TANZANIA

A NEW ARCHITECTURAL PEDAGOGY

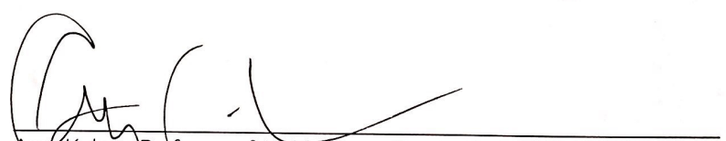
CAMERON LEANDRI | THESIS PROJECT 2019

TANZANIA: A NEW ARCHITECTURAL PEDAGOGY

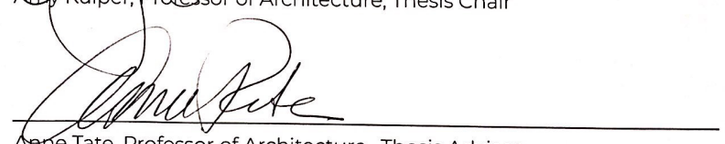
A thesis presented in partial fulfillment of the requirements for the degree of Master of Architecture in the Department of Architecture of the Rhode Island School of Design, Providence, Rhode Island.

By Cameron Leandri
2019

Approved by Master's Examination Committee:



Amy Kulper, Professor of Architecture, Thesis Chair



Anne Tate, Professor of Architecture, Thesis Advisor

Jonathan Knowles, Professor of Architecture, Secondary Thesis Advisor

ACKNOWLEDGEMENTS

This project stems from a series of work I was fortunate to be involved with during and after my undergraduate studies at the Massachusetts College of Art & Design,, working under Paul Paturzo. We paired with Deo Bawibregure, founder of KICORA (Kigoma Community College by Radio) to develop a university in Kigoma Tanzania called the East Africa University of Science & Technology. This university would act to serve as a bridge of knowledge to the local community to help solve a series of issues ranging from over-fishing to agricultural crises. As the project was put on hold due to the governments seizure of the project's hilltop site, I hope that the research of this thesis can inform some continuation of this project (or a similar one) in the future.

To Anne Tate, Jonathan Knowles, Colin Christensen, my thesis group "Tater Tots", Andrew Hartness, David Amdie, Rob Diaz-Vincente, Sara Naja, Anya Drozd, Matt Koegel and my wonderful family- thank you for your unconditional support.

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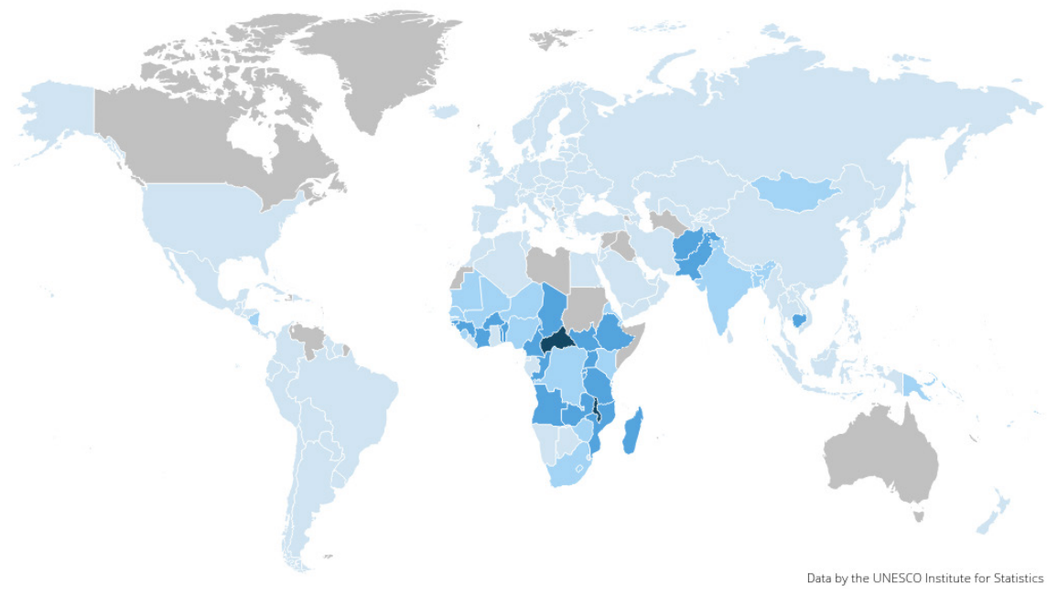
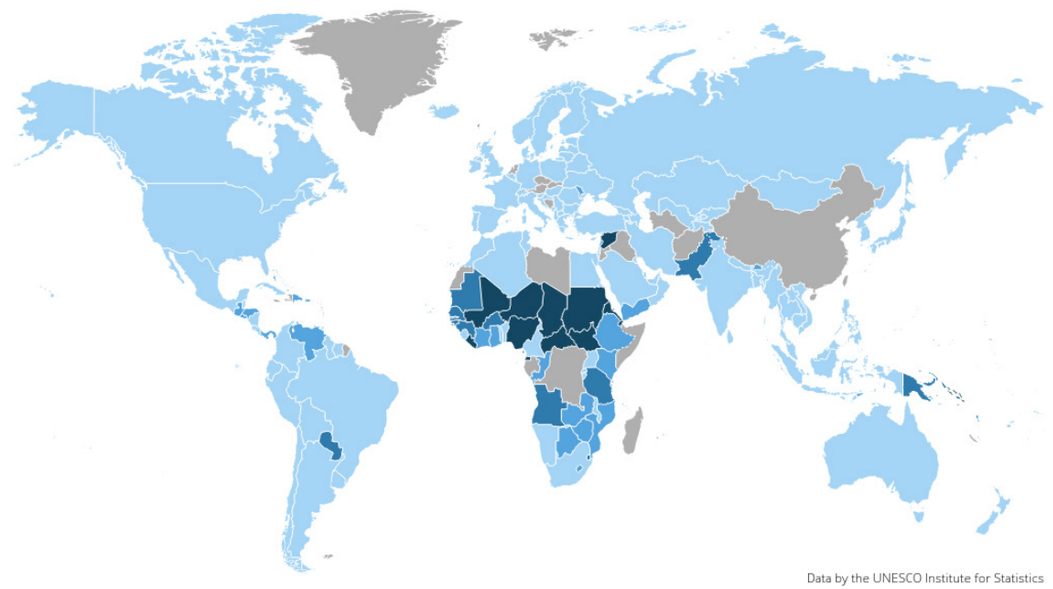
Pupil-teacher ratio in primary education (headcount basis) (2018)



Out-of-school rate for children of primary school age, both sexes (%) (2018)



A NEW ARCHITECTURAL PEDAGOGY

According to Habitat for Humanity, the impact of poverty on education in East Africa remains one of the biggest challenges faced by the region. Self sufficiency is the most sustainable way to advance a society and is a missing link that would help empower developing communities. This thesis imagines a more accessible network of education for the greater region of Kigoma, Tanzania. It proposes this through a two-step system, the first programmatic, the second architectural. Both strategies seek to strengthen the connection between local and global communities, as an education mission.

The proposed educational network utilizes a Central Hub located within the urban context of Kigoma. This Hub acts as an information collection center, vocational school and community center. Then, through both radio broadcast and physical exchange of materials (a mission inspired by Open Learning Exchange and KICORA), the Central Hub distributes educational materials to Satellite Schools which are strategically placed throughout the countryside. The connection generated is a two-way information flow between global, urban and rural communities.

The proposed architectural language investigates the marriage of native materials with innovative, yet simple design techniques, with the purpose of enriching and simplifying the construction process for local builders, both unskilled and artisan. It seeks to enhance, but not adulterate, vernacular architecture through use of the rammed earth wall and bamboo armature. These local materials are then paired with imported metal and fabric roofs, with strategic technological interventions, which act as an architectural expression of outreach.

While a perimeter security wall is normal and recommended by local leaders, this generates an interesting conundrum for a project which is focused on community engagement and worldly connectedness. Hence, the wall has become a vehicle which embodies outward engagement, through responding to exterior neighborhood conditions and giving back to the adjacent community. Paired with varying roof conditions, the wall accomplishes this through designed moments of porosity, water collection and distribution, shade, performance space, inhabitation, protection and openness.









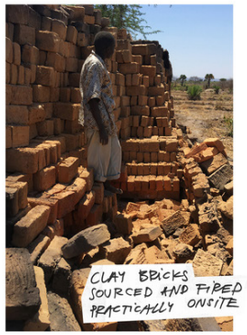



PRECEDENTS

WAYAiR/JEJU STUDIO- Ulyankulu School

Ulyankulu, Tanzania, 2018

LOCAL INSPIRATIONS

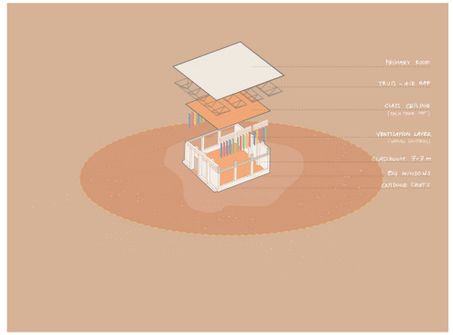


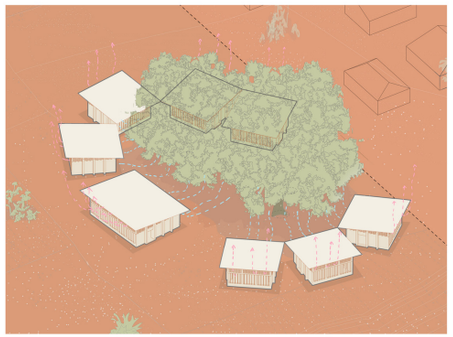
CLAY BRICKS SOURCED AND FIRED PRACTICALLY ONSITE

