The Lamu house – an East African architectural enigma

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Lamu is a living town off the Kenya coast. It was recently nominated to the World Heritage List. The town has been relatively undisturbed by colonization and modernization. This study reports on the early Swahili dwelling, which is still a functioning type in Lamu. It commences with a brief historical perspective of Lamu in its Swahili and East African coastal setting. It compares descriptions of the Lamu house, as found in literature, with personal observations and field surveys, including a short description of construction methods. The study offers observations on conservation and the current state of the Lamu house. It is concluded with a comparison between Lamu and Stone Town, Zanzibar, in terms of house types and settlement patterns. We found that the Lamu house is the stage for Swahili ritual and that the ancient and climatically uncomfortable plan form has been retained for nearly a millennium because of its symbolic value.

Introduction

The Swahili Coast of East Africa was recently referred to as "…this important, but relatively little-known corner of the western Indian Ocean"[1].

It has been suggested that the Lamu Archipelago is the cradle of the Swahili civilization[2]. Not everybody agrees, but Lamu Town is nevertheless a very recent addition to the World Heritage List[3]. This nomination will undoubtedly attract more tourism and more academic attention. What makes Lamu attractive to discerning tourists? Most certainly the natural beauty and the laid back style. But also the cultural heritage and history, which are that of the Swahili. What makes Lamu attractive as an architectural study is the fact that the Swahili culture is relatively undisturbed by colonization and that the settlement fabric has changed little since the 19th century (Fig. 1). Swahilis also have the only East African culture that has traditionally been urban-oriented.

The medieval Swahili stone house, although it has a unique form and was continuously constructed along the whole East African coast for the major part of the 2nd millennium C.E., has received only very limited exposure in literature. Norbert Schoenauer's otherwise comprehensive *6 000 years of housing* (2000) makes no mention of Swahili architecture at all. Banister Fletcher offers about 200 words
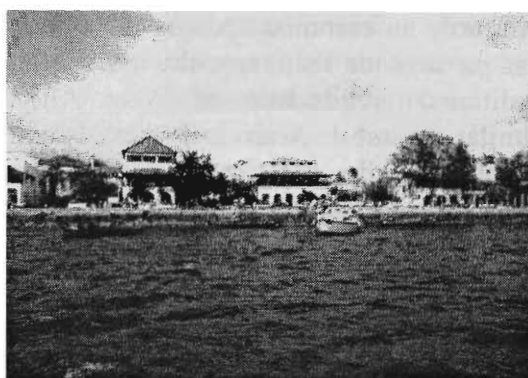

Figure 1.
Lamu retains its 19th century character.

and a single 1: 1 000 scale floor layout of a housing cluster at Gedi, Kenya, in the 1 543 page magnum opus, *A history of architecture* (Musgrove, 1987: 665-667). Even Susan Denyer in her *African Traditional Architecture* (1978) – a standard two hundred-page reference book in schools of architecture – devotes only one page to the Swahili city-states, four scattered paragraphs to other aspects and a single paragraph to the stone houses. Nearly twenty years later, Namdi Elleh's *African architecture: evolution and transformation* (1997) fails to respond adequately to the greatly increased interest in vernacular African architecture. His section on Swahili architecture is generally superficial and contains many inaccuracies.

His bibliography refers to Deneyer, and he shares her references to Peter Garlake,

Basil Davidson and James de Vere Allen. A more recent source is Abdul Sheriff, a historian from Tanzania. This very limited and dated pool of research on Swahili stone architecture is puzzling – after all, it represents one of the most tangible artefacts of the Swahili culture; a culture that has been dominating the East African coast for more than a thousand years and even influenced the history of Southern Africa. A culture that is still intact after Zimba and Galla raids, Portuguese intervention, Omani domination and European colonization!

Maybe it is because the houses with their totally blank façades – interrupted with only an entrance opening – are much less picturesque than, say, the more exotic traditional architecture of West Africa. Similar to most Arab and Arab-Islamic architecture, the exterior does not reflect the interior organization at all.

The early Swahili house has been under threat for some time. In 19th century Stone Town, Zanzibar, the occupying Omanis and accompanying Indian merchants extensively altered some of the original Swahili houses, but usually these were simply demolished and built right over. Elsewhere in East Africa they are now mostly just ruins found at the traditional Swahili settlements, such as Gedi, Kilwa and Songo Mnara. Since the Swahili house is "...seen most fully developed in the Lamu archipelago" (Sheriff, 1998: 15), the term "Lamu house" seems fitting. Here we could study the best-preserved – and functioning – examples. The objectives of this study are as follows:

1. To give a brief historical perspective of Lamu in its Swahili and East African coastal setting, including the settlement context.
2. To compare descriptions of the Lamu house, as found in literature, with personal observations and field surveys, including a short description of construction methods.
3. To share observations on conservation and the current state of the Lamu house.
4. To compare Lamu and Stone Town, Zanzibar – both Swahili Coast World Heritage sites and functioning historical cities – in terms of house types and settlement patterns.

Apart from leaving no written record, the early people of the African interior mostly used perishable natural materials such as mud, wood and grass, and the tangible manifestations of most of these cultures have simply vanished. The stone houses offer an opportunity to study part of Africa's medieval history.

Much of the tropical interior of sub-Saharan Africa remained a mystery to outsiders until the middle of the 19th century. We are fortunate, however, in that the Indian Ocean trade resulted in early literary descriptions – and speculation – of the east coast[4], much earlier even than Arab writings resulting from trans-Saharan commerce.

Lamu Town seems an eminently appropriate case study. As Ghaidan assures us (1976: ix):

> It is the only [settlement of the East African coast] retaining its original character almost completely. It has escaped physical destruction, looting by the Portuguese and the pressures of modern urban growth.

Historical Perspective

Nobody disputes that the history of coastal East Africa is complex. Amin and Willetts remark of Lamu that, "...the line of history is still tangled, full of loose ends" and that the historical perspective is "fuzzy" (1986: 9, 112)[5].

Sources suggest that merchants from the Arabian Peninsula and the Gulf, sailing in dhows, have been visiting the region since the first centuries C.E.. These journeys were made possible by the monsoon winds, which blow to the Swahili coast from the northeast during the southern summer, and from the southwest during the southern winter (Reader, 2001:

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250) (Fig. 2).

The merchants married local women, learned the language and adopted many of the local customs. The Swahili culture gradually evolved from this integration of Arab and Persian-Arab settlers with the indigenous African population (Allen, 1993: 3). In its mature form it was already predominantly an African culture – uniquely urban – and fully integrated with the Indian Ocean trade and, by the 11th and 12th century, mainly Islamic.
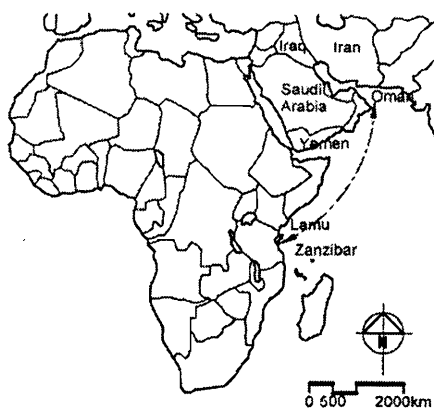

Figure 2.
Ancient Indian Ocean trade.

The coastal settlements were established by the 10th century. Most authors simply accept that Arabs founded these coastal settlements (Davidson, 1967: 180; Denyer, 1978: 36; McEvedy, 1995: 52; Kasule, 1998: 54-56). Garlake states bluntly that "…Islamic colonization of the East African coast started in the 8th century C.E.…" (1966: 1).

James de Vere Allen, on the other hand, adopts an aggressively Afrocentric position and resents the view that the coastal civilization was an "Arab-colonial" one (1993: 6). He argues that the founders of these settlements were Swahilis from the Lamu Archipelago and that this migration was a deliberate expansion of Swahili influence (Fig. 3).

Allen is convinced that the Swahili culture evolved from an ancient indigenous pastoral society on the Lamu Archipelago
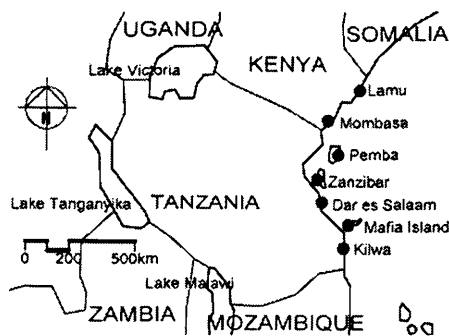

Figure 3.
The Swahili Coast.

around c. C.E. 800. The inhabitants knew how to locate and dig wells and line them with stone. One of the earliest of these settlements, Shanga, is probably typical. There was a well in the middle of a rectangular timber-fenced livestock enclosure with an area of about a hectare. This was surrounded by circular and rectangular thatched mud houses. In the mid 10th century a new group arrived at Shanga and other settlements of the Lamu Archipelago. The newcomers introduced imported technologies and the first permanent structures – constructed of squared *Porites*, or live coral blocks – were found by c. 950 (1993: 22-31) (Fig. 4).

