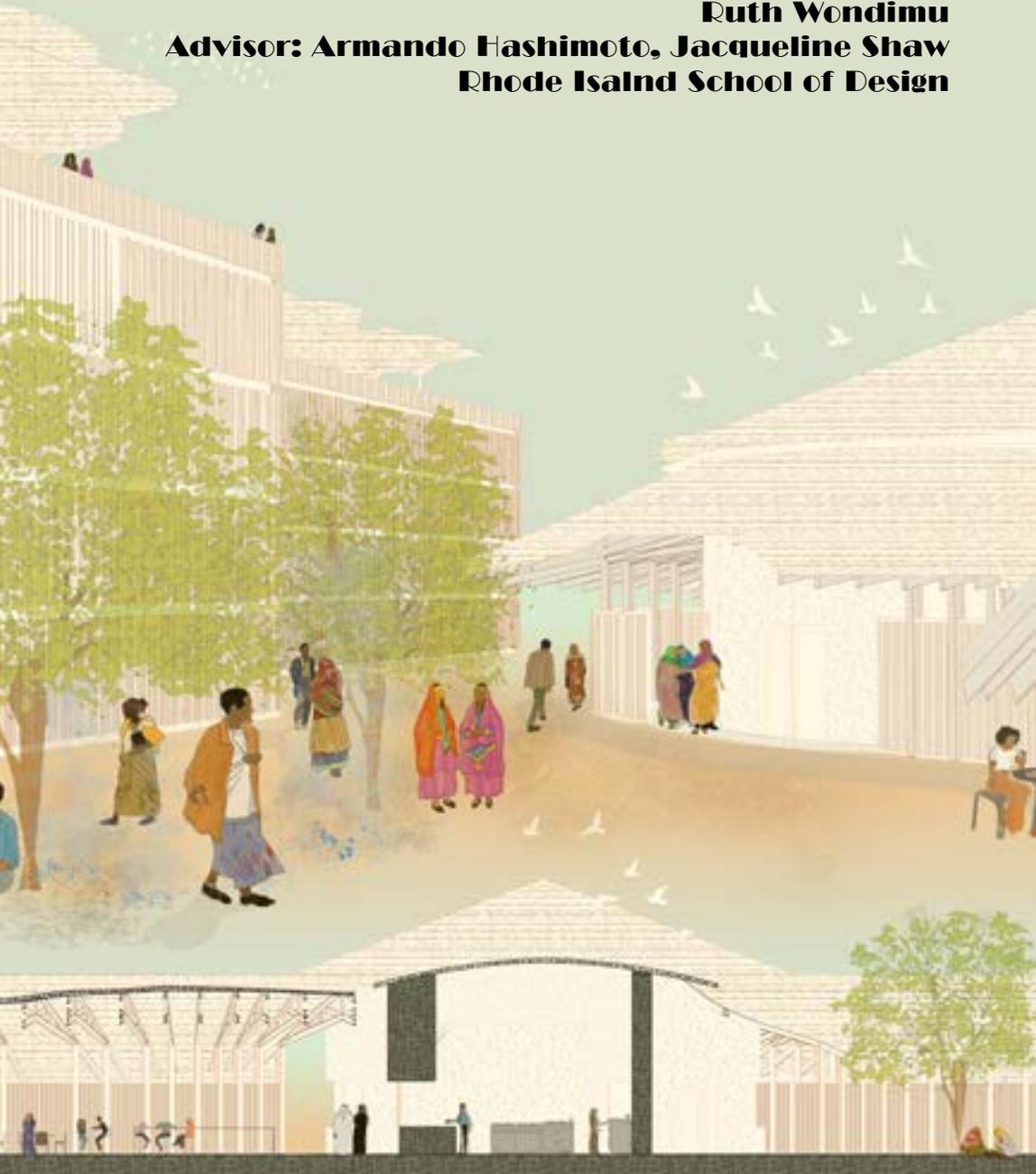


**Navigating Contextualism:
An architectural and urban design study at
the intersection of climate, culture, urban
development, and globalization
Case Study of Dire Dawa**

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Advisor: Armando Hashimoto, Jacqueline Shaw
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Abstract

This thesis investigates architectural typologies that have dominated the world especially in the context of Ethiopia. It critiques the de-contextual nature of the modernist and related typologies through the lens of climate, socio-economic fabric, and urban design. It then focuses on Dire Dawa University, located in the eastern part of Ethiopia, by investigating the authenticity, functionality, and contextuality of the architectural designs as well as their relationship with the people, urban landscape, and culture. Finally it provides design interventions that mitigate the climate related problems through local solutions.

Table of Content

Background and History	6
Problem Statement and Choice of Site	16
Data and Site Analysis	28
Adaptive Design Proposal	42
New Design Proposal	64
Bibliography	78

Background and History

Modernist architecture, in the past century, transversed national boundaries throughout the world through its use of new and innovative technologies of construction and the idea that form follows function, embraces minimalism and rejects ornamentation. The style continued to morph into various other philosophies such as the ones we consider as the International Style.



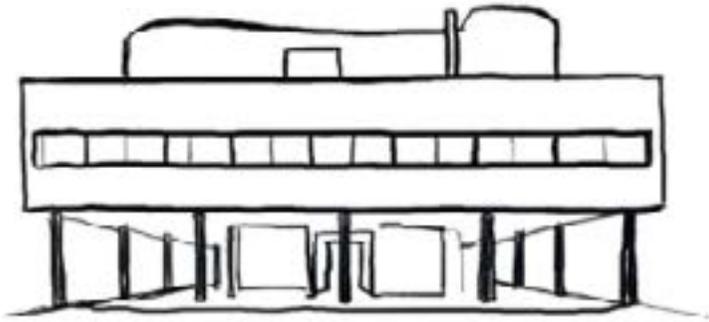
Larkin Administration Building by Frank Lloyd Wright, Buffalo, New York (1904–1906)



Home Insurance Building in Chicago by William Le Baron Jenney (1883)



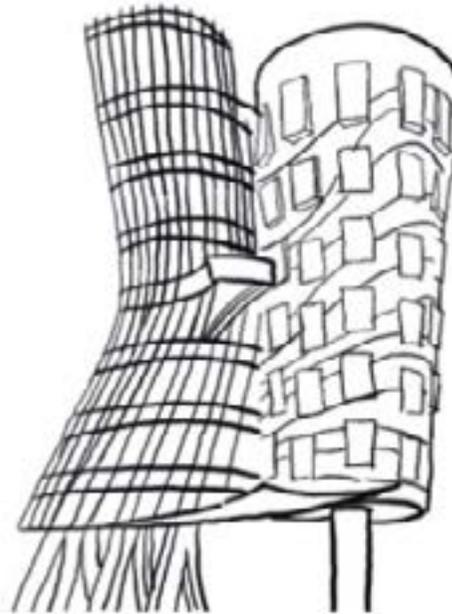
The Villa Savoye in Poissy by Le Corbusier (1928–31)



Modernism



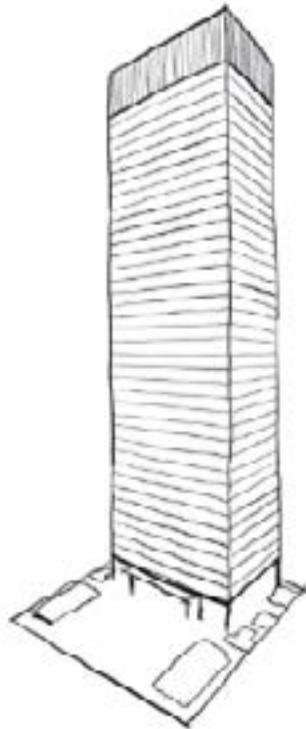
Vernacularism



Postmodernism



Critical regionalism



International



City of To-morrow; Le Corbusier

Modernism, especially at an urban scale, has been proven to have devastating consequences. The methods in which planning and design had happened in a top down approach influenced not only the intimate and personal aspects of human lives, but also the social, cultural, and religious traditions and institutions around the world. Its simplicity in form, material, and approach has also allowed it to grow exponentially.



The Pruitt-Igoe housing projects, United States

Minnette De Silva, a Sri Lanka born woman architect, was among the first people to challenge modernism in the context of the global south. Her work, even when clearly associated with modernism, argued for the inclusion of indigenous crafts, materials, and traditions in modernist projects. This method of thinking later developed into an architectural philosophy commonly known as critical regionalism.

