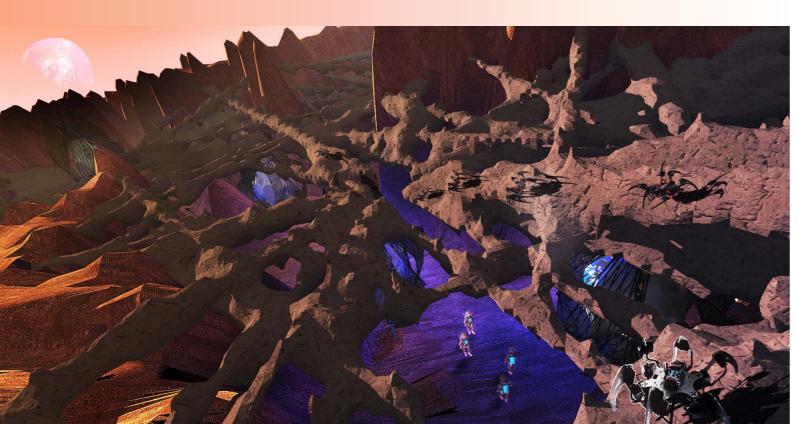


Inspiration found in Wadi Rum desert formations





Biological processes as inspiration







BIO-DYNAMIC ISLAND was developed in two phases.

Phase 1 - Investigate and research a natural phenomenon (viscous maculae release patterns) in detail and develop a design for a transforming pavilion in suitable ecosystems.

Phase 2 - Investigation and research into the topic on a large scale, combining two systems (Viscous maculae release patterns and aggregation) resulting in the development of a sytem that is applied to an artificial island in Hainan, China.

The tools and techniques involved in the development of this project were 3D printing, 3D scanning, CNC-milling and robotic filming.



FLOATING PODS shaped like "floats" of a seaweed, designed as seating on the surface of water

PHASE 1 (pavilion)

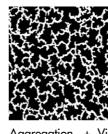


Viscous maculae release patterns



Seaweed as a specimen to study its viscous patterns

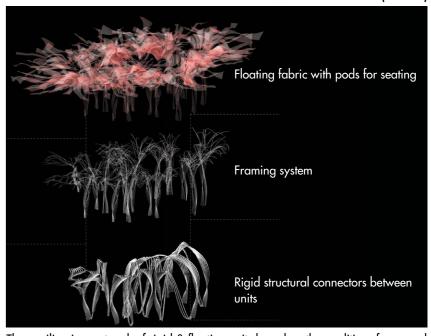
PHASE 2 (island)





Aggregation + Viscous maculae release patterns

PAVILION DESIGN (Water)



The pavilion is a network of rigid & floating units based on the qualities of seaweed

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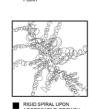
COMBINATORY SYSTEMS







