

# D S 1 8

## 2 0 1 8 M O N S O O N A S S E M B L A G E S D H A K A

### FIRST YEAR

Raymonde Bieler  
Thom Blain  
Aimee Cornelius  
William Galloway  
Lidia Gherghe  
Fiona Grieve  
Tahin Khan  
Elisabetta Lafratta  
Wendy Leung  
Omar Manshi  
James Purchon  
Patricia Trivino  
Rachel Wakelin  
Qishuo Zhang

### SECOND YEAR

Constantina Avraamides  
Anett Bako  
Sarah Bass  
Charlotte Birch  
Robert Fernandes-Dwyer  
Alexandra Horsman  
Rosanna Rolfe  
Georgia Trower  
Costas Xenophontos

### TUTORS

**Lindsay Bremner:**  
Lindsay Bremner is a research based architect and writer and the leader of the Monsoon Assemblages research project.

**Roberto Bottazzi:**  
Roberto Bottazzi is an architect, researcher, and educator. He is the author of Digital Architecture Beyond Computers (Bloomsbury 2018).

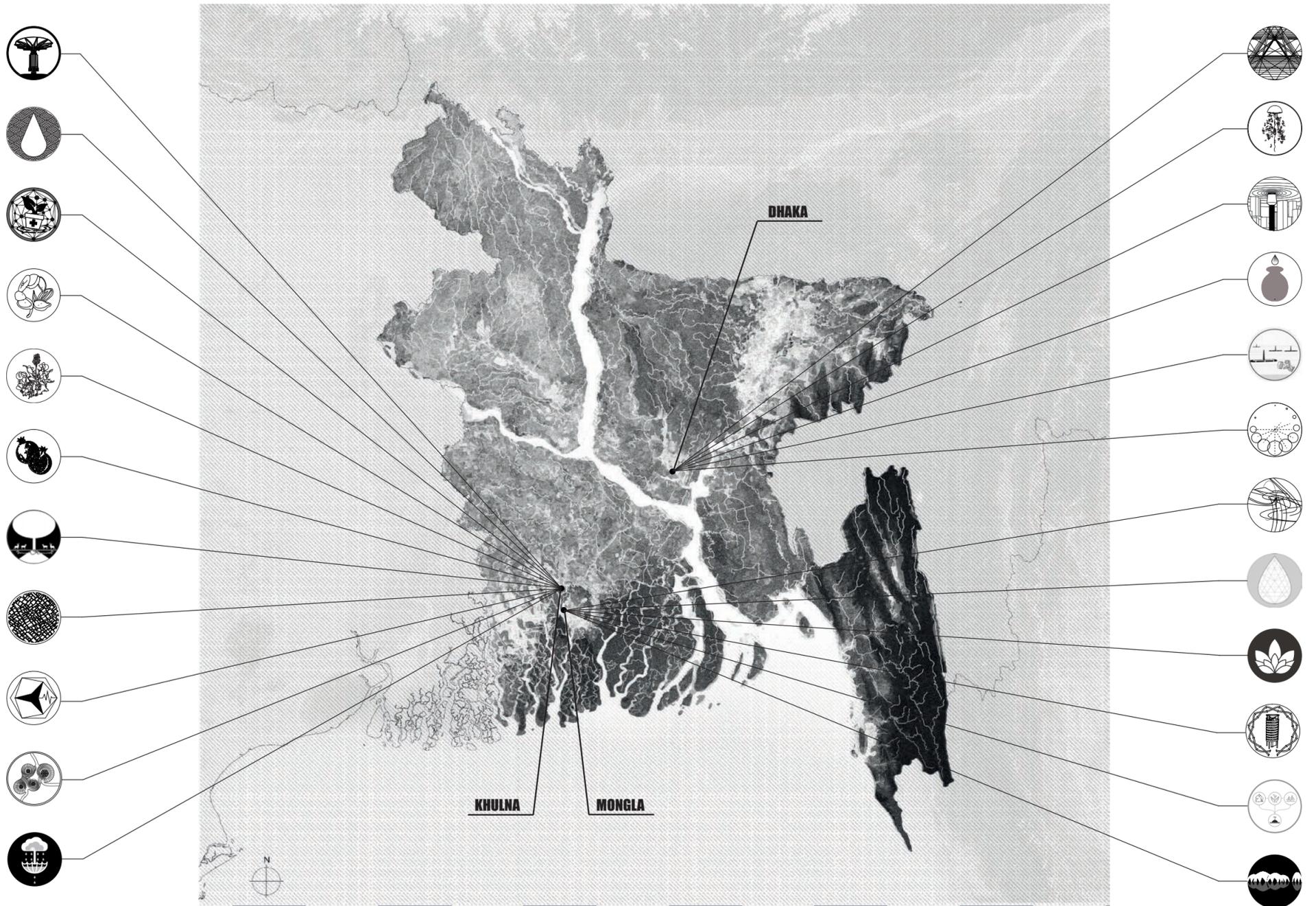
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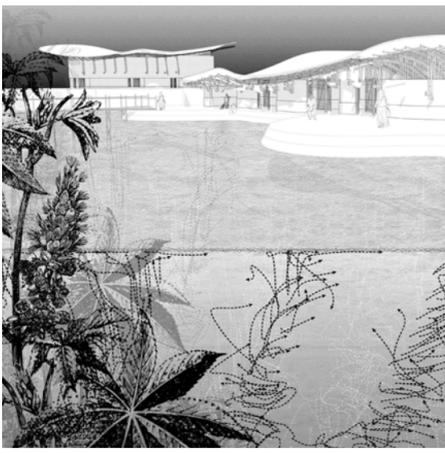
Yota Adilenidou (Bartlett, UCL)  
Tom Benson  
John Cook (Birds, Portsmouth  
Russum Architects)  
Tumpa Yasmin Fellows  
(University  
of Hertfordshire)  
Christina Geros  
Jon Goodbun (RCA)  
Monica Cristu (Sheppard Robson  
Architects)  
Susannah Hagan  
Alican Inal (Bartlett, UCL)  
Karin Jaschke (Brighton  
University)  
Oscar McDonald (Conibere  
Phillips Architects)