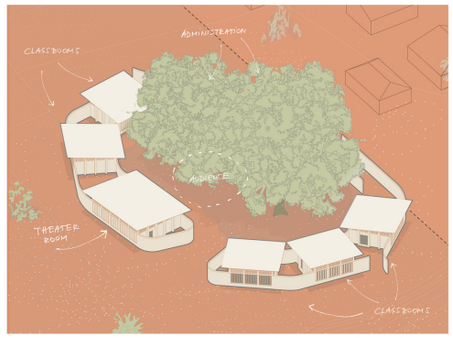
PRIMARY CEILING WEAVE

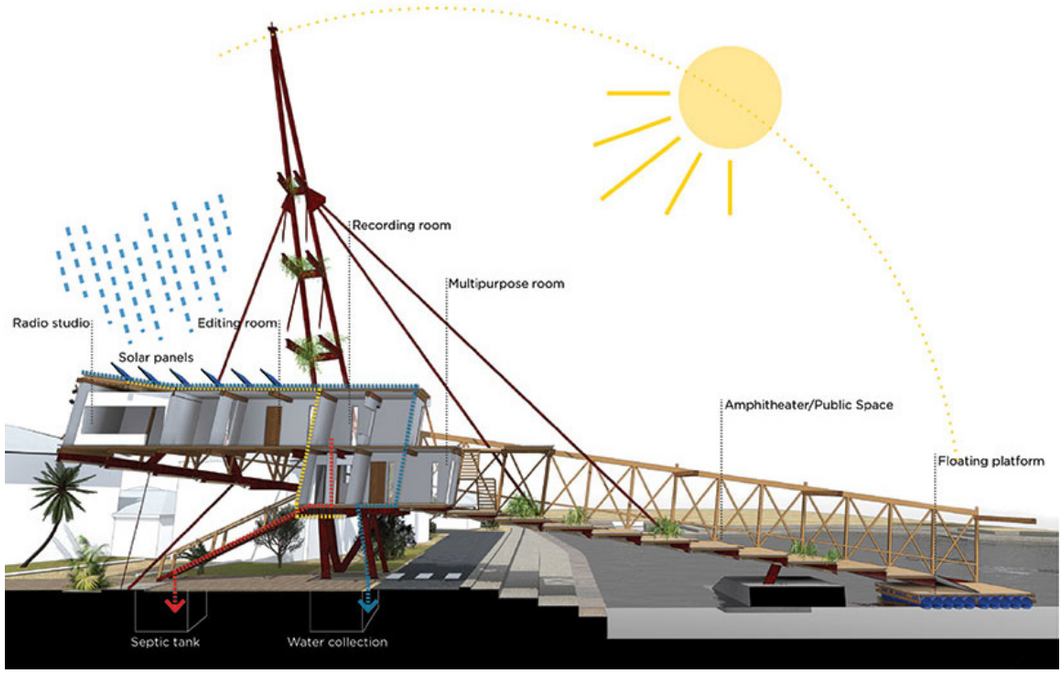
LOCAL WOOD

LOCAL WELDING SCHOOL







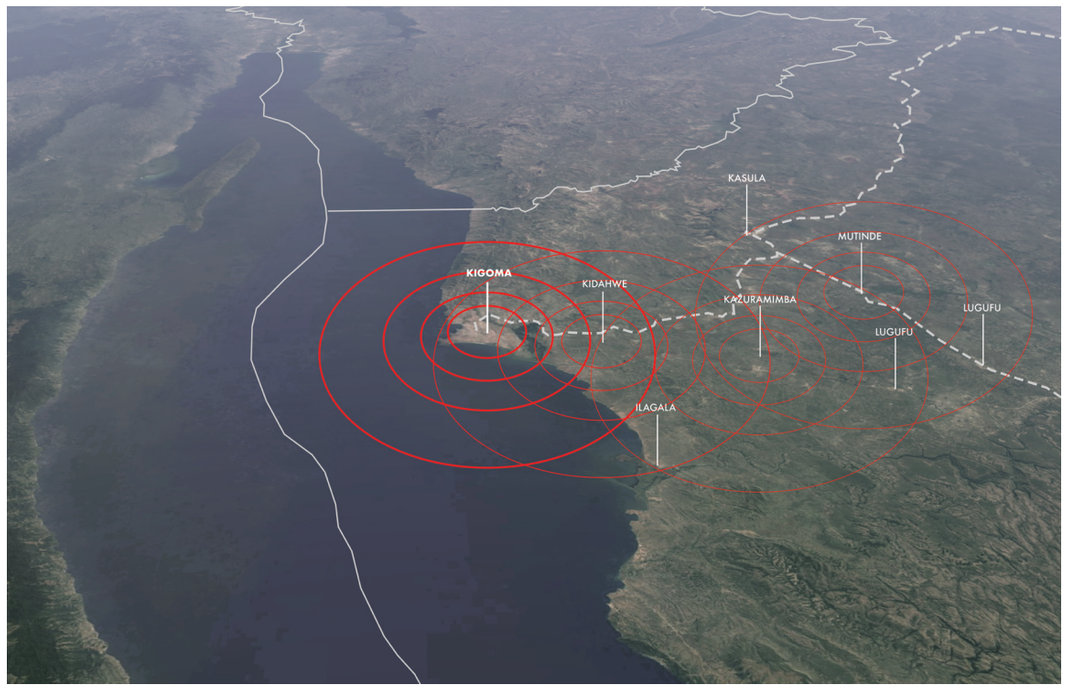


NLE- Chicoco Radio Center

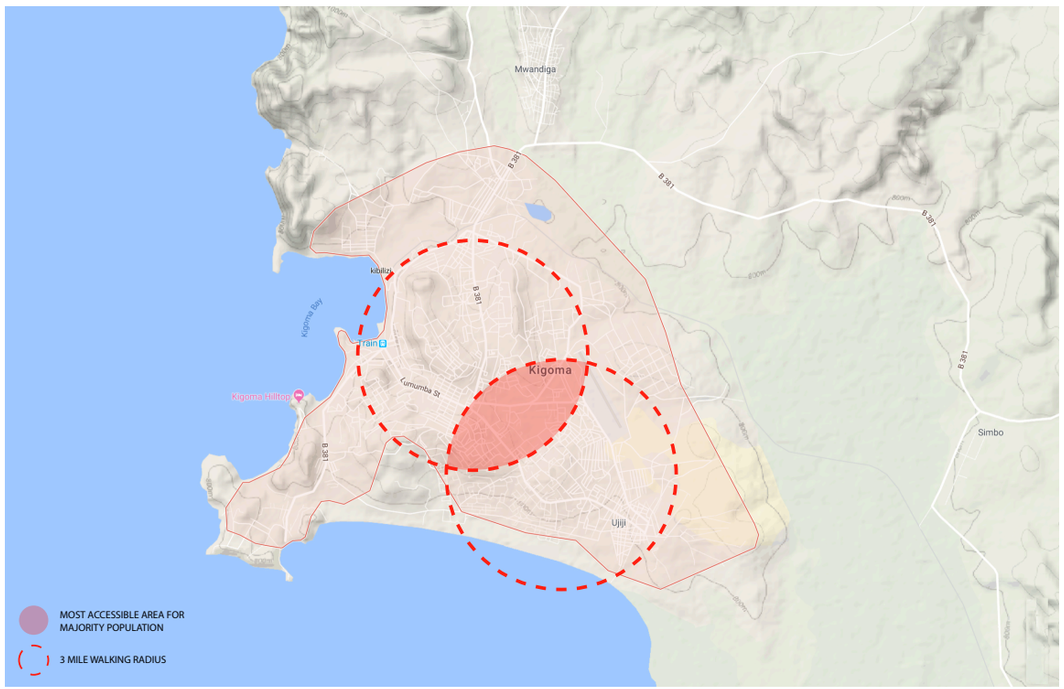
Port Hartcourt, Nigeria, 2014

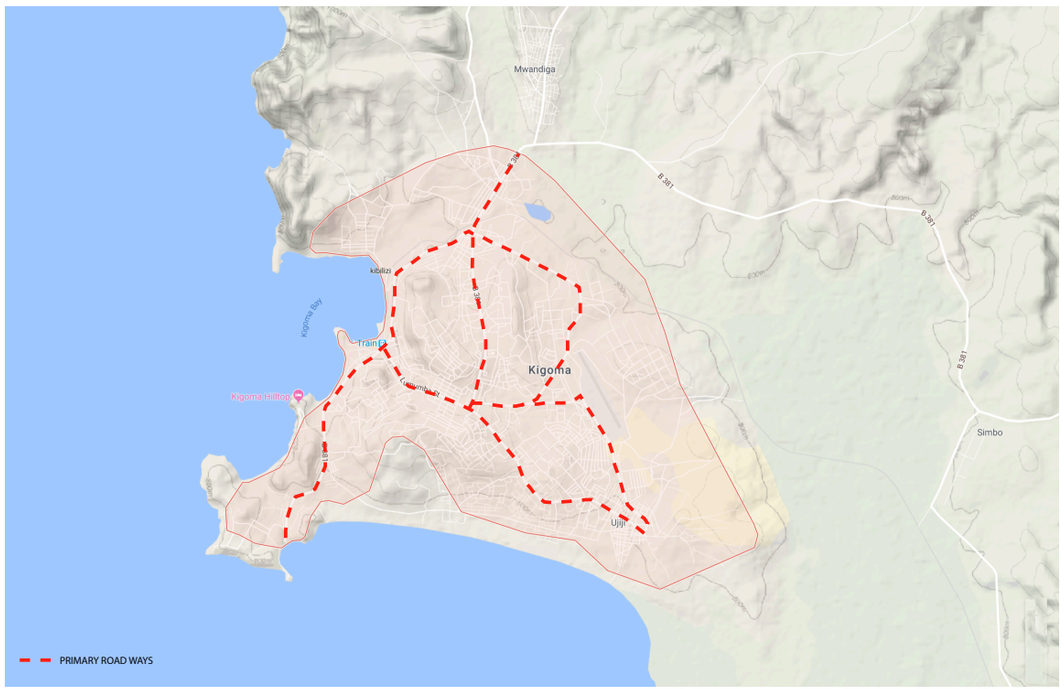
CENTRAL HUB / SATELLITE SCHOOL(S)

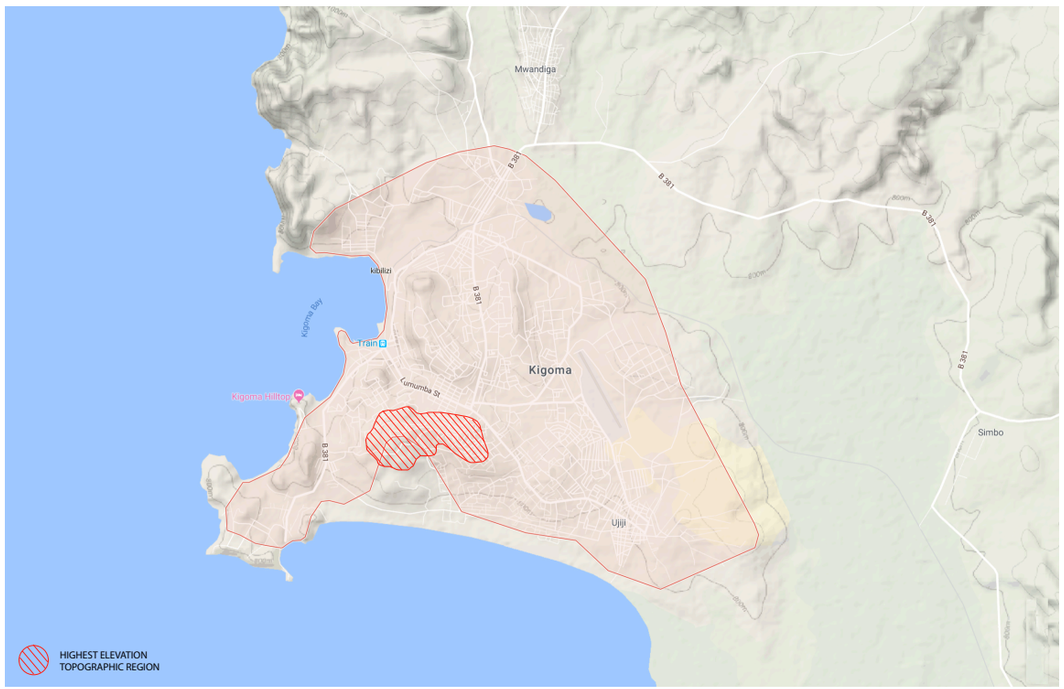
The proposed educational network utilizes a Central Hub located within the urban context of Kigoma. This Hub acts as an information collection center, vocational school and community center. Then, through both radio broadcast and physical exchange of materials (a mission inspired by Open Learning Exchange and KICORA), the Central Hub distributes educational materials to Satellite Schools which are strategically placed throughout the countryside.
The connection generated is a two-way information flow between global, urban and rural communities.