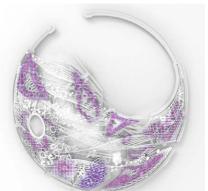


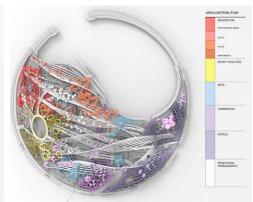




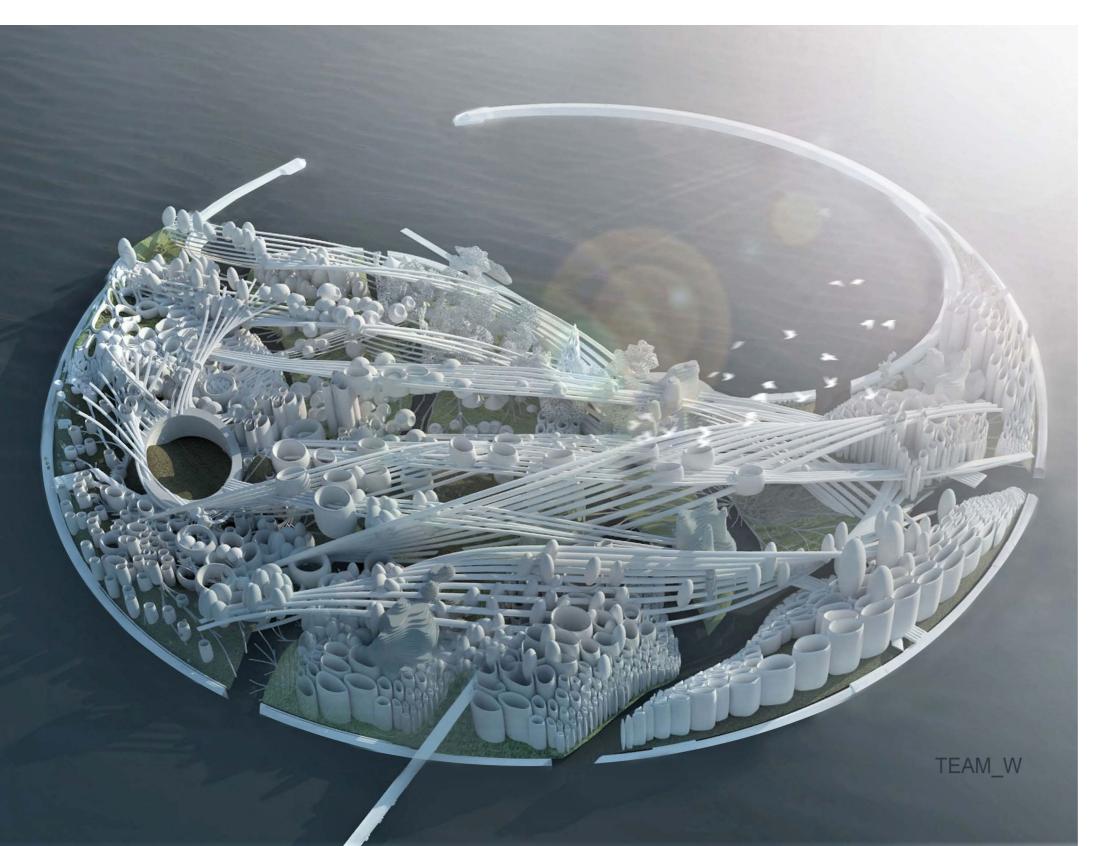


SITE: HAINAN, CHINA

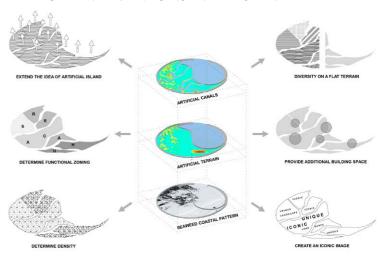




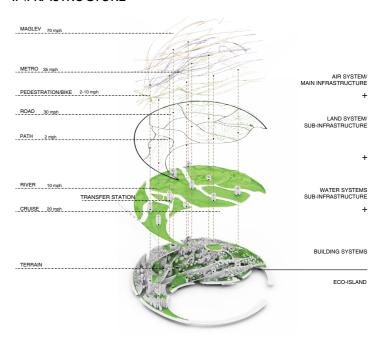
DENSITY AND ZONING MAPS



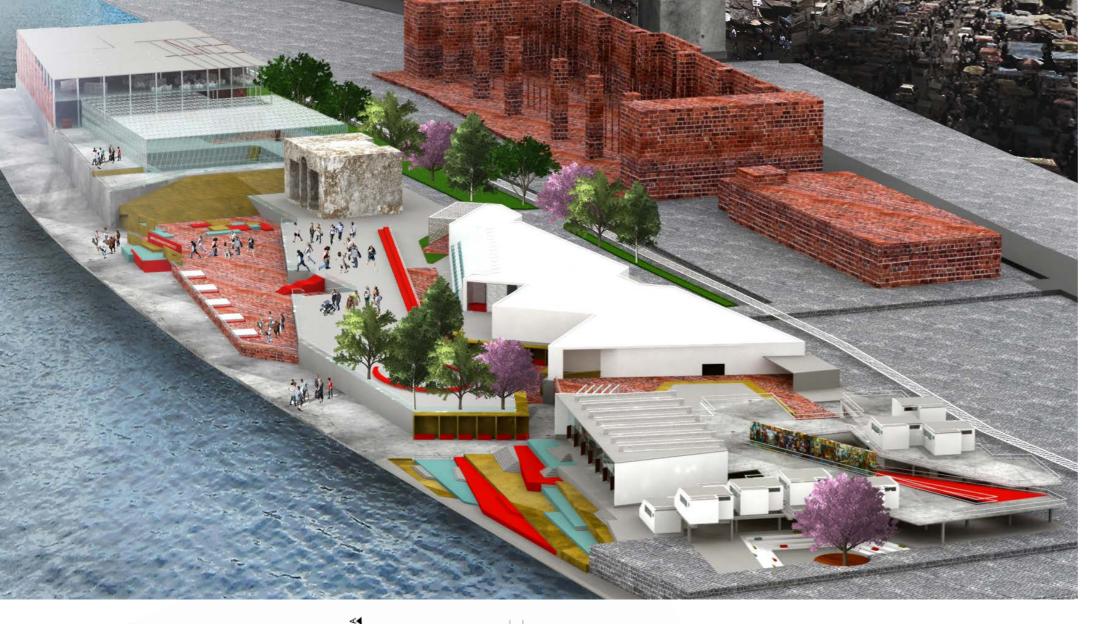
ARTIFICIAL INTERVENTIONS IN THE ISLAND



INFRASTRUCTURE



The second phase explored the possibility of an absolute self-sustainable urbanism that can balance and integrate the aims of culture, nature and business to re-claim the importance of intelligent ecology as the advancement of 21st century urbanism. South Sea Pearl Island aspires for a future model of urbanism and urban organization that will catalyze tourism through cultural and ecological development strategy.



INDEX (MASTERPLAN)

- 1. Contemporary theatre
- 2. Jatra theatre
- 3. Decks
- 4. Plaza
- 5. Food arena
- 6. Promenade
- 10. Strand warehouse

7. Art gallery 8. Art residency 9. Clive warehouse

A CITY IN SEARCH OF ITS SOUL

Hooghly riverfront revival (Kolkata, India) Undergraduate Thesis Project (2011)

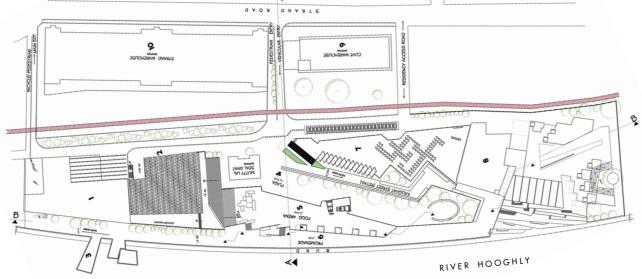