Laura Nica (Foster + Partners)  
Godofredo Perreira (RCA)  
Ben Pollock (Jestico Whiles  
Architects)  
Anthony Powis  
Alfredo Ramirez (AA)  
Damaso Randulfe (CASS)  
Calvin Sin (Jump Studios /  
Populous)  
Alice Thompson (MATA  
Architects)  
Alex Watt (Eric Parry Architects)  
Charles Weston Smith  
John Zang

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and Settlements  
Afroza Parvin and Shibu Bose  
of Khulna University



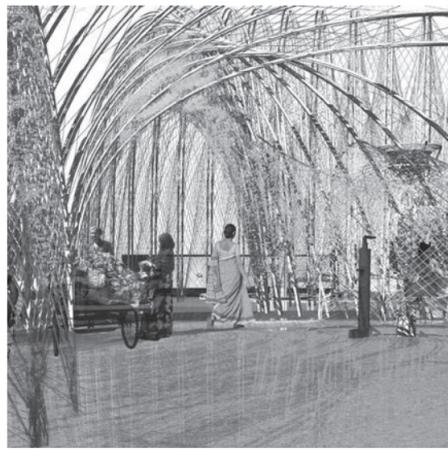


Constantina Avraamides  
**Arsenic Urban Laboratory**



The project is focused around tackling arsenic contamination in Khulna, Bangladesh, creating an economy around the production and distribution of arsenic. The masterplan includes an industry zone, where filtering prototypes are gathered and processed. Arsenic is extracted from the Composite Iron Matrix and Arsenic Trioxide is produced as a means of creating income for the community. The public aspect of the masterplan revolves around an urban laboratory, where different ways of living with arsenic are tested. Facilities for testing and treating people directly affected by arsenic are designed together with a visitor centre raising awareness for alternative safe drinking methods.

[constantina.av@gmail.com](mailto:constantina.av@gmail.com)

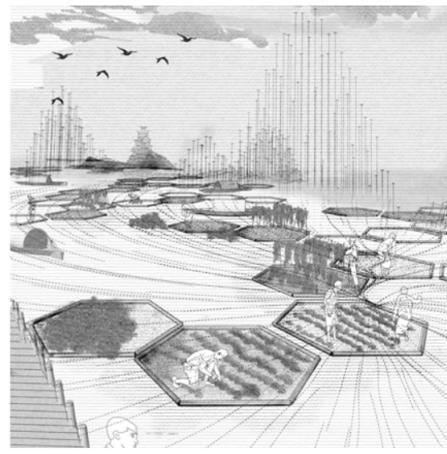


Anett Bako  
**The Salt Line**



The Salt Line grew out of a shared recognition of the importance of water stress as a potential contributor to health conditions of the locals from the city of Khulna. The project combines public recreational facilities with public health treatment through a collaborative function with the prototype; the desalination capsules. The by-product of the desalination process is the salt, which supplies the treatment points. Inhaling salt is beneficial, as it cleans the lungs from mucus, and is used as a therapy for respiratory problems due to air pollution. The two main drivers of the project, the fresh water and the salt are celebrated as an unpredictable architecture, changing in function along with climatic changes.

[anett.bko@gmail.com](mailto:anett.bko@gmail.com)

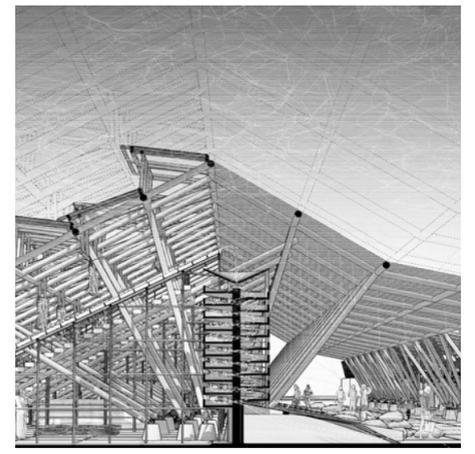


Sarah Bass  
**Hyacinth Cooperative**



The Hyacinth Cooperative is an aquatic system that uses water hyacinths to restore the rift between agriculture and the Bangladesh rivers. The hyacinth factory is a single component within the Cooperative system. It draws floating farm beds from the water and reabsorbs their nutrient to be converted into fertilizer. This imitates the behaviour of the hyacinth root system, actively absorbing nutrients found with the water and using it as a source of energy for rapid reproduction. The Factory acts as a central public interface for the farming community living along the river. It provides them with a space to gather and discuss, improving the lives of some of the most venerable members of the Bangladesh society.