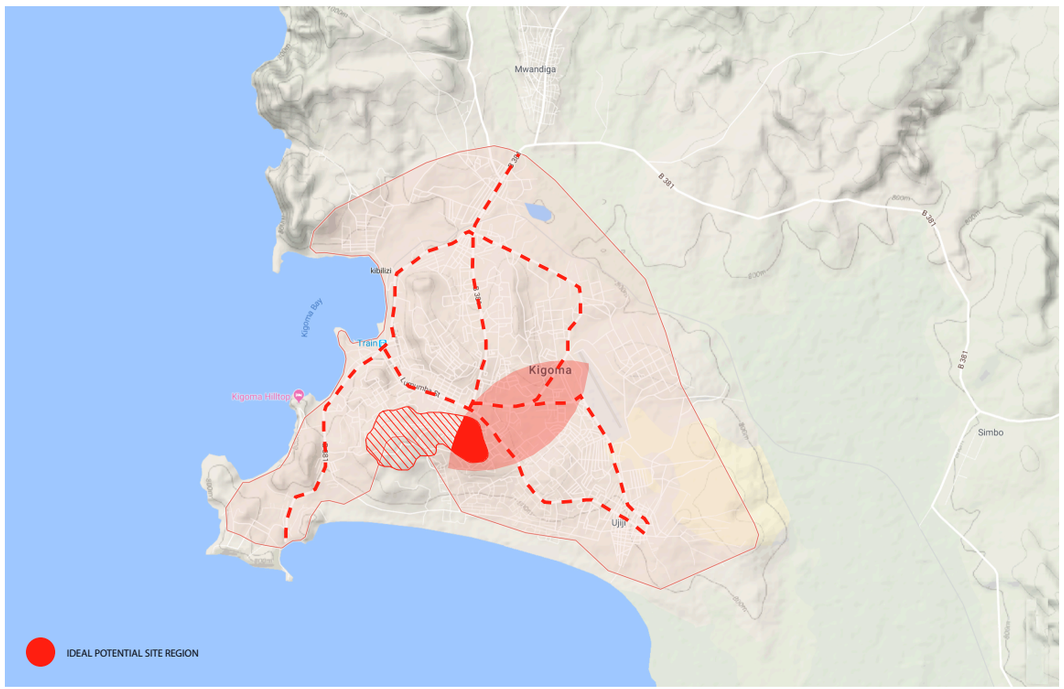


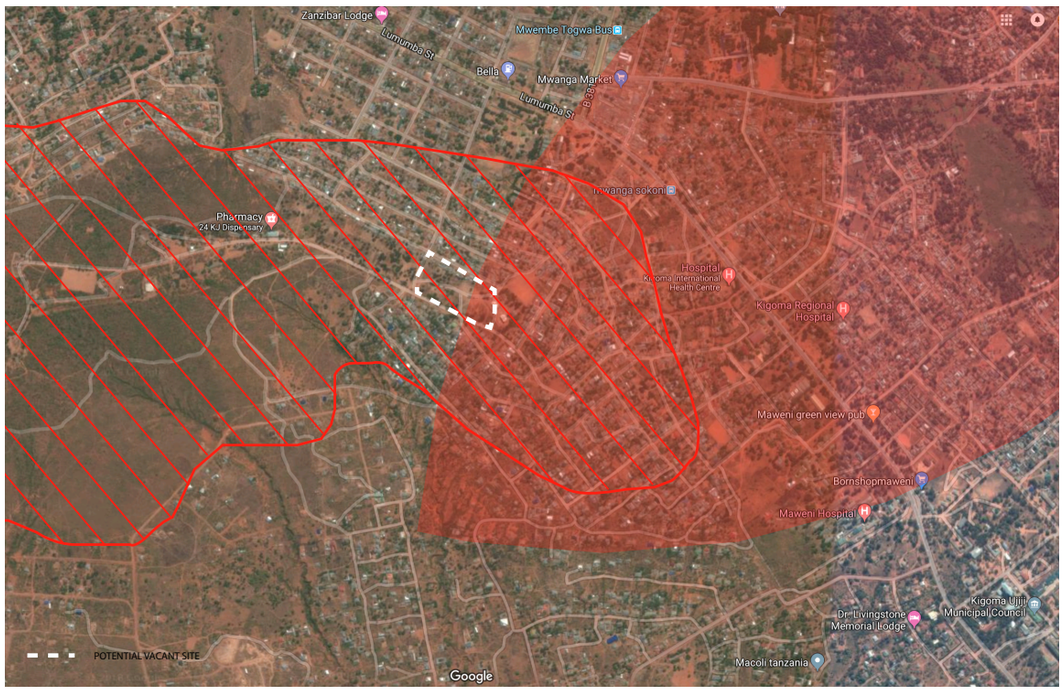
CENTRAL HUB / SITE FINDING






Mwandiga
B 381
kibilizi
Kigoma Bay
Train
Kigoma Hilltop
Lumumba St
Kigoma
Simbo
Ujiji
HIGHEST ELEVATION
TOPOGRAPHIC REGION


Mwandiga
B 381
kibilizi
Kigoma Bay
Train
Kigoma Hilltop
Kigoma
Simbo
Ujiji
IDEAL POTENTIAL SITE REGION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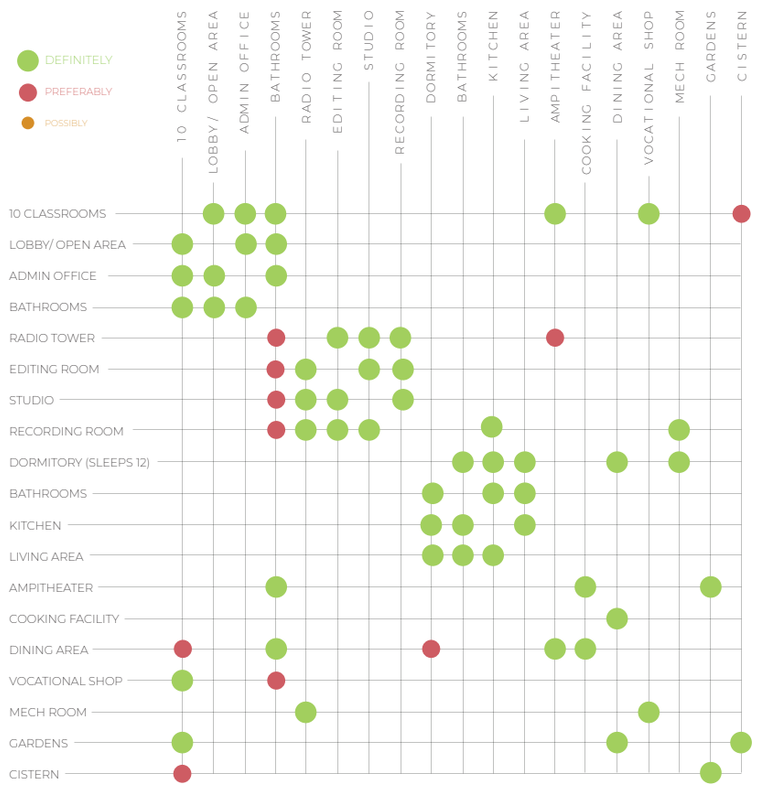
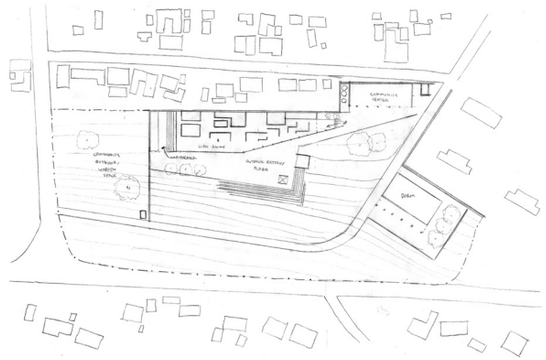
Lumumba St
Mwembe Togwa Bus
Bella
Mwanga Market
Lumumba St
Road
Mwanga Sokoni
Pharmacy
24 KJ Dispensary
Hospital
Kigoma International Health Centre
Kigoma Regional Hospital
Maweni green view pub
Bornshopmaweni
Maweni Hospital
Dr Livingstone Memorial Lodge
Kigoma Ujiji Municipal Council
Macoli tanzania
POTENTIAL VACANT SITE
Google