Once the lifeline of Kolkata, river Hooghly now stands in an absolute state of disdain. Its muck-filled banks cry out for attention. Stench from the dumped garbage, defunct godowns, waste from the flower market, people bathing and defecating paint an ugly picture to the entrance of the city. Some of the dead spaces have become breeding grounds for crime, theft and gambling, making them almost unapproachable for the common man. With just a handful number of failed initiatives from the authorities towards its rejuvenation, there is a dire need for some effective measures to be taken. My project aimed at identifying a small stretch of land along the length of Hooghly and proposing a program that would not only serve as an example of revitalization fo the river, but as a catalyst for further such urban renewals along the riverbank.

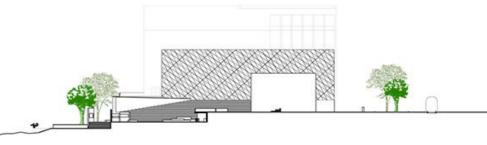
THE PROPOSAL

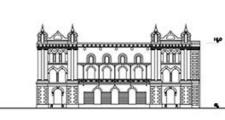
The project aims at identifying a small stretch of land along the length of Hooghly and proposing a program that would not only serve as an example of revitalization fo the river, but as a catalyst for further such urban renewals along the riverbank. Opening up of the riverfront extensively, creating plazas and promenades to bring the people closer to the river edge. To revive folk art and theatre forms. Learning facilities would be provided for the local, national and international artists for exchange of ideas and skills between the folk artists and contemporary artists.