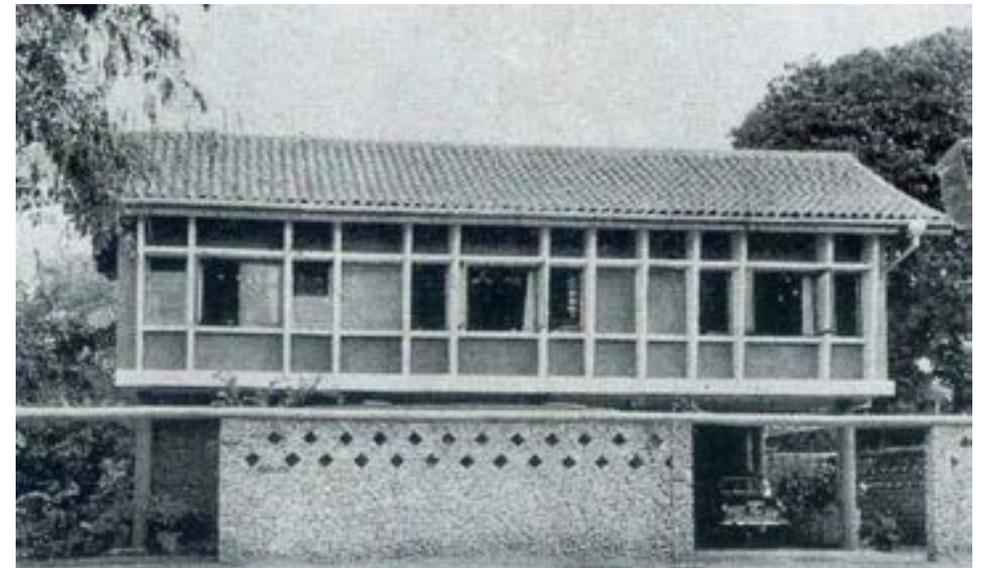
However, critical regionalism is further critiqued by contextualism for willfully continuing to perpetuate the form languages of Modernism and the ways it promotes colonial thinking and aesthetics.

So if including local material, craft, and thinking is not enough, What is?

Here is where my investigation started. I was really interested in Navigating the theory of contextualism



Minnette de
Silva
Architect



Minnette de Silva's house for Ian Dieris in Colombo's Alfred Fouse Gardens. Photograph: LASWA

So, What is Contextualism?

Contextualism is a theory that advocates for designing of a structure in response to the literal and abstract characteristics of the environment from the very beginning of the design process. It prioritizes thinking about culture, identity, ecology, and climate on a deeper level.

Problem Statement and Choice of Site

To study this theory, I had chosen to narrow down to my home country Ethiopia

Currently in Ethiopia, the use of a modernist methodology of projects persists specifically through projects relating to governmental organizations, higher education facilities, and other international institutions.



Addis Ababa housing projects

A good example of a category of institutions in Ethiopia that has a direct relationship with the built environment and modernism is higher education. In 2000 there were just two universities in Ethiopia, but since then the country has built more than 70 institutions, with plans for more. However, this ambitious effort to increase access to education in combination with modernist ideas of architecture and urban design has resulted in university campuses that are culturally, socially, and economically detached from the cities they are built in.



Dire Dawa University



Hawassa University



Semera University

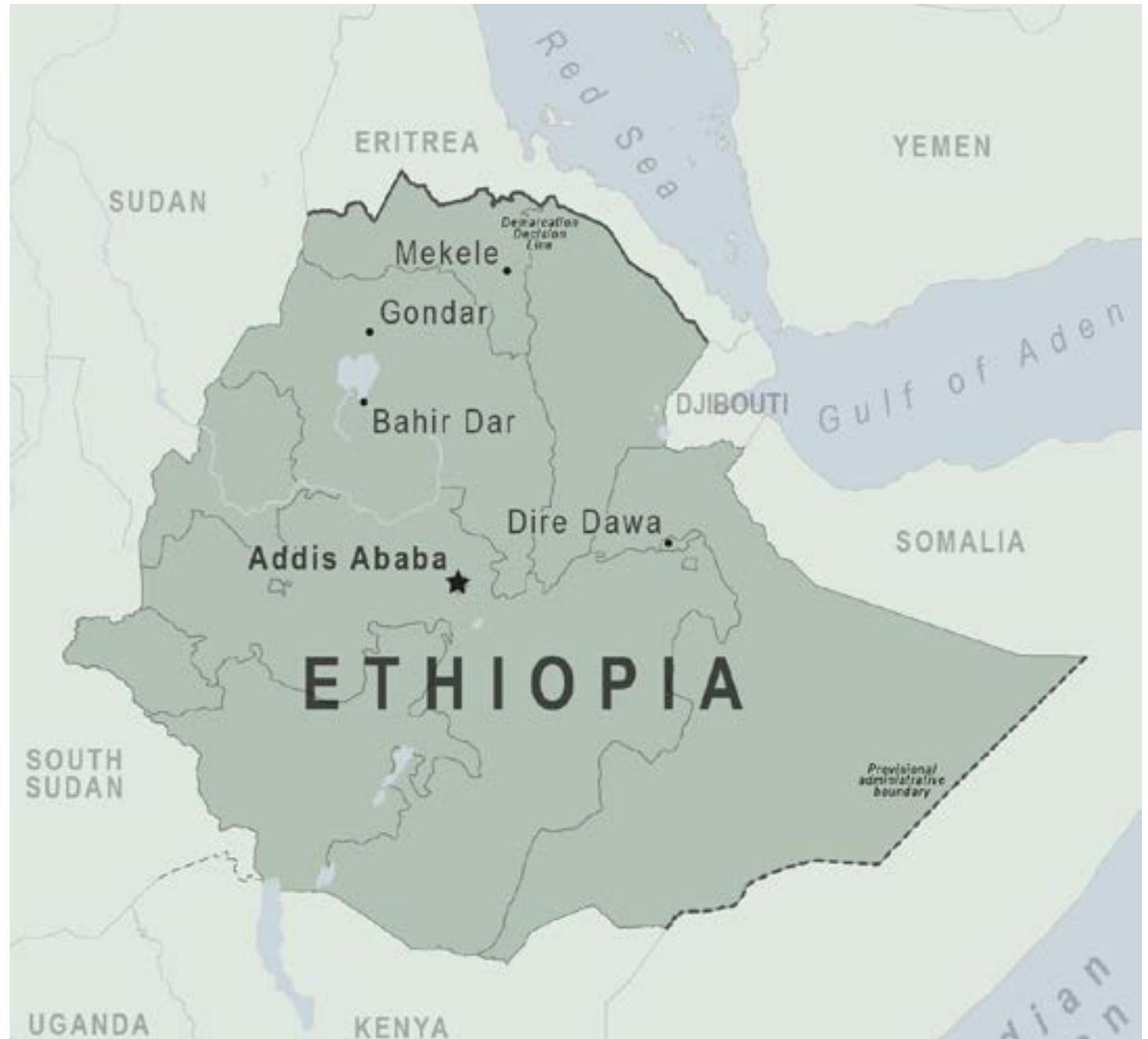


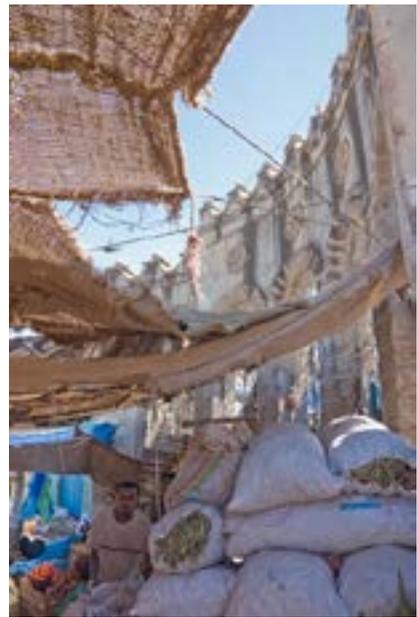
Mekelle University

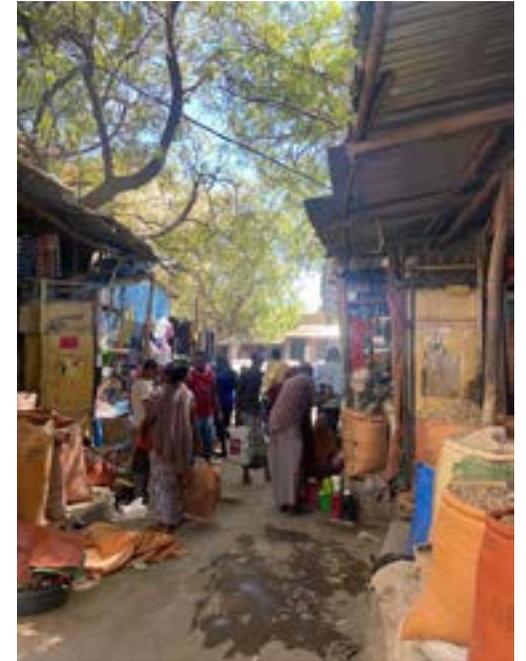
Furthermore, the consequences of modernist proportions and use of materials have shown extreme climatic discomfort resulting in students attending classes at night and taking out their mattresses outside to sleep in a well ventilated space. While I was onsite, I was also able to learn that there are gender based differences in the ways students live as the women feel unsafe sleeping outside. Therefore they are confined in their dorms even in the hottest of the temporal conditions. Serious consequences including multiple deaths had occurred in relation to the extremely difficult heat conditions