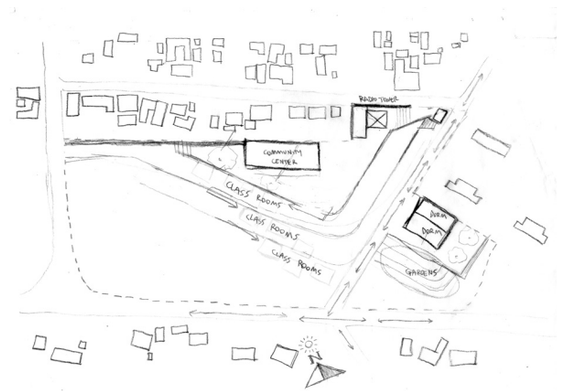

POTENTIAL VACANT SITE

CENTRAL HUB / DEVELOPMENT

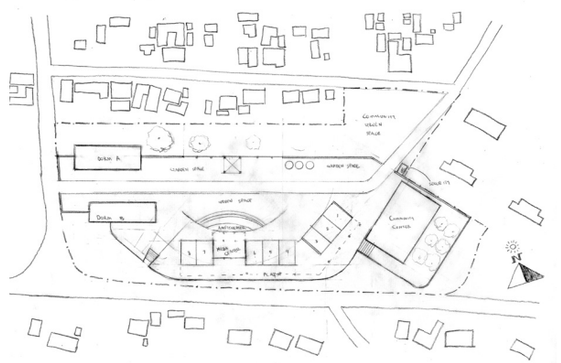




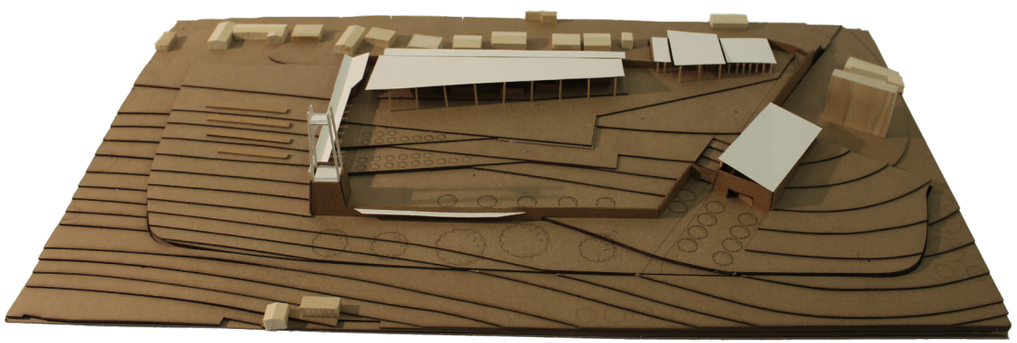
Iteration A



Iteration B



Iteration C



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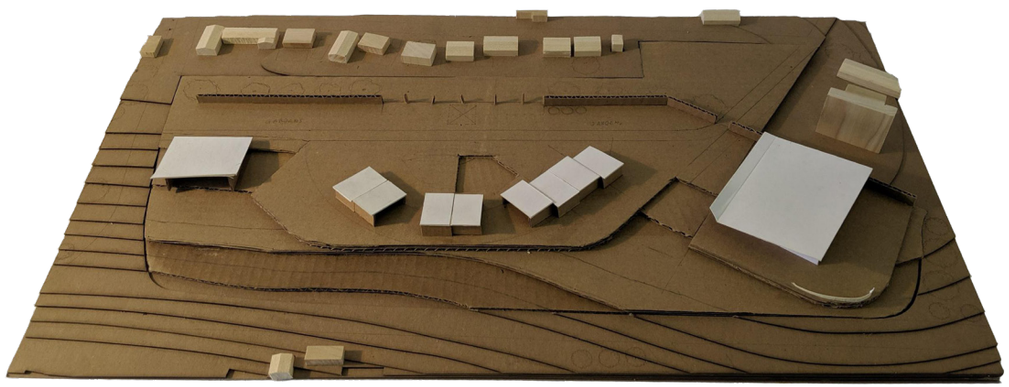
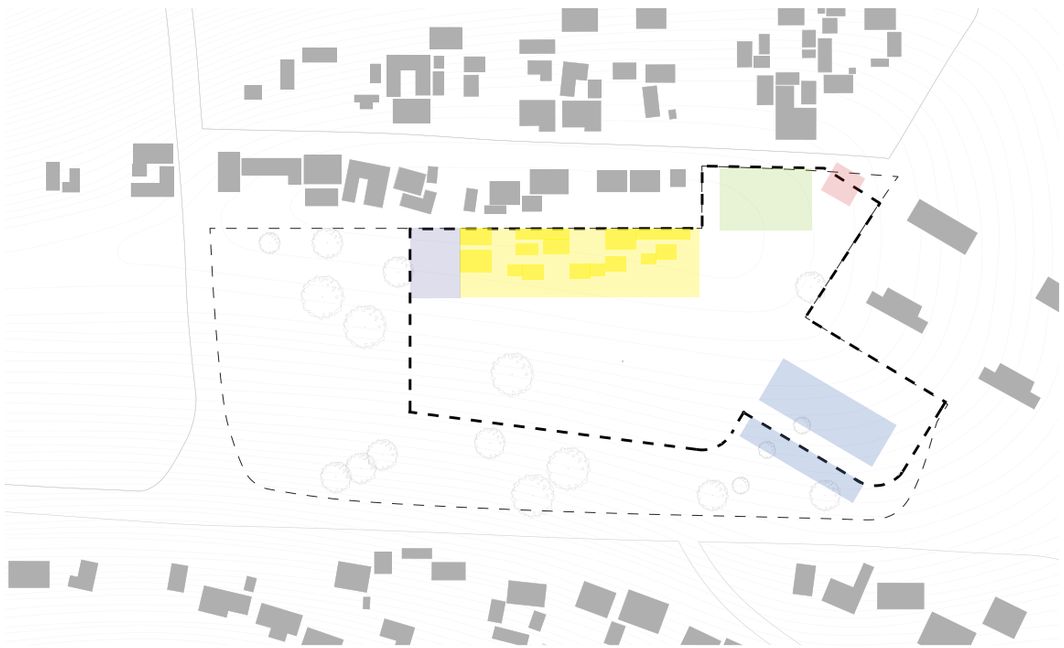
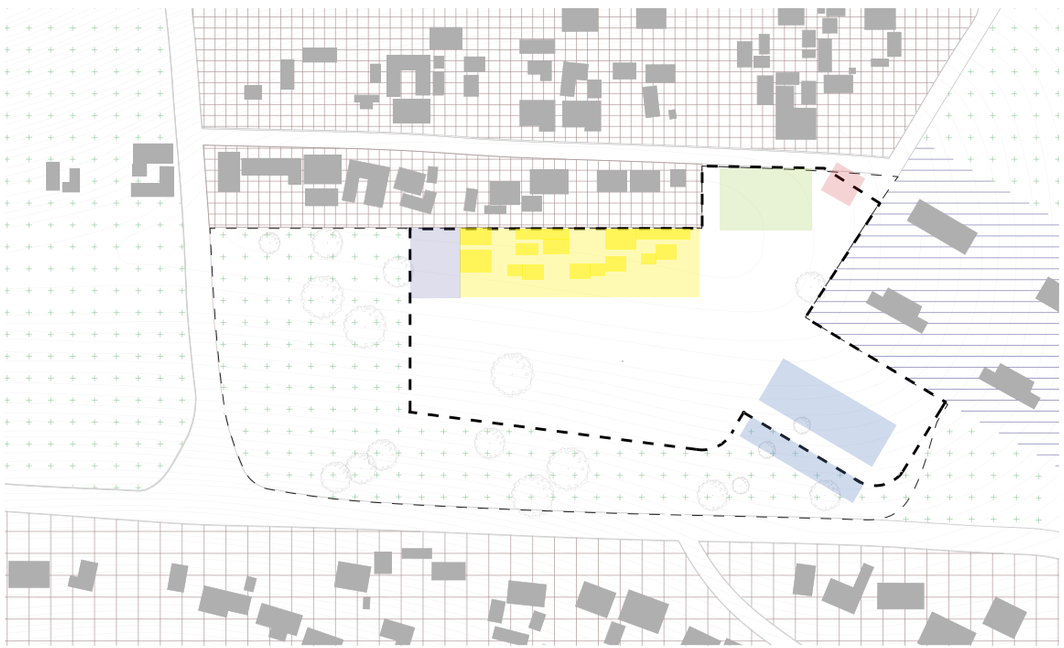