URBAN SPACES

A huge open plaza becomes the focal point on site. Directing the crowd toward the edge of the riverfront, multiple levels of open spaces are created. The lower level has a food arena which then leads into the promenade along the river. This system of terrains symbolically represents the aim of the project to bring the city closer to the river. The food arena is designed similar to the "addas" or chat corners/nooks that are famous in Kolkata. Roadside coffee shops and eateries often turn into spots for intellectual discussions and debates.







SECTION AA

SECTION BB

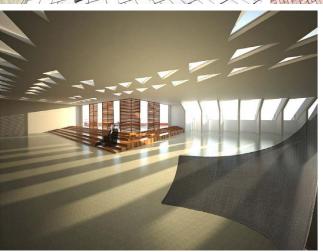
MASTERPLAN





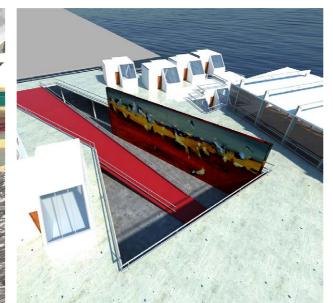


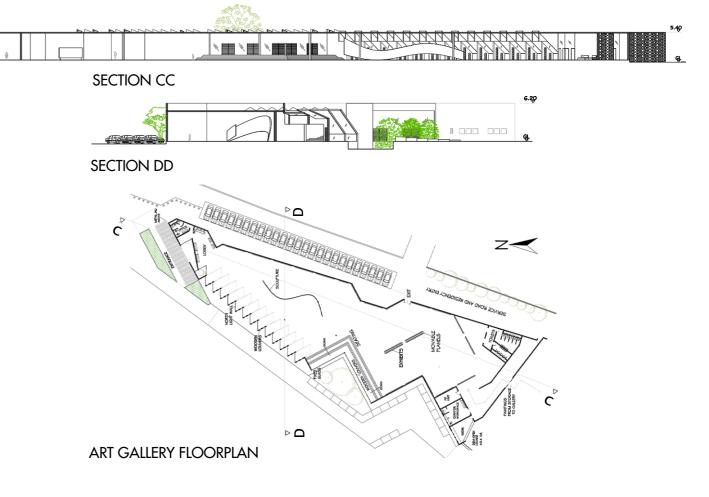


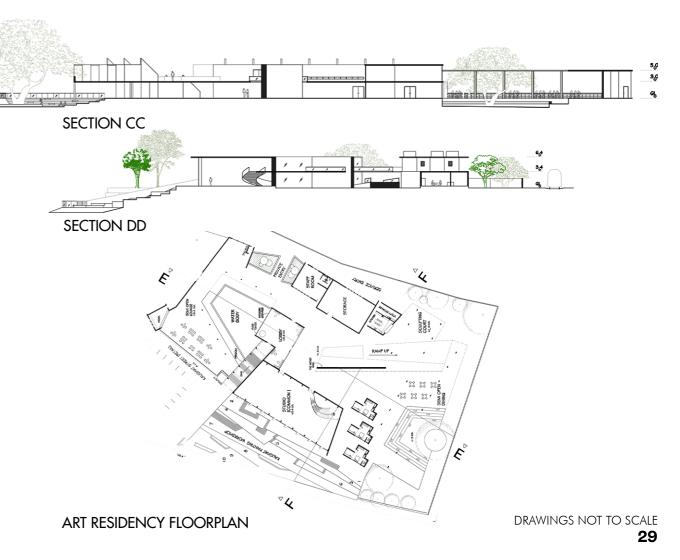












BREWSKY

A modern microbrewery to serve home brew and pub grub, Bangalore (2012)

Architects:Studio Decode

Role: Conceptual design, Design development, Construction documents, Site & Client coordination