[sarahbass0@icloud.com](mailto:sarahbass0@icloud.com)

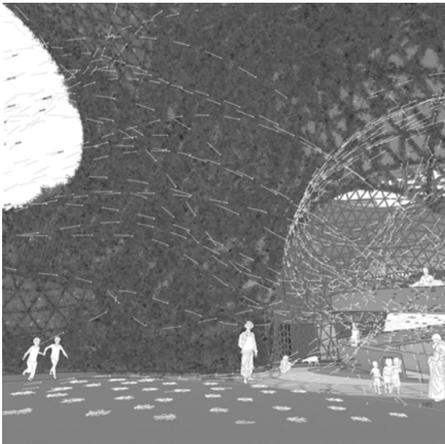


Charlotte Birch  
**The Fluvial Collective**



The Fluvial Collective is a co-operative involving three rural poor communities of the Banishanti Union in Bangladesh that are increasingly vulnerable to river erosion exacerbated by illegal sand mining. These communities will use the Sand Catcher prototype to help stabilise the crumbling riverbanks. The proposal serves as a sand market, processing harvested surplus sand from the Sand Catchers and made available for community use or sold on for community profit. The project is purposefully 'low-tech', but driven by manual labour. The Fluvial Collective will also produce the Sand Catchers through manufacturing the jute fibre logs, and perform as a social hub and community centre.

[charlottebirch01@gmail.com](mailto:charlottebirch01@gmail.com)



Robert Fernandes-Dwyer  
**Naturopathic Institute & Dispensary**



Plants and man are inextricable. The use of plants to alleviate human suffering is as old as the evolution of human civilization itself. Extensive monsoonal flooding triggers copious diseases to burgeon, which in informal settlements can be life threatening due to the extreme under-provision of healthcare. To mitigate these issues, the N.I.D. encapsulates a self-sufficient healthcare service and a research facility. Its form and site has been meticulously designed to manipulate the external environment including its elevation above the hundred-year flood level, to cool down the interior of the building to create a micro-climate which inhabitants of cramped informal settlements are able to socialise in.

[robertjdwyer1@gmail.com](mailto:robertjdwyer1@gmail.com)

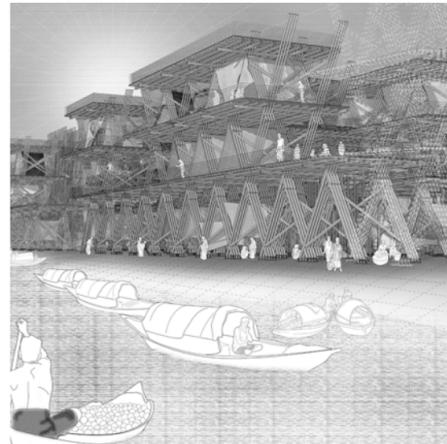


Alexandra Horsman  
**Neta Skula**



Neta Skula is a Micro Public Place that encourages teaching and learning and the exchange of knowledge. The design incorporates a school for the children of Rupsha slum but also a net making workshop where they will learn skills, and earn money by working in between lessons. The design is based around the Net, a vital element to the lives of the people living alongside the river, the inspiration for my device and the key to allowing the children to have an education. The net also is a key element of the design, the skin of the building is a system of layered multiple density nets, that can be controlled by the user to create shade and spaces.

[alexandra.horsman92@gmail.com](mailto:alexandra.horsman92@gmail.com)



Rosanna Rolfe  
**Char Islander's Refuge**



The Char Islander's refuge is a community project that is created to support those living on char islands. The inhabitants living on the chars are amongst the most vulnerable in Bangladesh. The lands that they call home can disappear within a matter of seconds when the river currents disrupt the grounds underneath. The Refuge provides a market space for char dwellers to buy and sell their produce on mainland Dhaka. The modular structure is then built up to provide emergency shelters to them and their animals when their homes are displaced. This structure offers a point of identity and stability in their temporary and changing landscapes.

[rosannarolfe@gmail.com](mailto:rosannarolfe@gmail.com)

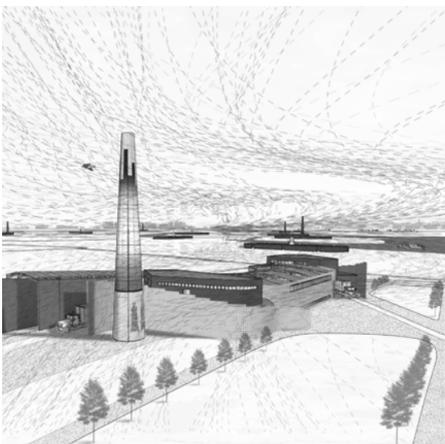


Georgia Trower  
**Epicarp Exchange**



The Epicarp Exchange is a co-operative programme for impoverished communities in Khulna giving access to energy resources for the exchange of waste epicarps. Unreported oil spills across the Delta are detrimental to the surrounding Sundarbans. The peel from certain fruits and vegetables have the ability to adsorb oil and pollutants which can then be extracted to be reused and distributed at a local level. The proposal uses the existing ship breaking industry to deconstruct and reconstruct a kit-of-parts system. Its function is to house the assembly and disassembly of the prototype as well as hold publicly accessible exchange points and market space for buying, selling and consumption of organic produce.