Iteration C

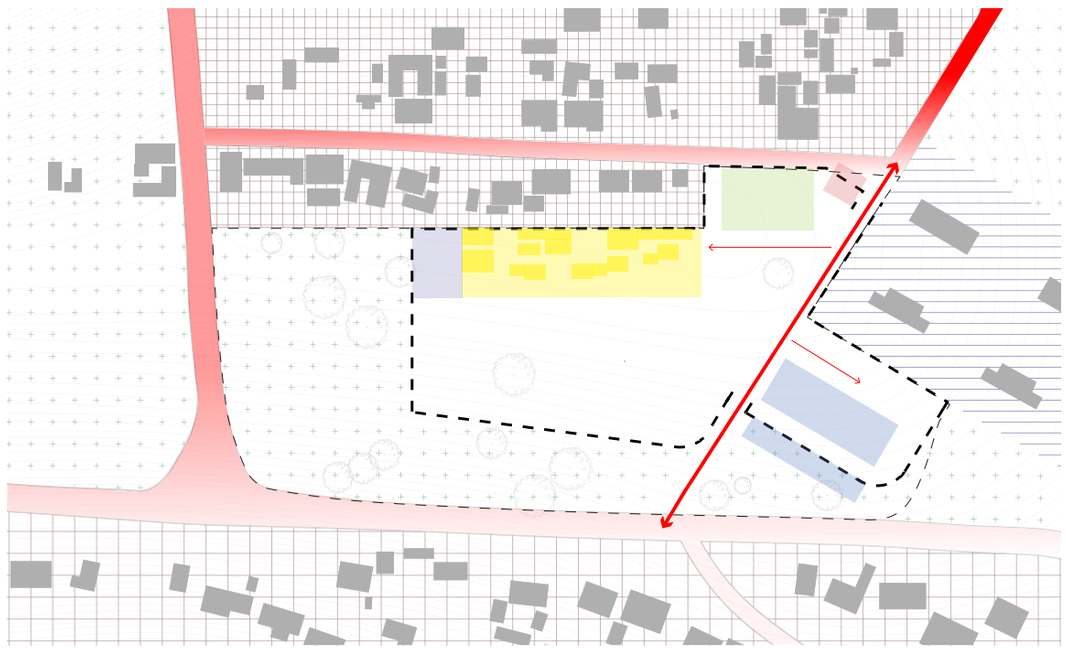
Adjacencies



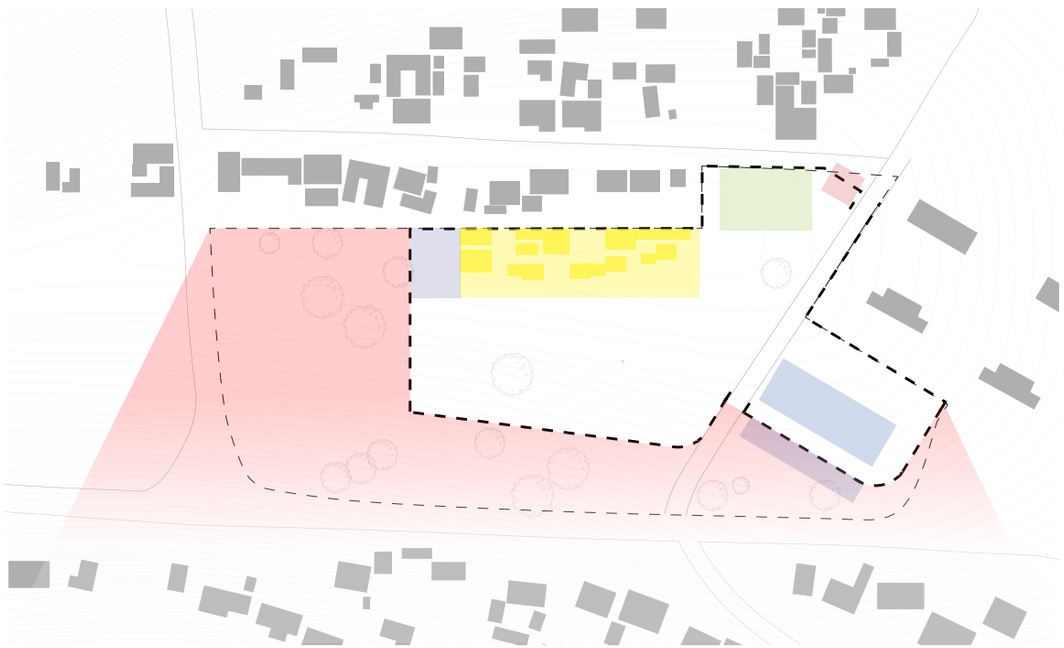
Program



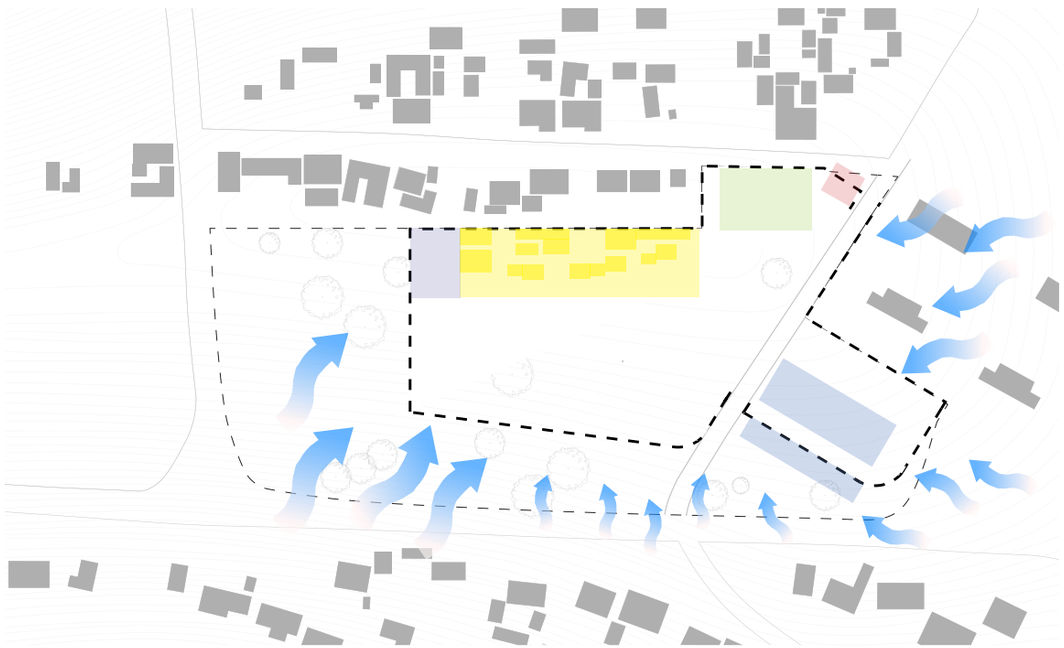
Adjacencies / Program



Traffic Flow

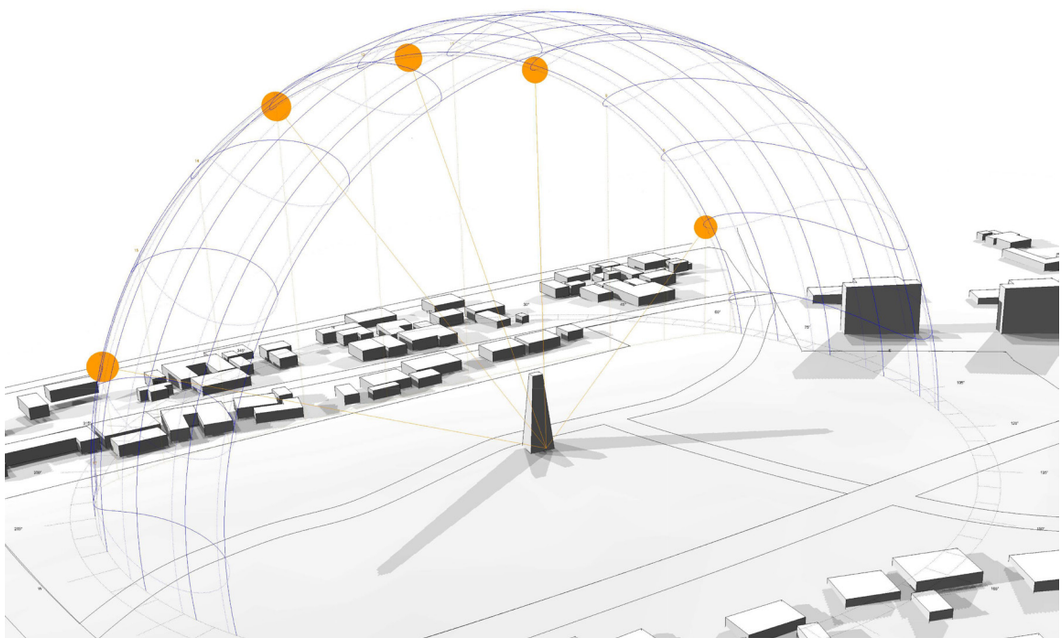


View



Wind

CENTRAL HUB / SOLAR ANALYSIS



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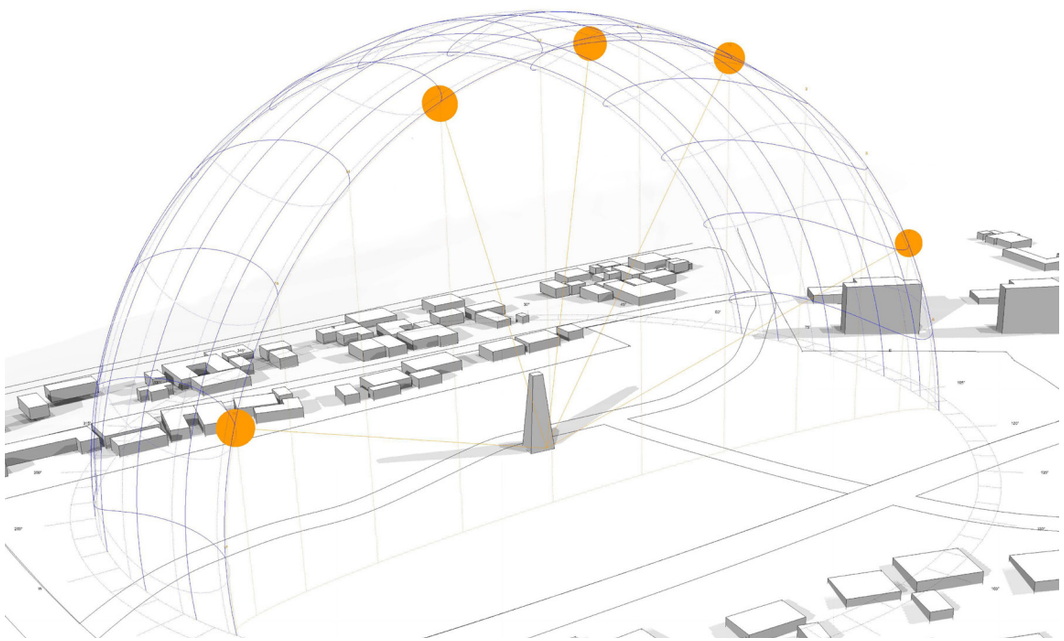

December

WALL DEVELOPMENT

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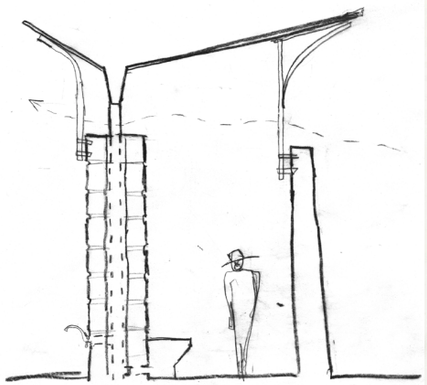

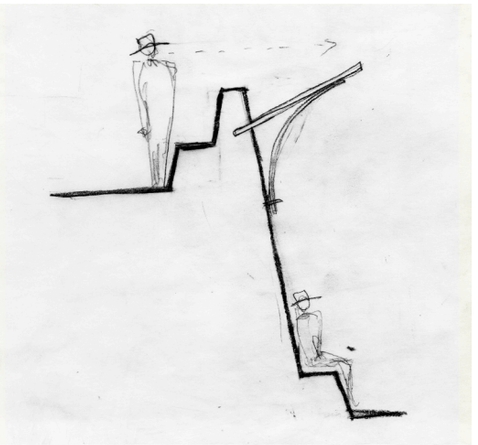

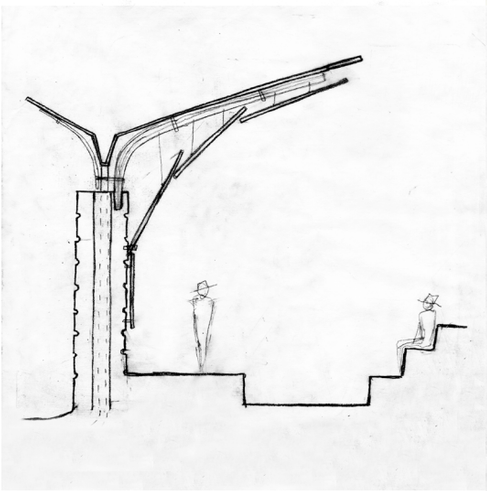

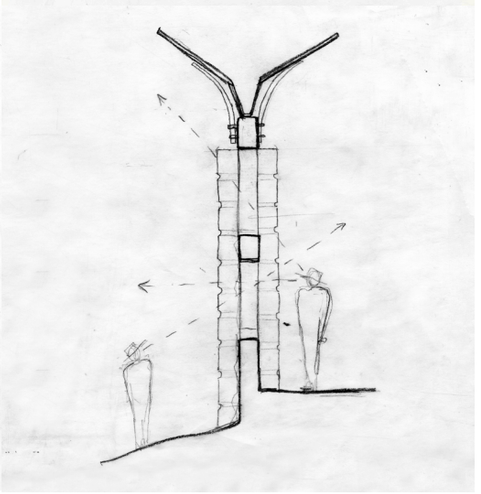

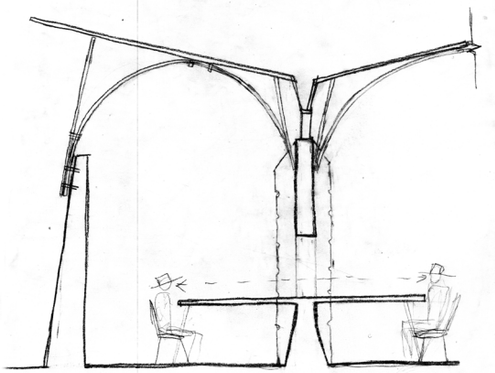

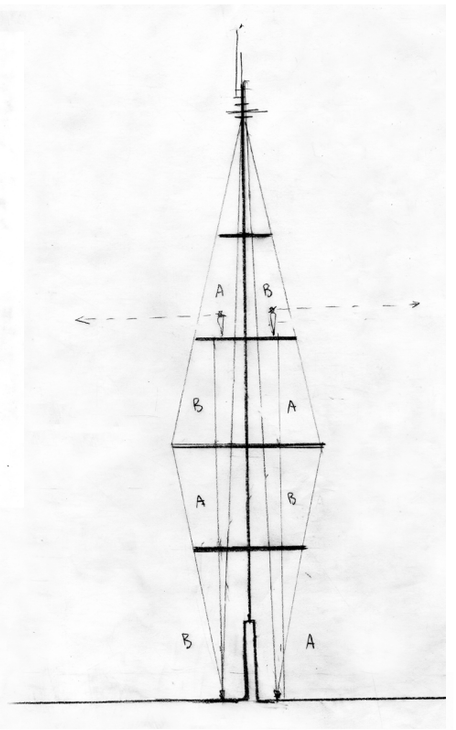
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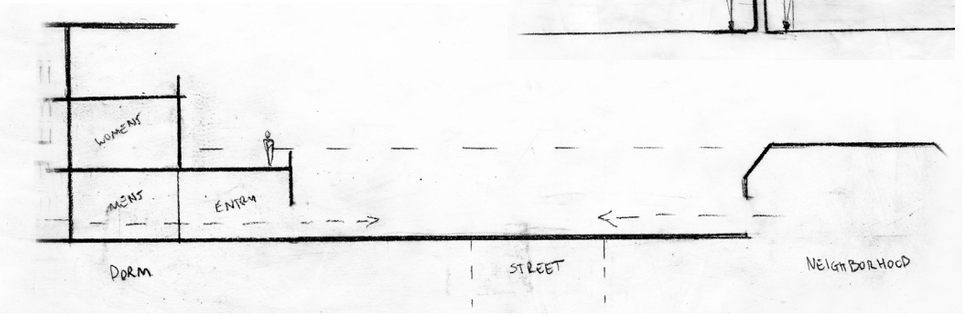
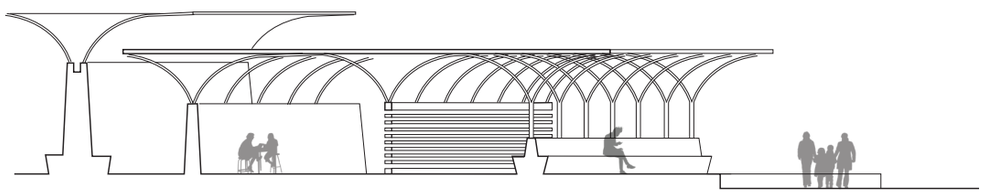
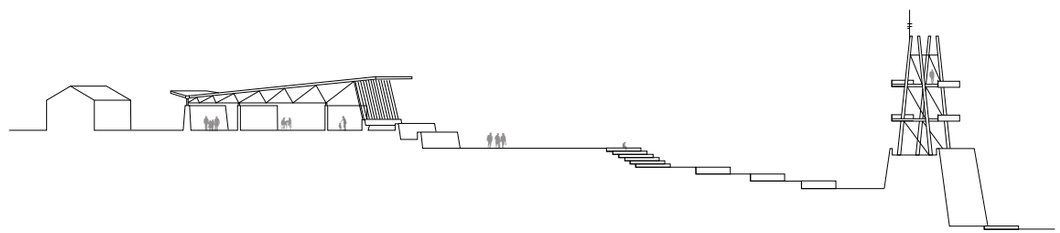
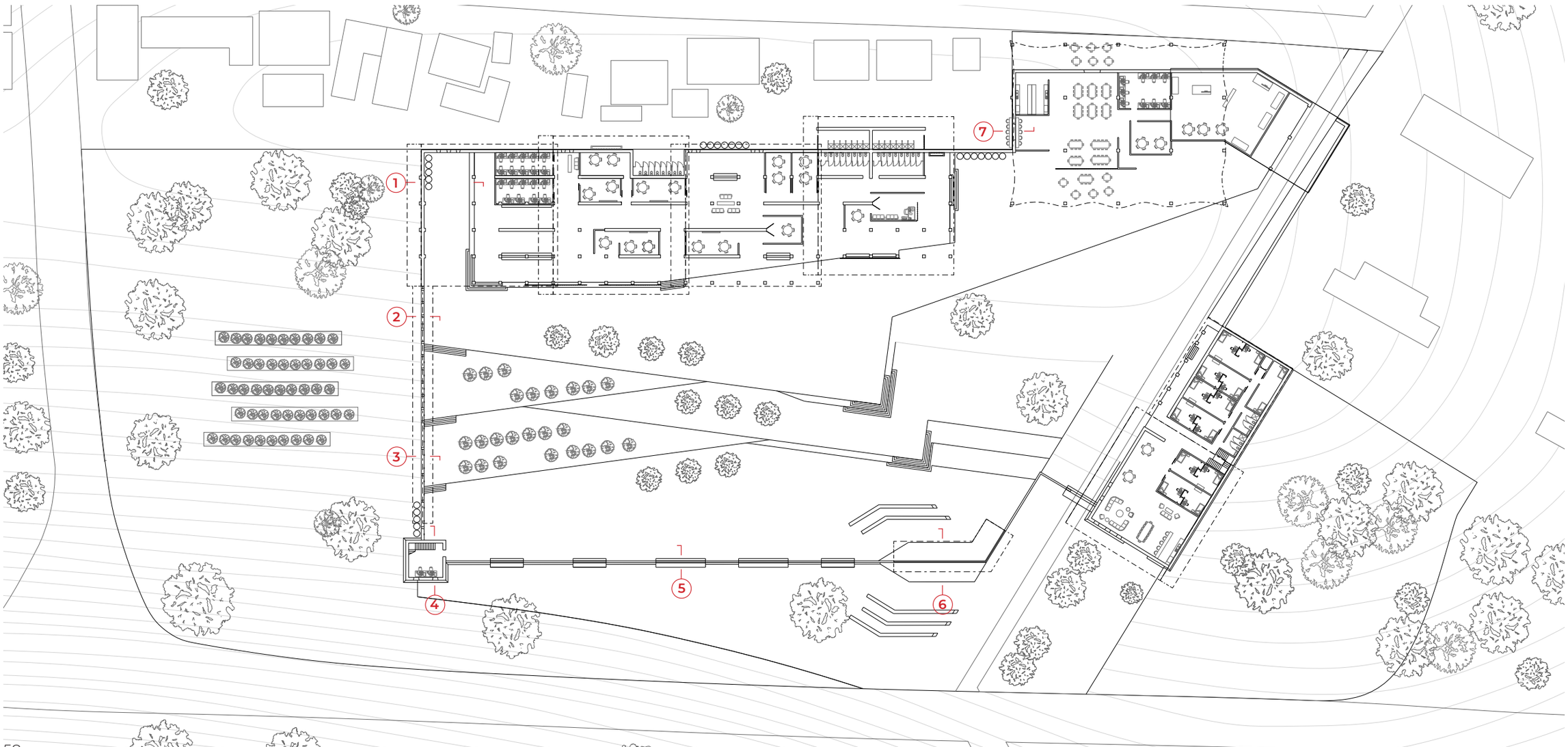