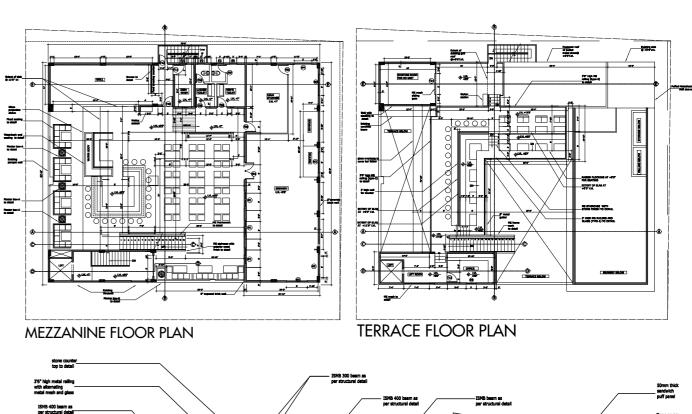
Total area: 10000 sft Status: Completed(2013) Duration: 10 months

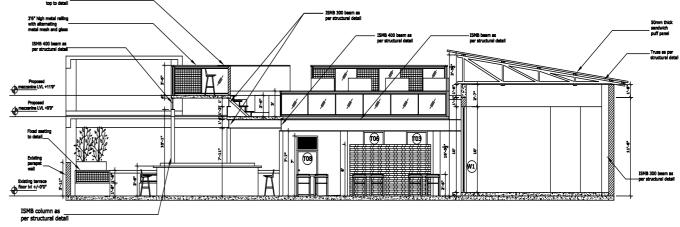
Placed on the 4th and terrace floors of a commercial complex, Brewsky was designed to accomodate an industrial style restaurant space has a micro-brewery with a bar on the terrace and and a 150-seater restaurant on the 4th floor.

A mezzanine floor was added with structural steel beams on top of the existing terrace that became a highlighted design feature.

Exposed concrete, unplastered brick and exposed metal beams for the deck render an industrial warehouse style to the space. The interiors have kitsch elements like brightly colored furniture, metal beams and wall accessories. High ceiling and large glass doors give the restaurant-goers a peek into the brewery.





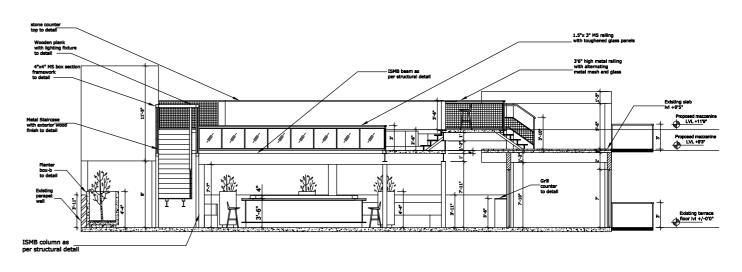


SECTION AA DRAWINGS NOT TO SCALE









SECTION BB DRAWINGS NOT TO SCALE



SUPRABAND

Instrument design, fabrication and performance (LA, 2017)

Link to video: SUPRABAND

Technology seminar, UCLA Visual Instrument- Manojna Acharya Supraband team-Manojna Acharya, Loveleen Brar, Erik Broberg, Tyson Phillips, Michelle Pauly, Taira, Ran Israeli, Barak

The seminar 'Instrumentalization of Space', looked into various ways to create visual and musical instruments to compose, sequence and play spatial performances using contemporary digital technologies including sensory input devices, acoustical and digital instruments, MIDI and projection mapping.

SUPRA-VJ is a dismantlable LED control device that I designed and fabricated to give a unique lighting effect to highlight individual instruments designed by other students of the band. During the performance, as each musical instrument was played, I controlled a strip of LED lighting on their instruments from a distance.