During the 10th century the Lamu region was the hub of all long-distance trade along the East Coast. Allen speculates that the migration of the newcomers responded to an increased demand for ivory. Apparently the ivory was first transported to Oman on Omani ships, and then transferred to India and China. Dhows from southern Arabia and the Persian Gulf could sail straight across the Indian Ocean and travel to the ports of the Lamu Archipelago and back in a single
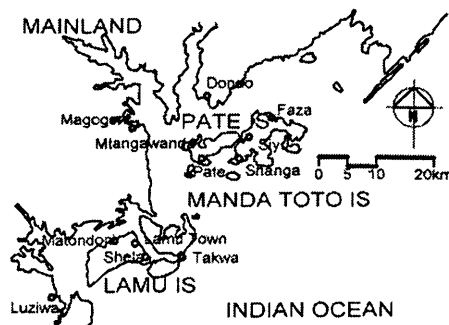

Figure 4.
The Lamu Archipelago.

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season. To reach Zanzibar they probably had to wait for the next monsoon (1993: 67-70).Some coastal towns, like Kilwa, certainly owed their affluence to the gold trade with the Zambezi valley, but they were still entirely dependent on the Indian Ocean trade. Swahili contacts were with Yemen and Oman on the southern part of the Arabian Peninsula, Siraf in southern Persia (near Fars and Shiraz) and ports on the coast of northwest India (Garlake: 1978, 94).

By the 10th and 11th centuries, Pate, Manda and Shanga, all on the Lamu Archipelago, were prosperous commercial settlements (Allen, 1993: 167).

The gold trade attracted the Portuguese, and their domination of East Africa started in about 1502. From Mombasa they controlled trade. The Portuguese also occupied Oman in 1507, but they were driven out in 1650. The Omanis subsequently pursued the Portuguese to the coast of East Africa. Fort Jesus in Mombasa eventually fell to Omani forces in 1698 and Zanzibar, a Portuguese ally, a few years later.

From then on, East Africa was ruled from Muscat in Oman. In reality East Africa was, however, largely free from external interference in the 18th century because Oman was occupied by Persia (present-day Iran) for a time and experienced internal and dynastic conflict. Even so, the Omanis built the Old Fort at Zanzibar in approximately 1780. Lamu was under the "protection" of the Sultan who built the Lamu Fort in about 1820.

In the 1800s, Zanzibar became the main slave-trading centre of East Africa. The trade in slaves, ivory, mangrove poles, gold and other commodities was so lucrative that the Sultan of Oman, Sayyid Said bin Sultan, transferred his capital from Muscat to Zanzibar in 1840 (some sources suggest 1832). During that period Zanzibar was also the world's biggest producer of cloves. From Zanzibar the Omani sultans now ruled the East African seaboard, and although they had representatives in the coastal centres, they did not exercise strong control (Reader, 2001: 263). The increasing trade opportunities attracted many merchants, financiers and professionals, including building craftsmen. The Sultan particularly encouraged such immigrants from Gujarat on the Indian subcontinent (Siravo, 1996: 15).

The economy boomed and Zanzibar remained the commercial "capital" of East Africa until Mombasa became the main port of the region at the turn of the 20th century. Even before that, the abolition of slavery and European colonization triggered the economic decline of the whole region, including that of both Omani and Swahili communities.

Allen maintains that the Swahili population before c. 1900 never totalled more than half a million people, and was usually closer to quarter of a million. The Swahilis occupied about 170 settlements along 2 400km of coastline. He calculated that Lamu Town might have had more than 20 000 inhabitants from the 17th to the early 19th centuries, and Pate had that number in the 17th and 18th centuries. Prior to 1900 only Kilwa, Malindi, Zanzibar, Witu and Mombasa had more than 10 000 inhabitants. Of the other Swahili settlements only about 30% had 5 000 or more inhabitants, while the remaining 70% had no more than 1 500 inhabitants (1993: 213-214).

Can Swahili be described as an Afro-Arab culture? Reader suggests, "...the history of the Swahili demonstrates the resilience of an indigenous system". He further maintains that there is sufficient evidence that indicates that the Swahili coast was "...the center of a significant African world" (2001: 251, 254), rather than merely "...the edge of the Islamic world", as Garlake suggests (1966: 12).

The Lamu House

Lamu epitomizes this Swahili world. Its patricians seem to have adopted Arab-based rather than Shirazi (in Persia, now Iran) Islamic traditions. Their mosques

were small, semi-private and relatively undecorated, compared with Shirazi ones. Their houses were of a "special stone-built type", which was absolutely plain on the outside but elaborately decorated inside. Entrance was through elaborately carved wooden doors. (Allen, 1993: 201).

Description of the type

Ghaidan (1976: 5) defines the type as follows: "The Swahili house was designed as an inward looking self-contained complex with a plan organized around a central courtyard." Prof. Abdul Sheriff agrees (1998: 15):

> The Swahili house was designed as an inward looking self-contained complex organized around an 'intimacy gradient' from the semi-open entrance porch, the characteriztic *daka*, where male members of the household received most of their guests … through the courtyard, and into the parallel living rooms which become darker and more intimate the farther they are from the courtyard.

Denyer states that the stone houses produced by the Swahili civilization between the 12th and 19th centuries have been "fully described by Garlake" (1978: 98). In fact, all sources consulted on early Swahili houses refer to Peter Garlake. *The Early Islamic Architecture of the East African Coast*, published in 1966, unquestionably remains the definitive description of the early stone houses. Garlake writes that the major elements still visible at the abandoned sites "…are so similar to each other as to be valueless in a typological study" (1966: 5).

Figure 5 illustrates some of these major elements. The houses are introverted and spaces are organized in a linear progression of increasing privacy. Ghaidan's description is used, with Swahili names for spaces in brackets (1976: 54).

Between the street and the entrance door is an exterior lobby (*daka*). Directly behind the entrance door is an interior lobby (*tekani*), which leads into the courtyard (*kiwanda*). Near the entrance may also be a room for male guests

(*sebule*). The courtyard sometimes has a kitchen and/or guest toilet off to one side. Facing the courtyard is the first sitting room (*msana wa tini*), a logia-like space open to the courtyard. Behind it is sometimes a second sitting room (*msana wa yuu*), but more often the master bedroom (*ndani*). Furthest away from the courtyard is a back room (*nyumba kati*) with access to the interior toilet.
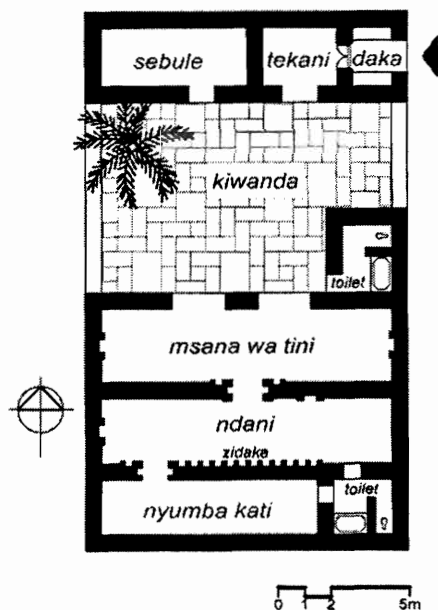

Figure 5.
Diagrammatic plan layout of the archetypal Swahili stone house.

The plan form raises many questions. Not many houses had guest rooms. These were trading communities. Where were visiting merchants accommodated? Where was merchandise stored? The separation of children's sleeping spaces by gender is entrenched in traditional African architecture. Where did boys and girls sleep? Was privacy for parents a consideration? Where were servants and slaves accommodated? It is very often not even clear where the cooking was done!

Garlake (1978: 98) and Lewcock (1971: 84) call the first room after the courtyard the "reception" and "main" room respectively, and the others simply the "private" quarters. How private were these rooms? After all, they nearly always have

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wall niches for display, which seem to be positioned to be clearly visible from the courtyard (Fig. 6).
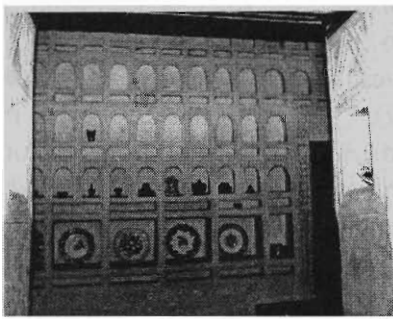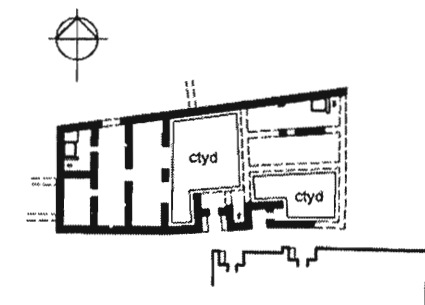

Figure 6
View of a *zidaka* from a courtyard.

This study focuses on the Lamu Archipelago. Our survey is limited to the ruined and abandoned settlements of Pate and Takwa, as well as the living settlements of Shela and Lamu Town.

Pate

Pate, an early and important settlement, but now a ruined site, occupies about 30 hectare. It has no proper harbour, and could have been a workshop town (Ghaidan, 1976: 32-33) (Fig. 7). It was nevertheless one of the most important centres of the coast and flourished until the 17th century (Garlake, 1966: 5).


HOUSES AT PATE

Figure 7
A housing cluster at Pate.

The illustrated examples show how groups of houses were constructed – certainly co-operatively – with common party walls and interlocking plan forms. This obviously results in compact and economical configurations (Garlake, 1966: 89-90).