[georgiatrower@live.co.uk](mailto:georgiatrower@live.co.uk)

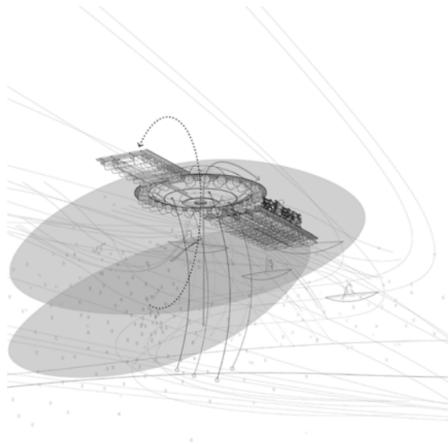


Costas Xenophontos  
**Bricks of Air**



An urban strategy project, reducing the air pollution in the city of Dhaka. A series of industrial buildings, around brick kilns, are constructed in South West Dhaka and act as exchange points for construction materials and air filters for the Prototypes. Each project consists of a series of industrial processes, generating bricks and lime powder. The Monsoon, confines brick production in the dry months of the year. Through the project, the industry can expand, generating more construction materials throughout the year. A digital chimney, displays air pollution information, raising awareness both in regards to the project and the air quality of the city.

[costas.xenophontos1@gmail.com](mailto:costas.xenophontos1@gmail.com)

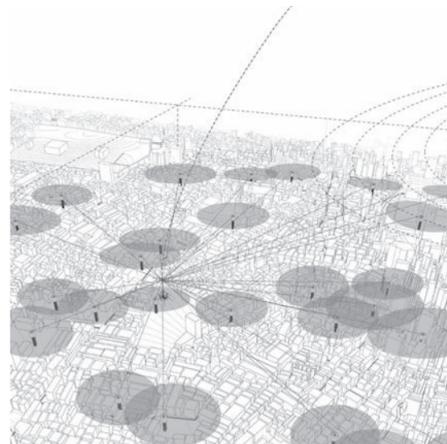


Raymonde Bieler  
**Resilient Farming**



One of the increasing concern in Bangladesh is the increase salinity concentration in the inland water system due to change in the river inflow. Salinity intrusion affects the availability of drinking water and agriculture productions. My project aims to address this issue with a series of aquaponic floating farm feed with desalinated water and managed by a cooperative of women. The farms are placed following the movement of the salinity in the Passur River. Central to the farm is a Women's Centre aiming to empower women of Mongla by giving them access to information, and creating spaces where they can feel invulnerable and be given economic opportunities.

[raymondeblieler@gmail.com](mailto:raymondeblieler@gmail.com)



Thom Blain  
**The Micro-Public Urban Lighthouse**



The whole year project is designed to work as a system. It is intended as such to increase the resilience of the population of Bangladesh to a potential devastating earthquake, this is a once in 400-year event. The Micro-Public Urban Lighthouse (MPUL) is therefore adapted to serve as shelter for the other natural disasters threatening the country on a yearly basis. Depending on where each of the MPUL is located they will have a different impact on the built environment and the inhabitants of the area. At ground floor the MPUL changes of appearance and function to reflect the needs of the local community it serves.

[thomb1.arch@gmail.com](mailto:thomb1.arch@gmail.com)

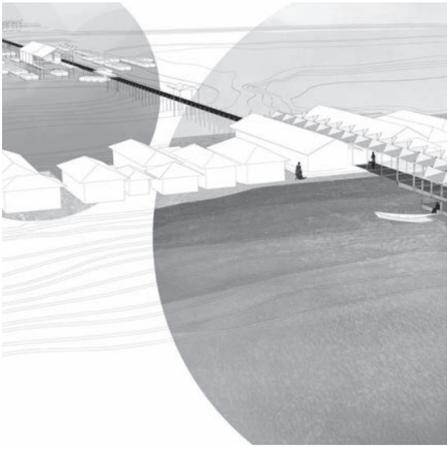


Aimee Cornelius  
**The Oil Refinery**



Oil pollution in rivers is a huge problem in Bangladesh. I've designed a Prototype which floats on the rivers absorbing oil. I later designed a large open area where the process of collecting and cleaning the oil is made aware to the public, highlighting the oil pollution on their rivers. Conveyor belts take the dirty prototypes through the building where they get cleaned and pressed to release the dirty oil. The oil then gets taken through the refinery to be cleaned and then taken along pipes extending to the jetty's to be resold back to the river.