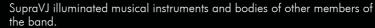
Some of the features of this device-

- Supra-VJ is connected independently to each instrument in the band, hence allowing for multiple solo performances to be highlighted.
- It is completely dismantlable. This feature helps it to be mobile and easy to unbox and repair.
- The central circuit box could be fitted with as many loops of control boxes around it as needed. This makes the device scalable and easy to expand or reduce.
- The programmed LED visible through the acrylic allows the instrument to become part of the visual performance











Fabricated using laser cut panels, the instrument housed an arduino powered circuit at its core and potentiometers to control lights connected to each band member

EXPANDING FRAGMENTS

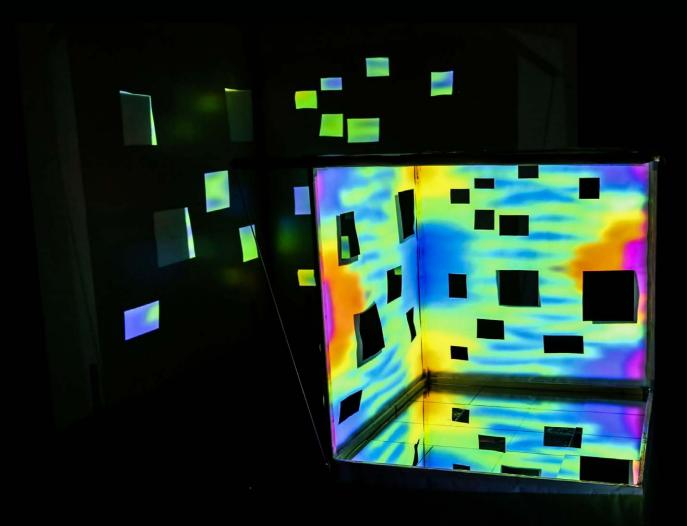
Design, fabrication and performance with video art and projection mapping (LA, 2016)

Tutor- Mark Mack, Steve Lee Team- Manojna,Loveleen,Jiantong

LINK FOR PROJECTION VIDEOS AND INFO

Fragmented reflections was conceived as a tool for telling stories. Visually captivating essays that respond to sound and pull the audience into the piece. It is a prototype to study the effect of spilling of projection through perforated surfaces onto the surroundings. The mirrored floor reflects the projection and the perforations thus expanding the space.





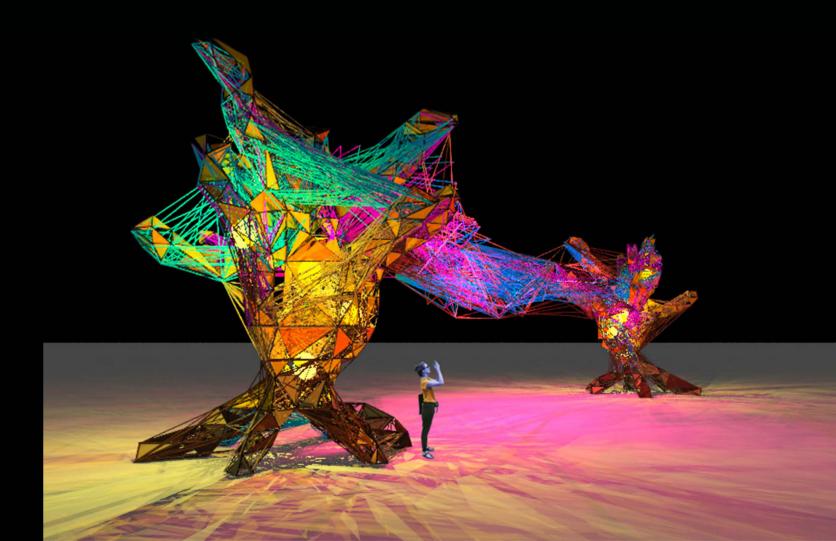
COACHELLA

Design Charrette with Coachella team Art Installation proposal for music festival (LA, 2017)

Team: Manojna Acharya, Loveleen Brar

Inspired by the root bridges growing naturally around rubber trees found in north-eastern states of India, the installation is seen as a brightly colored beacon that changes its effect on the crowd during the day and night. Providing shade during the day, it is constructed with multiple weaves of threads and ropes around steel frames and acrylic panels. It lights up dramatically during the night, making it a spectacle under which one can dance.







A scene from the performative heritage walk

GREENROOM FELLOWSHIP

(Anegundi, Karnataka, IN 2015)

Link for more info

One of 5 fellows for the Greenroom fellowship 2015, a collaborative initiative of the NGO Happy Hands foundation (Delhi) and the Kishkinda Trust (Anegundi). Worked with local village communities to design a theatrical heritage walk through mythical and historically important spaces in the villages, incorporating their traditional dance form. This performance is still carried out annually attracting tourists, educating them about the heritage structures through stories, songs and dance, simultaneously providing an alternate source of income for the farmers. It also became a morale-booster for them during the tough months.