WOMENS
MENS
ENTRY
DORM
STREET
NEIGHBORHOOD





WALL / CENTRAL HUB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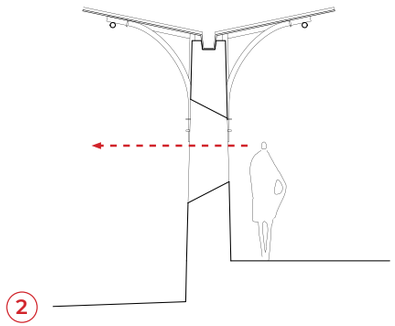

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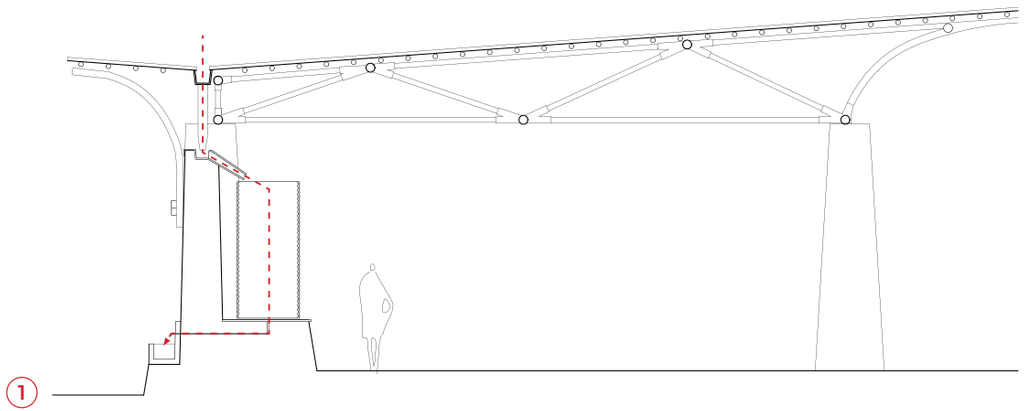

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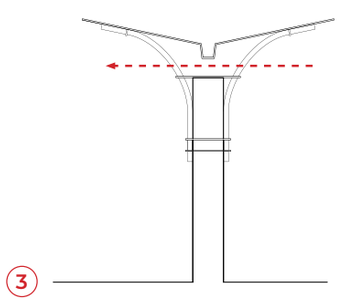

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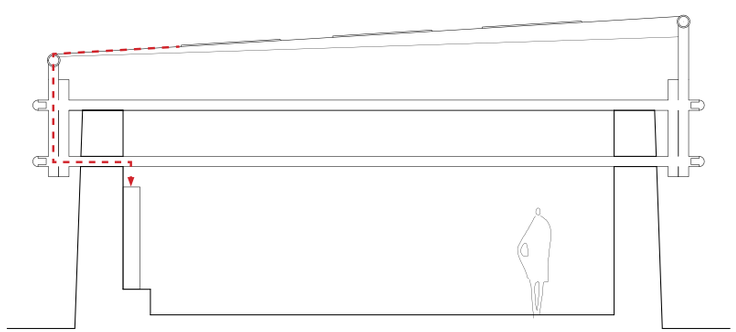

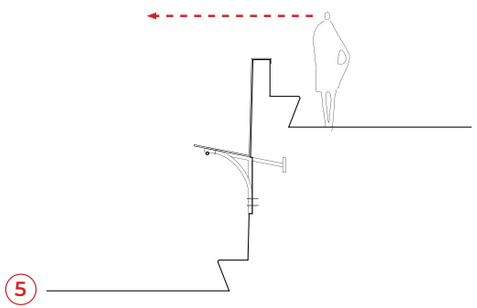
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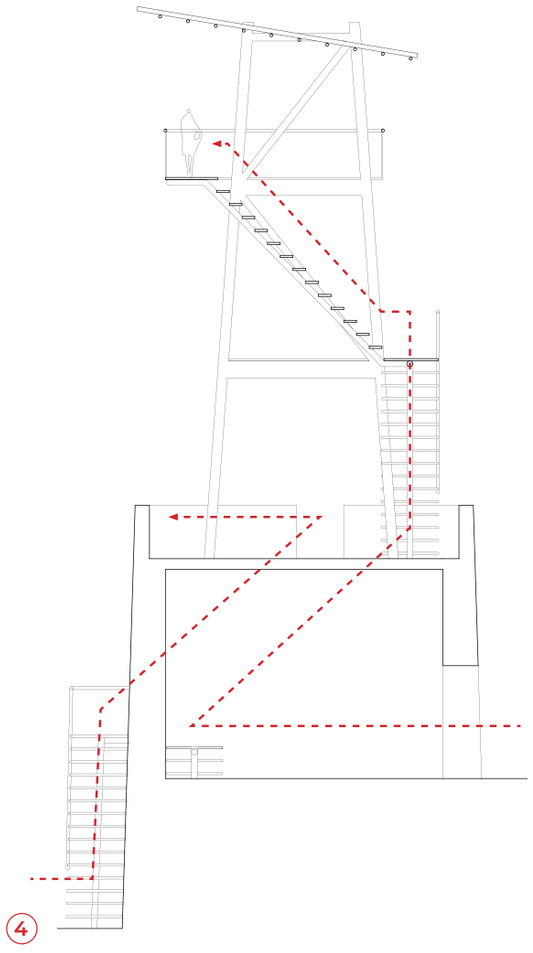
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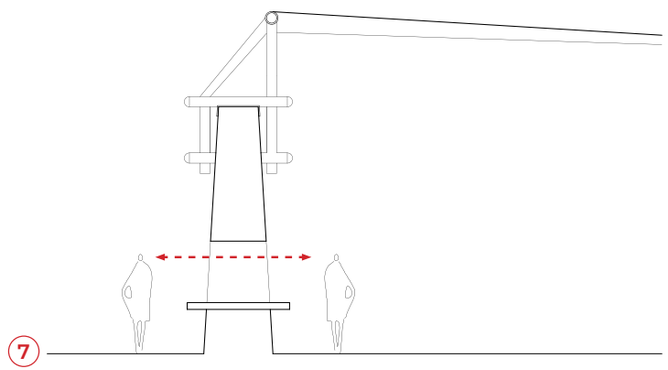

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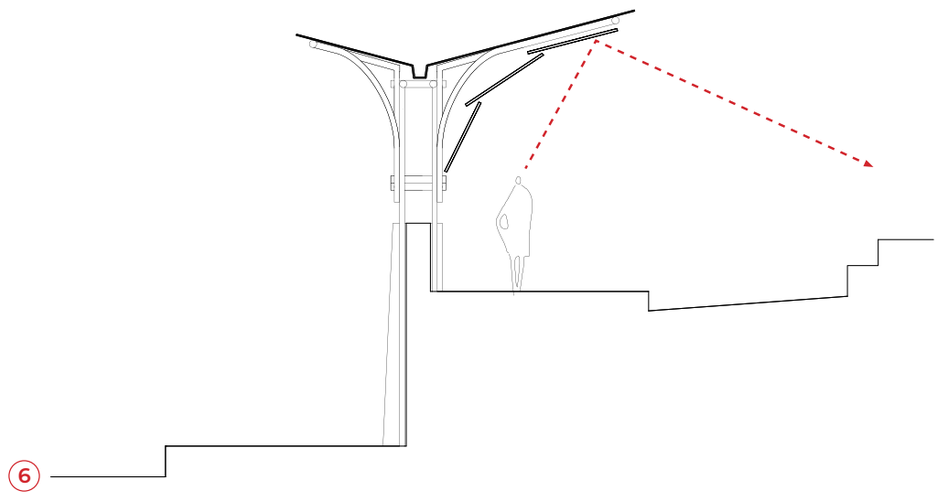