[aimee\\_cornelius@hotmail.co.uk](mailto:aimee_cornelius@hotmail.co.uk)



William Galloway  
**Dynamic Assemblages**



Dynamic Assemblages is a project based in the village of Banishanta, Mongla. With over two thirds of the islands inhabitants involved in brothel work, the project has a focus on providing those working in prostitution with an opportunity to access an alternate income. The key aspects of the project include a dynamic floating market space, a floating farming area and a static dry market, each space has been designed to consider incremental growth with demand. For the project to be a success it has been fundamental to understand how floating farming works, the crops that can be grown and how the project can be funded by villagers.

[galloway.william@gmail.com](mailto:galloway.william@gmail.com)

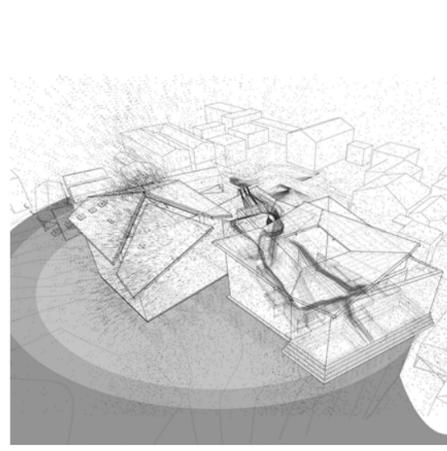


Lidia Gherghe  
**Seismic Research Centre**



Bangladesh is located between the EuroAsian and Indian plate which increases the possibility of an earthquake. Being one of the most populated countries in the world means that the consequences of a big earthquake could be devastating if not properly prepared. The proposal aims to inform people about the seismic movement and educate them in preparation of an earthquake. The scheme consists of a research centre that collects information that is presented into an interactive wall located in a public square. The wall has the shape of Bangladesh and is divided in a hexagonal grid that contains movable cells, each cell corresponding to a zone in the country.

[lidia.gherghe20@gmail.com](mailto:lidia.gherghe20@gmail.com)

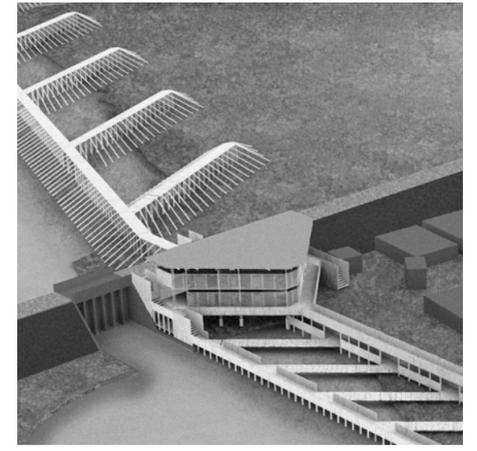


Fiona Grieve  
**Women's Ablution Centre**



Water-borne disease is one of the biggest mortality causes in Bangladesh and accounts for nearly 25% of all deaths. Most of the population lives below the poverty line, contaminated open water sources are their primary washing facilities. My project aims to alleviate water-borne disease through the provision of clean safe water sources for bathing and washing. A system that creates a sequence of spaces along the river front that maintain the traditions of washing in the river but provide a filtration system to create clean water in which to do so. The architecture is designed specifically for women providing a private sanctuary in the community for women to congregate.

[fi.grieve11@gmail.com](mailto:fi.grieve11@gmail.com)

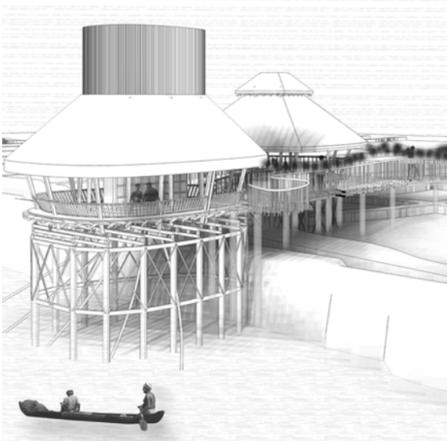


Tahin Khan  
**The Mangroves Sprawl Project**



An architectural intervention on the oceanic edge for the island of Sandwip in Bangladesh, which proposes to reclaim back eroded land from the Bay of Bengal using man-made and natural sediment traps. The Mangroves Sprawl Project has three phases before it reaches its full purpose of serving as a mangrove restoration program that will be maintained and managed by a new coastal community. The Mangroves Sprawl Project will be the prototype model for a masterplan scheme to strengthen the coastal defence as well as initiate the land reclamation process from the Bay of Bengal for the people of Sandwip Island.

[tahin\\_khan@hotmail.co.uk](mailto:tahin_khan@hotmail.co.uk)



Elisabetta Lafratta  
**Water Power**



Currently 13 million rural household live without power in Bangladesh. The Water Power initiative will substantially change the way the villagers live in the rural parts of Bangladesh. As using micro turbines floating on the river, electricity will be generated and stored in underwater batteries to be kept cool. Then it is distributed into a 'portable batteries' wall for the villagers to collect and supply their homes, and the micro community pavilions. Water Power wants to make a significant positive change in the rural Bangladesh, whilst maintaining its unique traditions of music, vernacular materials and sense of community and brotherhood, to be built across the nation.