Poster Design



CAGE OF SPARROWS

(Bangalore, 2013)

Written & Directed by: Ramneek Singh Stage Design, Poster Design: Manojna

<u>Link for more info</u>

The play 'Cage of sparrows' is a complex drama based on real-life accounts of illegal immigrants and their journeys across continents and oceans from India to Europe, it told tales of longing for freedom, of borders, smugglers, immigration agents and passports, of a homeland lost to conflict and men reduced to numbers.

The design for this play evolved through a metaphorical understanding of the script. Heavy gunny sacks are dragged around during and in-between scenes, sometimes demarcating space and sometimes signifying the weight on the shoulders of the characters. Colored ropes suspend from the ceiling, sometimes creating boundaries and sometimes signifying ties between characters and spaces.

CATCH THE WHITE DOT

Video art installation (Amsterdam, 2020)

Filming and concept: Deepti Rao Animation, concept and Design: Manojna

Status: Awaiting funding

EARLY WEBSITE DESIGN

VIDEO SAMPLE

Catch the White Dot (CtWD) is a participatory audio-visual installation that is developed into two modes of presentation. The first mode could be accessed online in the form of a game-based website. The second, in the form of a physical installation in the city of Amsterdam.

The installation consists of short video clips that were documented during the coronavirus lockdown on a street in Amsterdam south from the window of the filmmaker. The videos appear on the windows of a 3D structure that resemble the houses of Amsterdam. The installation creates a world where visitor is left wondering if the scene is in fact happening inside an apartment or outside of it. A curious animated white dot that appears in all the videos, almost like an extension of the observer's mind. Taking on roles of an enforcer, a friend, a bystander. After viewing every few clips, the audience is presented with questions about their interpretation of the white dot. At the end, they can compare their answers and stories with other participants.

GOAL

CtWD is writing the history of Amsterdam by documenting the stories of the people who visit the streets of Amsterdam virtually. It gives people an experience of social connection with the city of Amsterdam, during the lockdown, from home. At home people are free from the COVID-19 restrictions, physical limitations & social anxieties. With this freedom we give the audience a sense of control by looking at social interactions on the streets and then to create their own stories.





FURNITURE AND SPATIAL DETAILS



1. Accomodating for personalization in the communal work space, modular podiums are clustered together, their heights and textures allow people to maintain safe distances



2. Undulating ceiling forms create dynamic conference spaces, creating a unique feeling of being immersed in nature.



3. The body is embraced and lulled into a meditative state as an escape from the stimuli of work. Cylindrical forms allow for privacy in a shared space.



4. Furniture fashioned from sustainable materials, they cater to the exchange of ideas while accomodating safe distances between occupants.

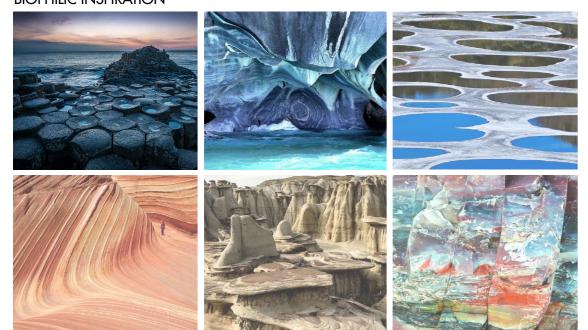


5. Meandering lounge areas accomodate group or individual work, the free flowings forms prompt users to slow down



6. Iridescent glazed surfaces provide privacy while responding to the changing qualities of light throughout the day, forming a synchronicity between individuals and the rhythms of time.

