Studio Africa: Mangue Negotiations

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The Illinois School of Architecture is committed to developing students with an informed worldview through global and local engagement.[1] These opportunities form students with a truly global and social perspective on architecture and the built environment, a critical quality of tomorrow's design professionals. According to the master's program main objective, students should learn to analyze complex environments and propose innovative design solutions to the world's most urgent problems.

This paper will focus on an academic exercise that challenged traditional mapping methodologies and embraced science and big data towards more creative collaborative processes. Within the aesthetics of remote collaboration, this experiment on map-making inverted the technicality of drawing, challenging the participants to map, model, and represent an expanded worldwide view of the mangrove ecosystem.

The study of coastal cities has been traditionally conditioned to a Eurocentric vision of space, where the importance of the metropolis and its infrastructure is imposed over the singularities of the people's relationship with landscape and nature. Coastal cities in the West Africa and The Caribbean are potential laboratories of climate adaption for building and social space. However, its study and analysis have not called upon cross-disciplinary approaches to develop conceptual and methodological frameworks between natural, cultural and social scientists.

"The mangrove is in fact a sensitive figure in our collective consciousness; it is in our nature, a cradle, a source of life, of birth and rebirth."[2]

—Patrick Chamoiseau

INTRODUCTION

Half of the world population currently lives in the tropics, 45% of them living in urban areas. The tropical belt holds the vastest biodiversity in the world with a median over 15 million species.[3] Some coastal cities located in the tropical belt are considered among the 20 biggest urban agglomerations of the world: Lagos, Manila, Mumbai, Dakka, Rio, Bangkok, Jakarta, Miami. A coastal location is important in terms of the global movement of goods and raw material, but also implies higher risks of tropical storms and sea level rise due to climate change. The sea, being an essential part of life for tropical cities, provides vital ecosystem services to urban communities. However, It is often severely impacted by industries that impulse urban growth, like tourism, trade and travel.

One of the most productive and significant coastal ecosystems of the world is the mangrove forest. It provides a secure resource for both land and maritime life through their leaves, roots and detrital material and provides a sheltered habitat for endangered species. It also adds a significant sport and commercial fishery value and serve as buffer for storms, hurricanes and flooding. Also, mangroves were put in the map very recently for being one of the most carbon-rich forests in the tropics becoming a great source for global warming mitigation. However, Mangroves are one of the most threatened habitats on earth, with an annual loss outpacing other tropical rainforests. Mangrove in the Caribbean Sea and the Middle Atlantic are rapidly declining, it is estimated that an additional 25% will be lost by 2025 due to rapid development in coastal cities.[4]

The mangrove forest is a very important ecosystem for the future, but it is also a space of political resistance. It is the perfect expression of Black Atlantic Modernity.[5] Transgressive, transatlantic, inclusive, always renovating itself through resistance; a social ecumene where culture is not rooted in the past nor floating away to the future. The coastal natural ecosystem is also a major inspiration for literature, music and cultural events. Mangrove has been food for thought to contemporary cultural manifestations like Recife's Mangebeat, Port of Spain's Soca and New Orleans' Bounce, among many others.

Chico Science's mange manifesto challenged us to embrace space, not just in the sense of being part of a cultural scene, but in a collective performance with the community and our
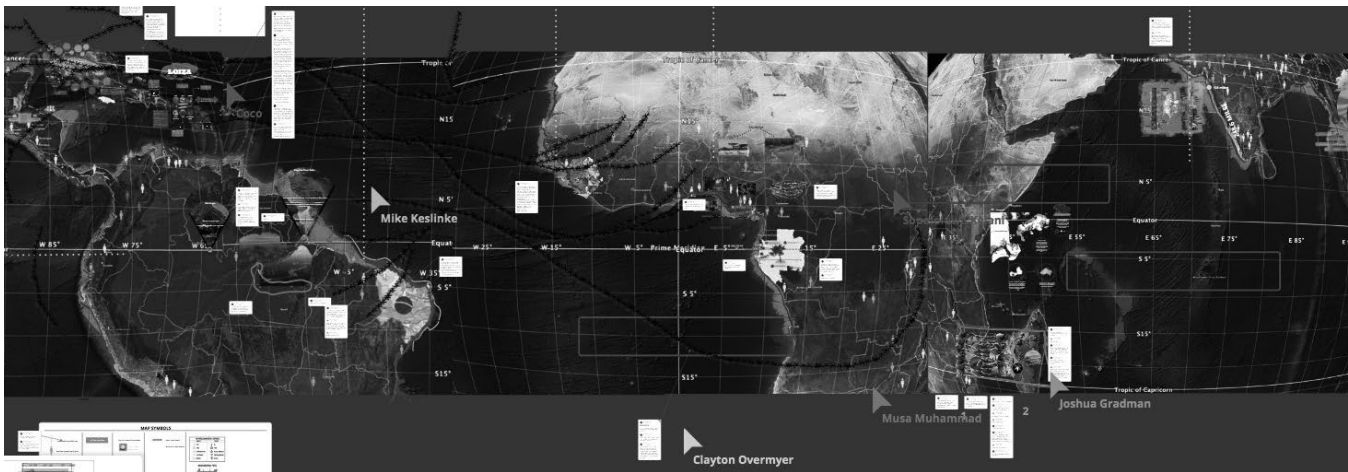
Figure 1. Collaborative Map Process.