In the process of further contextualizing my project, I had chosen a university in a city in eastern part of Ethiopia called Dire Dawa. Dire Dawa has had a unique cultural heritage due to its close border relationship with the neighboring country djibouti and its identity as a dry port city. Multiple languages are spoken within the city including Oromic, Somali, amharic, Arabic, Harari, and french. All of those identities also showcase their presence through the architectural typologies present within Dire Dawa. The city is hot year round with temperature typically varying from a minimum of 58°F to 91°F with the hottest temperature being measured at 108.0 °F





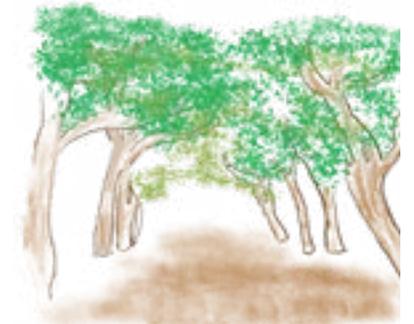
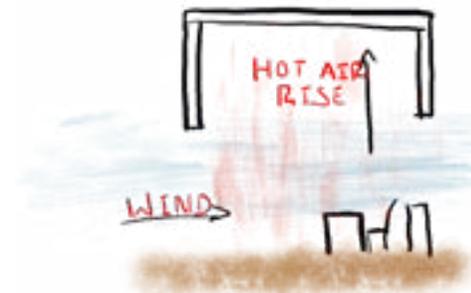
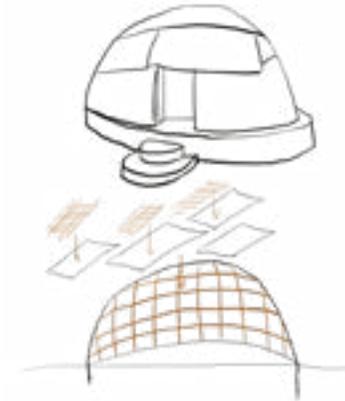
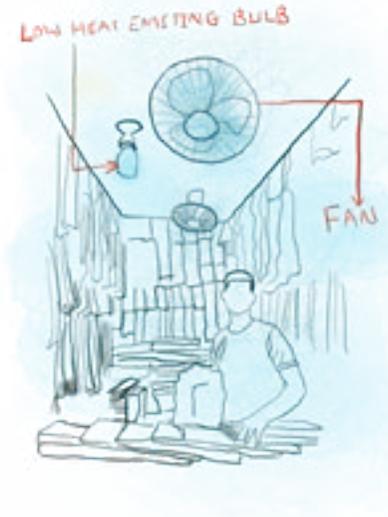
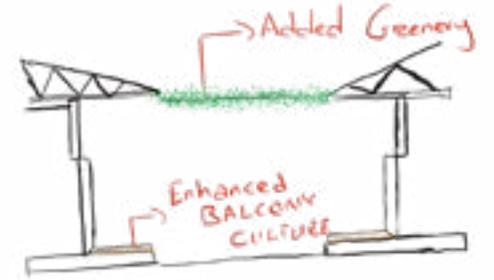
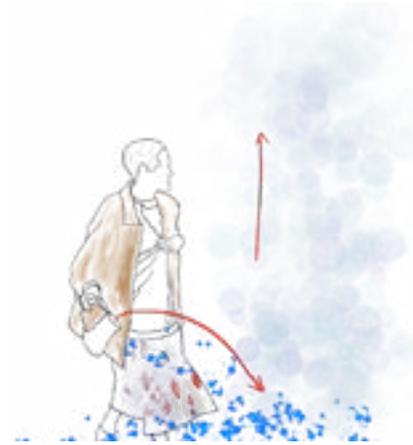


Data and Site Analysis

By interviewing various residents of the city, I was able to learn much about the adaptation techniques people have used to make the climate bearable as well as ideas that have become a very big part of the culture with in dire Dawa . Here, I am illustrating some to share the information I had gained as things to consider when designing in Dire Dawa. I am hoping that this can be done in other parts of Ethiopia's cities and more so that the idea of contextualizing projects can grow.

I believe that this gathering of information was the most important part of this project. It allowed me to talk to the residents of dire dawa and understand their culture and their preferences. For Example, as extreme as the hot weather conditions can be, they did not appreciate direct ACs. They believed that the speed and power by which colder air is pushed through made them sick. Perhaps without being in person, a simple solution for people with power would be to install ACs but that might not always be the right solution.

Hand Book Attached Here

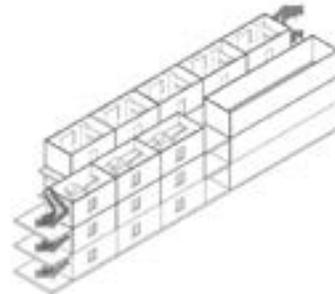
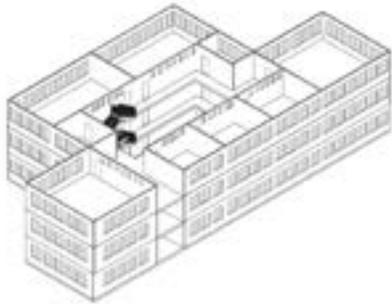
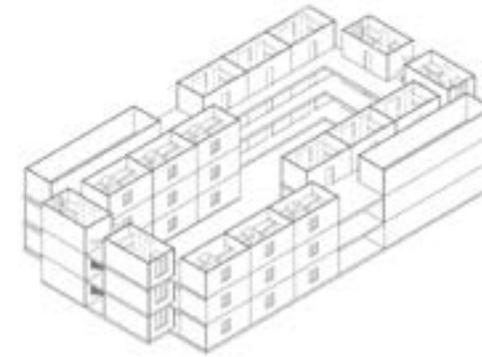
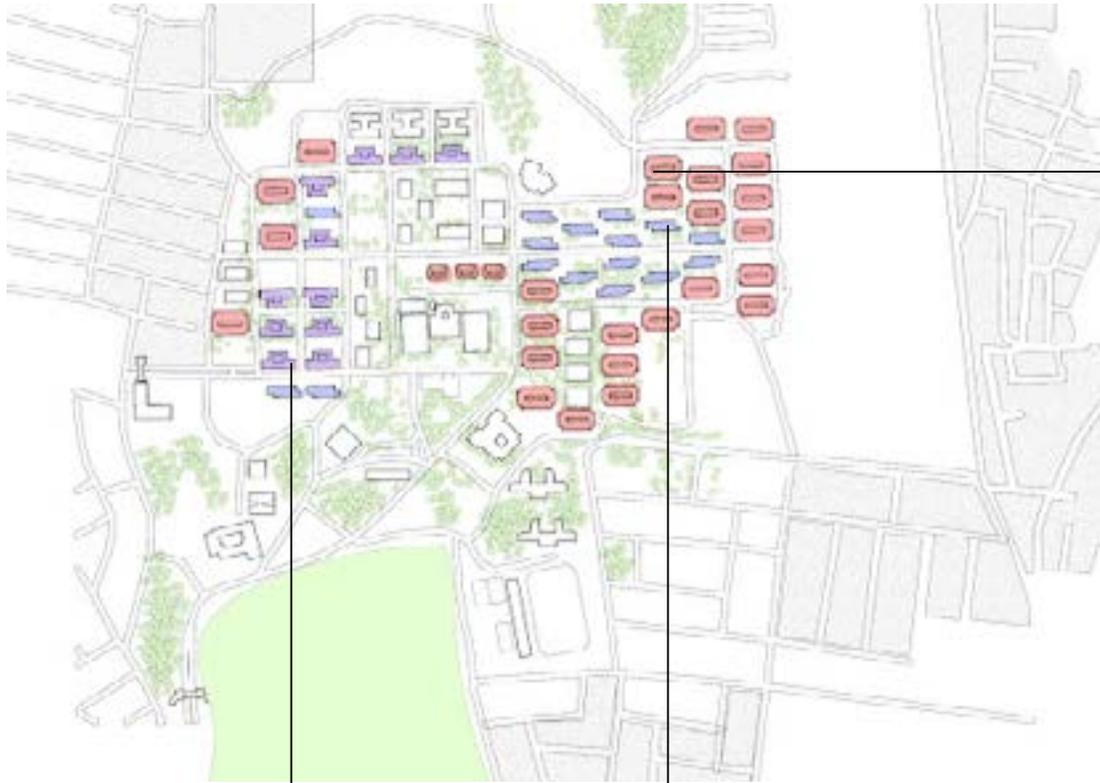




Dire Dawa University, located in the periphery of Dire Dawa, was established in 2006 and is home to more than 12,500 students. From a planometric standpoint, Dire Dawa university appears to be detached from the city of Dire Dawa.