BIOPHILIC INSPIRATION

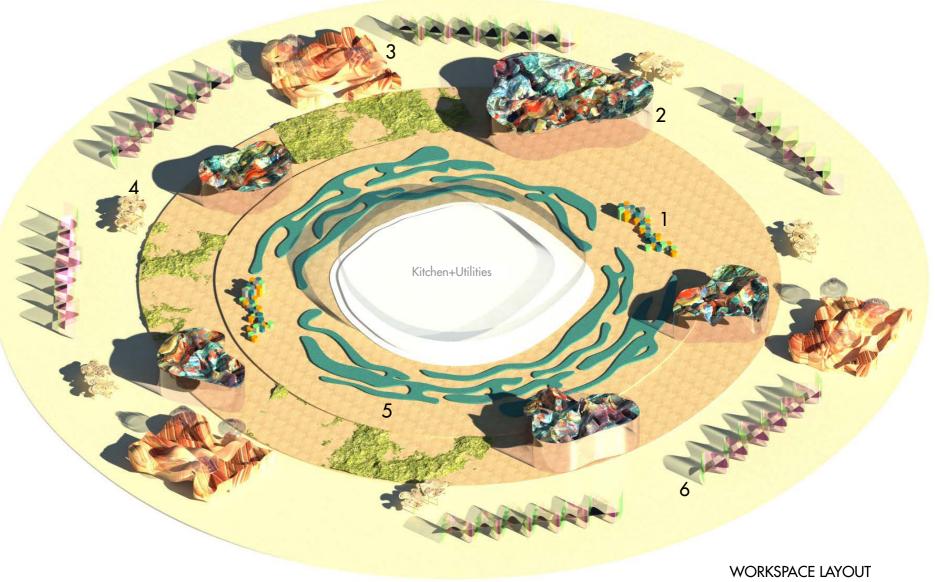


WORK (R)EVOLUTION

Workspaces for Tomorrow | Because Architecture Matters Competition (2020)

> Team: Angela Wiebeck, Brad Barndt, Manojna, Matthew Senkowycz, Rebecca Baugh, Zain Naqvi

This diagramatic response to the communal workspace focuses on the ebb and flow of connectivity, digital and interpersonal, that make up workflow as part of an organisation. Here, services (kitchens, restrooms etc.) sit at the core, operating as a meeting point at the heart of the space. Circular bands radiate concentrically from this core, with activities that require more collaboration located nearer to the core, while spaces for individual work are shifted toward the outskirts, as the increased circumference also makes the individual harder to locate. Each space is given a unique experimental language through biophilic adaptation.



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BLANKSPACE

Architectural storytelling competition (2019)

Team- Manojna Acharya

Set in the 2100s, two daughters decide to visit their 118-year-old mother who has a rusty memory having undergone multiple life-extensions. The capitalist economy which had not been done away with, was luring people to get these extensions to continue serving the economy. Bodies held captive. But it was also the greed to stay alive that made the humans take this option for life. Tara, one of the daughters enters the memories of their mother and travels back to her mother's earlier days as one of the planet revivers.

The following is an excerpt from the story:

"Bicycle tires screeched to a halt. Footsteps fell silent. Hysterical yelps and whimpers from kids and dogs. As Tara realized the world around her came to a stop, she looked in the direction of the collective gaze. The roots were spreading at a rate of knots. A team of supervisors stood close to the scene ensuring everybody's safety. The signage read 'BUILDING UNDER SIEGE, STAY OUT'. The plant roots soon started to grow mushroom roots around them. All in a controlled manner, spreading like miniature wildfire, a layer of mycelium formed around the concrete facade. Fenestrations were spared. People could still walk out, and skeptics could peep out and take a good look at the number of onlookers that had gathered by now to watch this spectacular performance.

Tara understood this to be an urban intervention. With the help of Al nano cell bots that impregnated the plant cells, they were able to accelerate and control the growth of the plant. This had begun to spread everywhere in the city, on all illegal buildings that were responsible for emission of carbon dioxide. Soon, birds and insects started to fly into the niches and dwell inside them. It wasn't as scary as it was funny, Tara thought to herself. A comedy pulled off by the municipal authorities in collaboration with the city's best art, engineering, and science minds. Within a few days, almost all the owners of buildings that weren't in compliance with the Earth laws, would face this prosecution. All that the city saw in a few days was absolute chaos!"