bodies.[6] Other cultural movements, such as 3canal's visual and performic experiments with soca and carnival, and Rita Indiana's understanding of hybridization and dislocation through Mambo-metal,[7] inspired us to embrace the complexity, interdisciplinarity, and hybridization, just the same way the waters of the estuary mix in the mangroves.

RESEARCH MODULE

We explored a hy-flex online delivery option[8] where students were able to interact using a new tool of communication and collaboration imposed by the pandemic: the collaborative online whiteboard. Using this interface, students were assigned a blank mapamundi of the world, which they used as an empty canvas, to map their findings on six different themes that were grouped in three distinct scales:

GLOBAL

• Green: Coastal ecosystems and sustainability.

• Blue: Global economics, trade and tourism.

REGIONAL

• Orange: Cultural industries and creative economies.

• Gray: City life and urban footprint.

LOCAL

• Pink: Vulnerability and inequality.

• Brown: Materials, tectonics and circular economies.

The assigned themes gave us directions into the discussion of many fundamental concerns on the ecosystems of Mid Atlantic coastal cities. The students read, researched, discussed and synthetized on the six themes assigned. They were able to discuss on topics related to environment, politics, community Issues, creativity and materiality related to the meaning and relevance of mangroves in west african culture.

Individual or team research assignments were given for each theme specified. Based on the topic of the assignment each team of students was required to moderate and write a report summarizing one or various conclusions. Parallel to the lectures and readings, the students produced one map layer for each topic conclusion that built up a collaborative conceptual map.

A first layer of the map concentrated on coastal ecosystems, the natural, historical and commercial connections established between West Africa, South América and the Caribbean through the Atlantic Ocean. The students mapped out the extension and density of mangrove in coast intertidal areas. They also represented the impact of sea level rise, hurricanes and floodings in populated areas.

A second layer of the map concentrated on the flux of cultural manifestations, including trade and slavery, between African, Caribbean and South American cities, and their relationship to the construction of an afro-atlantic identity. Through this layer the students represented the commercial trade between continental coasts and measured the population and extension of coastal cities, as well as the location of ports and major transportation infrastructure. They also mapped out the way that existing commercial trade routes coincides with colonial slavery routes and the extension that these trades have had in main land.

A third layer of the map concentrated on vulnerability and inequality as they relate to specific communities' collective performance and political resistance. The students identified the dependency that coastal communities have on the sea ecosystem and the use that these communities made of mangrove resources.

The map was developed online using a collaborative platform that functions as an infinite whiteboard that provides an

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Figure 2. Collage Study.

intuitive experience with multiple options for real-time collaboration and asynchronous teamwork. The experiment on the infinite whiteboard inverted the technicality of drawing challenging our abilities as designers to map, model, and represent the environment within the aesthetics of remote collaboration.

The latter process and technology enabled students to:

• Collect and synthesize project-related data at different scales.

• Learn about sustainable and green design techniques.

• Develop leadership and collaborative skills in team settings and produce independent conclusions.

• Synthetize in diagrams a conceptual analysis for their findings and conclusions.

DESIGN MODULE

The students were asked to develop a program and define a scope and scale for their projects. The site selected had to be conceptualized as a microcosm of West African Cities. It was required that students made a site analysis providing comprehensive drawings that refer back to the research conclusions.

The students selected as a site for their projects the island of Tarkwa Bay Beach in the Amuwon Odofin administrative subdivision of Lagos, Nigeria. Tarkwa Bay Beach occupies the maritime front of Lagos next to one of the biggest urban developments being built in West Africa, the Eko-Atlantic Project.