Takwa

Like Pate, Takwa has no harbour and can only be approached through a narrow mangrove-lined channel at high tide (Fig. 8). Manda Town, Takwa and Kitau, the settlements of Manda Island, were abruptly abandoned "sometime after 1600", probably because the water became saline. The Lamu patricians allowed the refugees to settle at nearby Shela, but they were not allowed to build stone houses, even though they were patricians of the settlements they had to evacuate, and lived in stone houses there (Allen, 1993: 218)!
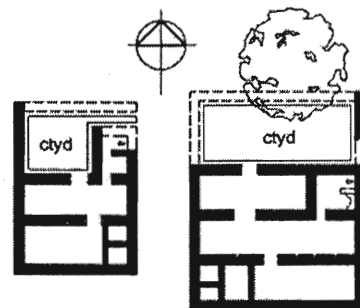
HOUSES AT TAKWA.

Figure 8.
Two surveyed house ruins at Takwa.

Shela

Nearly all the early Swahili houses were single storey and second storeys only became popular in the 18th century. The upper floors of two-storey houses generally constituted separate living units, which apparently required "considerable alteration and improvisation" to construct. Roofs were not used for outdoor living (Garlake, 1966: 88). Ghaidan found in 1976 that 64% of the houses his team

surveyed in Lamu Town were single storey and 36% double storey. He also concluded that most of these double storey houses had originally been single storey (1976: 56).

Shela, a village that is believed to be more than five hundred years old (Ghaidan, 1976: 23), is situated about 3km south of Lamu Town. The study of a house there confirms just how awkward the results of a conversion to two levels can be, while a theoretical reconstruction reminds us of the clarity of the archetype (Fig. 9).

Lamu Town

Lamu Town dates from about the 14th century, although very little of what exists today is apparently much older than the 18th century. During that time, the town was within the Omani sphere. It flourished as a centre trading slaves with the Middle East, especially after the slave trade had been abolished further south towards Zanzibar (Purvis, 1966: 1, Website). The earlier Swahili city-states, however, were evidently similar in scale, layout and architecture (Ghaidan, 1976: ix). The small house that was surveyed contains all the essential elements (Fig. 10).

Comparison with examples from the Islamic world

The mean footprint of the five houses under study in the Lamu Archipelago is 118m². Ghaidan reports (1976: 57), however, that the average size of the 173 houses surveyed by his team in Lamu Town was nearly 200m². By measuring electronically from a scanned and scaled map, we found that the average size of the older houses, those directly to the west and north of the Fort, is 135m², with the smallest being 65m² and the largest about 220m².
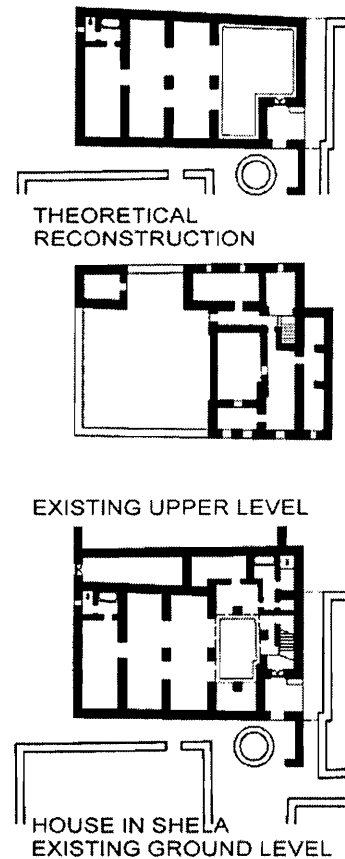

THEORETICAL
RECONSTRUCTION

EXISTING UPPER LEVEL

HOUSE IN SHELA
EXISTING GROUND LEVEL

Figure 9
A two-storey house at Shela.

Due to these variations, we checked the sizes of houses at Gedi (late 13th to early 17th century) (Fig. 11) and Songo Mnara (14th to 15th century) further south. Here we found average footprints of 108m² and 215m² respectively!
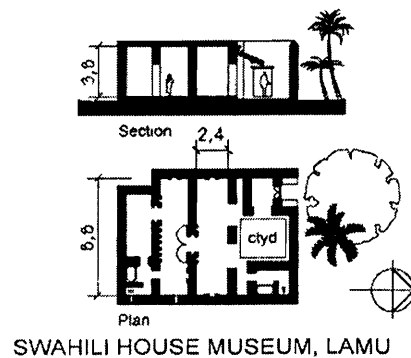

Section

Plan

SWAHILI HOUSE MUSEUM, LAMU

Figure 10
A small surveyed house in Lamu.

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EARLY HOUSES AT GEDI

Figure 11
Early houses in Gedi.

COMPARISON OF COURTYARD HOUSES			
Locality	Average site (m²)	Ctyd (%)	Covered (m²)
Gedi	108	43	62
Lamu Archepelago	118	25	89
Ur linear	141	35	92
Lamu Town	135	19	109
Songo Mnara	215	31	148
Tunis	113	13	196
Ur model	142	18	232
Middle East	149	17	246
Zanzibar	230	15	391

How is it possible to have such a range of sizes within such a standardized single-storey plan form? After all, 72 % of all Lamu houses have a courtyard-plus-three-room layout (Ghaidan, 1976: 57) and room width is restricted to the 2,4 to 3,0m span of the mangrove pole. The only way to manipulate size is to adapt the length of the room and the dimensions of the courtyard to suit requirements. This is why the room lengths of our examples under study vary from 5,8 to 10,3 metres, with an average of 7,9 metres. Courtyard sizes vary from 14 to 45m², with an average of 31m².

The aim of this study is not to trace the origins of this strange plan form. It is, however, surprisingly similar to a house excavated in Ur (Mesopotamia, present-day Iraq), a settlement dated to 2000 B.C.E.. This very early – and rare – example of a linear courtyard house has a footprint of 141m², which is coincidentally nearly the exact average of our four regional Swahili house groups (Fig. 12a).

Bianca proposes that the courtyard house, adopted as a prototype by Islam, was already "fully developed" in Ur by 2000 B.C.E. (Bianca, 2000: 56). He refers, however, to a well-published centralized courtyard house. This house has a footprint of 142m² (Fig. 12b). The table below compares this value with the average sizes of the Swahili houses, as well as with those from randomly selected examples from the Middle East and the old towns of Tunis and Zanzibar.

This comparison highlights two issues. The first is that, in shape and size, the centralized courtyard house of Ur seems indeed to have been a model for Middle Eastern courtyard houses to this day, as Rapoport suggests (1969: 14). As we shall see later, Zanzibari houses are probably not typical.

The second is stated tentatively. Our limited data seem to indicate that the linear courtyard house type – in its traditional single-storey configuration – offers about two-thirds less covered space, compared with the "average" Arab-Islamic house, organized around a centralized courtyard for the same footprint. Even accepting that interior spaces in Islamic courtyard houses are usually multifunctional (Petherbridge, 1978: 198), it does not explain why the Lamu houses are considerably smaller than other Arab-Islamic courtyard houses.

Comments on the typology

The "standard" Middle Eastern courtyard house evolves incrementally within a pre-determined perimeter, and subsequently vertically when the ground level is built over (Fig. 12c). The traditional Swahili house, on the other hand, seems to have
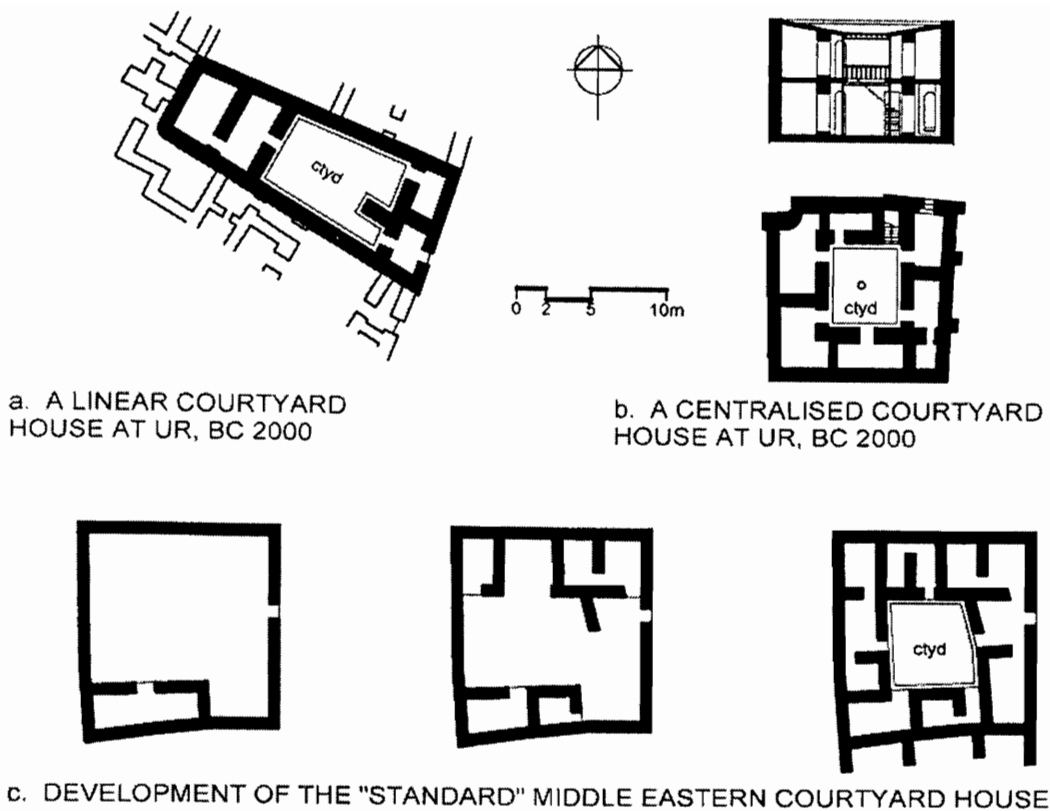
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a. A LINEAR COURTYARD
HOUSE AT UR, BC 2000

b. A CENTRALISED COURTYARD
HOUSE AT UR, BC 2000

c. DEVELOPMENT OF THE "STANDARD" MIDDLE EASTERN COURTYARD HOUSE

Figure 12
Ancient prototypical courtyard houses and patterns.

been built as a complete form right from the beginning. Is that why some authors use the term "self-contained"? Apart from expanding into adjacent properties, the type makes no provision for growth. This is a very strange phenomenon, especially households must have been extended families. It is also strange considering it lacks the additive quality so characteristic of vernacular architecture (Rapoport, 1969: 6).