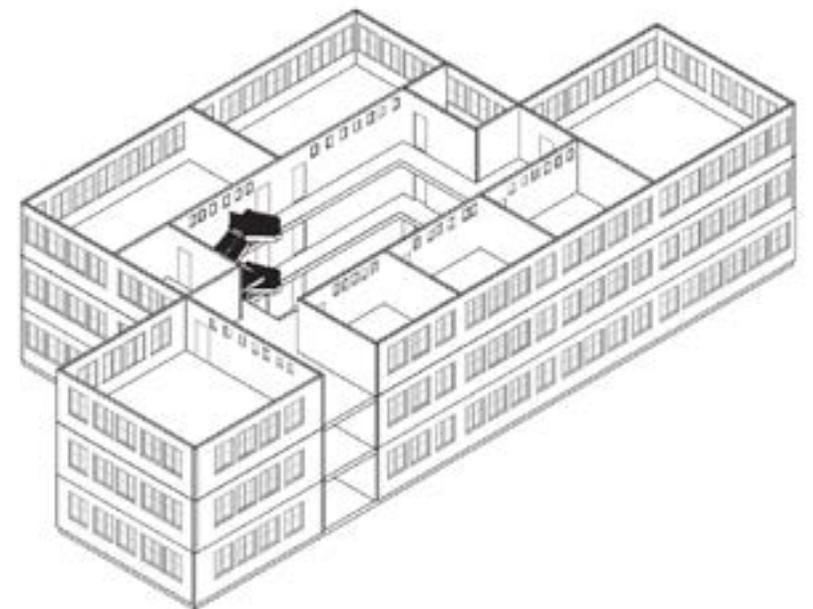
The proportions between land and the built environment as well as the use of concrete structures point to the modernist and international styles of architecture. The planning and construction of the space further imply the de-contextual nature of the campus.

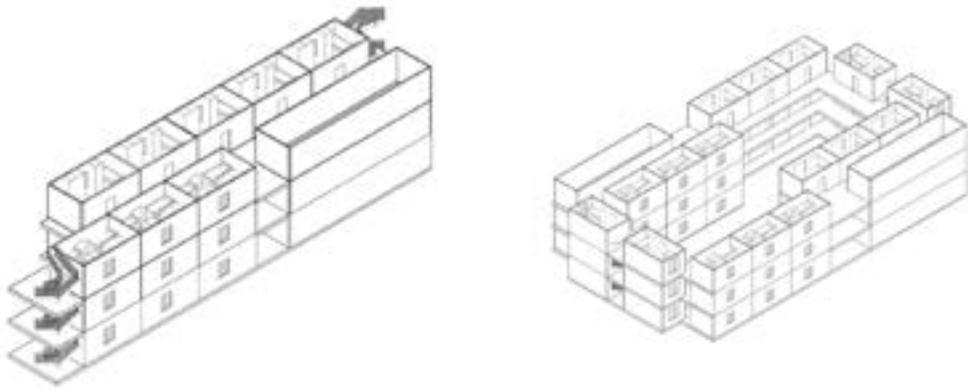




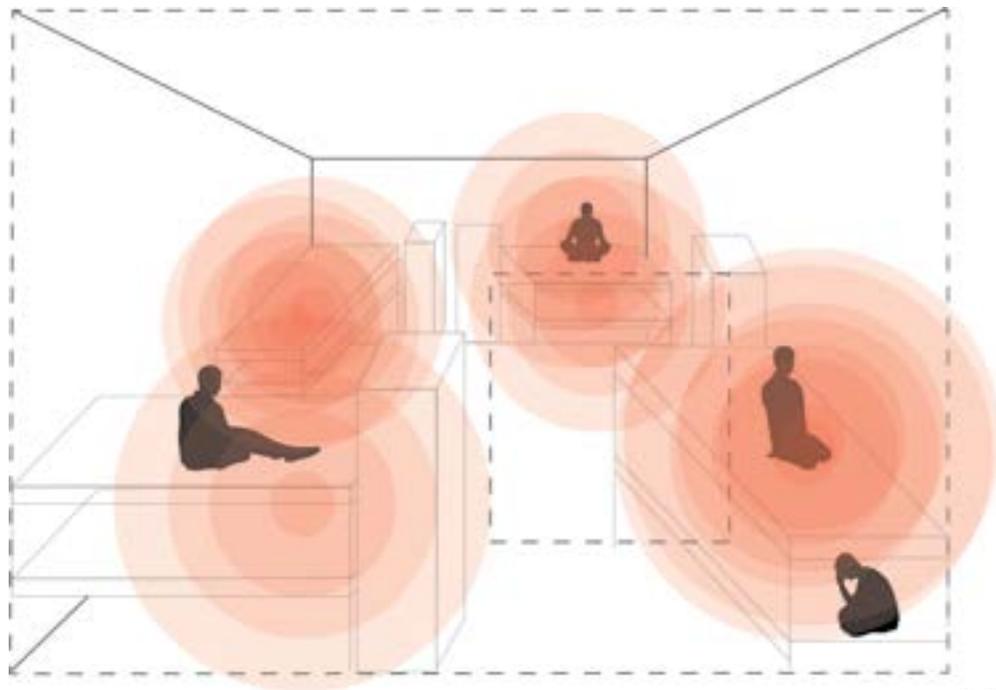
Although there are a number of buildings on the campus, there are three main designs of buildings that are found repeatedly.

The first one is often used for academic purposes and is relatively better ventilated with bigger classrooms and window to space ratio.





The second and third typologies are residential dormitories that are similar to the dorms you saw in the videos in the beginning of the presentation. Each dorm is occupied by up to eight students with minimal window access. Students often struggle with living through the heat and other consequences of the heat such as bedbugs.



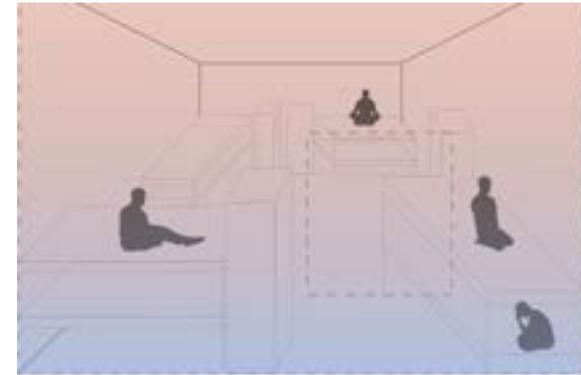
I believe that all these problems need to be addressed because this has become a question of living and dignity.

With the words of Francis Kere, Everyone deserves quality, everyone deserves luxury, and everyone deserves comfort.

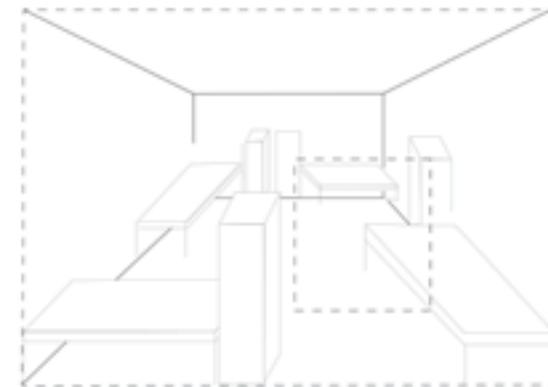
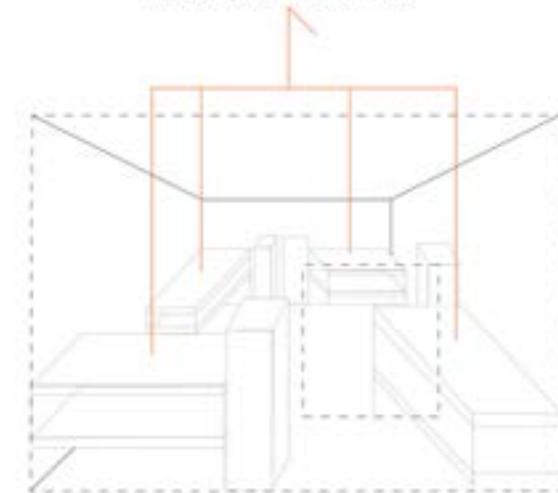
Therefore, in this second part of my thesis, I will try to provide that space for comfort through my design proposal. I am mainly proposing the adaptation of the existing buildings and a set of decentralized dining centers