Eko-Atlantic is a development project that will house 250,000 new residents in 10 square kilometers, it is being developed over an ocean-front reclaimed peninsula in the front of Lagos.[9]

Tarkwa Bay is occupied by a community of approximately 5,000 inhabitants in an area only accessible by boat. It is also a site of interest for tourism, local leisure and entertainment. It is the nemesis of the Eko Atlantic project and a land sought-after by real estate developers and the government for future urban development plans.

Due to forced evictions by the Nigerian military in 2020, right before the pandemics, many residents faced a disruption in their lives.[10] Left without shelter the former residents face inadequate food and water supply, lack of health and safety, deprivation of freedom, separation of family members and exposure to COVID infection.

The students proposed to bring back the residents of Tarkwa Bay to the island and proposed an integrated resettlement plan, replacing the destroyed urban fabric while introducing new forms of development that allow for greater chances of cultural expression, economic development, environmental restoration and health and wellbeing. They decided to declare for the interest of conservation all mangrove forests as ecological parks, preserving them from the impact of urban development and capital interest, maintaining the experience of the island for both inhabitants and tourists alike.

In order to support the latter statement, the students were asked to develop a series of research questions and collages that could support, through intellectual reflection and observation, the basis for their architectural programs. The research questions follow in the order of the six topics assigned:

Environment

• How does climate change affect coastal ecosystems?

• Are there programs or initiatives that are preparing these ecosystems for climate change?

• What other disasters do Mangroves mitigate? Floods, typhoons etc.

• Do environmental initiatives benefit only the coastal ecosystems or could cities and communities benefit as well?

Community

• How are communities using the Mangrove forests differently around the globe?

• Should Mangroves be for environmental remediation only? Could it also benefit the activities that sustains the community?

• What happens when urban developments take place? How will the community advocate politically with the displacement of this ecosystem?

Figure 3. Program Diagram.

Economics

• What is the economic value of mangroves?

• Does it vary by location?

• What is the cost of development for manmade structures (including preservation) Vs the cost of mangrove restoration?

Politics

• How could we ensure participation and community ownership in the formulation, implementation and sustainability of coastal plans and urban waterfronts?

• How could we advocate and propose plans that avoid community evictions in coastal land threatened by inadequate urban developments?

• How could we influence policies towards transforming marginalized neighborhoods as places of economic opportunity?

Creativity

• How should we balance creativity, individualism, and collectivism in equal measure, along with a philosophical bent supporting community?

• Will an embraced rationality and philosophy centered on people gives priority to interpersonal and coexistencial understanding of space?

• Could architecture acknowledge and appreciate the work of artists and creatives- not just the aesthetics but their potential to create employment, wealth and economic opportunities?

Materials

• Can we acknowledge the natural processes that mangroves use to extract water from salt water in an effort to address the capability of buildings for climate adaptation?

• How could mangrove forests interact with architecture in the protection from floodings, sea level rise and other natural disasters?

At the end of the midterm, students were able to translate an idea into an architectural program addressing the intentions and conclusions of the research module. Students were engaged with an increasing level of design-research through iterative studies and moved fluidly between different modes and scales of design.

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Figure 3. Collaborative Map Detail.

During the design module the students were be able to:

• Apply the interdisciplinary research process to architecture design problems in complex urban landscape settings.

• Work on community design issues in tropical neighborhoods.

• Evaluate environmentally sound sustainable and green design techniques.

CONCLUSION

My teaching methodology aims to incorporate deliberation, negotiation as well as mutual understanding between creative people, allowing for appropriate decision making. An approach that is relevant to professional practice, the community, and subsequently the planet. Design decisions are complex and depend on a variety of factors and therefore require a high level of flexibility. In times of uncertainty and where results are difficult to predict, architects must be willing to operate in a collaborative and inclusive environment.

The Master of Architecture at UIUC calls upon developing a conceptual framework for the built environment supported on an environmental and social perspective. However, students tend to gravitate too much towards technical solutions and individualistic problem solving. The existing commitment to eradicate poverty, to ensure equal opportunities and to create resilience strategies for climate change have created a paradigmatic shift, one where we need to design human habitats supported on resilience and solidarity rather than fueled by remedy and competition.

As educators, we must free students from preconceived limitations by offering them a friendlier atmosphere for knowledge sharing and substantial discussion. The pandemics was an opportunity to explore a new frontier in global and local engagement through new educational strategies, intentions and technologies. Counteracting the limitations of remote learning, students from Urbana, Chicago, New York, Mumbai and Taipei along with instructors from Santo Domingo, Johannesburg, Kampala, Port of Spain, Caracas and New Orleans were able to recover the conciliatory mission of architecture in the accessible realm of mapping.

ENDNOTES

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Figure 5. Final Mapping.