ACKNOWLEDGEMENTS

First and foremost, I give thanks to the Almighty God for his love, care and grace which sustained and strengthened me throughout my study and finally the write up of this thesis, especially at these times of the world wide COVID 19 crisis.

I would like to extend my deepest gratitude to my supervisor Prof. Koenraad Van Cleempoel for his guidance, constructive criticism and support throughout the course of this study. Together with him, all of my lecturers who have contributed to my body of knowledge during my study at Hasselt University. Many thanks to all the previous Hasselt University students who participated in Studio Tanzania in the years 2018 and 2019 together with the lectures especially Arch. Peggy Winkels, for the enormous amount of data collected in the Hasselt University archives which has been very useful in the course of this research, indeed this could have been almost impossible without your support. I also like to thank all my classmates and friends for their love and moral support throughout the course of this study.

Last but not least I would like to extend my gratitude to my parents, Mr. Gerald T. Runyoro and Dr (Mrs.) Deborah K.B. Runyoro, for their unconditional love, and support throughout my study, also for not shutting out my dream but instead paving a way for me to attain it.

ABSTRACT

Tanzania is one among the fastest growing countries in Africa, with a population growth rate of 2.98%. It is divided into 30 administrative regions. Dar es Salaam, its commercial capital, is the fastest growing, despite being the smallest region in the country. Dar es Salaam is now becoming overpopulated and this population increase has already started affecting the neighboring region, Pwani (Coast), especially the Bagamoyo district, in terms of its architecture and urban layout because lots of people are moving to Bagamoyo due to land scarcity in Dar es Salaam. Some people live in Bagamoyo, despite conducting all their daily activities in Dar es Salaam. It is evident that in the near future this trend will become the new normal and the neighboring region will be affected even more.

Bagamoyo is an important district in the History of Tanzania. It was the first point where 'the new comers' i.e.; missionaries, explorers and traders arrived in order to reach Tanganyika, now Tanzania mainland, and the interior of Africa at large. It is also famous as the first place where Christianity was introduced in East Africa, where slaves from upcountry Tanganyika were being assembled before onward movement through Zanzibar, where abolition of slave trade started and other important historical events. The part of Bagamoyo where most of the heritage buildings and history lies is famously known as Stone town.

The research is aimed at determining how this area can be prepared to accommodate the new expected population and functions without erasing the traces of history that lie within them, but instead uplift history and the lives of the people living in these areas. This study focused mainly on the Old Boma in Bagamoyo and its surroundings. However, the results of the research can be applicable to other areas which are similar in character to it, like Kilwa and Pangani.

The methodology used in the research was literature review and case studies. Literature review suggested that the reasons for the current, dilapidated state of the stone buildings include, the state of poverty of the people, the lack of knowledge in the technology of stone construction and the contentious status of the buildings in topic (most of them are related to the history of slavery and colonialism). On the other hand, some cases of adaptive reuse in Tanzania were analyzed, and their strengths and weaknesses identified. These helped in shaping the thesis and the master project in terms of the program and also the approach to follow. The research also involved a study on bamboo construction techniques and how they can be applied in a modular manner.

From the findings of the research, it is proposed that the Stone town area should be treated as a heritage site, where the new buildings should be designed in such a way that they fall in place with the context, and not stand out from it. Also maintaining the original streetscape character and the spirit of the place. The research has created a new direction in the field of adaptive reuse, especially in the Historical context, in terms of materiality. Whereby, vernacular architecture, particularly the use of bamboo construction, can be a solution, not only to be applied for the new elements in the existing buildings, but also for some of the new constructions as well.

Conclusively, the new proposed approach towards the buildings and the environment will be cheap, will not require a lot of learned expertise and in turn it ends up being a source of new knowledge and employment to the locals of Bagamoyo, and an additional advantage to it is that it will be a way forward towards development which will also conserve the environment.

Contents

LIST OF ABBREVIATIONS

AAT	Architects Association of Tanzania
BOMA (or Boma)	British Overseas Management Authority
DARCH	Dar es Salaam Center for Architectural Heritage
DOAG	Deutsch Ost Afrika Geselleschaft
GEAS	German East African Society
OUV	Outstanding Universal Value
UNESCO	United Nations Education Science and Culture Organization
URT	United Republic of Tanzania
WHL	World Heritage List
WWI	First World War

CHAPTER 1: INTRODUCTION

1.1 Introduction to Bagamoyo

Bagamoyo is one of the five (5) districts of Pwani Region which surrounds nearly the whole of Dar es Salaam Region. The headquarter of Bagamoyo District is also called Bagamoyo, which is a small town, currently in a dormant state, located about 75km North of Dar es Salaam (Dar es Salaam is the commercial capital, major port, and a manufacturing center of Tanzania). During the 15th to 19th Century, Bagamoyo was an important part of, and the center of both the Indian Ocean and slave trade (Lindstrom, 2019) as shown in Figure 1. It was governed by the Arab Oman Sultanate, Sayyid Said and was later on inherited by his sons.

Fig 1: Maps showing the Indian Ocean African Slave trade routes

In 1885, the Germans formed an East and Central Africa German protectorate and Bagamoyo became the headquarter of the German administration. In 1891 the Germans moved the capital to Dar es Salaam, (Fabian, 2007). After this move the importance of Bagamoyo as a center of trade and the main entry point towards the interior of Africa declined and at last stopped. This led to the deterioration of the town in terms of activities as well as prosperity of the population, since the people who were a little bit well off moved to Dar es Salaam and other parts of Tanzania where trade had flourished. This impact of the decline still affects the situation of Bagamoyo up to date.

Bagamoyo was the link between commercial routes along the Indian Ocean and also the caravan trade routes (Lindstrom, 2019) from the interior of Africa which were normally on foot, as shown in Figure 2. The town also served as a meeting area for people of different origins, i.e. the Africans, Arabs, Indians and later on the Europeans (Mosha & Plevoets, 2020). This mix up of people resulted to a mixture of building styles. This is an important piece of heritage to keep but the buildings are unfortunately disappearing one by one or are ending up in ruins due to lack of maintenance and care.

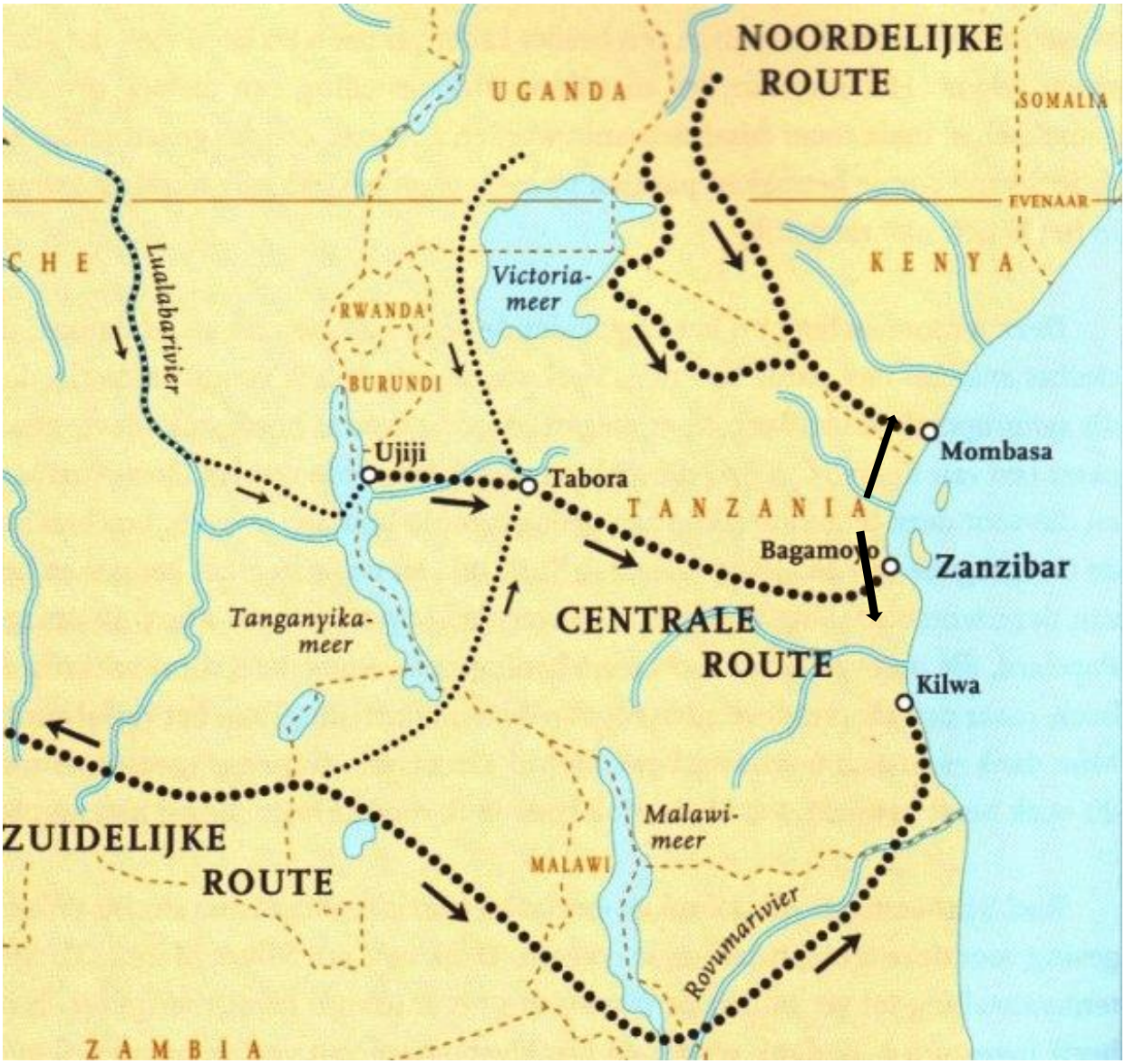


Fig 2: Main trading routes including a 1,200 km route from Lake Tanganyika to Bagamoyo and Zanzibar

Despite the different events that took place in Bagamoyo, with their different layers and actors, Bagamoyo, especially Stone town, is almost abandoned with historical buildings left to decay. “It will be too late for many buildings unless emergency repair is undertaken soon”. (Makamba & Malisius)

1.2 Timeline of Bagamoyo

Figure 3 below is a timeline showing the important historical events from the late 15th century to early 21st Century in Bagamoyo and Tanganyika. These events include the founding, rise and decline of Kaole town, now a ruin, located about 6 kilometers south of Stone town as an important trading center (Lindstrom, 2019; Fr. Johannes 2011). The current Bagamoyo town was founded in the 18th century with its prosperity peaking due to trade activities at around 150 years ago before declining in the post-colonial era (i.e. after Tanzania attaining independence in 1961).

