

Homes in the land of the Nile

Using nature to build a nation

Architecture and civil engineering
Housing and Environmental Design

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1. Chapter 1: Introduction & Review of similar study in this field.

The 1st chapter of the thesis will address an introduction of the research idea and background. It will also discuss the objective of the research methodology and question the possibility of improving the traditional building methods, together with reviewing of few similar researches in the same field. The contents of the 1st chapter are as following:

1.1 Introduction of the research and the main idea and background.

The idea of this master's thesis is based on my belief in the importance of the vernacular architecture in South Sudan and how the usage of the traditional building technique can help create a sustainable living environment. By using the traditional building methods, we can create suitable living environment for the poor population of South Sudan especially after the civil war and its impact on the housing and people's life. After the 2013 civil war, a great number of people were displaced and looking at the high cost of modern concrete houses, most of the population is living in the traditional dwellings with less convenience living standards.

1.2 Review of Similar research on the same topic from different sources.

1.3 The main idea of the research on how to use traditional material, local knowledge, and local skill to make new model of the house.

1.4 Research site.

1.5 Structure of this thesis

2. Chapter 2: A general introduction of the vernacular architecture in the African continent.

This chapter will focus on giving a general idea of the African continent in terms of location, climate, nature, history ...etc. Then it will give five different example of different types of vernacular architecture in Africa according to regions of Africa, discussing the characteristics of the dwellings, the traditional building materials, and methods of construction of each type. Finally focusing on South Sudan in terms of the history, culture, climate and nature, I will analyze the major points in the South Sudanese vernacular architecture and the characteristics of the traditional dwellings in the South Sudan. The contents of the chapter will be as following:

2.1 An Introduction and background of the African Continent and the five African regions.

2.2 Vernacular Architecture in the five African regions.

2.3 Vernacular Architecture in South Sudan.

3. Chapter3: Research study and analysis on the vernacular architecture in South Sudan

The South Sudanese building style is similar to the other African nations and with few specialties in the usage of the materials and the building style. What makes the local and the traditional building style unique is the environment and background of each ethnic group. The country has more than 64 tribes and the climate is Equatorial or tropical climate in the southern part and dry climate in northern part. It is characterized by a rainy season of high humidity and large amounts of rainfall followed by a dry season. River Nile is one of the major natural resources and it has its impact on the culture and life style. The location of this research was Abyei Administration area in the northern part of the country. Dinka Ngok are the ethnic group living in this area. They are known for their cattle and small agriculture during the rainy season. To conduct the research, I have made a research trip to the area in March 2018. The study included researching five different dwellings in the area. The research included data collecting, drawings, measurements of the dwellings, pictures taking and interviewing the owners of the houses. Based on these data, I conducted my study analysis of the dwellings. The research helped me understanding the characteristics of the dwellings and traditional building techniques. It also helped understanding advantages and disadvantages of such dwellings.

The traditional dwellings are built by using simple natural materials such as: grass, wood, mud, bamboo...etc. Each single house is a compound of different sized huts or rooms locally called (Tukul or Gotty) as showing in figure 1, which are used for various activities during the day. The family members share this space and one compound can include more than one family. The general size and shape of the compound depends on the number of the rooms built there.

The middle of the compound is used as courtyard for social activities, together with providing a space for gathering and other functions. In some houses, we can find a space for the domestic animals such as cows, goats, chickens...etc. as they

co-live with family, providing them with a separate space.

The shape of the hut (room) is usually round, square or rectangle. The mud walls can be up to 25cm thick with the height of 130cm. The single room contains small windows for minimum ventilation and sun light. The roof height can get up to 300cm with a wooden structure supported with bamboo and covered with the grass for the finishing.

These kinds of dwellings are common all over South Sudan with difference in some of the building materials and the construction methods, but mostly as a low-cost construction, it provides housing for a large number of the population. However, the dwellings lack the basic services needed for daily living such as electricity, water, draining system and so on., which make the daily life struggle for the household. Chapter 3 includes the following contents:

- 3.1 The back ground about Abyei Area and why choosing the location for research.
- 3.2 Analysis of the 5 case study of the research.
- 3.3 Conclusion of features of the vernacular architecture in South Sudan.



Figure. 1 Traditional hut (Tukul or Gotty)

4. Chapter4: Key points extracted from Japanese traditional architecture in Shiba

This chapter is based on a general study of the Japanese traditional architecture, focusing on Shiba village in Miyazaki prefecture by studying and analyzing characteristics of the traditional dwellings and building methods. I will conclude the key points from the Japanese traditional architecture that will help me modify some features in the South Sudanese traditional architecture. Based on the traditional Japanese climate control methods, materials, and building techniques, the main point of this study is to show variety of traditional techniques that can be implemented in the South Sudanese traditional architecture from Japanese traditional architecture using natural materials. This can help improving the traditional dwellings in South Sudan. The chapter will focus on similar natural materials in both Japan and South Sudan. The Japanese way of utilizing

these materials & traditional methods of climate control...etc.

This chapter contexts are as following:

- 4.1 An introduction of Japan.
- 4.2 Vernacular architecture in Japan.
- 4.3 Climate control methods in the traditional Japanese Architecture.

5. Chapter 5: Research conclusion and design guidelines for sustainable housing based on traditional architecture

The chapter discusses the final conclusion of the research which is based on both type of study in Japan and South Sudan, especially focusing on how to improve the traditional architecture in South Sudan and to take advantage of the traditional building methods and techniques from Japan as well as mentioning the latest sustainable technology that can be used to improve the life style in low cost housing. At the end, all these results will make the guidelines for future design proposals that can bring the tradition back in to our modern days in a sustainable way. The contents of the chapter are:

- 5.1 The answer of the research question “How to create a sustainable housing from the traditional architecture in South Sudan and Japan?”
- 5.2 The main conclusion of the study and analysis of both architectures.
- 5.3 Guidelines for future design proposal.
- 5.4 Conclusion.

Modernization in life and at this point it should be a given right. But when that right become an expensive commodity, it's important to look for alternative solutions. Sometimes our vernacular architecture is the answer for such situation. The only thing that can stop this from happening is our attitude towards our own architecture. Generally, in Africa rejection is the first and only reaction towards this type of architecture. This kind of thinking is one of the reasons that African vernacular architecture is left behind. Adding to that, the poor quality of production when it comes to the local construction technology. How can it be improved by involving the latest knowledge and technologies? The fact that these architectures have the ability to be sustainable if improved should be a reason for more research as it could help changing the lives of many people across the world.

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