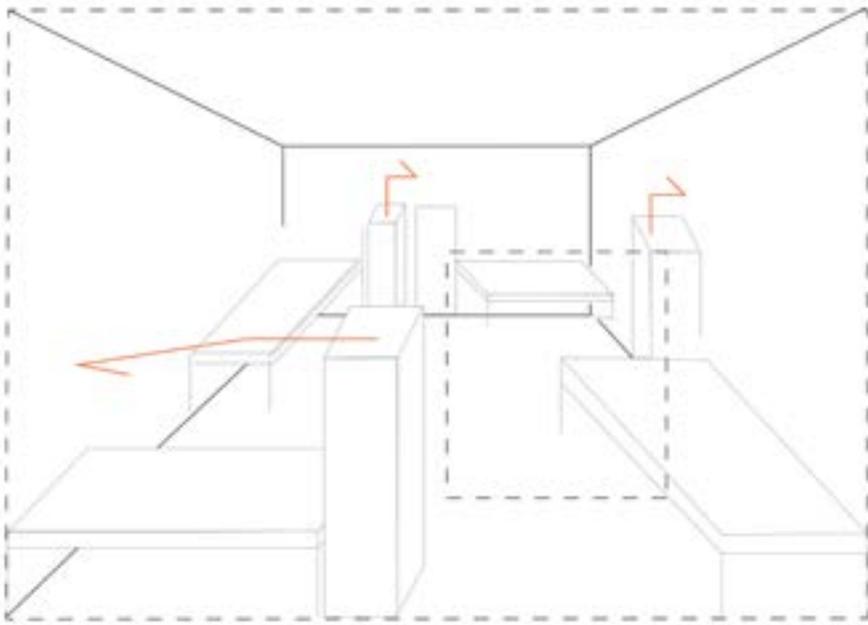
Adaptive Design Proposal

1) My first proposal is more of an acknowledgement. I believe that some problems don't have instant architectural interventions. Similarly, the use of 110 ft square space can not be enough for up to 8 people. Therefore there needs to be a systemic change in the distribution of students within dorms also calling for additional dormitories to house the students. Due to this, I will be considering the new building to only need to house up to four students.

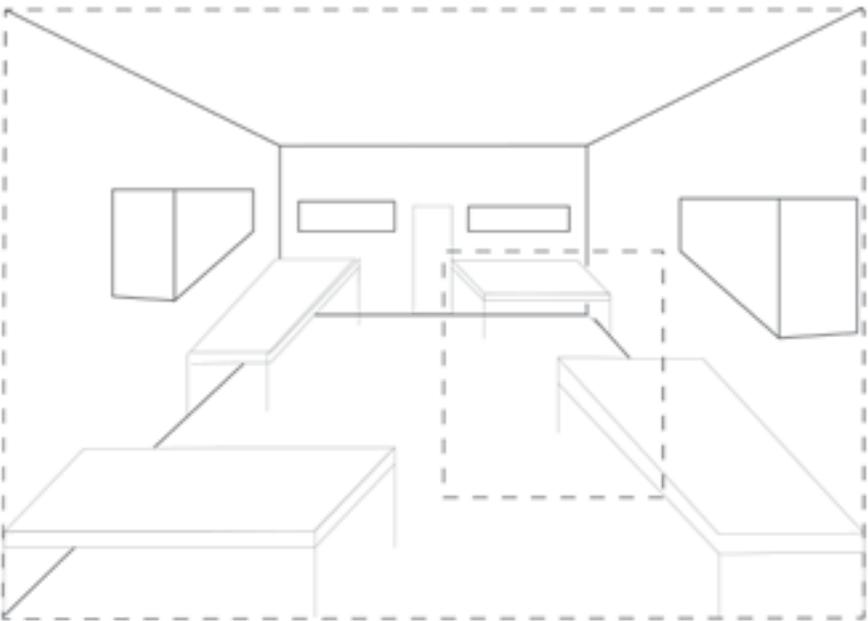


Remove top bed from double beds





2) At the scale of the room, I have chose to use single beds instead of bunk beds to ground the students away from the hot air that rises. The space above their beds is then instead to hang the cabinets that had taken much of the space in the room



3) I am then proposing to remove the non-load bearing wall on the exterior of the building to replace with a curtain wall system that creates more ventilation for the space.



4) I am then adding balconies to each room to create an occupiable space that can be used for hanging cloth, or forming a connection with neighboring dorms



5) Each rooms are divided by folding structures that stretch textile to create privacy but that can also be left open



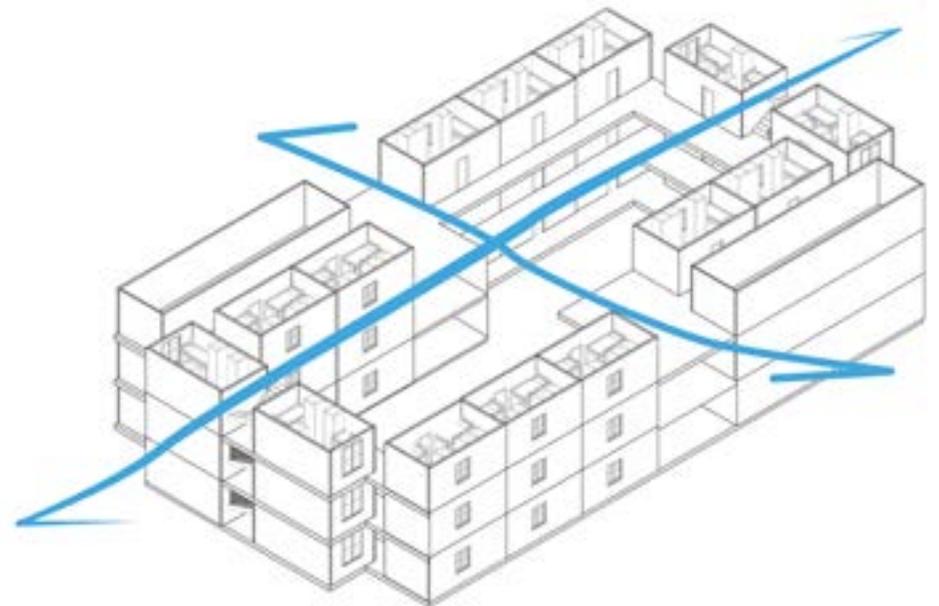
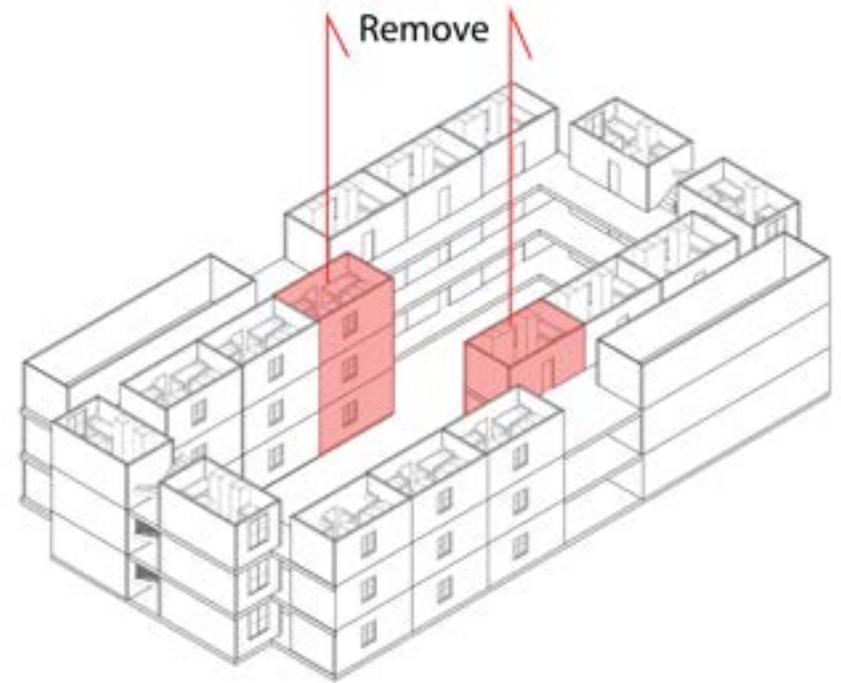
6) Finally for the scale of the room, I am adding a facade system that creates shade from the sun while sustaining privacy. At a static state, it is angled at peak sun direction, however it is movable to allow the students to decide on how much privacy and sun comes into their space.