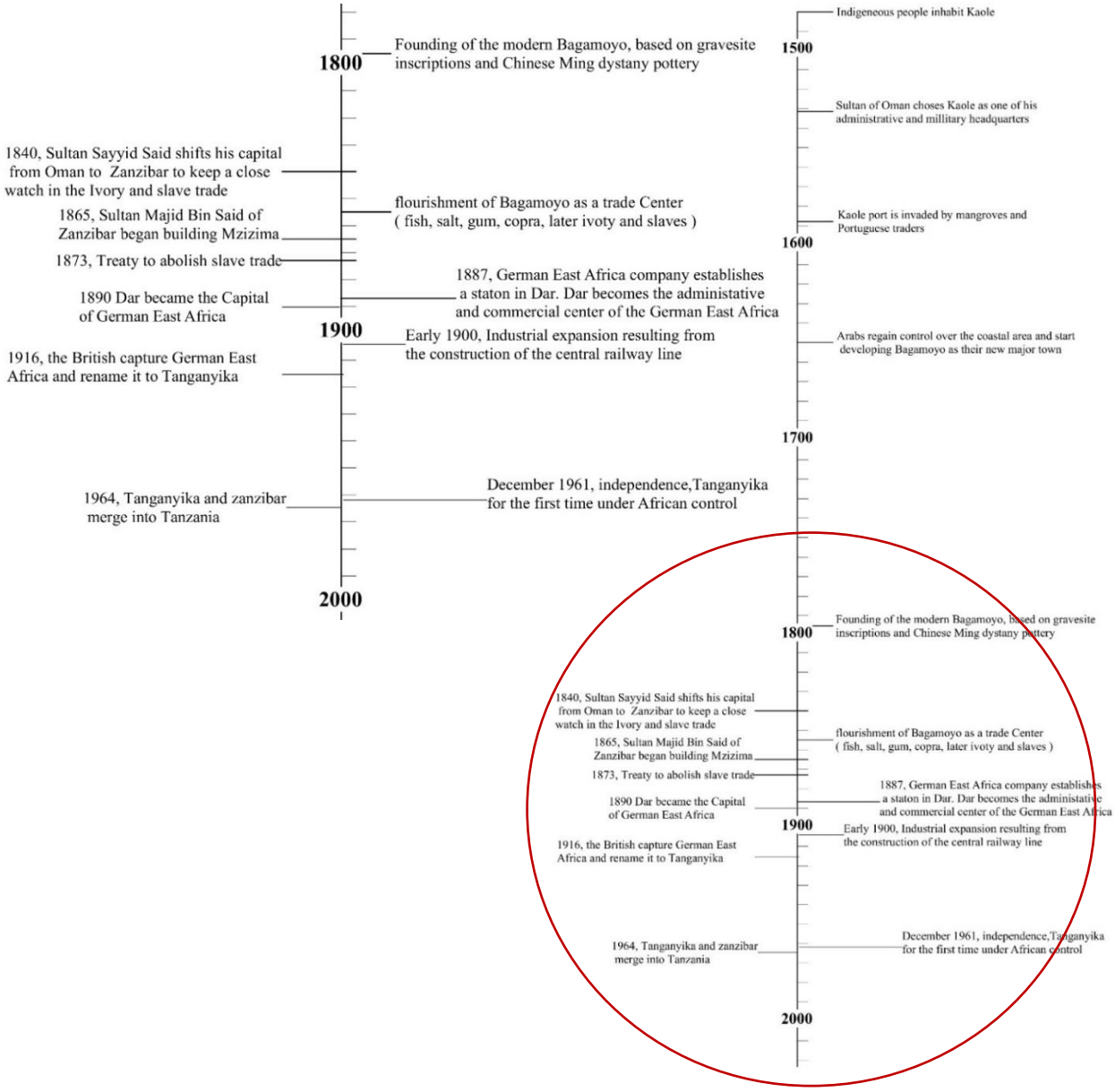


Fig 3: Timeline of Bagamoyo from 15th century to 21st century

1.3 Stone town, Bagamoyo

Stone town is the name given to the historical part of Bagamoyo (the old Center of Bagamoyo) developed before and during the colonial times by the natives, the Indians, the Arabs, the Germans and the British. This zone of Bagamoyo town has witnessed different cultures that lived and traded in Bagamoyo. In this zone, both the roads and buildings carry the historical image, and it is the site of focus for this research.

Figure 4 shows the historical buildings on the famous India Street (on which most Indians are believed to have lived) also named Kaiser Strasse during the German times and King's road during the British time currently known as Ocean Road, according to Fr. Johannes (2015). India street, was the center of the old Bagamoyo. He mentions that there were 20 buildings in the old masterplan of 1992, but in 1999 as he was walking down the road, he saw only 14 of them. Now, in 2020 there are even less buildings. Most of the buildings were abandoned, some have become ruins and others cannot even be traced at all. This is a wakeup call now, although coming late, that something has to be done to save what is left of this place.

Fig 4: Master plan of stone town showing the India street and Historical buildings

1.4 The Old Boma building

The Old Boma is an Old building (currently a consolidated ruin) in Bagamoyo district, constructed between 1895 and 1897 by the Germans (at that time, Tanganyika was under German colonial rule). The building was built to serve as the administrative headquarters for the German East African Society (DOAG), with the Governor's residence and offices. The building is said to have had: a meeting hall, six (6) offices, two (2) safes, a kitchen, six (6) store rooms, two (2) residential rooms and a toilet on the ground floor; 10 rooms, for assorted uses, a hall and two (2) toilets in the first floor; two water tanks under roofed parts on each wing of the building, two (2) towers for communication and the Wissman monument in front of the building, towards the public garden which was erected in commemoration of the German soldiers who died during the Abushiri war when the locals revolted against the Germans' invasion of Bagamoyo (Lucian, 2010). A public garden extended from the Boma to the Beach (200m) with a pavilion, sports grounds and flower arrangements, a band stand which was built in 1915 was in the west of the Boma, a baraza; covered meeting place, was built near to the Arab tea house and it was built in 1915/16 (Fr. Johannes, 2015).

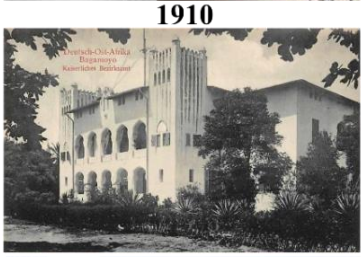
The Boma was used as the administrative headquarters from 1897 to 1918. After First World War (WWI) the building was taken over by the British and continued to serve the same function as before. The British demolished the Wissman monument in 1946. Fr. Johannes (2015) also mentions that the British replaced the roof and roof over layers with a flat roof. Rhodes (2014) adds that it is during the British time as well when two smaller exterior, two storey wings and a staircase were added, resulting to the building losing its symmetry. After Tanganyika gained independence, in 1962, the building became the District Commissioner's office and residence until 1998 when part of the building's roof and balcony collapsed due to the heavy El - Nino rains. As the building has not been occupied since then, this might be one of the factors that heightened its decay. "No major restoration has been done in the building except for minor measures to stop the building from falling", wrote Mtobesya, 2008. Figure 5 shows the current state of the Old Boma building.

Fig 5: Recent pictures of the old Boma building

1.5 The Old Boma Building Timeline

Figure 6, is a summary of the timeline of the Old Boma building, showing different changes that it has undergone, from construction to the current time.

1910



1964

2000

2005 - 2008

2018

GERMAN COLONIAL RULE

BRITISH COLONIAL RULE

POST INDEPENDENCE

1894	Official opening of the Wissman monument (To honour their captain at the time, Hermann Von Wissman)
1895 - 1897	Construction of the Old Boma building
1897 - 1918	Governor's Office and Residence (German East African Society)
1919 - 1961	Governor's Office and Residence (**BOMA**, British Oversees Management Authority)
1946	The Wissman monument demolished
	The pitched roof was transformed to a flat roof
	Added two smaller exterior two storey wings and a staircase
1962 - 1998	Office and Residence of the Bagamoyo District Commissioner
1993	Building was still in a functional state (ref to Fr. Henschel)
1995	Old Boma recognised as an Historical building
1998	Collapse of the roof and balcony due to the El Nino rains in East Africa
1998 - 2007	Building not occupied hence this fastened the decay
2006	Bagamoyo recognised a tentative World Heritage List site
2008	Restoration works on the Old Boma started
2020	Old Boma still standing, but, just a consolidated ruin with no function

Fig 6: Old Boma building timeline

1.6 Why did Bagamoyo decline?

The aim of this part of the write up is to establish the reason behind the current situation of Bagamoyo, why did it crumble, and what can be done to reinvigorate its importance and prosperity of the society. Some of the possible reasons generated from the study include the following:

1.6.1 The effect of colonial planning

In the book DAR ES SALAAM, by Seifert (2017) we read that the first planning of the Tanzanian land was done by the European colonialists, in this case the Germans. They divided the areas into three main zones with different architectural and spatial qualities. The zones were namely European, Asian and African zones as shown in Figure 7. The Asians were not wealthy enough to build in the European zone, and the Africans as well could not build in either the Asian or European zones. The same trend of planning is seen in most coastal towns with examples on Figure 8 like Bagamoyo, Tanga and Kilwa as documented by Rhodes (2014). This categorization of spaces might have been a reason why even after independence these sea front areas of the town of Bagamoyo, which were initially demarcated mostly for the Europeans, were not seen as valuable/ worthy parts of town by the natives and hence a decline.

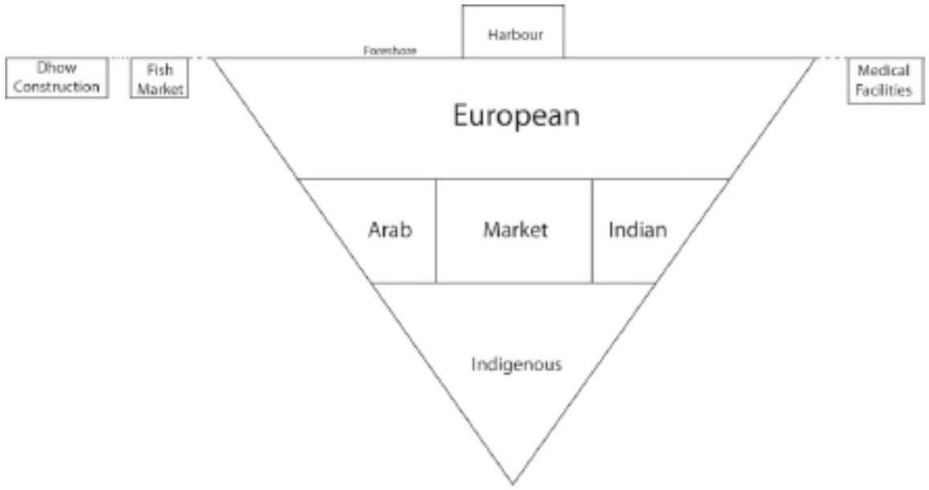


Fig 7: Sketch showing the layout of colonial planning with respect to the ocean location

Fig 8: Master plans of Dar es salaam, Bagamoyo and Tanga respectively

1.6.2 Introduction of railway lines

The main reason as to why Bagamoyo flourished was trade in both slaves and the Caravan trade. Due to the lack of infrastructure, travelers walked from Bagamoyo to the interior. But, in 1905 the construction of the central railway from Dar es salaam to Kigoma was started by the Germans and was completed by 1914 (Seifert, 2017). This new means of transport, therefore, replaced the use of feet as the only form of mobility coupled with growth of Dar es Salaam which is said to have had better port facilities and a deeper harbour (Fabian, 2007). As such, different parts of the interior could be accessed without starting or ending the journey from Bagamoyo.

1.6.3 Decline of the caravan trade

Following the introduction of railways, trains started to transport the people and their goods, reducing the need for people to travel in groups carrying goods over long distances. In a way this caused unemployment and loss of income to those who were relying on trade related activities. Groups of the affected people may include but are not limited to the porters, slave owners, farmers who ensured availability of food during the peak trade seasons and inn owners. Caravan Serai is a good example of a famous guest inn in Bagamoyo. (Chami, 2004)

One may also ask, Bagamoyo was once rich and had a lot of farms and plantations: what happened to these? There was a belief around Bagamoyo that the natives related the plantations and farm works to slavery and colonialism, (Lindstrom 2019:23). This explains why after independence these economic activities were not continued. Instead, many of the natives, especially the youth preferred to go to Dar es Salaam and other cities to get alternative jobs. But due to the high level of illiteracy in Bagamoyo, they only manage to get ordinary jobs that do not require a lot of expertise like shop keeping, hawking, cleaning, just to mention a few.

From this assessment, it is most likely that in order to make the people of Bagamoyo feel welcome and at home with the new product of design that will in the end of the research be proposed, the design should be something that is suited for them, not linked to the history of colonialism. Although the site in focus is along the India street, it should be an authentic product of the African way of life. The interventions should be affordable and construction techniques should be simple for the natives to perform.

1.6.4 Differences in the perception and meaning of development

Many chapters of this research show the efforts of defining Stone town Bagamoyo as a valuable place due to the layers of history that it possesses. This is also the definition held by the stakeholders and pioneers of conservation. Sadly, this is not the case for some of the inhabitants of Bagamoyo. Lindstrom, 2019 speaks of a report from one of the participants of the 2000 workshop who reported that, some of the inhabitants of Bagamoyo left their buildings to collapse although they had the economic resources to maintain them. Lindstrom, 2019 also quotes Mturi 2000:14, that, “To many owners the significance of the buildings is that they occupy a commercially valuable plot and the buildings themselves are a desirable object in terms of the coral stones. Therefore, the collapse of the buildings is a desirable object so that they release the site and building materials”. The Lund survey of 1969 also mentions that most of the inhabitants of the buildings in Stone town are either tenants, or relatives who inherited the buildings, this can explain their attitude towards the buildings.

1.7 Problem statement

Bagamoyo is a small historic coastal town/ village in Tanzania. It is located at about 75kms North of Dar es Salaam. The town is important because of its tangible and intangible historical heritage as shown many times in this study. The town is also of great touristic potential as concluded by many scholars. With Dar es Salaam being one of the fastest growing cities in the world, it is an acceptable assumption that the population of Bagamoyo will also grow fast with potential negative effects on its architecture, urban layout, and historical status.

Therefore, this research is aimed at determining the architectural strategies by which the slumbering village of Bagamoyo can be revamped so as to accommodate the new population increase but at the same time maintain its many layers of historical heritage, having the best interests of the local community and preserving the environment. The main focus being the Old Boma and its surroundings.