Durability of the type

Garlake writes that the "continuity of style in East Africa for some five centuries is remarkable". But he states scathingly: "Its position on the perimeter of the Islamic world and the basic inability of the culture that evolved on the coast to respond with initiative, or to originate its own individual solutions to its problems…help to explain the static quality of the architectural style" (Garlake, 1966: 12).

The truth is probably more complex.

For many centuries the patricians of the Swahili settlements were minorities among rural alien populations. considering that

They could not have maintained dominance exclusively by force. They made themselves acceptable through trading relations and intermarriage, and used unique "magical powers" for political purposes. These included scientific knowledge, well-digging skills, ceremonial objects and charms, manuscripts, and finally "…the sacred settlements themselves". These aspects were presented as the hereditary monopoly of the patricians (Allen, 1993: 199).

Ceremonial rules and privileges were strictly protected, for if these were "diminished" the whole system on which all patricians depended would be threatened (Allen, 1993: 201). This system was, of course, based on the superior and unchallenged Swahili role as middlemen in Indian Ocean trade between Arab merchants and the people of the interior, supported by an essential subservient class.

Allen maintains that the patricians regarded individualism as "inappropriate for a Muslim gentleman" and that there are many stories of people who had to demolish their houses, whether mud and thatch or stone, because they did not conform (1993: 201, 219).

No vernacular society encourages change (Rapoport, 1969: 8-11). Reader writes that for sub-Saharan communities "...innovation and change were unacceptable risks" (1997: 263). But despite this trend in vernacular societies, accepted building traditions endure for a very long time in Muslim cities too (Al-Hathloul, 1998: 22).

The fact that the stone houses are climatically uncomfortable does in no way prove that their builders were ignorant. It rather seems to confirm Rapoport's theory that traditional societies might have ceremonial and religious needs that are more important than climatic requirements. This situation could actually result in "anticlimatic" solutions (1969: 20-22).

Swahili existence seems to have been in a state of very precarious equilibrium. It worked, and the houses were part of the "magic". They were symbols and inherent to the Swahili culture. To change them would mean changing the entrenched values and perceptions of the society.

Construction materials and methods

Allen believes that only a small number of newcomers would have been necessary to achieve the technological change to build in coral instead of mud and timber. Technological superiority could also have given the newcomers the prestige to dominate the local population. He states that there is "no real doubt" that these newcomers came from the Red Sea and/or the Gulf of Aden, since that is where the technology of working with *Porites* blocks came from. *Porites* is living coral, carved under water and finished on the surface. It remains easily workable for a few hours, during which it can be sawn to give a "smooth, fine-grained surface or chipped

and chiselled into elaborate designs". He stresses that "...coral was not used for building in the Persian Gulf, or anywhere eastwards to the western coast of India, from which regions it is often assumed that the inhabitants of East Africa learned the art of permanent building (1993: 30).

In East Africa, however, carved live coral was only used around prayer niches, jambs and lintols, and apparently never in a structural application. Walls of Swahili stone houses were generally of coral rag (fist-sized coral rubble), bonded with burnt and slaked lime mortar and sometimes mud (Garlake, 1966: 16; Ghaidan, 1976: 5, 119).

Abdul Sheriff claims that the regional building technology – using coral stone, lime, mud and mangrove poles – was developed "on the East African coast itself" (1998: 10). Talib, however, claims that coral stone (*faroush* in Arabic), with mud or gypsum as a bonding material, is a traditional technique in parts of Saudi Arabia. He mentions not only the west coast off the Red Sea, but specifically also the Eastern Province, which is on the Persian Gulf, and also the contributions of Iranian and Iraqi settlers and their descendants, as well as those of artisans from the Indian sub-continent (1984: 56, 62, 67). And this is the precisely the region with which the Swahilis had most and enduring contact.

Walls

Coral remains the preferred material for modifications to these houses. The material is quarried from coralline cliffs, which formed in prehistoric times when sea levels were much higher (Reader, 2001: 246).

In Lamu, coralline limestone blocks are currently used. They are quarried on the island of Manda, across the channel, by a Luo community. These blocks are roughly dressed in three sizes: 460 x 230 x 230mm for ground-floor walls, 460 x 150 x 150mm for upper levels, and 460 x 100 wide x 150 high for partitioning. From Manda the blocks are transported by dhow

to Lamu and from there, in sisal saddlebags by donkeys, to the building site (Fig. 13).

Figure 13
Coralline building blocks.

There seem to be two ways of finishing external walls, whether in coral rag or coral blocks. The first is whitewashed smooth lime plaster. Early buildings sometimes had a very thin, white, smooth plaster skim coat (Garlake, 1966: 16). The other is a rough finish with matchbox-size coral chips embedded in lime mortar. This is still a popular and apparently durable finish (Fig. 14).

Figure 14.
A rough finish with coral chips. character.

Flat roofs and suspended floors

Flat roofs and suspended floors consist of closely spaced mangrove poles supporting roughly dressed coral blocks with coral lime concrete over. The resulting slab is 300 to 500mm thick (Garlake, 1966: 26).

The planning module is based on the span of the mangrove poles used as ceiling beams and rarely exceeds three metres. Originally, decorated beams cut to a rectangular profile, called *banaa*, were used, but most houses now have natural round beams called *boriti*. (Fig 15).
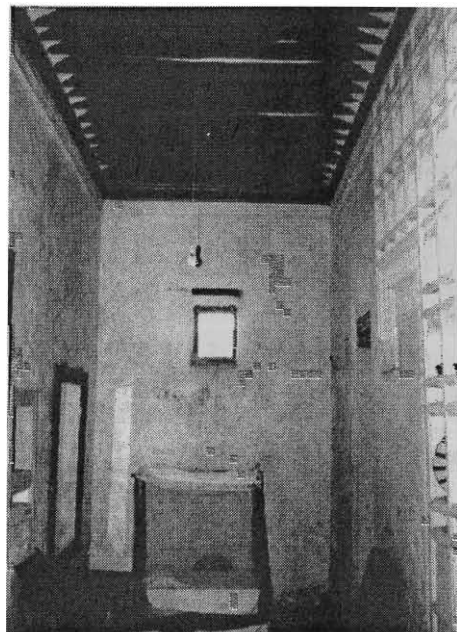

Figure 15
Roof with *banaa* beams.

Thatched roofs

A thatched roof is called a *makuti* roof. A *makuti* "tile" measures roughly 500mm wide by 300mm and is woven from palm fronds. Coverage is about 20 tiles per square metre. Mangrove poles are usually used for structural timbers.

For a small structure with a span of four metres, the ring beam and ties would have a diameter of about 120mm, rafters 100mm at 1 200 to 1 500 on centre, purlins 75mm at 450 on centre, and counter

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purlins 50mm at 300 on centre (Fig. 16).

Sanitation

A Swahili house had at least one stone-lined pit toilet and a bath-like water container for washing (Garlake, 1966: 87). It is also significant that larger rooms had floor drains for washing the surface down.

Figure 16
A *makuti* roof

Doors

Many houses have decorative carved and studded entrance doors, although the majority are sadly neglected (Fig. 17). These double entrance doors are basically the same as those found in Stone Town, Zanzibar, and all along the coast. Apparently carved doors have featured in Swahili architecture at least since the 1500s (Denyer, 1978: 199). Elaborate and highly decorated entrance doors – contrasting with the very plain façades – are often found in Arab-Islamic domestic architecture (Petherbridge, 1978: 197). These doors demonstrate cultural exchange and interaction, since some were exported to Oman, while others were imported from India (Sheriff, 1998: 46-52). Talib's *Shelter in Saudi Arabia* contains a photograph of such a door – from Qatif in the Eastern Province (1984: 20).

Figure 17
A typical carved entrance door.

Foreign homebuyers are boosting the door carving industry tremendously. The process is very labour-intensive – each door apparently requires eight man-months to produce (Ghaidan, 1976: 50).