This balcony and facade system continues to revolve around the building for each room

At the scale of the building, I am proposing to take out the two rooms per floor that are blocking cross ventilation to replace with open spaces that can be used for communal activities such as cloth washing stations and gathering spaces at a smaller scale



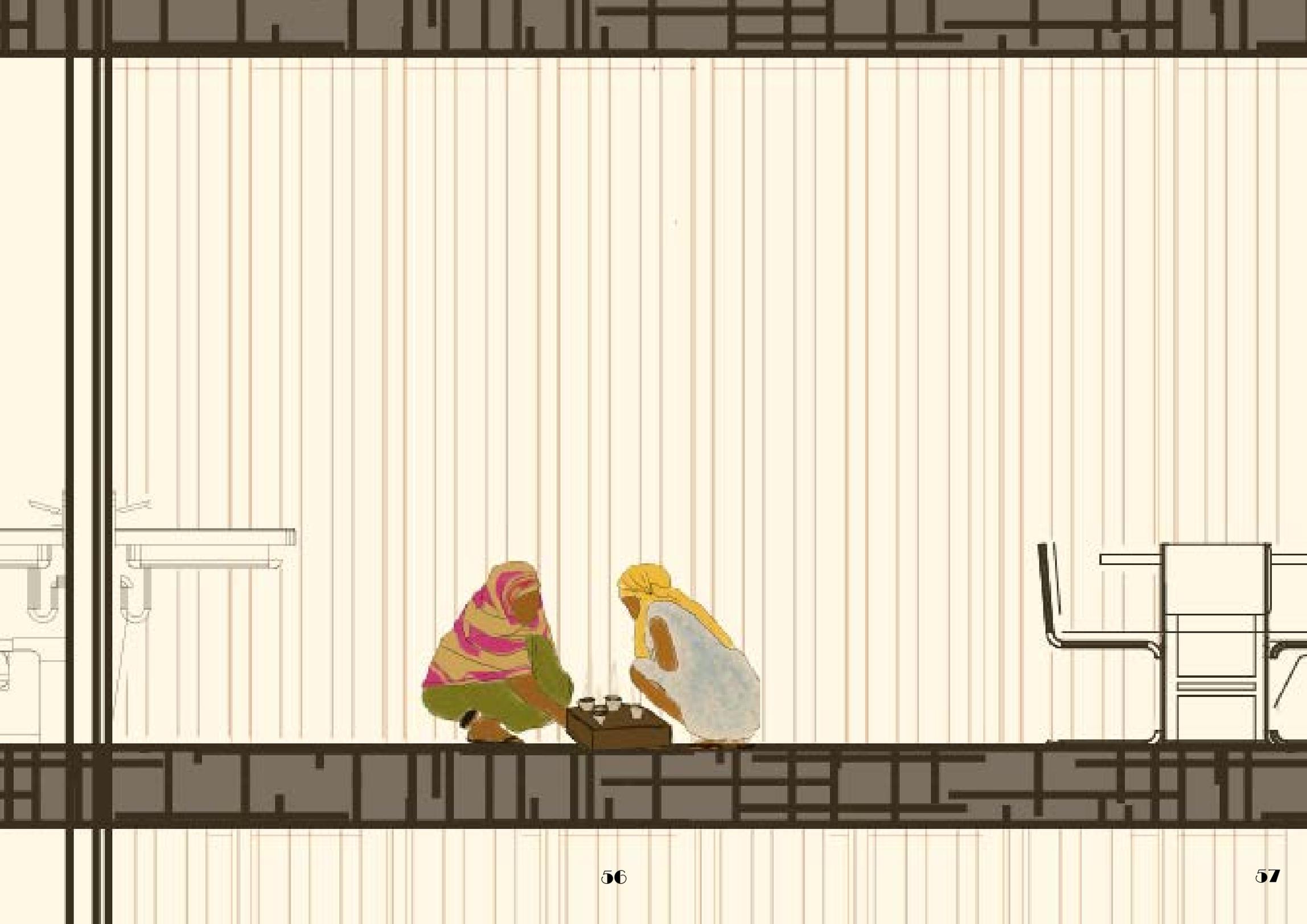


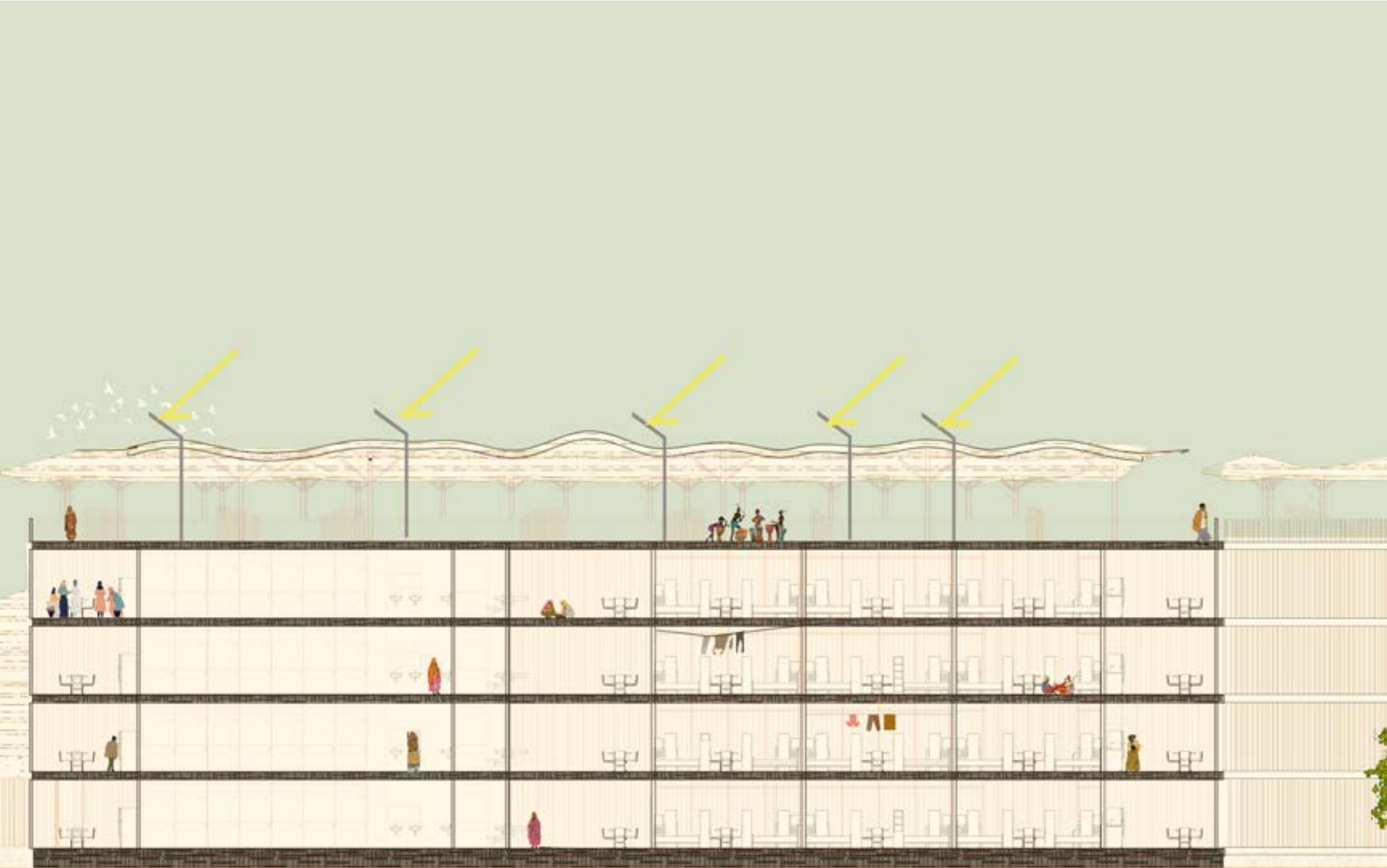
I am also proposing to utilize the communal spaces created by the balcony to dedicate spaces for kitchens

I am proposing to build the staircase to go all the way up to the roof removing the metal and replacing it with an occupiable slab that can be the largest community amenity. It would be used for resting, studying, and playing games. Its roof is made up of the local material and vernacular systems to bring back the softer quality materials and fluidity in the local design. I also designed this thinking of the students that decided to sleep outside. Perhaps this can be a safer and more dignified space for all genders

Finally I am attaching air conditioning systems powered by the solar panels. I am doing that because I believe option is important. Similar to how we depend on airconditioning systems for the coldest of the winter conditions as well as for the hottest of the summer temperatures, I believe everyone deserves to have a space with environmental and climatic knowledge but also that there are options to turn on ACs in the direst of the weather conditions.