1.8 Research question

The general research question can be phrased as, “What architectural strategies can be used to conserve historical heritage and improve the wellbeing of the natives, with minimum impacts to the environment.”

CHAPTER 2: LITERATURE REVIEW

2.1 THE BOMA

As defined by Rhodes (2014), the Boma was the 19th Century European managerial centre from which commercial, legislative and political activities of the towns and wider districts were organized. The name Boma came to use during the British time, where it was actually the abbreviation for British Oversees Management Authority (BOMA) (Kigadye,2012). Coincidentally, the nature of these buildings (the BOMAs) had the same meaning to the Swahili word Boma, which means a fortified living building, thus even after independence these names still make sense.

2.1.1 Architecture

Reflection on the history of Tanzania, the Oman Arabs arrived on the Tanzanian coast before the arrival of the European explores. This was mainly because of the trading activities that took place in the coastal towns. The Sultan of Oman shifted his capital from Oman to Zanzibar in 1840 and started construction projects in Dar es Salaam in the late 1860's (Seifert, 2017). They built several buildings which are said to be of the Oman/ Islamic architecture. They were characterized by plain, white, high walls, flat roofs and small windows and crenellated parapets surrounding the rooflines. When not used for military purposes, the crenellation served as decorative elements. Elaborately carved wooden doors counterbalanced the simplicity of the facades. It is said that the door carvings depicted flowers and other organic motives rather than living creatures (Fr. Johannes, 2015). The buildings were constructed of coral stone blocks and lime mortar. Mangrove poles were used for the structure of the upper floors. Mangrove trees grew up to a maximum height of 3 metres, therefore the rooms inside these buildings were normally long and narrow.

When the Germans arrived to Tanzania, they adopted this same culture of construction being driven by the climate of the region, availability of the construction materials and also the construction skills of the locals at that particular time. They also bought some buildings from the Arabs and used them as they were (Rhodes, 2014)

In their construction projects, the Germans replaced the use of Mangrove poles with I – Beams for structural support of the slabs and, unlike the Arabs buildings, the German buildings had covered balconies and verandahs which provided not only sheltered outdoor spaces linked to the buildings but also complemented the thick walls of the building in keeping the buildings cooler. (Seifert, 2017). In other words, this construction was an evolution of the Oman construction for the better.

This mix of the architectural styles is one of the fascinating things about most of the buildings constructed by the Germans, including the Bomas.

2.1.2 BOMA as a building typology

The one factor that grouped the Boma buildings together is their use, meaning that they were all the headquarters of the colonial administration, but they were of different shapes and sizes, as mentioned above, this is mainly due to the way they were acquired and their location within the country. But, from the perspective of this study, it was realized the buildings that were constructed during the German colonial time have similar characteristics, not only limited to the Boma's, but also the hospitals, other government offices and post offices. As Seifert (2017) also mentions, the German building designs were climate conscious. Figures 9 through 11 show some of the Bomas and other German buildings in some of the regions of Tanzania.

OLD BOMA, TANGA

OLD BOMA, ARUSHA

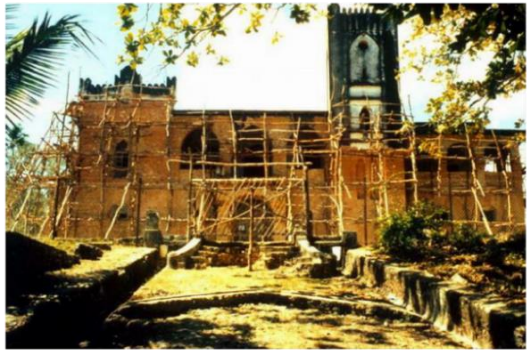
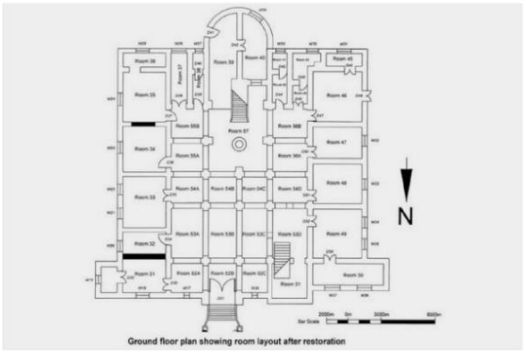
Fig 9: Old Boma Tanga and Arusha




OLD BOMA MIKINDANI

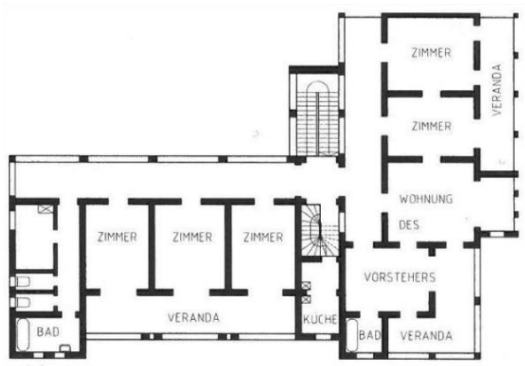
PICTURES BEFORE, DURING AND AFTER RESTORATION

CURRENTLY, **THE OLD BOMA HOTEL**

Ground floor plan showing room layout after restoration

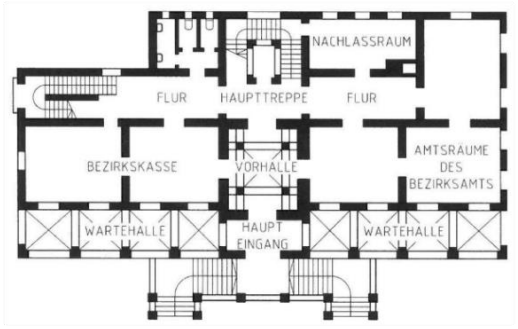
Fig 10: Old Boma Mikindani, Mtwara Region



OLD POST OFFICE, DAR ES SALAAM

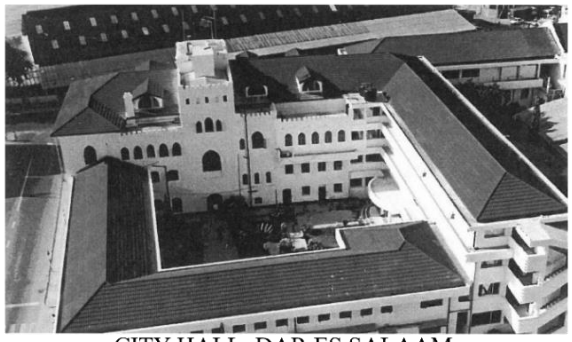
OLD POST OFFICE, DAR ES SALAAM

SCIENTIFIC HEADQUARTERS, DAR ES SALAAM

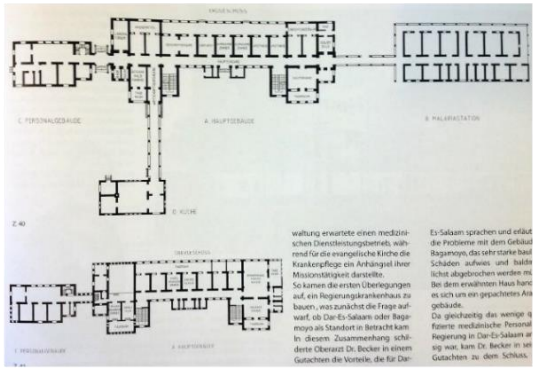


CITY HALL, DAR ES SALAAM

CITY HALL, DAR ES SALAAM



CITY HALL, DAR ES SALAAM



OCEAN ROAD HOSPITAL, DAR ES SALAAM

OCEAN ROAD HOSPITAL, DAR ES SALAAM

OCEAN ROAD HOSPITAL, DAR ES SALAAM

Fig 11: Old German Buildings in Dar es salaam

In Summary, the German era buildings, including the old Boma in Bagamoyo, are characterized by:

- Pitched roofs with deep eaves
- Building ventilation via cross and stack ventilation schemes
- Balconies and verandas
- Central courtyards (for some)
- Communication towers
- I-beams in place for mangrove poles

Some of the similar characteristics between Oman and German buildings include:

- Thin circulation corridors
- Plain white facades with high ceilings
- Construction materials being coral stone and limestone mortar and plaster
- Building opening up to a backyard/ courtyard
- Decorative arches
- Ornamented/ curved doors and windows
- Small openings

2.2 Previous proposals on the Bagamoyo Old Boma building

The topic of reuse of the Old boma building for a new function has been of concern for some time, most likely since the start of the debate of putting up the Stone town area of Bagamoyo in the World Heritage List. Below are some of the proposals that were suggested; However, none of them was realized.

i. Mtobesya (2008) proposed

"Introduce multiple use of space and such could be: On the lower floor one wing create a cultural centre. Centre upstairs could be a conference room. Craft shop downstairs on the centre part. Communication room for Internet services and telephone. Soft drinks and bites shop. Office space. The money earned from the use of space could be used to sustain the building." (Mtobesya,2008)

ii. Mtobesya, 2008 also mentioned that the state proposed to reuse the Old Boma as the state Lodge.

iii. Lucian, 2010 proposed:

"After the consolidation in progress, the building can be used as a school to train craftsmen or a commercial centre (tourist hotel, museum or shops to small scale traders of arts and crafts)."

iv. Olivier Eurlings (Hasselt University 2017/18)

Proposed the building to be used as an urban event center, meet up or chilling space. With offices, tourist information center, garden rooms, conference spaces, exposition, storage and sanitary facilities. He also suggested to add structures around the periphery of the site. (Eurlings, 2018)

v. From the book muted memories, by Lindstrom (2019), it is written that UNESCO consultants suggested that the Old Boma could be converted into a hotel with International Standards, with its architectural qualities preserved. On another occasion in the same book, a proposal given with input from the UNESCO consultants was to develop the building into a Centre for Stone Town conservation skills and crafts.

2.3 Concept of protection of buildings in Bagamoyo (Lindstrom, 2019)

The concept of Heritage in Bagamoyo has undergone a great shift. The interest has moved from only having small objects as important heritage elements to regarding the whole of Stone town as a potential conservation site in 1970's -1980's. Followed by the process of trying to define the importance of Bagamoyo in the heritage making process, which as a negative side tends to uplift some qualities of an area and turn a blind eye to the other. Therefore, making it difficult to decide what side of the history of Bagamoyo should be kept and what side should be ignored and forgotten.

2.3.1 Colonial efforts of heritage making

"The British colonial power, in 1937, instituted its Preservation Ordinance and in 1957 established its antiquities Division. The fundamental principle of the policy of conservation at that time was 'to make good the structures as they stand, new work being added only where it is structurally necessary for the safety of the building, or where the greater part of the original materials are to be found in the vicinity and the original aspect of the parts to be reconstructed is to all intents and purposes certain as cited in Russell 1980:16" (Lindstrom 2019:16).

The concept of protection of heritage and related elements in Bagamoyo started as early as the 1940's. Here the main focus was on smaller elements, the unique windows and doors, and door frames of the Arab and Zanzibari style curved before 1940. Fr. Johannes (2015) elaborates six symbols are found on Arabian doors including dates, fish, roots of the date tree, lotus flower, frank-scents, and the sun. These doors were a unique characteristic of all the Swahili coastal towns. The interest was not based on the style of the door curving, the message that the doors portrayed, the material used or any other strong reason. But they were to be preserved because they were a unique characteristic of the East African Swahili coast, the appearance and the workmanship skills behind them. The names of these doors also show a great linkage of areas where they possibly originated from like Oman, Gujarat or Zanzibar (Indo-Persian styles).

2.3.2 Post-Independence efforts of heritage making

2.3.2.1 The Antiquities Act

After the Independence, the British Preservation Ordinance was still in use by the country. But in 1964, it was amended and renamed the Antiquities Act. "The antiquities act extended the conservation concept from the Preservation Ordinance's focus on specific items like monuments and relics created before 1863 and protected objects like carved wooden doors and frames created before 1940 to now also include 'conservation areas'" (Lindstrom, 2019).