Wall niches

Swahili stone houses are characterized by their decorative wall niches, called *zidaka*, which were found from the 14th century onwards. Houses were actually designed to focus the view from the courtyard on these display niches. Here the family's wealth was displayed (Allen, 1993: 202, 233).

Early houses featured wall niches out of carved *Porites* coral, but lime plaster was later used. The craft is being revived – sponsored by affluent foreign owners. I watched the process. Forming the ancient Swahili mouldings is slow and laborious.

Conservation and the current state of the Lamu house

Swahilis became an impoverished minority as Indian merchants took over foreign trade. But the eventual end of Arab-Indian

trade signalled the decline of the region as a whole and the built fabric of Lamu Town consequently deteriorated rapidly. Lamu is a functional environment and the question is how to preserve these unique houses and, at the same time, improve the sustainability of the community.

The guardians of the Swahili culture – and by implication its architecture – are arguably the patrician families, of which only Lamu seems to have any (Allen, 1993: 251). They live in the old stone houses. But other people have moved in too – either to earn a livelihood or … for tourism. Young suggests that the deterioration of the built fabric is being caused mainly by lack of maintenance, population growth and increased tourism (S.a.: 1. Website).

Lack of maintenance certainly – the patrician families can very often simply not afford maintenance and repair. And because the houses are introverted, the street façades are generally sadly neglected. They often build gazebo-type structures for cooking and/or sleeping outdoors, but that is now accepted as part of the morphology, if traditional construction technology is used.

Population growth is unquestionably having a detrimental effect. Some homeowners – of which many seem to be absentee landlords – generate income by maximizing useable space. Different floors often accommodate different households. The result is that the ground floor is often deprived of ventilation and natural light, and basically uninhabitable. This also happens when the oblong rooms, already without cross ventilation, are subdivided with ceiling-height walls to accommodate more than one household on that level (Ghaidan, 1976: 60-61). The additions are mostly improvised and incompatible materials are often used.

Tourism has increased dramatically since the late 1960s. But the archipelago is not easily accessible, and Lamu Town has fortunately avoided the commercial developments associated with mass tourism.

Lamu is now nevertheless "heavily dependent on heritage tourism". Foreigners are buying traditional stone houses and converting them into holiday homes and guesthouses. Young laments that this phenomenon is "disrupting the balance of the locally oriented economy" (S.a.: 5. Website). But the benefits to the community certainly seem to outweigh the perceived disadvantages. Ghaidan writes that these holiday homes are well maintained and that such intervention has even saved some stone houses from collapse (1976: 50). Our observations confirm this (Fig. 18). The money spent on restoring and modifying these houses goes into the local economy and has revived local crafts such as door carving and decorative plastering.
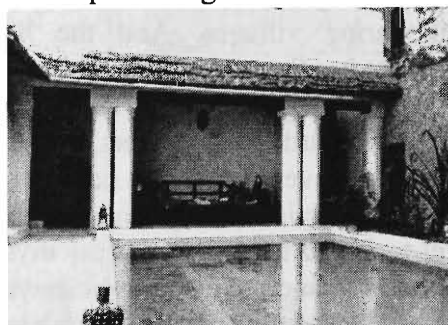

Figure 18
The courtyard of a holiday home.

The suite of parallel rooms is inconvenient for both circulation and climatic comfort. How are the houses modified to accommodate paying guests or the foreign homeowners on holiday? Simple – some of the parallel rooms are often converted into loggias by enlarging the openings between them. Ceiling fans improve airflow substantially. A more drastic measure is to sacrifice rooms in favour of more courtyards. This intervention creates "thin" rooms with light and air on two sides. Second-level and even third-level penthouses, or gazebo-like structures, are often added for sleeping or cooking.

Fig. 19 compares the theoretical development of an archetypal early Lamu house expanded into a tenement house with one converted into a holiday home

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(Fig. 19).

Ghaidan claims, however, that selling houses to foreigners has a negative effect on the social fabric of the town, since these houses are empty for most of the year (1976: 50). What must be kept in mind is that the influx of strangers from surrounding rural areas has already disturbed the social fabric. They come in search of employment, and have absolutely no affinity for the culture or the architecture. Who else would paint political slogans on coral walls and dump refuse in the sea?

Also, the historical part of Lamu Town that should be preserved is the size of a large townhouse scheme. It has an area of about 10 hectares, while the town proper is approximately 70 hectares. This excludes neighbouring villages. And the holiday homes are hardly ever empty. The majority of the foreign homeowners employ security guards, gardeners, domestic servants and even handymen permanently.

The choice is actually simple – tourists travel to Lamu to experience the mystique and the ambience of this exotic town in a lush tropical coastal setting, complete with a safe and beautiful beach. Allow the deterioration and the dirt to get much worse, and people will stay away. Clean up the town, restore it to its former pristine beauty, allow controlled development and it will prosper.

How can such developments be controlled? Ghaidan's *Lamu: A study in conservation* (1976) is considered a "baseline survey" and has since been complemented with *Planning Lamu: Conservation of an East African Seaport* (Pulver *et al*, 1986).

The Lamu Conservation Plan of 1986 provides homeowners not only with guidelines for alterations, but also for new homes in the historic core. The plan accepts that sustainability requires more than just the conservation and controlled development of the old town – there must be a plan for greater Lamu Town (Young, S.a.: 5. Website).

One has to accept that the Lamu house in its pure archetypal form cannot meet the requirements of modern living. A logical development is alterations within the building shell, which do not disturb the streetscape. Another is the addition of gazebos and penthouses for more space and cross ventilation. This has been associated with the morphology and skyline for a long time, and, if properly done, is not a problem. Much more problematic are insensitive efforts to increase rental space. This creates instant overcrowding, unhealthy living conditions and a very unattractive environment.

Settlement patterns

Islamic architecture originated in Arabia and adopted concepts from Roman, Mesopotamian, Persian and earlier Arab civilizations (Stierlin, 1996: 228). To non-Muslims it seems curious, but rules relating to building developed parallel to religious dogma and were well established by C.E. 900. The definitive building codes were written by a Tunisian, Ibn-al-Rami. Laws governing architecture addressed privacy and interdependence between neighbours, and dictated simple, unassuming exteriors (Hakim, 1986: 15, 95). These laws were formulated much like Christopher Alexander's patterns (1977) – normative but more doctrinaire – the most significant characteristic being the introverted nature of the houses. The focus is on the enclosed space inside the perimeter of the houses, rather than on exterior articulation. A descriptive analysis of morphological patterns based on Vitruvian principles cannot, therefore, be meaningfully applied (Hakim, 1986: 137, 138).

A result of Islamic social patterns is the vertical layering of settlements. At ground level men interact, with many areas excluding women, who can move freely at upper levels; even sometimes from house to house by means of galleries called *vikio* over alleys (Sheriff, 1998: 16). This is also found in Lamu (Fig 20).
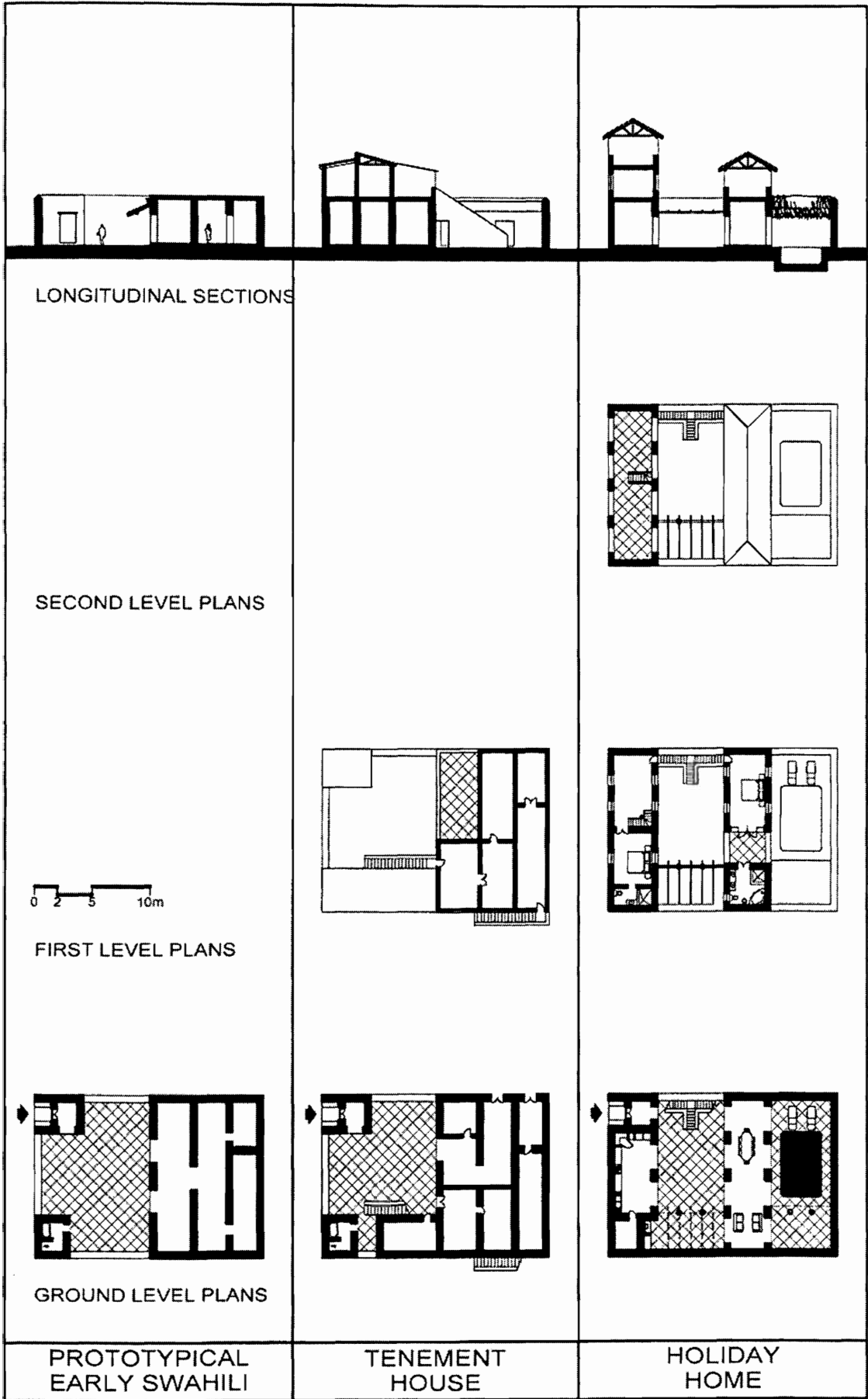
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LONGITUDINAL SECTIONS