Through this design process, I am incorporating the climatic and contextual knowledge I had gained in order to create better living conditions for the students that have suffered from the consequences of these modernist approaches. However the design to this point, had me contemplating on the core of the design part of this thesis which is critiquing critical regionalism through the lens of contextualism. My choice to work on an already existing modernist structure allows the essence of modernism to continue within the project. Therefore, the incorporation of these local materials and knowledge allude more to critical regionalism than contextualism at its purest form. That led me to developing one additional design for the campus to integrate a contextual approach to the urban fabric of the campus.

New Design Proposal

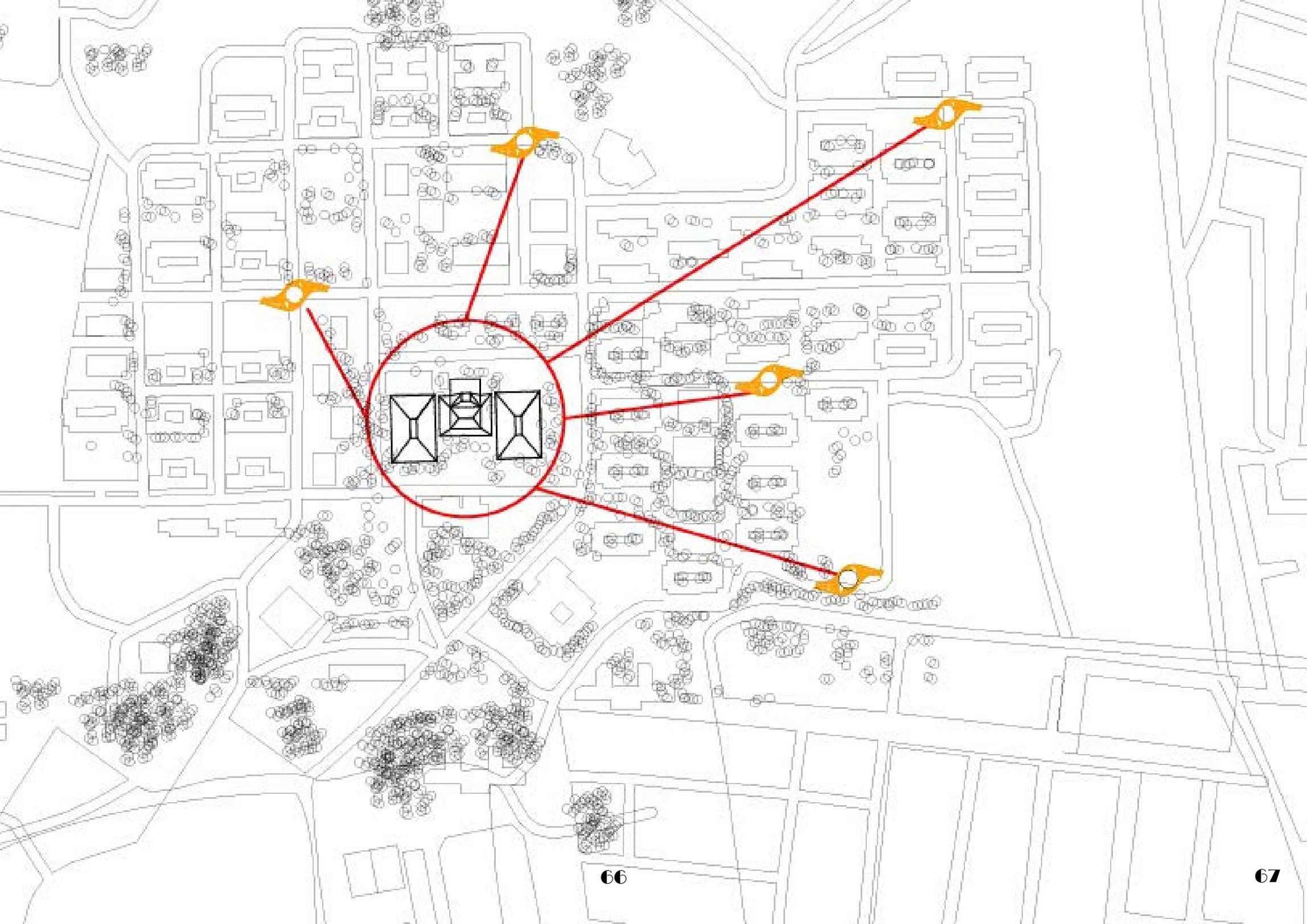
The existing dining center serves 12500 students. There has been multiple evidence and stories of its current conditions due to the number of students it feeds and the ways the food is made in bulk. To approach this problem, I am proposing a decentralization of the dining center by proposing multiple satellite dining halls. These dining halls could also serve as gathering and community spaces when not mainly used for dining.

The design is influenced by the use of curves often found in the textile pattern. It centers the kitchen at its core, similar to the existing dining center and provides the dining spaces at its ends. The overall planometric geometry of the dining hall changes based on the location.

It's fluidity in space and use allows students to occupy it at multiple periods. There is no obstruction to look into the kitchen . The roof is designed to angle in favor of the shade. It created both indoor and outdoor opportunities to socialize . Similar to the existing dining hall, the bathroom and hand wash stations are located right outside to lessen the risk of cross contamination while utilizing an open form floor plans and material

The design utilizes local construction techniques including metal based frames. Amongst the local materials, one that I had found fascinating is called Guguba. Originally my intention was to bring a bag of the soil that makes this material here to investigate its properties. However, when I was held at the airport security for an attempt to smuggle local resources, I was reminded of the fear and trauma of extraction within the global south. Therefore I was reminded that there is so much to study, so much to learn, so much to invent, but only in a way that includes or most importantly is led by the people who own their resources.





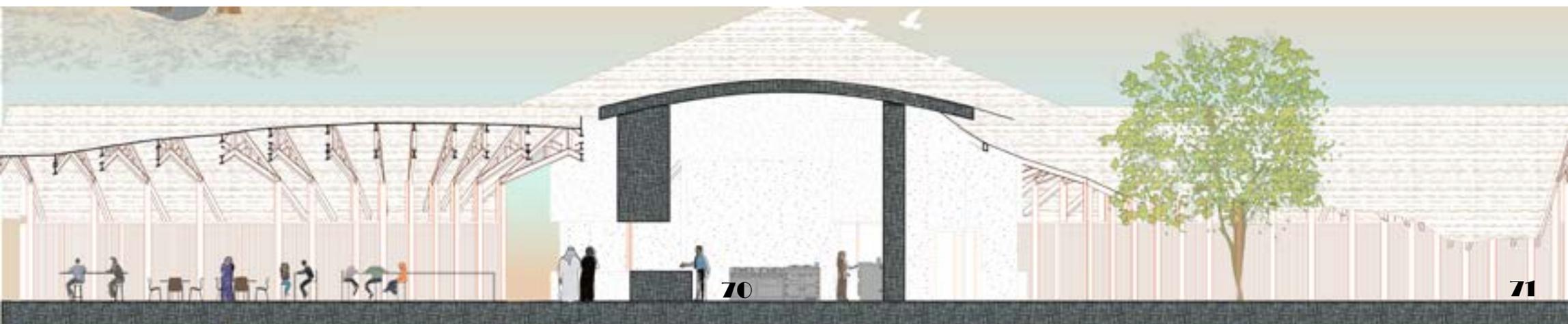
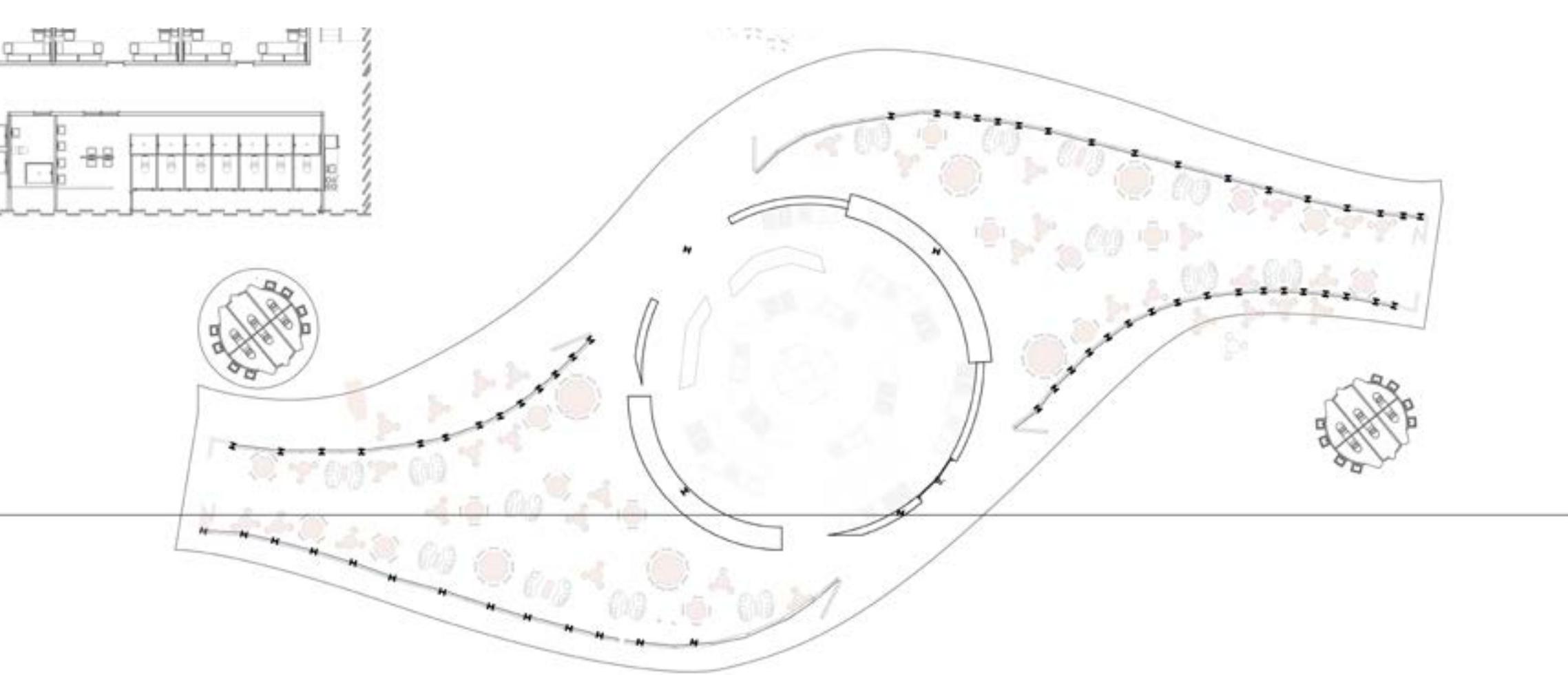