2.3.2.2 Tanzanian Swedish Survey of 1969

One of the first attempts of measurements and documentation of Bagamoyo was the joint Tanzanian Swedish project which involved professionals from Tanzania and Sweden. This survey pictured Bagamoyo as a poor town without water or electricity and also without any sign of the possibility of development or modernization that could be seen. The survey mentioned that almost all the inhabitants had a small garden for subsistence farming. But of course, this is different from what the prosperous Bagamoyo used to be, with many large plantations. The report also stated that there was no tourism in Bagamoyo, despite the presence of the beautiful buildings and beaches. The buildings are not spoken of in detail, but most probably it refers to the old stone buildings. An idea was given that maybe it will be wise to introduce spaces for parking, latrines, wash places, food selling facilities and maybe later on a hotel. This idea painted the picture that Bagamoyo was a potential tourist attraction site. In 1972, at a request from the government of the United Republic of Tanzania (URT), some important buildings were selected as being of importance in the history of Bagamoyo and the list comprised of the fort, Caravan road, the Block house, the Mwanamakuka cemetery, the old stone town (India street, Customs street and fruit market street) and finally the Catholic mission. (Lunds university, 1969)

2.3.2.3 Tanzanian and UNESCO work to identify buildings for preservation (including the 1983 and 2002 conferences in Bagamoyo)

In 1979, the Tanzanian Government requested UNESCO to identify and estimate the need for the conservation of Bagamoyo (Lindstrom, 2019). The UNESCO consultant, T. N. Watson, replied describing Bagamoyo as 'the beautiful sandy bay with its historical past, its easy way of life, traditional dancing and singing'. With all that had been going on in Tanzania during that time, tourism was seen as the only promising sector in Bagamoyo except that there was no available overnight accommodation. It was on this report where UNESCO proposed to convert the old Boma building into a hotel, with international standards for 172 guests (Lindstrom 2019:27).

This work between UNESCO and the URT resulted into two conferences in 1983 and 2002 which involved the search of new partners who could be mobilized to spearhead the conservation of Bagamoyo.

The 1983 conference resulted into the identification of mainly technical and financial problems in the conservation works, i.e. there were no people with skills for stone house construction and maintenance. There was also a lack of money. It was also in 1983 when the Antiquities act of 1964 was amended, not only to focus on specific objects, buildings or monuments but also to embark on conservation areas or the built and settled environment.

In the early 2000's the interest again shifted to Bagamoyo as a slave port in association with the other towns involved in the East and Central African caravan trading routes and how heritage making could be applied as a mechanism of expanding the tourism sector and also contribute to poverty eradication to the people of Bagamoyo.

In 2002, another international conference was conducted in Bagamoyo with the main aim of evaluating the options of Bagamoyo to be inscribed in the World Heritage List (WHL). The conference tried answering two questions, what should be identified as of Outstanding Universal Value (OUV) in Bagamoyo, and why? These questions gave rise to other two, who shall be empowered and how shall this be done? (Lindstrom 2019:47). The conference was concluded by both answers: "Why Bagamoyo? Because of its assumed role

in the slave trade. And which OUV? The memory of slave trade, so that people from the Americas and West Indies can come and trace their backgrounds" Lindstrom,2019: 57

This debate and its conclusion are a way of directing the research, and the justification that the research and the projects are respectively something that is required for Bagamoyo.

On 20th February 2006, Bagamoyo was put in the Tentative List by the Tanzanian's government, but more than fifteen years later it has not yet been nominated for the WHL (Lindstrom, 2019)

2.4 The future of Bagamoyo

Although Bagamoyo has not been nominated for the World Heritage List up to date, as a result of not being an important part of the slave trading routes as it was said to be; it is unquestionable that it is a location of great historical importance not only for Tanzania, but also the entire Swahili coast. Lindstrom, 2019 quotes (Fabian,2013) to show that some researchers stood up to prove that the reason for the nomination was wrong, but Bagamoyo is still important for its place in the caravan trade and the Indian ocean trade as well. Bagamoyo might still have a chance in the future. While waiting for this future to arrive, it is a wise decision to protect and conserve the buildings that are still standing.

CHAPTER 3: METHODOLOGY

This chapter outlines the research design, research strategy, case study selection and elaboration, data collection methods and techniques used during the research process.

3.1 RESEARCH DESIGN

The research began with literature review to allow learning from historical buildings that have been adapted for other uses, in an almost similar context as case studies, to identify the approaches followed during the interventions of the buildings in preparation to accommodate new uses. With this, background comparative data was collected and analyzed. The results enhanced making proposals on how the Old Boma building, the botanical garden and Stone town at large can be approached.

The research has been conducted mainly through literature review and case studies. There after, it was interpreted through design. Other tools such as maps and photographic analysis were also employed.

3.2 RESEARCH STRATEGY

Case study strategy approach was employed in the research because of the nature of the topic of adaptive reuse which is exploratory, i.e. Learning from already executed projects, questioning how the adaptive reuse process has been executed and weighing out the strengths and weaknesses of the approaches applied.

3.3 CASE STUDIES

The selected cases for the study are the Old Boma Dar es Salaam, Old Boma in Mikindani (in Mtwara Region) and Firefly lodge in Bagamoyo. Whereas the Boma buildings were selected not only because they are Historical but they are also listed buildings, the Firefly lodge, although not listed, is a very recognized old building in Bagamoyo and its transformation and reuse appreciated by many.

3.3.1 Old Boma Dar es salaam

This is one of the oldest buildings in Dar es Salaam. It is located along the Dar es Salaam water front as seen on Figure 12. It was built in 1866-67 as a house for the guests of Sultan Majid bin Said. The building has had various ownerships from the Sultan, Germans, British, United Republic of Tanzania (URT) and now serves as an office building for the Dar es Salaam Center for Architectural Heritage (DARCH) and Architects Association of Tanzania (AAT). The building also houses the DAR ES SALAAM permanent exhibition which was mainly created to inform the general public more on the importance of Historical buildings and heritage, a rental space for temporary exhibitions, a curio shop and a terrace restaurant.

Fig 12: Map showing old Boma location

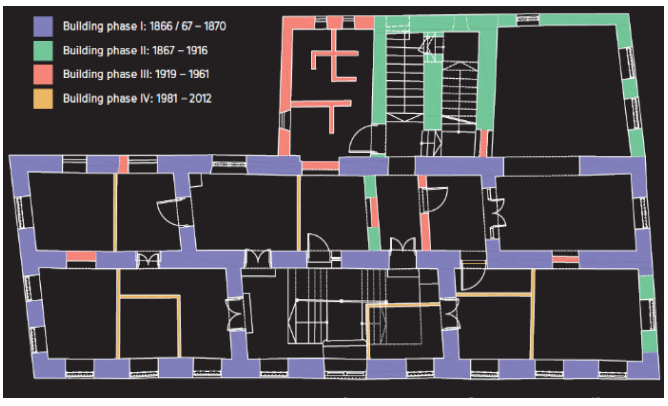


Fig 13: Old Boma construction phases

In the restoration process, all the additions that had been made to the building during the course of its life and were not part of the original structural construction, like aluminium and glass partition panels, were removed (referring to Figure 13, floor plan top right, elements from phase IV). A geo technical survey was conducted so as to detect the materials used in construction and used exactly the same materials during the restoration process. The project was a joint venture between Ardhi University, TU Berlin, and the Goethe Institute, being funded by UNESCO. The work required a lot of external supervision. Figures 14 to 17 show the old Boma Dar es Salaam before, during and after the renovation process. (Seifert, 2017)

Fig 14: Old Boma before restoration

Fig 15: Old Boma during restoration

Fig 16: Old Boma exhibition space

Fig 17: The Old Boma, view from the road side

3.3.2 Old Boma, Mikindani, Tanzania

The Old Boma building in Mikindani, Mtwara Region, was constructed in 1895. It was a German fort and the headquarters for the Southern zone. It also remained an important administrative post under the British protectorate until 1947 when development moved to nearby Mtwara. In 1996, the building was in a state of despair as its surrounding environment was. From 1997 - 2001 the building was restored and is now a nine-room hotel and an education/training centre for English, core skills and specialist hospitality training for youth from the local community of Mikindani. (Kigadye, 2012)

The building was originally constructed using coral stones and lime plaster. During the restoration, traditional construction techniques were used. Furthermore, most of the labour force was offered by the people from around the region. The dilapidated floor slabs were rebuilt, corroded I beams replaced, and both interior and exterior walls re-plastered. Old doors and windows were restored where possible, otherwise new ones were installed. New amenities were added including a swimming pool, an outdoor restaurant and a shaded sitting area and a pool house which put the historical building characteristics into consideration. While Figure 18 is an aerial view showing the location of Old Boma Mikindani, Figures 19 to 24 show its various features from its disrepair state, restoration process and the face lifted status. Kigadye, 2012 also concludes that “The restoration of the Old Boma building has accelerated the rehabilitation of other historic building and hence the town has rejuvenated”

Fig 18: An aerial view of Old Boma Mikindani

Although the building is close to the waterfront, there is no physical linkage between the two premises, maybe it is because of the surrounding environment which is compacted by a mix of other buildings, historical and non-historical. The Hotel organization though still tries to utilize the waterfront by creation of various activities for their guests, such as walking tours and beach trips and events.

Fig 19: The building in state of despair

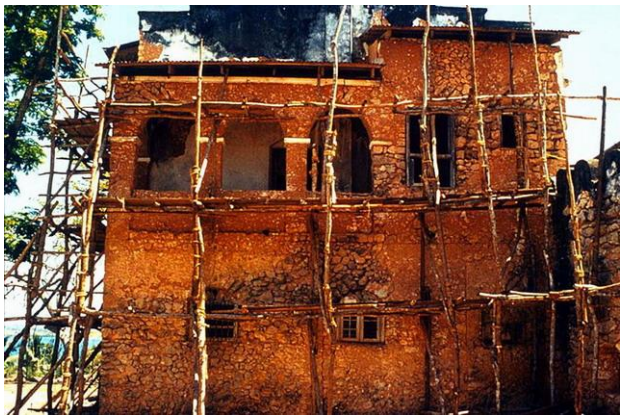


Fig 20: The restoration process

Fig 21: The restoration process

Fig 22: Replacing the I-beams

Fig 23: Interior after the restoration

Fig 24: New pool house, with Boma characteristics

3.3.3: Firefly Lodge, Bagamoyo, Tanzania

The Firefly Lodge is a bed and breakfast facility that is being hosted in an old German house (Abdun palace) in Bagamoyo, on India street, not very far from the Old Boma building. In their official website, (www.fireflybagamoyo.com) they have explained most of the process they went through in the adaptive reuse process of the building; In the renovation, they tried to keep the building as much as the original style and facade as possible. The main tools of the renovation were old recycled materials, presumably obtained from the falling buildings and ruins around it. Together with that, the project is in general eco-friendly involving recycling of wastes from the facility and the neighbours as well, a beach cleaning and education club, local food production in a garden around the facility and a clear selection of materials to use, in the eye of being friendly to the environment. In the same way, the running of the facility tries to give back to the local community around it. The labour work commissioned during the renovation was also from the community. Other facilities apart from the bed and breakfast offered at the Firefly lodge include a camping site, a spa, yoga classes and live music every Friday night. Some pictures of Firefly lodge are shown in Figures 25-30.

Fig 25: Firefly lounge during restoration

Fig 26: 'Swahili bench' outside one of the dom rooms

Fig 27: Firefly camp site

Fig 28: Indoor room treatment

Fig 29: Locally made furniture and recycled objects for decoration

Fig 30: Fresh vegetable garden

3.4 Discussion on the case studies

From the above briefly described cases it can be suggested that restoration of the buildings to their original forms and building materials is not a wrong approach, but allowing few changes to the buildings to make them more functional sounds more appropriate. It is in this light that the late architect Almeida (verbal conversation with author at DARCH, 2007) said that the restoration of the Old Boma building in Dar es Salaam for example, was not sufficient, or appropriate, because there was no other form of vertical movement apart from the stairs. For this reason, therefore, mobility challenged people cannot access the building.

In the above cases, the natives have been commissioned to perform the manual labour, which is good. However, there is one weakness in this in that if these buildings require any more major renovations or maintenance in the future, most likely another more skilled person, from a place further would be needed for the instructions or supervision of the works. If simpler/ more familiar methods of construction were applied, it would be easier for these projects to be performed by the natives and also be handled by them in the future. Therefore, we would advocate for the use of vernacular architecture, which will be easier for most of the native inhabitants to be acquainted to.

With the recent construction movements, pioneering for a greener world as a way to counterbalance the current state of world pollution, it is also advocated to use environmentally friendly means even in adaptive reuse projects, recycling of building elements like doors and windows, or use of other materials that can be given a second life like glass bottles, car tyres and the like. It is, furthermore, suggested to use alternatives to wood and timber such as bamboo and earth.

Another point of view is to enable local people to be connected to a building with historical Heritage, i.e. adding a ‘public element’ to the building. An additional proposal is to enable the buildings to have more than one function, i.e., the major function of the building should exist but other small facilities like shops and restaurants can allow more people to relate with the buildings.