[elisabetta.lafratta@gmail.com](mailto:elisabetta.lafratta@gmail.com)

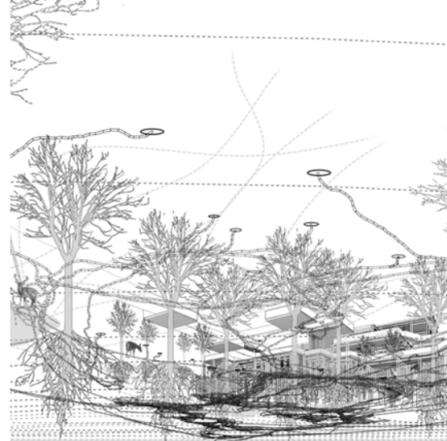


Wendy Leung  
**The Rupsha Women's Bath House**



Rupsha Women Bathhouse is a project providing basic sanitation facilities to the oldest and largest slum in Khulna, Rupsha Ferighat Slum. This master planning scheme upgrades the current sanitation service, tackling the hazardous environmental condition in the slum. This infrastructure acts as a public space for the people living there, in poor conditions, by providing sanitation facilities such as bath house, shower, clothes washing area and safe drinking water access. This micro public space is a communal area where daily housework could be performed, encouraging individual women to gather outside their homes within the community.

[wendy0611@gmail.com](mailto:wendy0611@gmail.com)

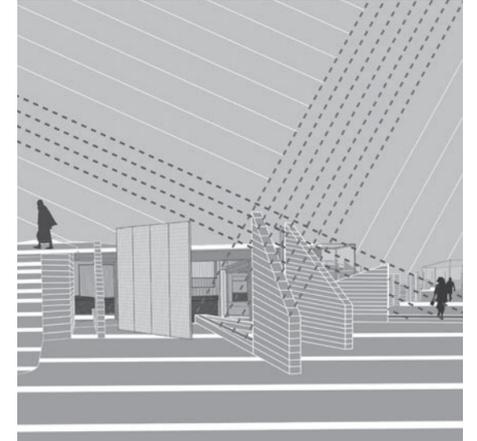


Omar Manshi  
**Creating an Eco-System**



This project is hypothetical, creating an eco-system combining varying systems. By creating a forest that is home to moles, who's tunnels reduce the levels of surface waterlogging and in addition providing a space to re-introduce endangered deer to Khulna's environments. A demonstration centre provides an educational space for the systems in play, in addition to a market place that during monsoon season becomes a deer shelter, which collects fertilizer that can be fed back into roof gardens. Housing prototypes replace existing homes along with the introduction of a floating garden space that becomes a refuge for the moles when their tunnels are flooded.

[omarmanshi@gmail.com](mailto:omarmanshi@gmail.com)



James Purchon  
**The Intercommunicating Institute of Rural Society**



Monopolisation of the agricultural industry globally is straining the many stakeholders that interact with land locally for the financial and political benefit of the few macro, capitalist businesses and infrastructures. The institute aims to empower the agricultural and rural by using the built form to create a connection to environment, ecology, indicating a cyclical equality between all stakeholders (humans, animals, land etc). Public space embodies its surrounding micro landscape: ground, built, sky and beyond. Volume physically creates a spacial understanding of macro agricultural and societal specifications. Education flows through the negative, proposed and shaded formed constructed.

[jamespurchon1@gmail.com](mailto:jamespurchon1@gmail.com)

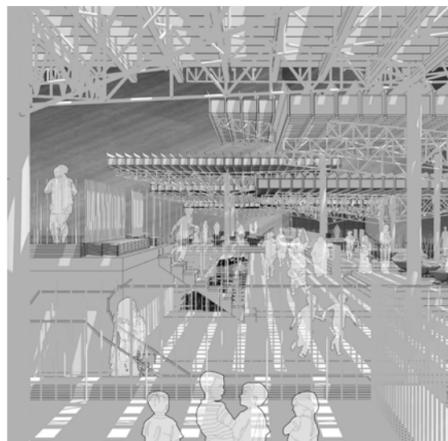


Patricia Trivino  
**Under Pressure**



My project is a piece of infrastructure to be plugged into the cyclical climate system of Bangladesh, to help the locals deal with it. It is a flexible space with the capacity to passively lift itself away from the flood waters and return to ground level in the dry season. Its dynamic architecture is connected to the weather and lifestyle of Mongla; a town known for its floods, hit by frequent cyclones and in constant dearth of fresh potable water. The proposal is a prototype tailored to that flexibility and culture.