Organic string pattern from a textile

Finding Core: Kitchen

Shell: Dinning

Community Spaces outside





Dried Grass Roof

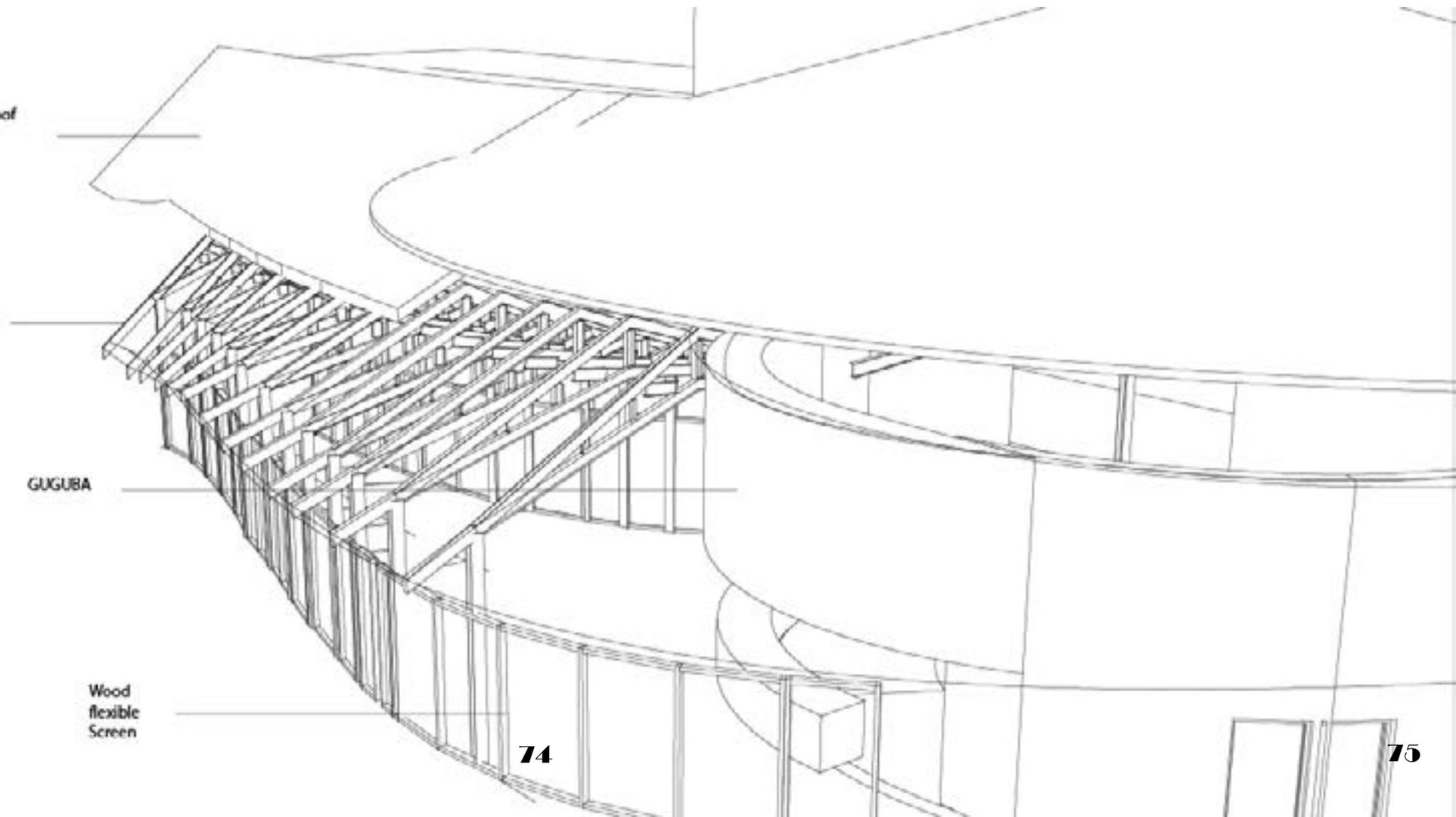
Aluminium

GUGUBA

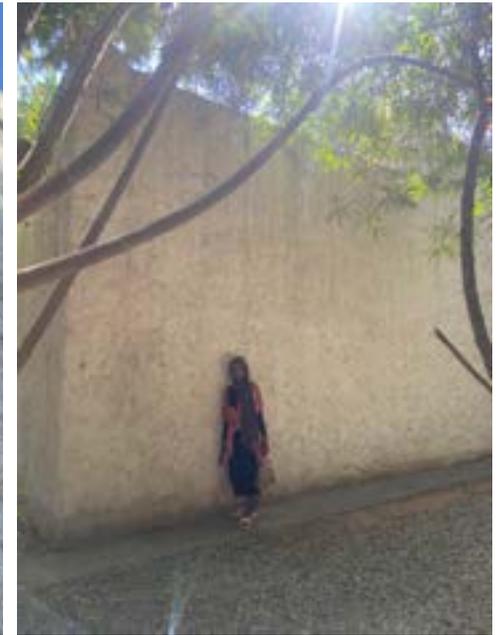
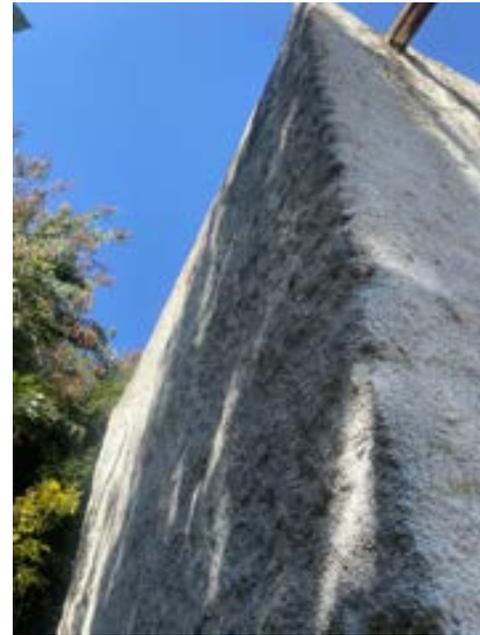
Wood
flexible
Screen

74

75



Finally, I would like to state that the most important part of this thesis for me was the time I had spent with the students and the general community of Dire Dawa. What I wish I had more of is also more time with them. Building trust and finding direction takes time and design especially at an architectural and urban scale should take time. Imagine if all these projects were given the care and time they would need. It would make a world of difference.



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