3.5 Bamboo as construction material

During the course of the project research and design, it was decided to base the interventions on vernacular architecture, specifically the use of bamboo and use of thatch for roofing. This reason therefore extended the span of the research towards the characteristics of the bamboo plant and how it can actually be used in construction, in the simplest means possible that can be easy to perform and adapt to.

3.5.1. Description and characteristics

Bamboo is a woody and fast-growing grass which occurs naturally on every major continent, except Europe. See Figure 31. There are almost 1,200 species of bamboo in the world distributed across 110 genera (Bamboo source book).

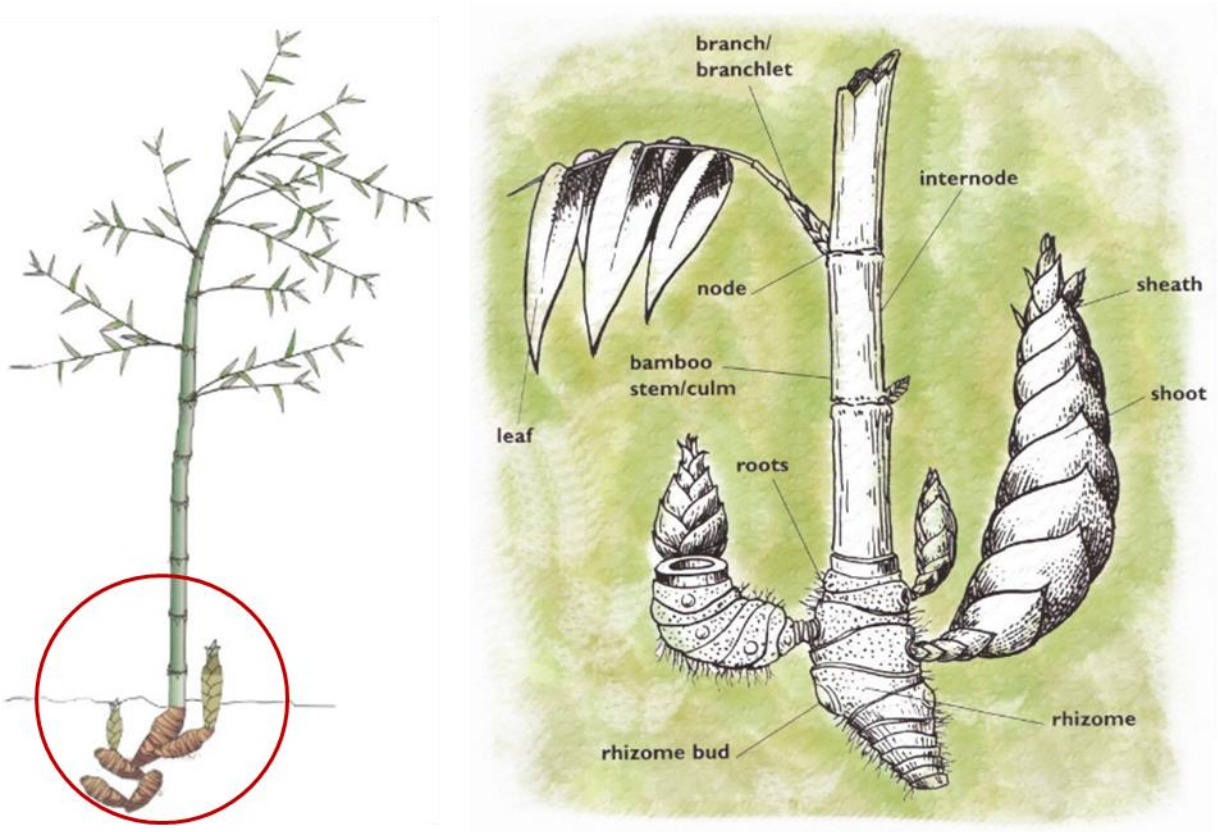


Fig 31: A bamboo plant

Bamboo can grow to up to 35 meters in height and 150mm in diameter. It grows in different forms: tree, reed, shrub and straggler forms (see figure 32 below). It is widely used around the world depending on the different cultures of the people and its versatility in characteristics. Apart from housing and shelter, bamboo has also been used in making furniture, baskets, bicycle parts, bridges, brooms, decorative elements and many other things (Bamboo source book).

Fig 32: From left to right, Tree, Straggler, Reed and Shrub bamboo forms respectively

3.5.2. Characteristics of bamboo for construction (Bamboo source book).

Bamboo is a good construction material due to its different strength characteristics,

- It has twice the compressive strength as that of concrete
- Roughly the same strength to weight ratio of steel
- 1.9 times strength of equivalent solid poles
- Greater shear resistance than structural wood
- It is light weight with high strength hence resistant to winds and earthquake

Despite these wonderful qualities, two things should be put in mind, bamboo poles should not be directly put into the ground because it is prone to fungi and insects, also the moisture from the ground will cause the footings to rot and henceforth reducing the lifespan of the bamboo elements, and finally the building. Bamboo is also very prone to fire accidents; therefore, all precautions should be observed.

3.5.3. Bamboo construction booklet

The main driving force towards the use of vernacular architecture for this research and the respective project is to create a construction scheme that would be simple to learn and follow. This resulted to the proposal of some standard construction details. It is recommended to use a step by step manual to ease the construction process. A step by step instructions manual developed from a bamboo study research conducted by previous Hasselt University students; Bamboo construction manual by Bista et al is a good one. Some information on joints and construction details found in the manual will be will be further applied in the design of this project. Figures 33 and 34 show lashings[1] of the bamboo, which can be used to connect the different bamboo elements. Hand in hand with that, contents of the proposed bamboo construction booklet are summarized in Figure 36 (a – g).

[1] Lashing is defined as a rope used to fasten something tightly to something else (oxfordlearnersdictionaries.com).

A. Square lashing (Bamboo elements are perpendicular to each other)

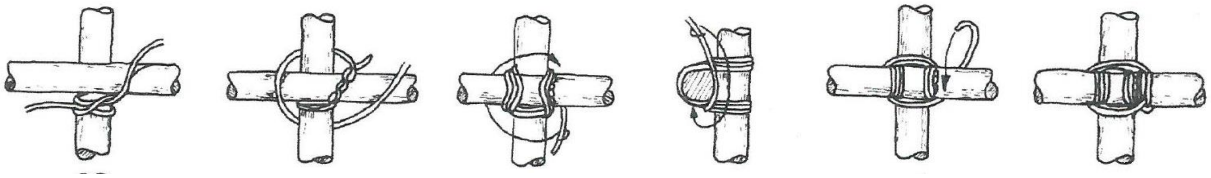


Fig 33: Square lashing

B. Diagonal lashing (The two elements are at angle to each other, like for the roof)

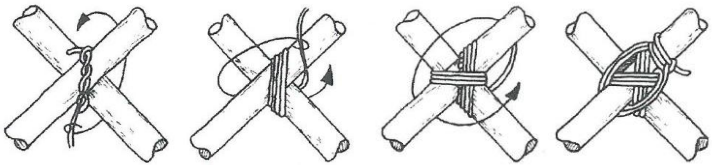


Fig 34: Diagonal lashing

As shown by Espinosa (2010), an alternative to the use of strings of rope lashing would be the drills, screws and bolts, as shown in Figure 33. This project is also advocating for such an alternative because it consumes less time and manual strength while making the joints stronger. Therefore, the joints remain the same, but screws and bolts are used instead. It was these same tools used in the construction of the shed in Figure 37.

Tool list:

- Hand saw
- Hammer
- Hand drill and accessories
- Bamboo splitting knife
- Spanner

Fig 35: Basic bamboo working tools

Figure 37 shows a sequential construction of a bamboo shed and Figure 38 elaborates on the grass roof thatching procedures.

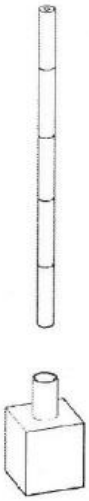
Fig 36.a VERTICAL ELEMENTS		
Concrete footing and hollow steel to receive the bamboo column 	column 	column with footing 

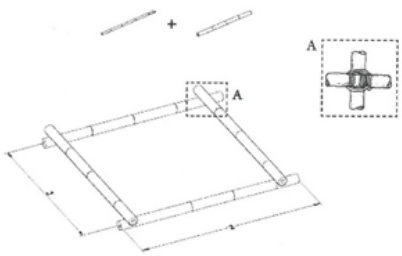
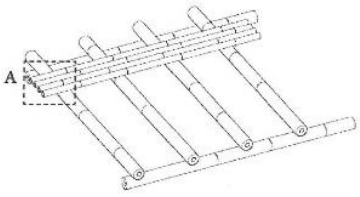
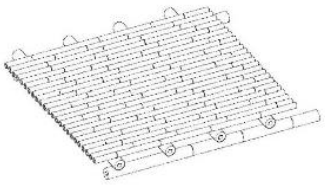
Fig 36.b PLATFORM		
		 This method will be used for the flooring of the cabins, stair steps.

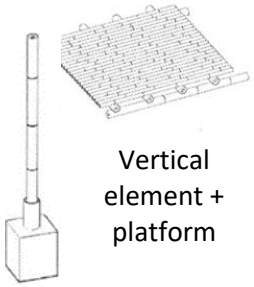
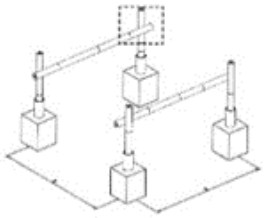
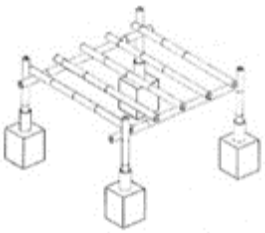
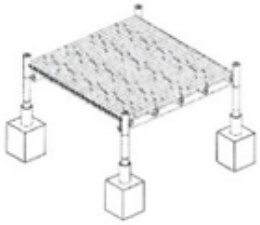
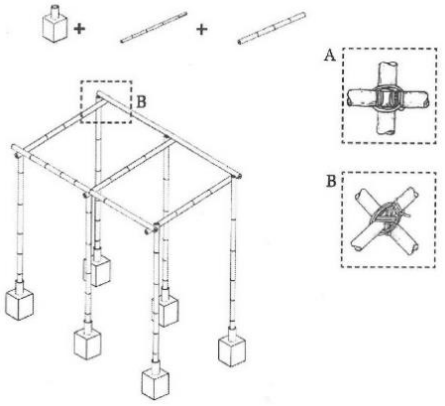
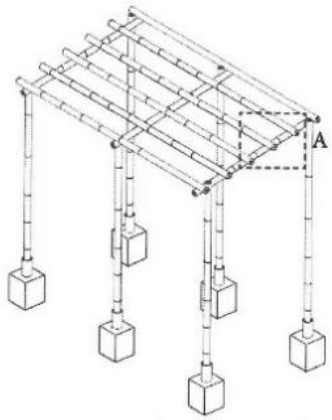
Fig 36.c ELEVATED PLATFROM			
 Vertical element + platform			Methods will be used for the boat dock structure, with concrete footings slightly above water level for water proofing to the bamboo elements 

Fig 36.d PERGOLAS AND CAR PARKING SHED



Author's suggestion to use an almost flat roof, very small angle less than 5 degrees



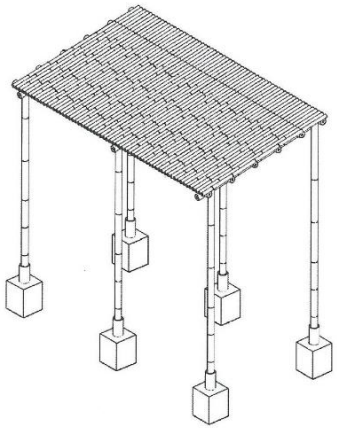
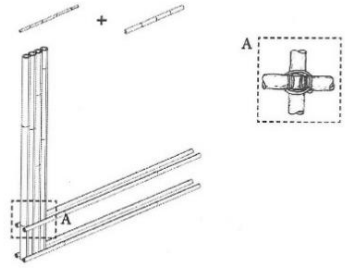
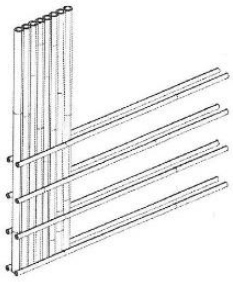