[patritrivi@gmail.com](mailto:patritrivi@gmail.com)

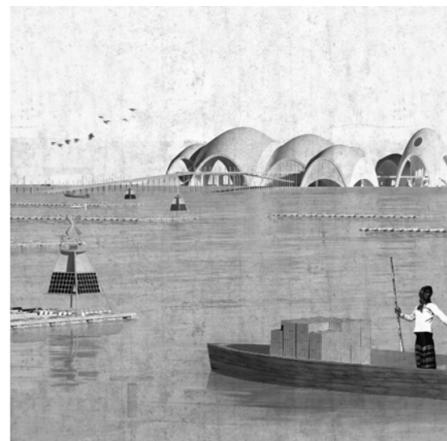


Rachel Wakelin  
**Incremental Intervention Amplifying Supraghat**



Located in the densely populated city of Khulna, the Supraghat slum, adjacent to Rupsha river, is a large, established, yet informal settlement. The settlement is incredibly compact, with an intricate and delicate mix of distinctive communities with elaborately intertwined social issues and complexities. The program addresses these established collective issues, including; fire hazard, lack of services and waste management, with incrementally implemented communal infrastructure. The structure is primarily a bridge reaching across the settlement, incrementally installed with segmented combating facilities, as a vertical amplification of the communal requirements below.

[rachelwakelin26@hotmail.com](mailto:rachelwakelin26@hotmail.com)



Qishuo Zhang  
**Kuakata Assemblage**



This project explores the idea of using mineral accretion to grow construction materials out of the minerals in the sea and build inhabitable structures on the land. Kuakata, is located in coastal Bangladesh. Sitting in the cyclone prone area, the proposal provided a shelter for residents during natural disasters, while in normal time it is a fish market with facilities provided for the local fisherman community. The modular vaulting structure demonstrates the possibility of using biorock for both domestic houses and public buildings. The sensors located in the growth field gathers weather data which are vital to the local people. The building therefore is an assemblage of people, goods and information.

[shawn.zhang@hotmail.com](mailto:shawn.zhang@hotmail.com)

# STUDIO DESCRIPTION

For three years DS18 is aligned with Monsoon Assemblages, a research project funded by the European Research Council working on the monsoon in three South Asian cities - Chennai, Dhaka and Yangon. In 2016/17 the studio was set in Chennai, Tamil Nadu, where design was framed by the materiality of a wetland.

In 2017/18 the studio worked in Bangladesh, framed by the materiality of the delta, and in 2018/19 the studio will be set in Yangon, Myanmar, framed by the materiality of the river.

The studio in Bangladesh began by requiring that students map and simulate the geological, hydrological and socio-political processes and practices shaping the Bangladesh delta and the climatic challenges it faces. Three digital workshops introduced them to software to aid in this process. This was followed by a field trip to Bangladesh in early November 2017, where students spent five days in Dhaka hosted by the Bengal Institute of Architecture, Landscape and Settlements. They visited various sites in the Bengal Institute of Architecture, Landscape and Settlements. They visited various sites in Dhaka, the ancient city of Sonargoan, a char island in the Megnaa River and Jol-o-Jongol, an eco-tourist facility. They then took the overnight ferry to Khulna, where they were hosted by the Architecture Department at Khulna University, followed by two nights on a prawn farm in Mongla, from where they visited the port city of Mongla and the Sundarbans.

On return to London, students were required to design an infrastructural prototype to intervene in one of the dynamic situations they had observed

on the field trip to improve the socio-ecological outcomes of the territory.

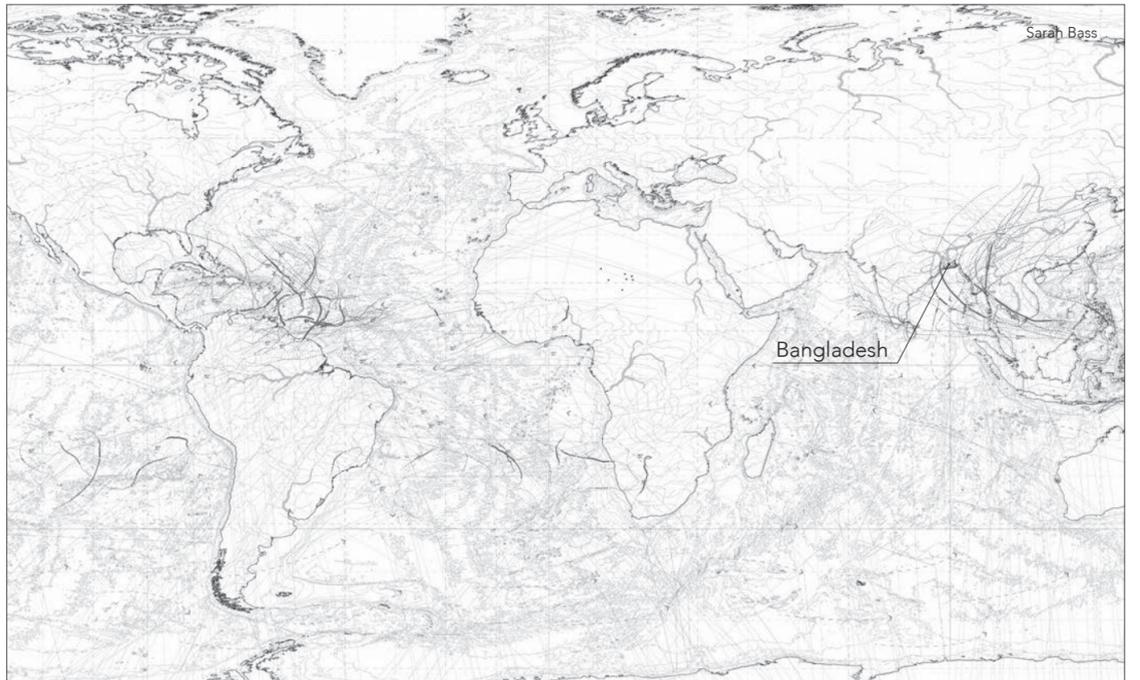
During the second semester, they developed the prototype into a micropublic place - a physical and social forum to engage with a site at multiple scales, bringing together territorial, architectural and socio-ecological concerns.