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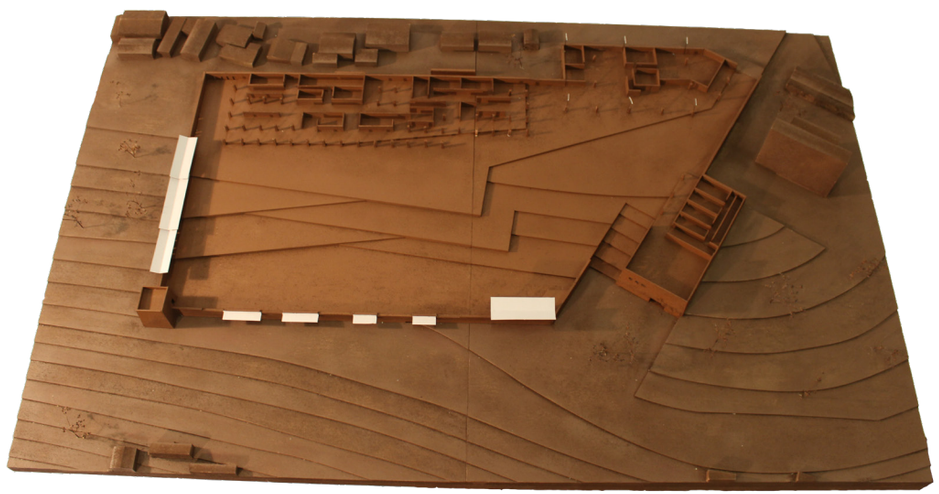
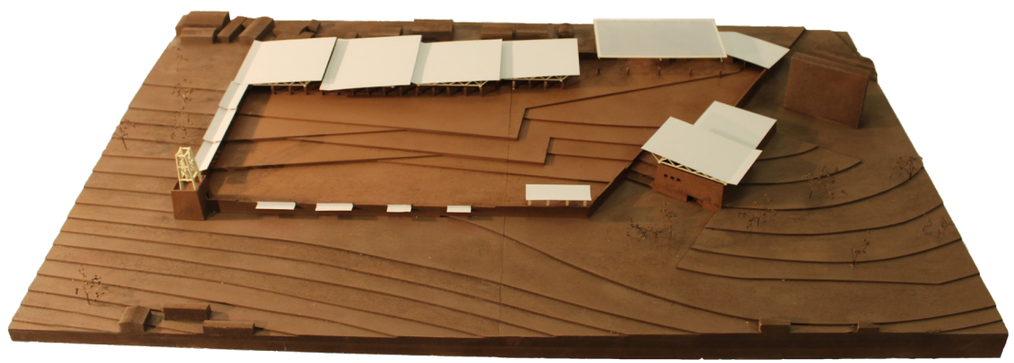
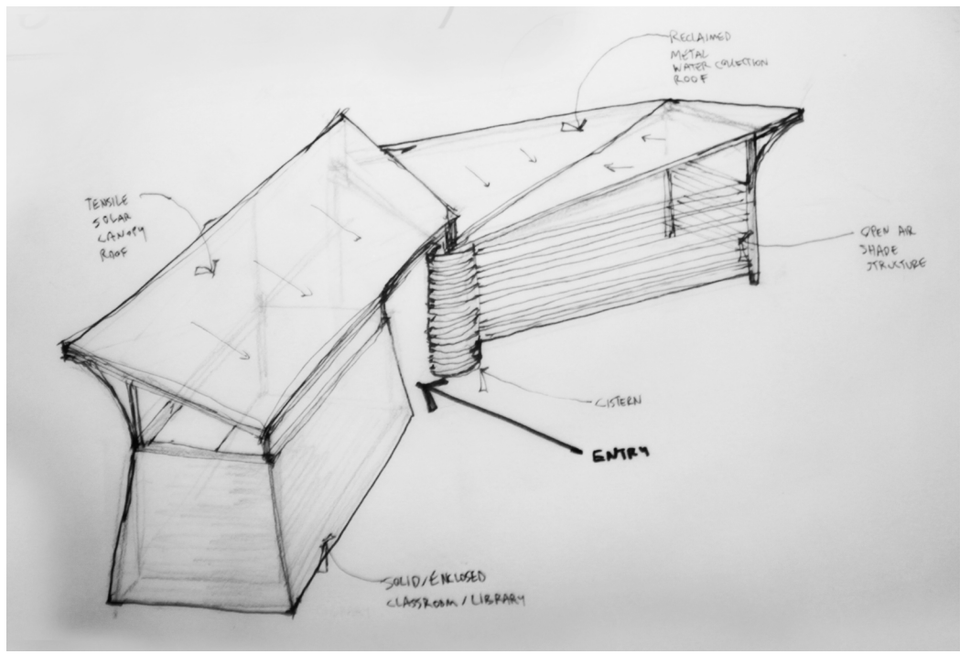
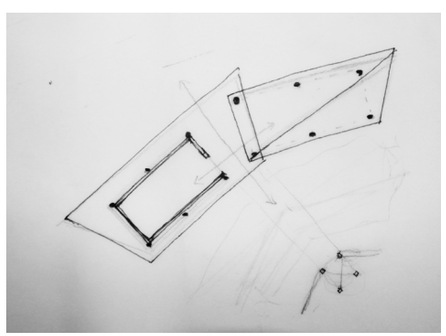
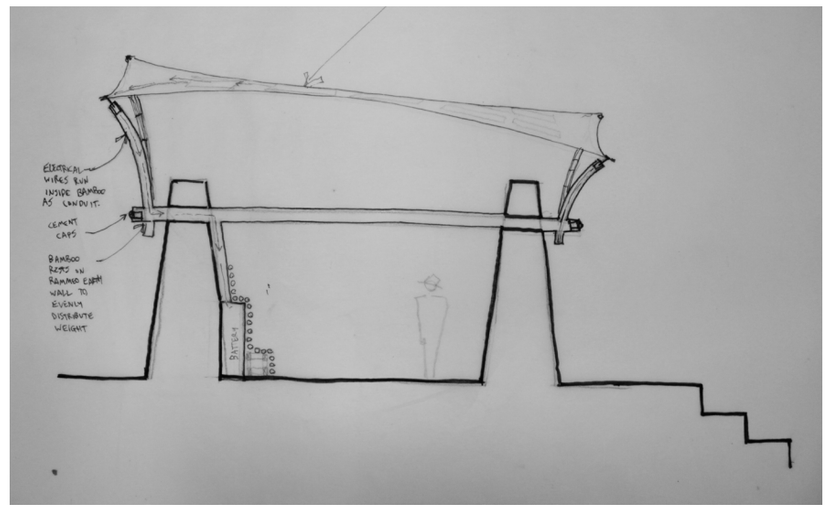


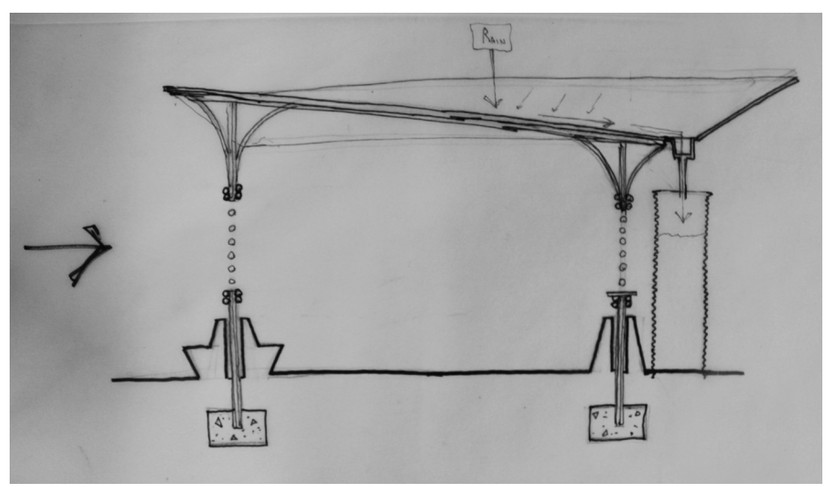


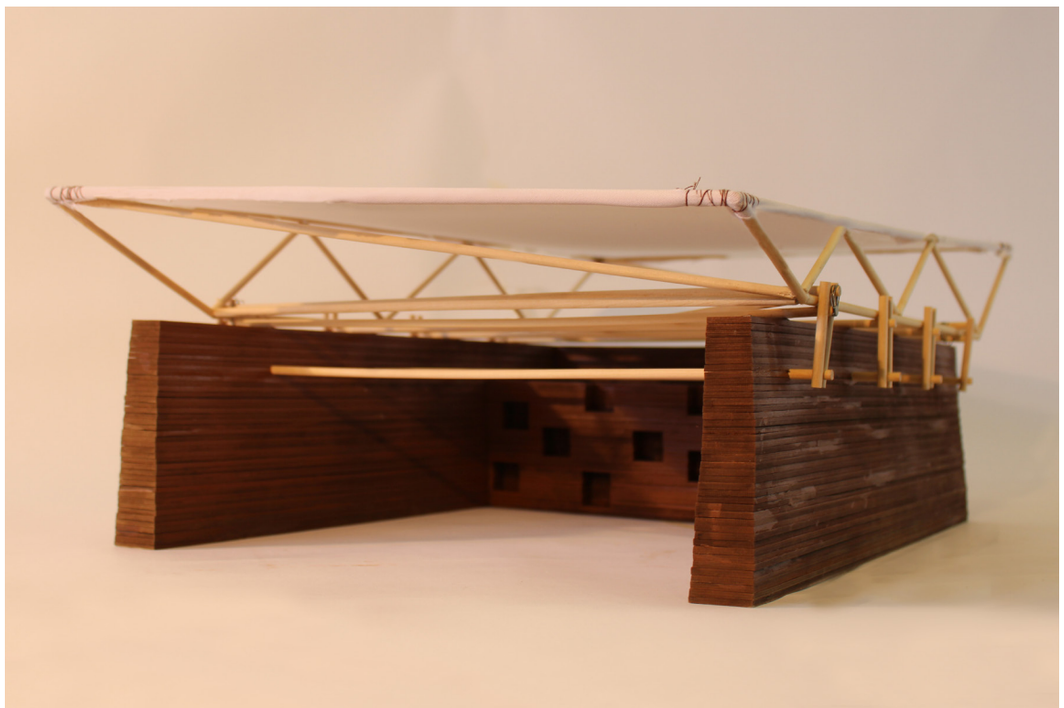
SATELLITE SCHOOL(S)











Minimal outside assistance-

A self sustaining ecosystem of education which is controlled entirely by local community leaders who have access to a framework of educational programs and resources.

Community Leaders-

Elected members of the community who demonstrate superior knowledge and leadership skills, are well respected and who can act as point-people for the transmission of key educational and programmatic elements. Community leaders will be responsible for responding to separate communities needs and orchestrating transportation of materials from the central hub to satellite pods.

Tools & resources-

A framework of both tangible and intangible educational materials which are fit to accommodate a wide range of learning-levels, topics and presentation platforms. This framework will ensure all materials are of a high quality and provide a structural platform which instructors can expand upon.

Tangible-

1. Perceptible by touch. Clear and definite; real.
2. Material, artisan or pertaining to cultural tradition. Micro-scale.

Intangible-

1. Unable to be touched or grasped; not having physical presence.
2. Ethereal, interconnected, wire-less. Pertaining to networks. Macro-scale.

Symbiosis-

1. Interaction between two different organisms living in close physical association, typically to the advantage of both.
2. In architecture, symbiosis is achieved when its tangible and intangible elements are acting to mutually benefit one another or are existing in close harmony.

Adaptable-

Possessing the capacity to address and/or manipulate to accommodate fluctuating greater-community needs, in addition to programmatic needs for expansion and contraction of spaces.

Architecture of Dignity-

A design language which symbolizes the sense of pride it instills in the participants of the building process and the respective community for which it is intended. It strives to benefit those who is are effected by the finished structure(s) directly or indirectly. This language must pay homage to traditional beliefs and cultural symbology of the region in which it is situated and include a high level of community involvement/decision making

Designed correctly/ empowerment-

A system of construction details which are refined enough to accommodate the hands of an unskilled laborer, while responding directly to climatic conditions and maximizing the impact of locally sourced materials such as mud, wood and bamboo.

Central Hub-

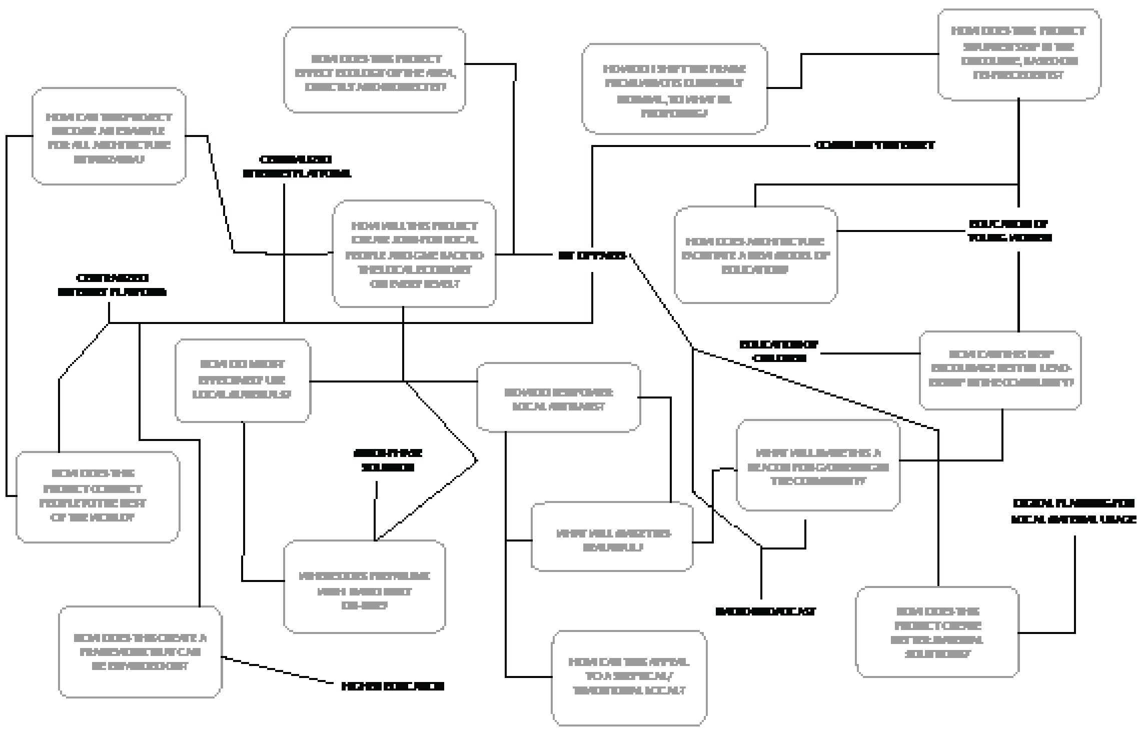
A home base which relays information to all satellite pods and acts as a beacon around which the community may gather. The central hub will provide internet connectivity to download new course materials to mobile computers and a radio tower to broadcast classes. It will also contain classrooms, performance areas and a variety of agricultural interventions.