Fig 36.e WALL





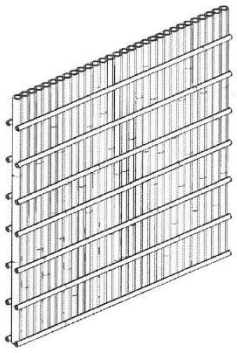
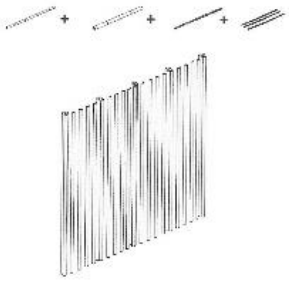
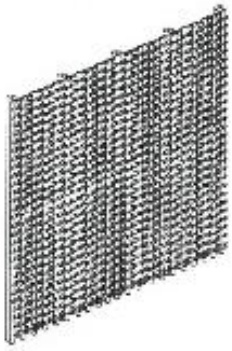
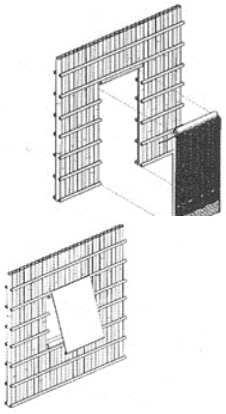


Fig 36.f LIGHT WALL







Methods will be used for doors and windows

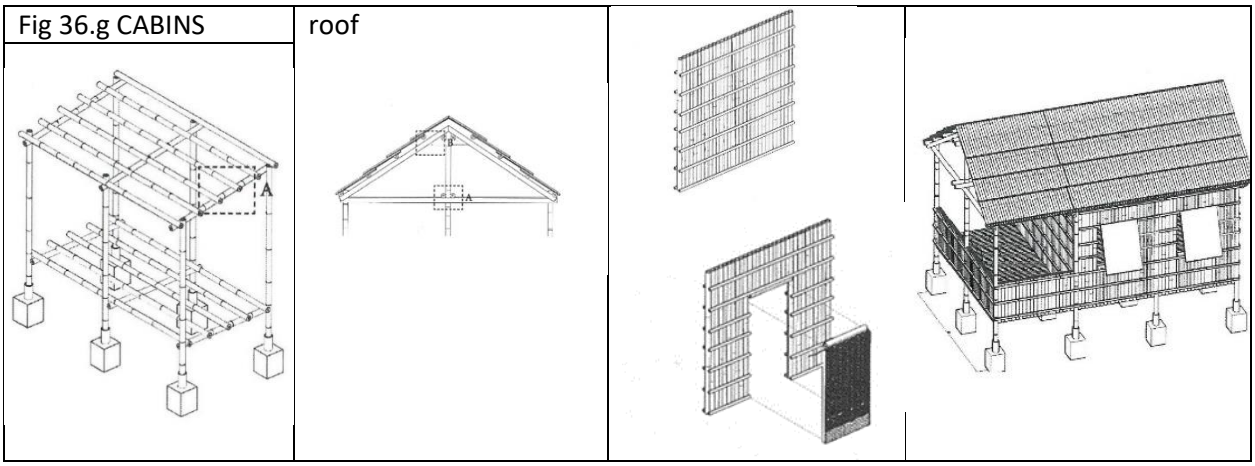


Fig 36: (a – g): Summary of the bamboo construction procedures

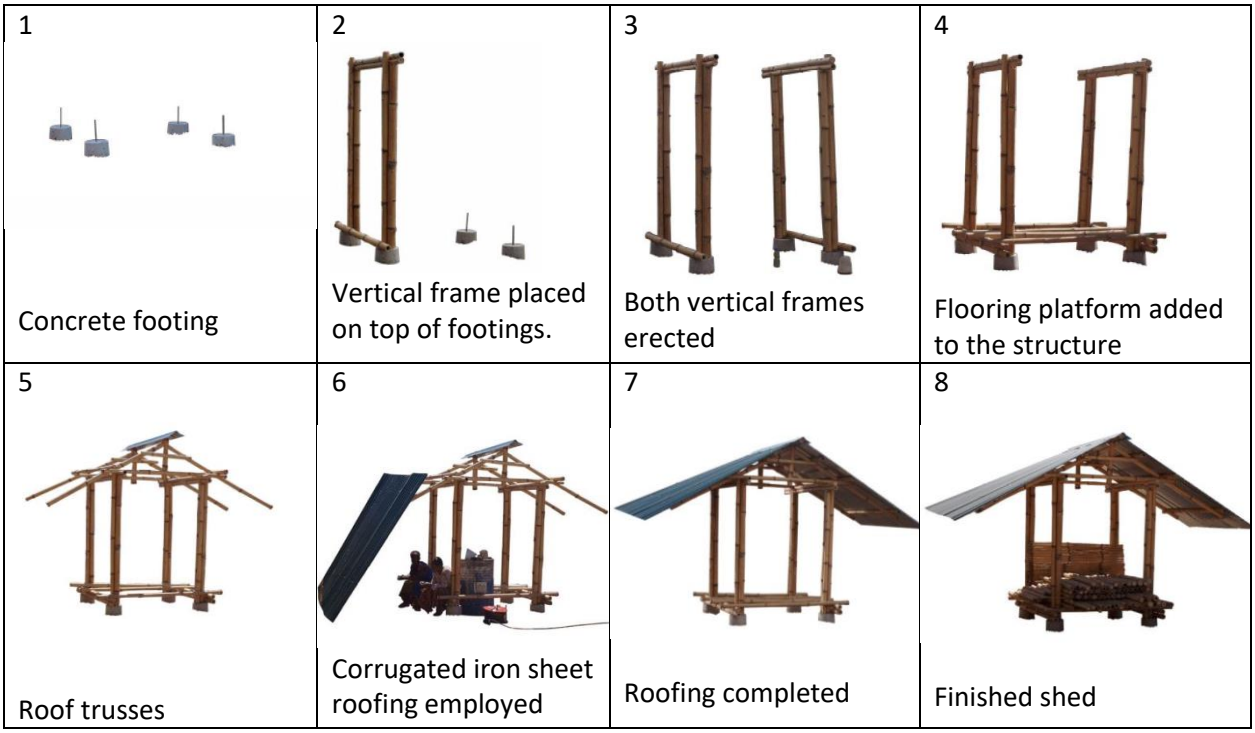


Fig 37: Alternative method of bamboo construction, sequence in construction of a bamboo shed

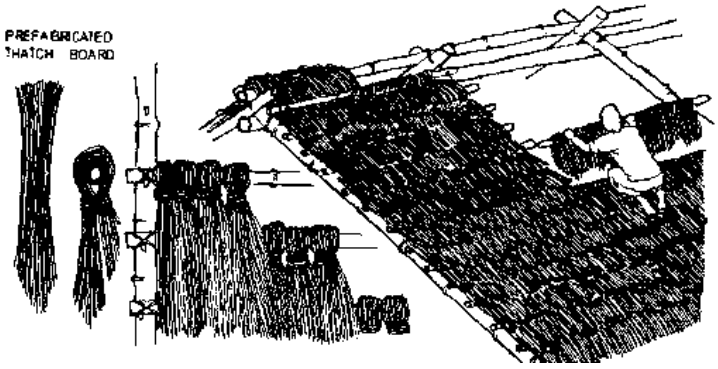


Fig 38: Grass roof thatching

3.6 Bamboo construction in Tanzania

In Tanzania, the extensive use of bamboo as a construction material is of recent a topic of interest, researches are being conducted on how the status of bamboo can be uplifted as a source of construction material and energy for domestic uses. This comes also with the world wide evolution of bamboo and the different things that it can be used for. At the same time, bamboo construction is not something new; Mwakyusa (2000), studied 8 major ethnic groups in Tanzania, which are shown in Table 1.

Table 1: Tanzanian vernacular construction elements

	Ethic group	Housing construction elements
1	Western Tanzania	Poles, sticks, **bamboo**, mud & grass, elephant grass roofing
2	South East Tanzania	Poles, **bamboo**, sticks, soil and grass
3	Southern Highlands	**Bamboo** (extensive), grass and mud
4	Coastal areas	Mud & poles, sticks, soil, palm leaves, grass thatch (common)
5	Central Tanzania	Bush poles, grass and soil
6	Interlacustrine region	Poles, **bamboo**, sticks and grass
7	Nilo-Hamitics	Poles, sticks, grass and soil
8	Kosain & Luo	Mud and grass

Source: Notes from Mwakyusa, 2000 table generated by author

As seen in Table 1, the vernacular construction elements for housing, four of these groups have bamboo as one of their elements. An example of a bamboo housing typology is a Nyakyusa house from the Southern highlands (Figure 39).

Fig 39: A typical Nyakyusa bamboo house

Table 2 shows the current bamboo availability and distribution in Tanzania, and predominant the species.

Table 2: Estimated area of bamboo resources in Tanzania

Species	Northern zone (ha)	East Coast zone (ha)	Southern Highlands zone (ha)	Western zone (ha)	Total (ha.)
Arundinaria alpina	31,750	3,175	28,575	ns*	63,500
Oreobambos buchwaldii	8572.5	2857.5	2857.5	1,191.0	19,050
Oxytenanthera braunii	5334	4445	17,780	1,689	44,450
Bambusa vulgaris	40	480	ns*	280	800
Others	ns*	20 (Nondo)	ns*	4 (Misuni)	24
Total	**45,696.5**	**10977.5**	**49,212.5**	**3,164**	**127,824**

Source: Chihongo, et al 2000

As can be seen from Table 2, in Tanzania most of the bamboo grows in the Northern and Southern highlands zones followed by the East coast zone where Bagamoyo is located. Chihongo, et al, (2000) also mentions the potential for the establishment of bamboo plantations in Tanzania, either in the East Coast Zone or in the Western Zone. The new bamboo program can also be a driving force towards the establishment of the plantations.

3.7 CHALLENGES DURING DATA COLLECTION

- Only one method of data collection was used in this research, literature review, due to the fact that during the course of the study it was not possible to travel between Belgium (where the author was studying) and Tanzania (where the research site is located) to collect other types of data. As such, the study lacked the opportunity to obtain data that could complement information acquired from literature review.
- Lack of reliable system of archives and documentation of materials such as building drawings and photographs in Tanzania made the data collection and analysis process harder.

CHAPTER 4: THE NEW PROGRAM

This chapter elaborates in detail the approach for the project, which is mainly based on information gathered from previous chapters. It explains the approach followed and the interventions that have been done.

4.1 Design concept

The Old Boma building covered by this study is located in the Historical zone of Bagamoyo (Stone town) which is characterized by a good number of historical buildings and a unique atmosphere, a mix of both very vibrant places (the fish market zone) and also 'very sleepy' places. As mentioned in the first chapter, this zone is in the danger of totally being wiped out by the expected future demographical changes and also the lack of attention paid to the Historical buildings. The conceptual approach therefore is in three levels, the Stone town urban level, the Botanical garden level and the Old Boma building level.

4.1.1. The Urban Approach

As expected, the increase of population in Bagamoyo will result to increase of demand for new buildings and facilities such as nursery and other schools, healthcare, meeting spaces and facilities, food businesses and take outs, sports facilities, housing, art and crafts, administrative spaces and offices, shopping and curio centers, visitors' accommodation and many others. Figure 40 shows the existing situation of the India street, historical buildings and the different architectural styles associated with it.