**“In 2017/18 the studio worked in Bangladesh, framed by the materiality of the delta”**

## MAPPING A DELTA BRIEF 1A

The aims are to understand and represent the geological, hydrological, and socio-political processes and practices that shape the delta ecology of Bangladesh. The challenges faced are explored through a series of mapping exercises, in order to locate sites of maximum fluidity, mobility and change as the basis for design interventions. Working in groups of two, a theme is selected for researching and mapping Bangladesh. This theme then becomes the theoretical framework of the work for the rest of the year.

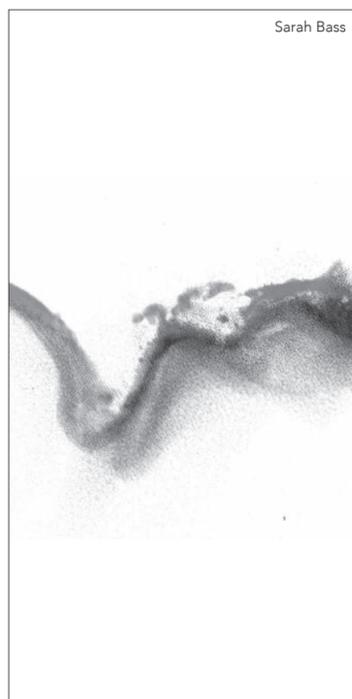
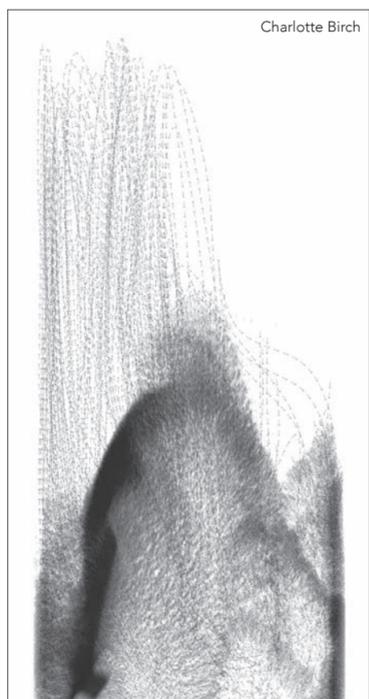
**“The challenges faced are explored through a series of mapping exercises”**



## SIMULATING A DELTA BRIEF 1B

Parallel to researching and mapping, a physical process that shapes life in the Delta is simulated using RealFlow; a fluid and dynamics simulation digital tool. The processes is simulated in an abstract environment, since the digital simulation is considered as an abstraction, rather an exact replica of reality. Digital simulations are used throughout the studio as instruments to speculate about a reality that needs to be 'complexified' in order

**“The processes is simulated in an abstract environment, since the digital simulation is considered as an abstraction, rather an exact replica of reality”**



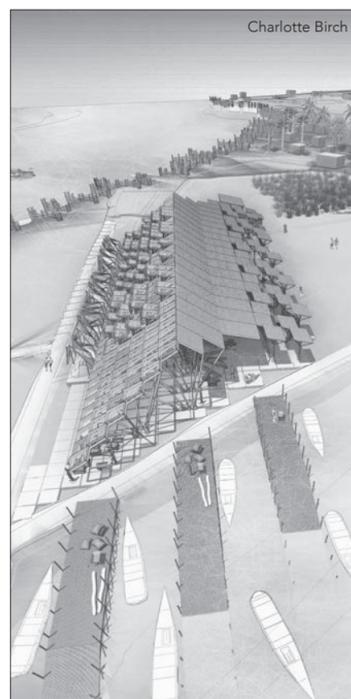
## INTERVENING IN A SHIFTING SITUATION + PROTOTYPE BRIEF 2

The aim of this brief is to utilise the mapping and simulation research undertaken in Brief 1. A situation in which human and/ or nonhuman habitation in the delta is at risk, is identified and a prototype, a replicable device is designed that intervenes in the dynamics of the site conditions mapped, giving rise to new spatial and habitation potentials. The design principles developed in designing this intervention will constitute the starting point of the second semester's work by increasing the complexity of the design brief.



## DESIGN IN(G) A DELTA PROTOTYPE TO MICRO-PUBLIC-PLACE BRIEF 3

The objective of the final, semester long brief of the year is to take a series of steps that would aid unlocking the potential of the prototype to generate the architecture for a new institution that contributes to public space and life in Bangladesh. The objective of the project is to animate public life and engage the public and the public imaginary in the performance of the prototype through the design of a MicroPublicPlace (MPP). The requirements of the brief are to identify and develop a program for a public institution, to include a public space, of which



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## MONSOON ASSEMBLAGES

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