An analysis of an Omani house in Stone Town, Zanzibar

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Abstract

The Omani houses of Zanzibar are the tangible legacy of ancient trade links and 19th century political domination. These elegant houses are climatically effective, and offer private outdoor living space in a dense urban environment. This type of house is still popular in Oman, but in Zanzibar it is are threatened.

As background this report reviews the state of the literature related to the Omani houses of Zanzibar and also presents a very brief historical perspective. A description of the selected case study in its current state is followed by a proposed reconstruction to its perceived original form when build in the 19th century. This exercise reveals a concept of great sophistication and clarity. Although the planning process and the constituent elements were standardized, an infinite range of possible plan forms and sections ensured flexibility and responsiveness.

Our subsequent analysis hints that the Omani house is unique but not alien when compared with other traditional Arab courtyard houses. The report is concluded with suggestions for future academic research, while our conclusions and recommendations focus on opportunities for practical research and development.

The premature demise of this house type was partly the result of colonization and European interference. It offers valuable lessons, however, which could be explored in our quest for better affordable housing in Southern and East Africa.

Acknowledgement

We are grateful to the National Research Foundation for the grant, which funds our investigation of vernacular African courtyard houses, and which made this excursion possible.

Introduction

Zanzibar is part of the United Republic of Tanzania. The ancestors of the local people were from Africa, Persia, Yemen, Oman and Asia, and trade links date from antiquity (Fig. 1). Oman politically dominated the whole of the East African region during the 18th and especially the 19th century.

Figure 1 A sketch map of ancient Indian Ocean trade

This report focuses on the courtyard houses introduced by the Omanis. These dominate the historical Stone Town of Zanzibar, where they supplanted the earlier medieval Afro-Arab Swahili houses in the 19th century as the accommodation of the ruling and merchant classes. In a very few cases these Early Swahili houses still exist in an extensively modified form. In East Africa in general they are now mostly just ruins found at the traditional Swahili settlements, such as Kilwa and Songo Mnara (both World Heritage Sites). Since the best-preserved examples seem to be at Lamu in Kenya, they are also called Lamu-type houses. While contemporary Swahili houses are rare in Stone Town itself, they are the common residential type in the Ng'ambo area east of the town; in fact, all along the East African coast. The large number of traditional African homestead types

is mostly restricted to the interior (Fig. 2).

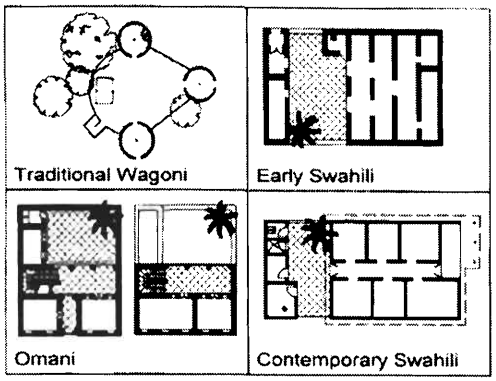


Figure 2 Vernacular Tanzanian house

In spite of being of massive construction, the Omani houses seem to respond well to the hot, humid climate. In addition, they allow high settlement densities to be achieved, while still offering private outdoor living space. Street elevations remain harmonious, but plan forms are flexible and responsive. These elegant courtyard houses are no longer constructed in East Africa, although they seem to remain popular in their cradle land, Oman. In Stone Town, government and international agencies are battling to conserve this heritage.

Stone Town offers the exact antithesis of urban sprawl – the settlement is eminently compact, "walkable", friendly and safe. Narrow alleys are punctuated with small, intimate public squares, reminding one of Christopher Alexander's recommendations for neighbourhood planning (1977, pp. 310-314). In fact, most of Alexander's principles seem to be embodied in this type of neighbourhood layout.

Our review of the literature revealed some inconsistencies. On the other hand, a field survey and subsequent reconstruction of an Omani house revealed an uncompromisingly Arab house of great simplicity and clarity of design.