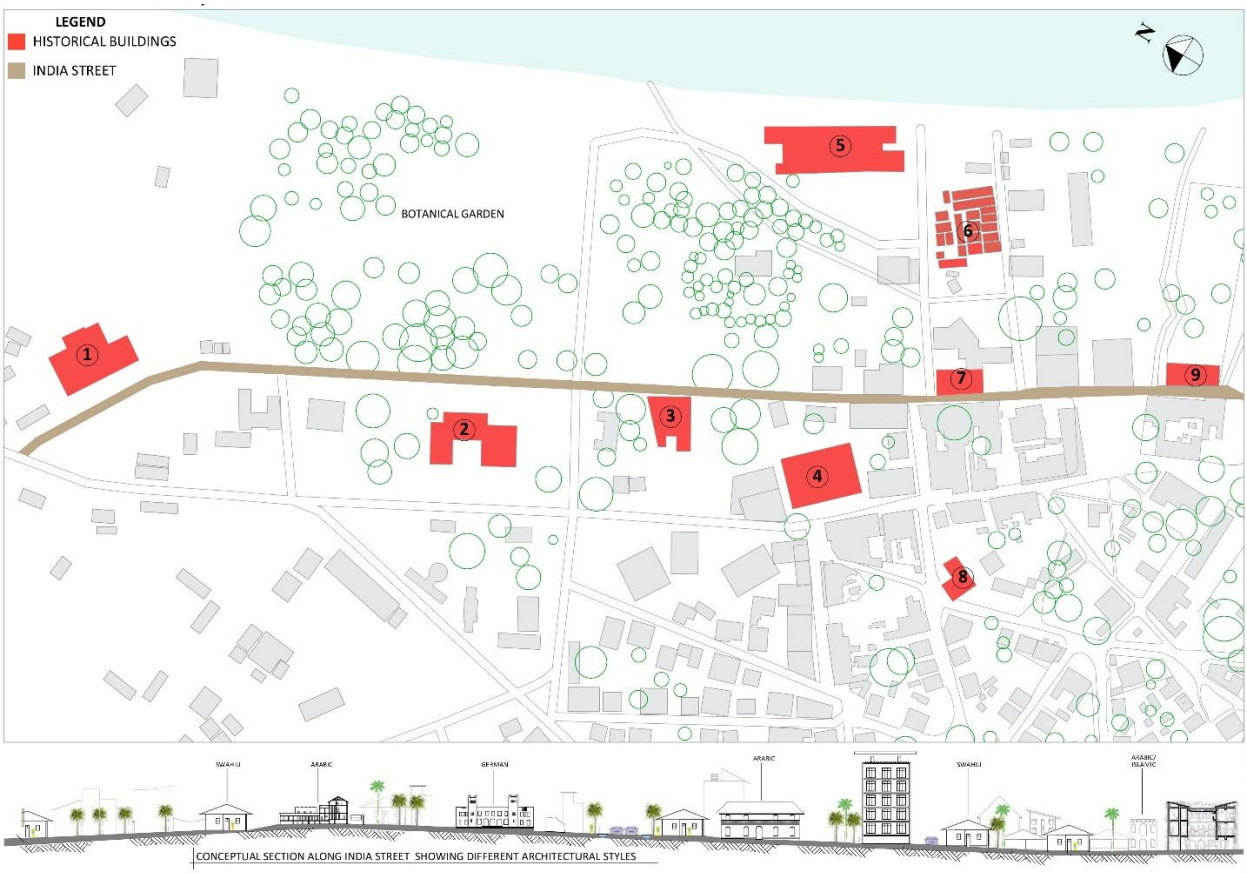


Fig 40: Existing situation of the India street

Recommendations to put into consideration for the Urban approach are: Bringing back the narrow nature of the Indian street, reusing the ruins, linking the old centre of Bagamoyo to the current lively new centre, but all these interventions should put into account the urban fabric of the area, like the mixed architectural styles, shared community courtyards and the current building heights. For this part of the project, the Wencun village in China designed by Wang Shu Lu Wenyu's Amateur Architecture Studio was used as a reference case. The plan is to make sure that the old and the new blend together with one another. Two more proposals are to have new bus stops along India street to facilitate the use of public transport and promote pedestrianization. One of the bus stops would be close to the old Fort and the other close to the fish market. Third proposal is to put up a new boat parking for boats headed to and from Zanzibar, at the old Customs house, which will also be an important part of the functional activities of the Old Boma and the surroundings. Figure 41 shows the scenario of this proposal overlaid with the existing site situation.

Fig 41: Proposal of the India street in the future

4.1.2. The Botanical garden and the Old Boma building

As analyzed by other scholars; (Mtobesya,2008), (Lucian, 2010) and (Eurlings, 2018): this study also proposes to introduce a touristic function to the Old Boma building and its surrounding site. So, the new program will be a hostel building mainly targeting but not limited to locals, backpackers, solo travellers, students and researchers. In order to extend the capacity of the project and the building program at large, the accommodation facilities will extend towards the botanical garden, where camping cabins will be introduced.

At this level of the interventions, due to lack of local skills for undertaking historical stone construction works, it is proposed to use vernacular architecture, focussing on the use bamboo and thatch as the main construction elements. The same material will be applied to both the camping cabins in the botanical garden and also the major new additions in the building. The use of bamboo will be an ecologically friendly approach which will affect a very small area of the site in terms of built up footprint. It will also provide employment opportunities to the natives at both the time of the implementation of the project and the maintaince works in the future, not requring any sophisticated knowledge and technology, say the need of professionals from outside Bagamoyo. The location of these cabins will be in such a way that they do not obstruct the view of the Old Boma to the ocean, and each unit will also be at the advantage of having a direct view to the ocean. This is envisioned as a growing project, hence the initial 20 cabins will be a starting point, which will be added to as the project expands and more needs arise. The cabins will be a new addition to the environment, but they fit well in the Historical context, also because in a way, the design is linked to one of the historical (the first) constructions by the Germans which for some reason was moved, the Usagara store house[2], figure 42 which they had built on piers. But at the same construction techiques are practised in areas that have a historical linkage with Tanzania, like India. Figure 43 is a similar construction from a touristic farm in Malaysia used as a reerence case in the study.

Fig 42: Footings on which Usagara store house stood

Fig 43: Bamboo cabin reference project Kiulu farm, Malaysia

[2] "The Usagara store house, also famously known as German Store House, is believed to have been the first building to be erected by the Germans in 1888. It represents the earliest phase of the German construction upon the foreshore and an early attempt to dominate Bagamoyo waterfront. It also demonstrates the development of German construction techniques in East Africa and displays an early reliance upon timber-framed buildings which soon developed into adoption of the indigenous technique of coral construction." (Rhodes, 2014). According to the Bagamoyo Friendship Society, The Usagara House was used by the representative of the German East African Society, merchant Schuller and his family (Gretel Schuller rests in the German Cemetery).

The camping cabins will be fully constructed by bamboo, except fort the roofing material. Each unit will have unblocked views towards the ocean. Facility provision will be just enough to carter for a few days' travel. Ie; a bed, working chair and desk and a small wardrobe. Every cabin comes with a front porch where the guests can enyoy the view of the beach and sun sets. See Figures 44 and 45.

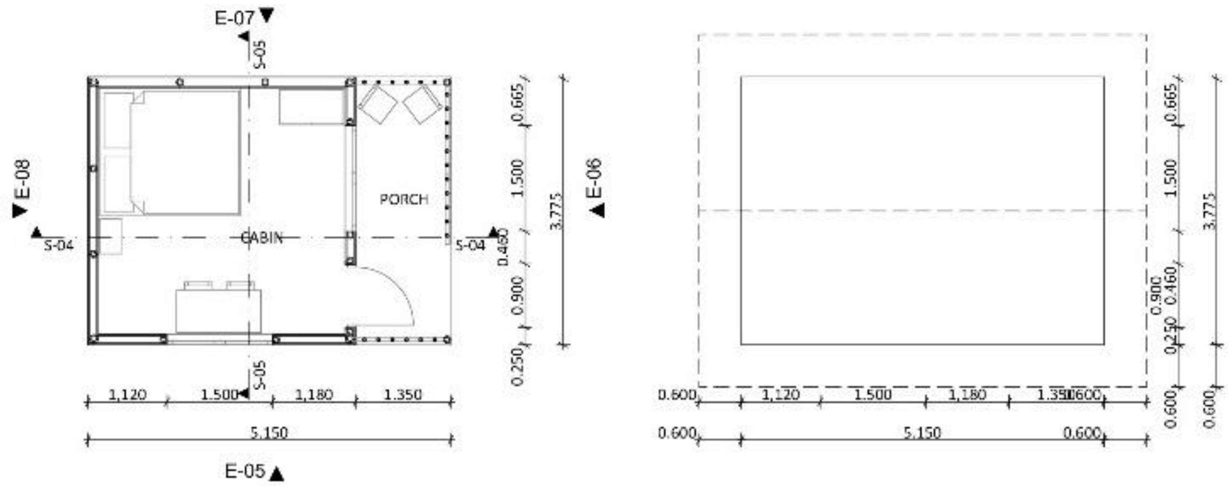


Fig 44: Cabin proposal floor plan and roof plan

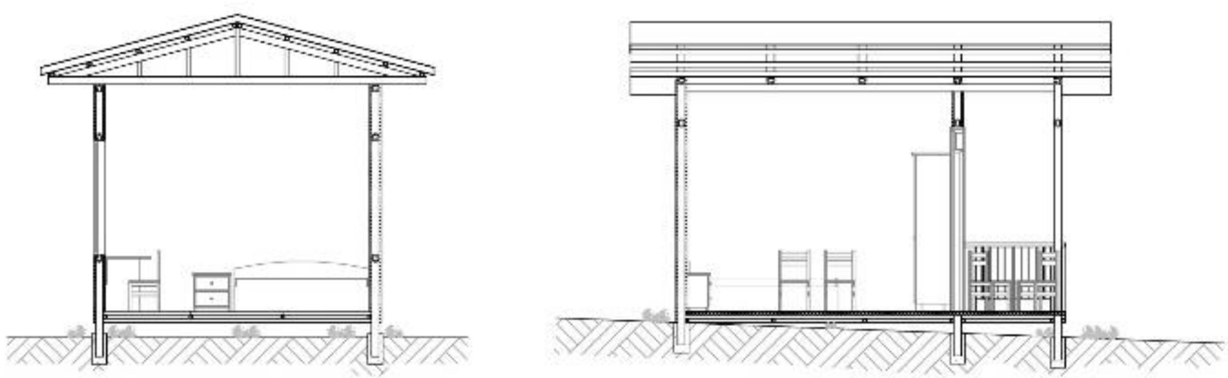


Fig 45: Cabin proposal, sections

Fig 46: Plan and picture showing part of the Botanical gardens in use by the fishermen

Currently, a part of the site that was originally allocated for the botanical garden is already being invaded by the activities of the fishermen like net repairing and vehicle parking, see Figure 46 above. The new program will facilitate rescue of that part of the land by growing back the lost trees and vegetation, see Figure 47 below. Figure 48 on the next page elaborates the view of the Old Boma building and site from the beach.

The Old Boma building is currently presented as a 'majestic place' almost self standing in a big plot of land, which is not very inviting for passersby. As a solution, it is proposed to introducte movable outdoor furniture around the building, again, within the same lines of bamboo material which will also be a source of employment to the local people. This will also be a move towards treating the contentiousness of the building, the building will not be marked only for a certain group of people or social class, but for all. It is also proposed to add another building in the site since the available areas is large enough to accommodate it. This move will also contribute to reducing the herrachy of the old Boma building and make it more inviting to go to.

Furthermore, another intervention would be the creation of a new pedestrian path that will connect the Old Boma building to the botanical gardens and then further towards the beach, but also connect this whole site to the area around the Old Customs house where the new boat parking space for the boats that will be going to and coming from Zanzibar is proposed to stand. Again this pier structure will be a product of the bamboo vernacular architecture, standing on concrete columns which will be slightly above the water level for water proofing reasons.