SECOND LEVEL PLANS

0 2   5   10m

FIRST LEVEL PLANS

GROUND LEVEL PLANS

| PROTOTYPICAL EARLY SWAHILI | TENEMENT HOUSE | HOLIDAY HOME |

Figure 19
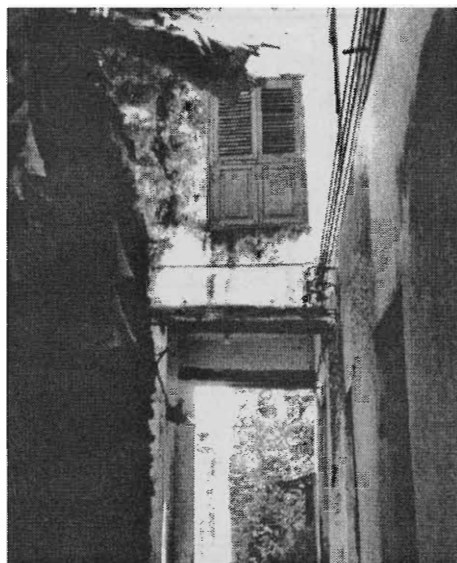**The evolution of the Lamu house.**

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Figure 20
A gallery over an alley.

Arab-Islamic cities developed organically, and are rarely geometrically ordered. But, as Petherbridge explains, there is always "…a consistent underlying order of hierarchical sequences of access and enclosure responding to patterns of social intercourse…" A settlement is composed of public, semi-public and private spaces. The main public spaces include mosques, bazaars and caravanserais. Central streets, sometimes interrupted with small, intimate squares, form the spines for narrow alleys, which lead, labyrinth-like, into the various quarters or wards. These wards are described as "…an ancient and ubiquitous phenomenon in Islam". They are based on kinship, and are shared by rich and poor (1978: 195).

The system of wards, called *mtaa* in Swahili, allowed groups with different cultural and economic backgrounds to co-exist. But settlements also had *mkao* (plural: *mikao*), which were "demes" that separated newcomers from longer-established groups, with patricians and commoners sharing such a deme (Allen, 1993: 224). Physically the *mtaa* still exists, but as a social ordering mechanism the system is greatly eroded.

A significant aspect of Islamic settlements is the lack of many formal institutional buildings such as municipalities and city halls. That is because many administrative controls are integrated with religion, and mosques accommodate a wider range of functions than Christian churches do (Bianca, 2000: 30).

As opposed to Middle Eastern settlements, Swahili settlements had no central market (*suq* or *bazaar*), public bath-house, *caravanserai* (a hostelry for visiting merchants), palace or fort. Visiting merchants could have been guests in patrician homes and could have conducted their business from there. Swahili society did not need large stone buildings. The first Swahili forts were only constructed towards the end of the 18th century, based on Arab and Portuguese models.

Allen regards Husuni Kubwa, the palace-like complex, and the nearby Husuni Dogo (a Middle Eastern type of walled market under royal control), as well as the Great Mosque, all at Kilwa, as an effort to superimpose a "typical Middle Eastern Islamic capital" on the "quite different context of Swahili society". He writes, "the significant point about Kilwa's architecture is precisely that most of these great public buildings were never even finished" (1993: 227-228).

Lamu, Stone Town in Zanzibar and the old town of Mombasa are probably the only functioning historical cities in East Africa. Lamu and Stone Town both feature labyrinthine topologies (Fig. 21). In Lamu the stone houses occupy approximately 10 hectare and in Stone Town about 25 hectare. Lamu has about 350 Swahilil stone houses (Ghaidan, 1976: 54) and Stone Town has 426 Omani-type houses (Siravo, 1996: 87). Apparently craftsmen from the Indian subcontinent were also employed in Lamu (Young, S.a.: 2. Website), as was the case in Zanzibar.

Thanks to economic decline caused by the end of Arab-Indian trade and 30 years of socialist rule, Lamu, like Stone Town, escaped the disastrous effects of modern tourist-orientated development – both retained their mid-nineteenth century

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character. But there the similarities stop. In spite of a common geopolitical stage, Lamu is morphologically totally different from Stone Town.

Islamic law dictates the dimensions of streets, including uninterrupted heights (Fig. 22). These norms are based on camel traffic and the requirement for a strip of private space directly adjacent to the house. Accordingly, a street should be between 3,2 and 3,5 metres wide. Alleys in Lamu are much narrower – 1,0 to 1,5 metres, except for the "main" street, which is about 2 metres wide. It is significant that by c. 1050 there were camels in Shanga (Allen, 1993: 22-25), only about 20 km away. There are still camels all along the Kenya coast. If we accept that Lamu Town today is essentially the same as in the 18th century, the inhabitants chose not to plan it for camels – donkeys are the beasts of burden. Generally the alleys in Stone Town are about 2 to 3 metres wide, and feel much less restrictive. Alleys are also more regularly relieved with small squares.
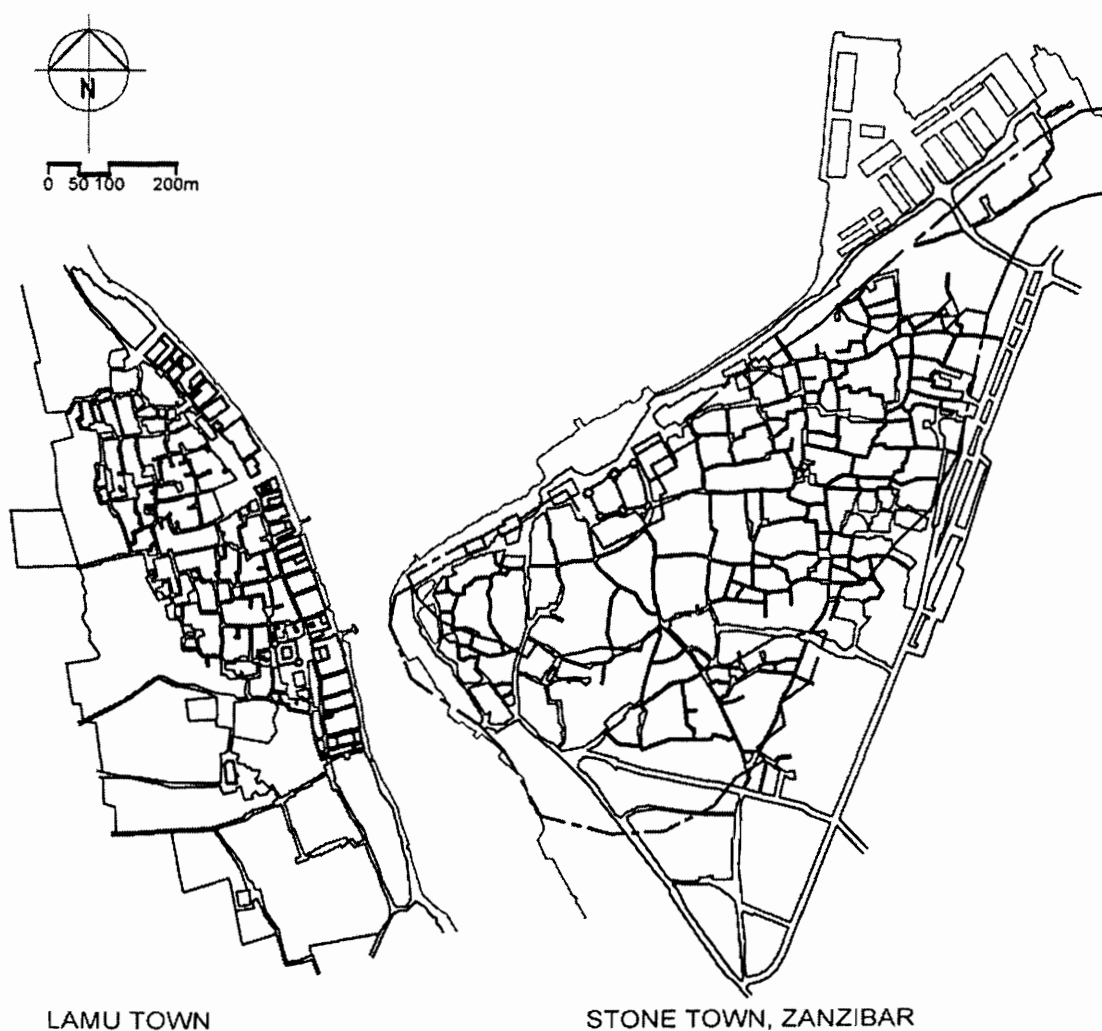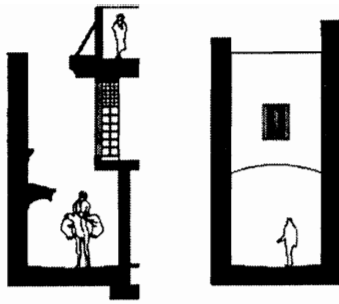

LAMU TOWN   STONE TOWN, ZANZIBAR

Figure 21
Contemporary topological maps of Lamu Town and Stone Town.