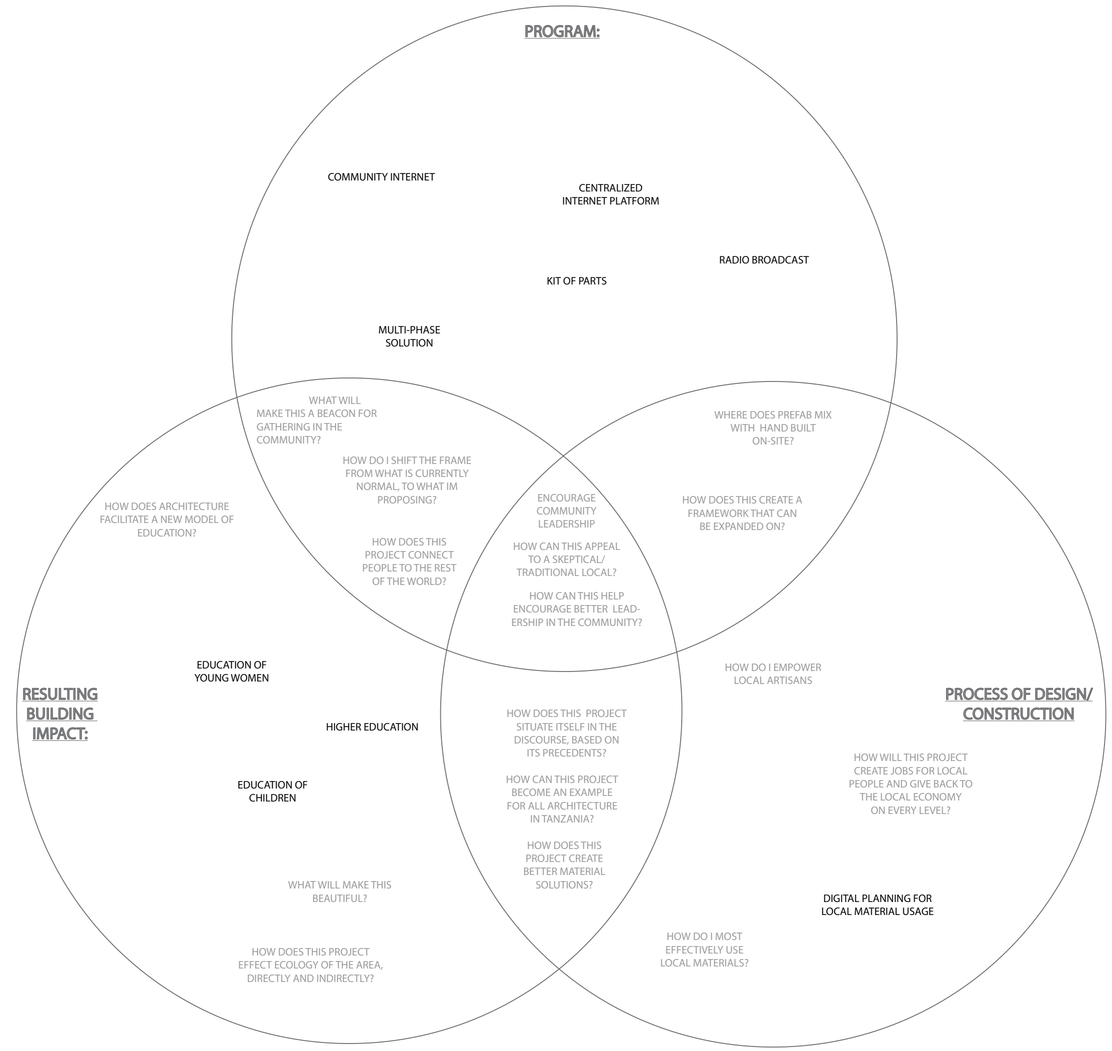
Satellite Pod-

A modular community center which acts as a station to relay information from the central hub to remote country-side communities which would not normally be able to easily access quality learning materials. The design of this pod must be highly adaptable and respond to a variety of conditions presented by the different communities such as fluctuating population and educational demographics, varying solar orientation, etc.

Kit of Parts-

A pool of design details, ideas and resources which can be selected from which provide are designed correctly, provide dignity or are in symbiosis.




PROGRAM:
COMMUNITY INTERNET
CENTRALIZED INTERNET PLATFORM
RADIO BROADCAST
KIT OF PARTS
MULTI-PHASE SOLUTION
WHAT WILL MAKE THIS A BEACON FOR GATHERING IN THE COMMUNITY?
HOW DO I SHIFT THE FRAME FROM WHAT IS CURRENTLY NORMAL, TO WHAT IM PROPOSING?
HOW DOES THIS PROJECT CONNECT PEOPLE TO THE REST OF THE WORLD?
WHERE DOES PREFAB MIX WITH HAND BUILT ON-SITE?
HOW DOES THIS CREATE A FRAMEWORK THAT CAN BE EXPANDED ON?
ENCOURAGE COMMUNITY LEADERSHIP
HOW CAN THIS APPEAL TO A SKEPTICAL/ TRADITIONAL LOCAL?
HOW CAN THIS HELP ENCOURAGE BETTER LEADERSHIP IN THE COMMUNITY?
HOW DOES ARCHITECTURE FACILITATE A NEW MODEL OF EDUCATION?
RESULTING BUILDING IMPACT:
EDUCATION OF YOUNG WOMEN
HIGHER EDUCATION
EDUCATION OF CHILDREN
WHAT WILL MAKE THIS BEAUTIFUL?
HOW DOES THIS PROJECT EFFECT ECOLOGY OF THE AREA, DIRECTLY AND INDIRECTLY?
HOW DOES THIS PROJECT SITUATE ITSELF IN THE DISCOURSE, BASED ON ITS PRECEDENTS?
HOW CAN THIS PROJECT BECOME AN EXAMPLE FOR ALL ARCHITECTURE IN TANZANIA?
HOW DOES THIS PROJECT CREATE BETTER MATERIAL SOLUTIONS?
HOW DO I EMPOWER LOCAL ARTISANS
PROCESS OF DESIGN/ CONSTRUCTION
HOW WILL THIS PROJECT CREATE JOBS FOR LOCAL PEOPLE AND GIVE BACK TO THE LOCAL ECONOMY ON EVERY LEVEL?
DIGITAL PLANNING FOR LOCAL MATERIAL USAGE
HOW DO I MOST EFFECTIVELY USE LOCAL MATERIALS?

TANGIBLE

Martin Rauch, Refined Earth, 2016

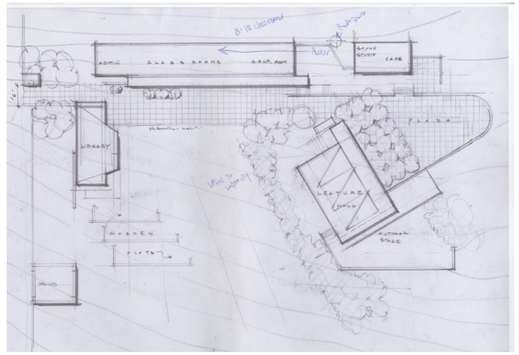

NLE- Floating School


Llima Primary School, Mass Design Group, 2015


Nocenco Cafe Lowres, Vo Trong Nghia Architects, 2018, Image Trieu Chen

SYMBIOSIS


Lycee Schorge Secondary School, Kere Architects, 2016, Image Iwan Baan

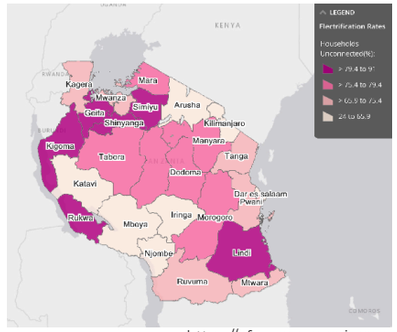

Paturzo Design, 2014


Gheskio Cholera Treatment Center, Mass Design Group, 2015

INTANGIBLE


www.scientificamerican.com/article/pay-as-you-go-solar-energy


https://lostpedia.fandom.com/wiki/JACK_FM



https://gfw.maps.arcgis.com
Mapping Energy Access: Tanzania, 2016

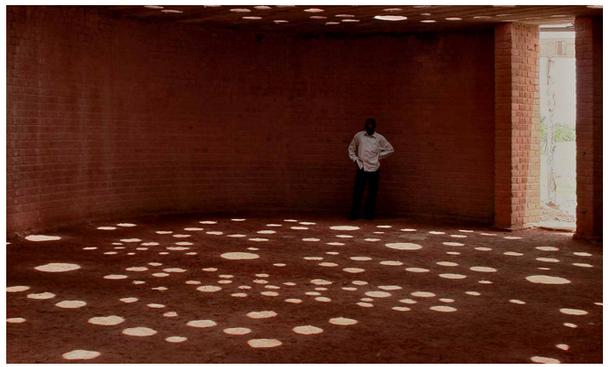
TANGIBLE

Gando Primary School, Kere Architects, 2009

METI School, Anna Herringer, 2006, Image © Kurt Hoerbst

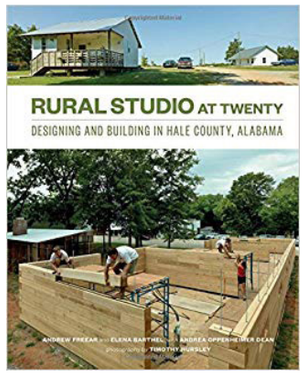
WAYAIR
FUNDACJA U ŁEJERÓW

SYMBIOSIS



Gando Library, Kere Architects, 2015

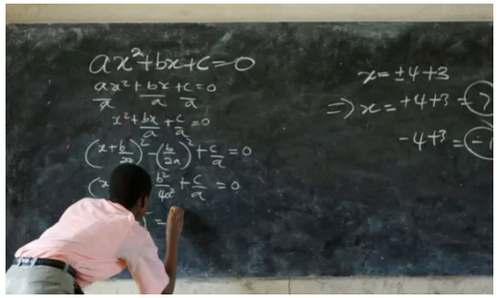
Mike Gernot, Building with Bamboo, 2012



Rural Studio, At Twenty,, 2014

Shigeru ban, Paper Tower, 2009

INTANGIBLE



Muniratu Issifu, Ghana Country Director, The Varkey Foundation.
www.devex.com/news/5-ways-to-innovate-education-in-africa

CHICOCO
RADIO
OUR
VOICE

OPEN LEARNING EXCHANGE