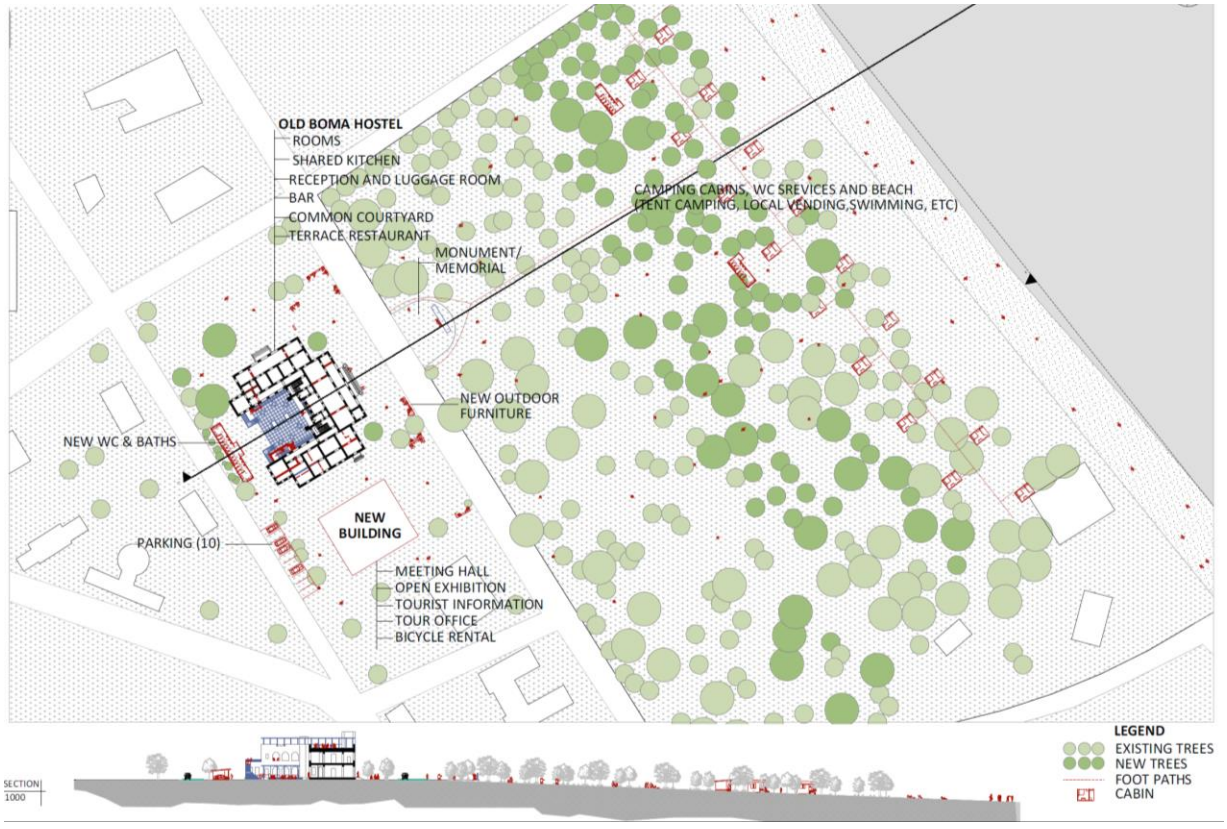


Fig 47: Botanical garden and Old Boma surroundings showing the new program

Fig 48: View of the Botanical garden and Old Boma from the beach

4.1.3. The Old Boma building

The Old Boma building is a class I listed building (Lucian, 2010) where, according to regulations in Tanzania, it is supposed to be restored to what it had looked like originally, without additions on either the interior or the exterior of the building. Mani, (10.05.2018) also quoted Miss Mulokozi, CEO of DARCH advocating the same treatment to historical buildings. "Maintain the buildings with the look they had when they were constructed" For this reason, therefore, the main approach towards this building is to try and maintain the original fabric of the building for as much as possible. Therefore, minimum additions are proposed which should also blend with rest of its surroundings in the use of bamboo and thatch. These major additions will be a pergola to create a communal space for the users of the building (Figure 49). The arcade on the lower part of the building will be opened up to strengthen the connection between the rooms and the communal space. In terms of the finishing of the building, the famous Bagamoyo curved doors, and vent windows will be reinstated. New windows and doors will be added to the building wherever needed. Some few 'patches' will also be maintained in the walls of the building to show imperfection, beauty of the age of the building. They will also be conversation starters to the people that will be using the building every now and then to keep the narrative of the building alive, even to those who will not have been informed about its history beforehand. The building will have 21 rooms, with varying accommodation capacities from two to four people per room. Because of the U shape of the building, relating to the exterior environment at both street level and the private courtyard, almost all the individual rooms can feel like a single Swahili house [3]unit. Furthermore, to add more functional spaces into the building, five rooms on the left wing of the first floor can be extended outwards towards the balcony as the need arises. This will allow accommodation of more people when required. Other parts of the building will accommodate the reception and lobby, bar, shared kitchen, mini library, 4 wc's and a new bathroom building at the back of the Old Boma.

As an initiative of making the building even more accessible to the public, a restaurant space will be introduced in the roof terrace, which will allow more people accessibility to the building even if they do not use the accommodation facilities. A bamboo structure will be introduced here as well to provide shelter.

As it is an issue with many historical buildings constructed before the birth of the current building codes and regulations, consideration has been given to the circulation to fit for all by the addition of a lift and ramp, and also some new stairs. One of the stairs can be seen in the Figure 49 while figure 50 shows the

[3] Swahili House is a traditional native house for the Swahili people (found mostly along the East African coastal towns). Swahili style houses are characterized by symmetrical arrangement of rooms, with a central corridor, which connects the front veranda and a courtyard at the back of the house. The veranda and adjacent front rooms were used by men. Women socialised in the kitchen and courtyard at the back. This gender division of the space may have developed as a result of cultural or architectural traditions brought by Muslim traders from the Gulf (Seifert, 2017)

expected look from the Old Boma building towards the Botanical garden and the beach with all the additions.

Fig 49: Central courtyard of the Old Boma as a public place and one of the new added bamboo stairs

Fig 50: View of the Old Boma building towards the botanical garden

CHAPTER 5: CONCLUSION

This chapter shows how the research and the project have managed to address the research problem at hand: "*The aim of the research was to determine the architectural strategies by which the slumbering village of Bagamoyo can be rehabilitated so as to accommodate the new population increase but at the same time maintain its many layers of historical heritage and having the best interests of the local community. The research concentrated on the Old Boma building and its surroundings."* (chapter 1).

The research problem was resolved in the following manner:

First and foremost, the possibility of the extending the life of the Old Boma has been verified by the introduction of the new hostel and restaurant functions which, with the limited alterations, will ensure the continual life of the Boma building and its history.

The major intervention technique chosen to approach the Old Boma building with, i.e. bamboo vernacular architecture, does not only answer the question of the contentiousness of the colonial history in Bagamoyo and Tanzania at large, but it also answers the question of poverty and employment in the Bagamoyo area. With the use of bamboo technology as a modular form of construction, the construction processes will be easily carried out by the natives without the need for highly skilled or external supervisors.

The project also affects the natural environment and ecology at the minimum level possible. This is because the new construction (cabins and service facilities) will be done on piles and have only a very small amount of surface contact with the ground. Also, the use of bamboo as a construction material is a welcome approach because it limits deforestation, and bamboo also grows back into nature very fast (3 years) so it is like another form of renewable energy.

Furthermore, this project answers a question which was not originally thought of which is the use of bamboo and pilotis construction coincidentally still links Bagamoyo with the culture of the different people who passed by it, lived and traded in Bagamoyo. An example is the very first construction by the Germans which was an elevated above ground construction, the bamboo construction is also very popular in India, especially in the areas prone to floods and earthquakes.

In conclusion, the above-mentioned measures can be a good driving force towards the protection not only of the Old Boma building and other buildings of the same nature but also the general environment and attractiveness of Bagamoyo to tourists. Altogether, the interventions will also promote income generation and livelihoods of the local people in Bagamoyo.

REFERENCES:

Bista, A., Costa, C.F, Benoit, L., Strojek, A. (n.d) Bamboo construction manual (KU Leuven _ Artelier sud) (submitted by Issa Khoury as part of a UHasselt class assignment)

Catholic Museum Bagamoyo (2001) Karibu Bagamoyo, Welcome to Bagamoyo – Bagamoyo Town Guide, (Department for Antiquities), Peramiho Printing Press

Chami, F. (2004). *Historical archaeology of Bagamoyo: Excavations at the caravan-serai*. Dar es Salaam: Dar es Salaam University Press

Chihongo, A. W., Kishimbo, S., Kachwele, M., & Ngaga, Y. (2000). *Bamboo production to consumption systems in Tanzania* (No. 28, p. 28). INBAR Working paper. Retrieved from http://www.firstlight.cn/upload/plusfile/20145/7/201457102140281.pdf on 07.05.2020

Domus1009. Regeneration of Wencun village, Fuyang, China. (January, 2017) pg 50-63

Espinosa, J. (2010) Bamboo Training and Development Centre in Mbeya, Tanzania: The Experience of an Architecture Student retrieved from http://oa.upm.es/4566/2/PFF_Jaime_Espinosa_Bamboo_Ingles.pdf on 13.05.2020

Fabian, S. (2007). Curing the cancer of the colony: Bagamoyo, Dar es Salaam, and socioeconomic struggle in German East Africa. *The International Journal of African Historical Studies, 40*(3), 441-469. Retrieved from https://www.jstor.org/stable/40034038?read-now=1&seq=3#page_scan_tab_contents on 14.05.2020

Fr. Frits, V, et al (n.d) 1868 – 2012 The Catholic Church in Bagamoyo. 144 Years' Service to the People

Fr. Johannes, H. (2011) 1868 – 1893 Bagamoyo Catholic Mission; What Old Sketches and Documents tell, Desktop Publications Ltd, Dar es salaam

Fr. Johannes, H. (2011) 19th Century; Human as Merchandise, Slaves in Bagamoyo

Fr. Johannes, H. (2015) Bagamoyo Historical Portrait Just Before the Old Stone Town Dies, Desktop Publications Ltd, Dar es salaam

Hunnarshala Foundation for Building technology and Innovation (n.d) Bamboo Construction Source book retrieved from https://issuu.com/communityarchitectsnetwork/docs/the_bamboo_book_final_12-5-13 on 07.05.2020

Kamamba, D.M.K & Malisius, U. (n.d) Heritage at Risk, 2001 – 2002, Tanzania, ICOMOS report retrieved from https://www.icomos.org/risk/2001/tanz2001.htm# on 14.05.2020

Kigadye, F. S. (2012). Adaptive re-use of historic building and community development: the case of Mikindani Old Boma-Tanzania. Retrieved from http://openarchive.icomos.org/1179/ on 13.05.2020

Lindström, J. (2019). *Muted Memories: Heritage-making, Bagamoyo, and the East African Caravan Trade*. Berghahn Books.

Lucian, C. (2010). Conservation and Maintenance of the Old Boma Building in Bagamoyo (Tanzania). *Conservation and Management of Historic Buildings, Advanced International Training Programme–2009/2010, Under Sida and Lund University*. Retrieved from http://ijcs.ro/public/IJCS-19-39_Lucian.pdf

Lunds university. Arkitektursektionen, & Karlsson, R. (1969). *Tanzania: Bagamoyo Township Survey 1969*. Department of Architecture, University of Lund.

Mani, I. (10.05.2018). 'Beautiful Architecture Always Respects People's Culture'. The National Newspaper. Retrieved from https://dailynews.co.tz/index.php/news/beautiful-architecture-always-respect-people-s-culture.aspx accessed on 14.05.2020

Mosha, L. & Plevoets, B. (2020) Human Settlements and Architecture of Old Buildings in Historic Stone Towns – A Case of Bagamoyo Tanzania. International Research Journal of Engineering and Technology (IRJET), 07(04) retrieved from https://irjet.net/archives/V7/i4/IRJET-V7I4939.pdf on 30.04.2020

Mtobesya, J.K (2008) Designing a Restoration program for the BOMA A Historic building in Bagamoyo, Tanzania retrieved from http://www.hdm.lth.se/fileadmin/hdm/alumni/papers/CMHB_2008_a/TANZANIA_Juliery_Mtobesya.pdf on 13.05.2020

Mwakyusa, A. T. (2006). *Traditional and contemporary building styles used in Tanzania and to develop models for current needs* (Doctoral dissertation, Doctoral thesis, St. Clements University of British West Indies). retrieved from http://stclements.edu/grad/gradmwak.pdf on 13.05.2020

Rhodes, D.T (2014) Building Colonialism: Archeology and Urban Space in East Africa, Bloomsbury Publishing retrieved from https://play.google.com/books/reader?id=jAtCBAAAQBAJ&printsec=frontcover&pg=GBS.PP1

Seifert, A. & Moon, K. (2017) DAR ES SALAAM: DARCH catalogue of the permanent exhibition, Mkuki na Nyota Publishers

Watson, T. N. (1982). Areas of Concern: Bagamoyo, Tanzania. *Monumentum*, *25*(1), 29-42. Retrieved from https://www.icomos.org/monumentum/vol25-1/vol25-1_4.pdf on 06.05.2020

Websites

Bagamoyo Friendship Society/ Germany Retrieved from https://www.bagamoyo.com/links0.htmlaccessed on 27.02.2020

https://archnet.org/sites/5105/media_contents/48308 accessed on 05.03.2020

https://worldpopulationreview.com/countries/tanzania-population/ accessed on 16.04.2020

https://www.architectural-review.com/today/wencun-village-china-by-wang-shu-and-lu-wenyus-amateur-architecture-studio/8691086.article accessed 0n 13.05.2020

http://www.boma-chronicle.com/old-boma-pictures/ accessed on 01.04.2020

http://www.fao.org/3/S1250E0l.htm accessed on 08.05.2020

https://www.fireflybagamoyo.com/ourmission accessed on 02.05.2020

https://www.hippostcard.com/listing/german-east-africa-tanzania-dar-es-salaam-daressalam-base-commandants-office/15626409 accessed on 01.04.2020

http://www.mikindani.com/hotel-2/history-restoration/ accessed on 01.04.2020

https://www.oxfordlearnersdictionaries.com/ accessed on 11.05.2020

other sources unpublished sources;

Eurlings, O. (2018) The new old Boma (submitted as a studio assignment a partial fulfillment for Studio Tanzania, 2017/18 at Hasselt university)

Hasselt University, Studio Tanzania picture archives

In house workshop week Feb, 2020 (Group work and Dr. Bie's presentation)

LIST OF FIGURES

LIST OF TABLES