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ISLAMIC LAW AND ALLEYS

Figure 22
Islamic patterns for alleys and streets.

The abundance of windows at street level, the wider alleys and the large number of intimate open spaces inevitable make Stone Town a much more inviting city for tourists. In Lamu visitors tend to restrict movement to the waterfront, the market square and fort, and the "main" street, one block away from the waterfront and parallel to it.

This street is somewhat wider than most and lined with Indian-type shopfront buildings, probably the legacy of the Gujarati merchants who took advantage of the opportunities offered by Omani rule.

The layout of Lamu seems to be based on that of an Arab-Islamic city in a hot-dry region, while the layout of Stone Town reflect the realities of a hot-humid climate with much looser planning (Fig. 23).

Before the 1830s, the area now known as Stone Town on Zanzibar Island consisted of thatched mud huts and some stone houses, in the manner of a typical early Swahili settlement. After Sultan Said's "permanent" move to Zanzibar the Omani houses spread rapidly. Of the old stone houses, indications – the exterior entrance porch, the *daka*, so characteristic of the Lamu houses – of only five remain (Siravo, 1996: 31, 34).

Conceptually, an Omani house in Zanzibar can be described as a roughly square courtyard building of two or three storeys, in a massive, solid form with a flat roof, sometimes with a crenellated parapet (Fig. 24). Towards the end of the 19th century they were generally roofed over with corrugated iron sheeting as protection against the tropical rain (Siravo, 1996: 34). Regularly spaced shuttered windows face the street and any adjacent open space. The ornately carved *Zanzibar door* defines the main entrance.

Omani houses are cool and well ventilated. Full-length shuttered windows and the double-leaf doors allow cross ventilation from the outdoors, through a string of rooms and an adjacent loggia, both no wider than 3,0 metres, due to structural constraints. The cross ventilation could well be generated by the courtyard acting as a funnel, with the rising warm air actually causing the airflow, without the need for a natural breeze.

Traditional Swahili houses, on the other hand, with their rooms layered parallel to the courtyard, had no external windows and therefore no cross-ventilation. In a hot, humid climate this is a very uncomfortable arrangement. Some Lamu-type houses have windows at upper levels to the same pattern as that of the Omani houses. Indian-type balconies, like those found in Stone Town, are rare.

In a randomly selected 100 x 100 metre area in Stone Town we find that the mean footprint of the Omani houses – excluding the waterfront palaces – is 336m² and the courtyards on average 57m². These are directly behind the palaces and probably belonged to the Omani elite.
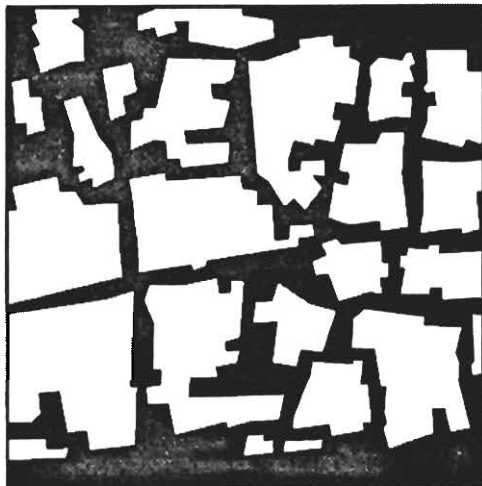
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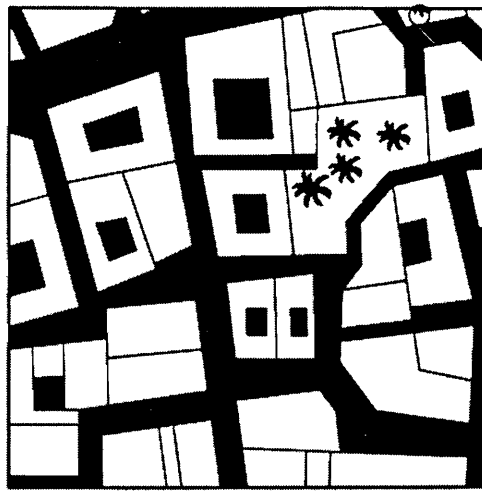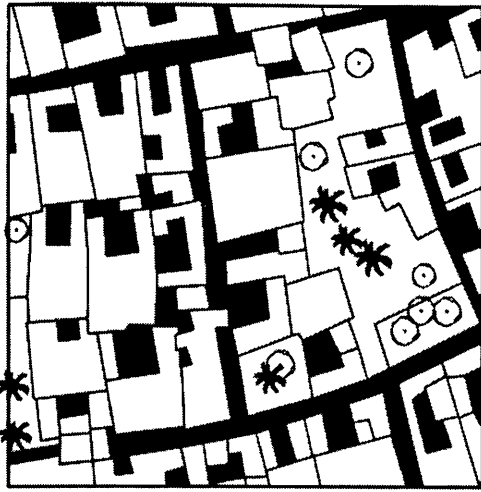
COMPARISON OF 100 x 100m CORES IN LAMU AND ZANZIBAR
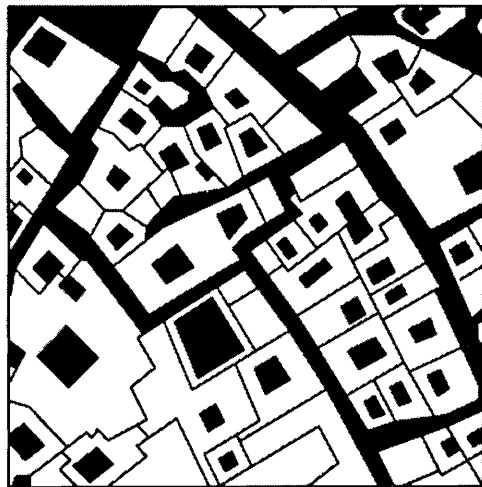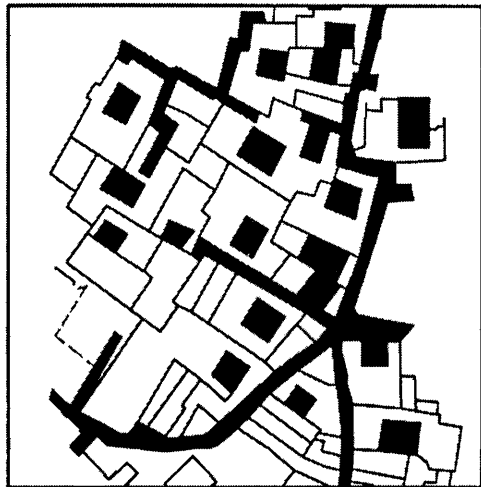
COMPARISON BETWEEN UR, BC 2000, AND TUNIS MEDINA
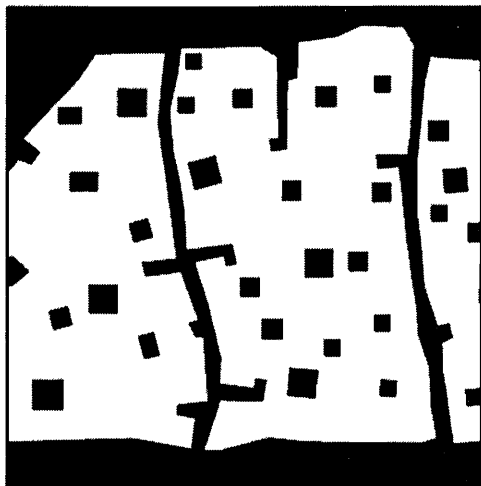
Hot dry   Hot humid

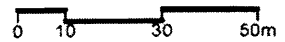COMPARISON BETWEEN PATTERNS OF ARAB CITIES BASED ON CLIMATE

0 10 30 50m

Figure 23
Comparison of Lamu and Stone Town with Arab cities.

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Isometric view

Street level plan

Upper level plan
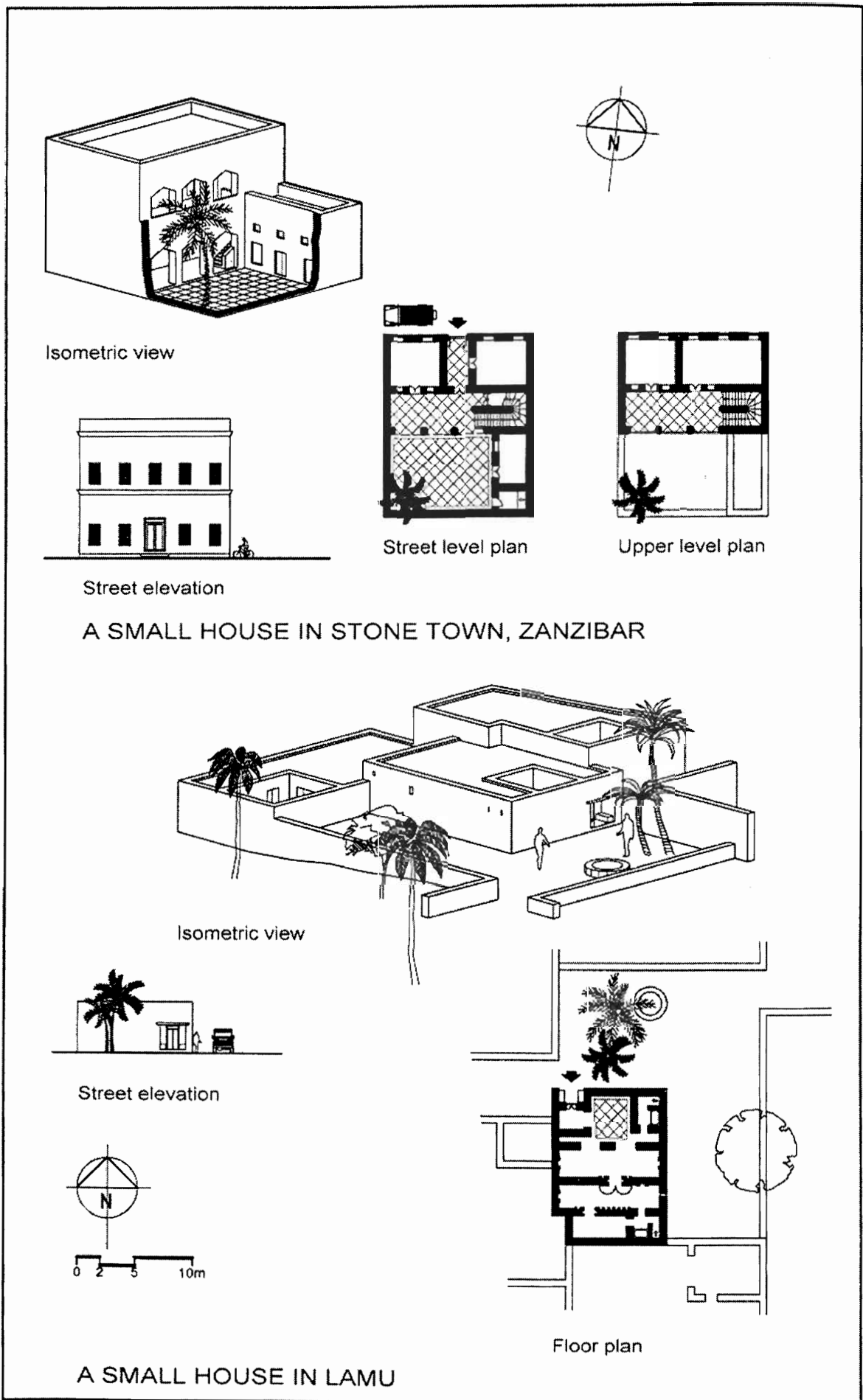
Street elevation

A SMALL HOUSE IN STONE TOWN, ZANZIBAR

Isometric view

Street elevation

0 2 5 10m

Floor plan
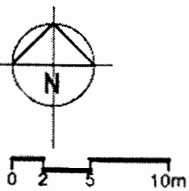
A SMALL HOUSE IN LAMU

Figure 24
Comparison between an Omani-type house in Stone Town and a Lamu house.

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Actually the footprint for an Omani house in Stone Town as a whole ranges from about 200m² to more than 500m². But the average is probably closer to 230m². These are typologically and conceptually in the same category as the typical Arab-type merchant's house, which was found in North Africa after Islamic conquest. If only the portion open to the sky is considered, the courtyard occupies about 15-17% of the footprint. If colonnaded areas, which are essentially covered outdoor living areas, are included, we find that the proportion of protected outdoor living area, whether covered or not, increases to the 35-42% range. In the typical two-storey configuration, the Omani house could easily offer approximately 390m² of enclosed and colonnaded space.

The average footprint of the early Swahili houses was probably about 140m², offering only about 92m² of covered space. It is easy to imagine that the Omani aristocracy and merchants would rather demolish Swahili houses on occupied sites and build over them with their own much larger houses, which were more suited to the climate.

Fortunately the Omani rulers and their followers settled mainly in Zanzibar and only had representatives in towns like Lamu. In spite of a number of new building types introduced by the Omanis and accompanying merchants, the patricians obviously retained authority over socio-cultural matters, including architecture.

Islamic towns are traditionally classless, with the rich and poor sharing the same neighbourhood (ward). The Swahili town, however, with its permanent stone houses surrounded by thatched mud huts, was the setting for a highly stratified society, which was the norm not only for the Swahilis, but also for their trading partners in medieval eastern and southern Africa[6].

Conclusions and recommendations

The story of the Lamu house and the historical setting in which it existed for nearly a thousand years cannot be neatly packaged. The history is also controversial, but cannot be ignored – too many key developments seem to have influenced the form and evolution of the Lamu house and the Swahili settlement, as such.

Further study should include the detailed surveying of many more examples, with access to the houses facilitated by official sanction, in parallel with a much more comprehensive review of literature on the history of the Swahili coast. We accept that buildings can no longer be studied as isolated icons. Buildings exist in a physical and cultural landscape, and to study a topic like the Lamu house properly, it is important to become fully acquainted with the life-styles of the relevant society and the way the house and the settlement were and are still being used.

It is clear that the old established patrician families very often cannot afford to maintain their homes. Maintenance should perhaps be subsidized in the interest of the community. Houses converted for tenants are spoiling the town – they are simply shanties two and three storeys high. New low-cost housing should be provided on the outskirts of the town, which would still be within a comfortable walking distance from the core. To date, foreigners have displayed amazing restraint and sensitivity when converting traditional houses into holiday homes and guesthouses. As mentioned previously, they revived local crafts and are underpinning the local building industry, and to an extent, the economy. It might also be beneficial to restore a cluster of old stone buildings in the same way as the Swahili House Museum has been restored and fitted out.

The Lamu house is the stage for the manifestation of the Swahili culture. It is also its most tangible symbol. It is worth recording and conserving the last vestiges

of this remarkable legacy[7].

Notes

1   Edward Alpers of the University of California, Los Angeles, in his spring 2000 review *Port Cities and Intruders: The Swahili Coast, India and Portugal in the Early Modern Era*, written by Michael Pearson. http://www.findarticles.com/cf. 30 Nov. 2001.

2   By James de Vere Allen, a controversial author and founding curator of the Lamu Museum from 1970 to 1980.

3   Other sites include Great Zimbabwe, Sukur in Nigeria, Ashanti traditional buildings in Ghana, Stone   Town in Zanzibar and in South Africa, Sterkfontein, uKhahlamba Park and Robben Island. www.international.icomos.org

4   Including *Periplus maris Erythraei*, a handbook by an Egyptian merchant, written c. 60 C.E., Al Mas'udi in 916 C.E., c. 1 100 Chinese descriptions, Al Idrisi in c. 1150, Ibn Battuta in 1331, and Álvares in 1540.

5   Their book, *The beauty of the Kenya coast*, is obviously intended to orientate tourists and armchair travellers, but it presents its information very authoritatively.

6   By about C.E. 1 100 the Mapungubwe settlements of the Limpopo Valley were part of a state with trading links to the Swahili Coast, which shows the same hierarchical division of housing (Reader, 1997: 313-315). The demise of Mapungubwe in the 12th century was followed by the rise of the hilltop settlement of Great Zimbabwe in the 13th century. The Shona rulers also traded with the East Coast and the rulers imposed the same social segregation (Reader, 1997: 318-321).

7   This report stems from a field trip to Zanzibar in 2000 and one to Lamu in 2001, both financed with a grant from by the National Research Foundation (NRF). The theme is related to two NRF-funded projects. The first investigates the vernacular courtyard houses of Africa, and the other, African settlement patterns.

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Glossary

Banaa – Dressed mangrove pole used as a roof beam.

Baraza – A stone bench adjacent to the entrance door on the street.

Boriti – Round mangrove pole used as a roof beam.

Daka – An entrance porch with stone benches.

Kiwanda – Interior courtyard, sometimes with a kitchen and/ or toilet to one side
.

Mabati – Corrugated iron sheeting used to roof over the flat roofs as a protection against the tropical rain.

Makuti – Roofing tile woven from palm thatch.

Mji (pl. miji) – A Swahili settlement with a degree of political or social autonomy. Can range in size from a small village to a populous town.

Msana – Elongated room in a Swahili house.

Mtaa (pl. mitaa) – Cluster of buildings forming a ward, sometimes based on

family and ethnic affinities. Several such wards make up a neighbourhood.

Sebule – The entrance or informal reception hall.

Tekani – Interior vestibule, often with seats, overlooking the courtyard.

Zidaka – A matrix of wall niches, framed with decorative plaster mouldings.