Nature and scope of this report

This report attempts the reconstruction of an Omani house in Zanzibar – surveyed during a field trip, funded by the National Research Foundation, in July 2000 – to its original form when completed, probably some time during the first half of the 19th century. Surveys of these houses, even in their current much altered states, are rare in literature, and a reconstruction of an original scheme has not yet been attempted as far as we could establish. Apart from complementing the historical picture, such a reconstruction could provide valuable knowledge on why the type is so successful in terms of climatic responsiveness, flexibility and compactness, even if it did not endure for long in East Africa.

Our report first reviews the related literature, then offers a brief historical background. Stone Town is subsequently discussed, including the urban fabric. Our case study is then described in its existing state, before a reconstruction is attempted. This we discuss in terms of:

- The proposed concept
- Street elevations
- Architectural composition
- Climatic effectiveness
- Aggregational characteristics
- Streetscape
- Construction technique
- Zanzibar doors and windows

By comparing the data to other examples, a set of tentative observations are submitted as an agenda for analysis. Suggested issues for further consideration and discourse attempt to identify a field for future academic research, while our conclusions and recommendations focus on opportunities for practical research and development.

Method of investigation

The method of investigation was to visit as many examples of the dwelling types under study as possible, to survey selected representative examples with an electronic measuring device and to record significant aspects photographically. Surveys had to be sufficiently detailed to allow plans,

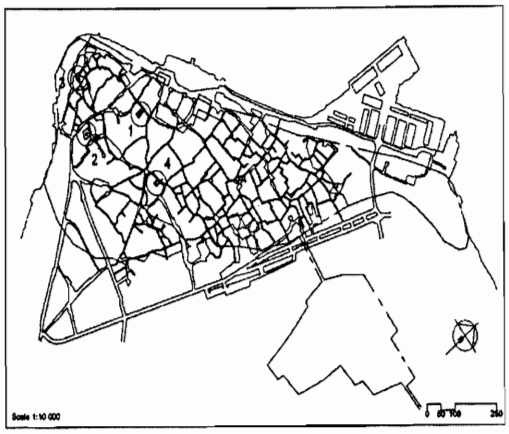


Figure 3 A schematic map of Stone Town, Zanzibar. The numbered circles identify the surveyed houses

sections and elevations to be drawn, once back in South Africa.

One early Afro-Arab Swahili house converted into (1) a business below and residence over, and three Omani houses converted into (2) a hotel, (3) offices and (4) an apartment block, respectively, were surveyed. These are shown, numbered, on the schematic map of Stone Town (Fig. 3). House No. 4 is the subject of our case study. It was chosen for analysis because alterations to the original structure were easily recognisable due to unsympathetic methods and materials

Nancy Galloway, a British citizen resident on the island, has remodelled a number of houses in Stone Town, including her own house and the building housing her tour operation. Ms Galloway claims that she was astonished at the spaciousness of the houses, which only became apparent when more recent partitioning and infill panels were demolished as she tried to get more light and air into the buildings. This observation encouraged the idea to explore the theoretical reconstruction of an Omani house.

Review of the literature

Most popular references on vernacular architecture make no mention of either the Swahili culture, or the early Afro-Arab and Omani architecture of coastal East Africa.

A widely used reference is Susan Denyer's *African Traditional Architecture* (1978), whose sources on East Africa include Allen, Garlake, Roland Oliver, Paul Oliver, Davidson and Kirkman; all the standard references. Her classification of styles – Sudanese, Impluvial, Hill, Beehive (1978, pp. 159-168) – is widely accepted. But none of these refer to either the Early Swahili house or the later Omani surrogate. In her chapter on house forms she has a partial elevation of an Omani house – without identifying it as such (1978, p. 141).

Peter Garlake's *The early Islamic architecture of the East African coast* (1966) is arguably still the most referred-to and authoritative study on East African coastal architecture – but his timeframe is delimited to about the 16th century and he does not even mention Omani architecture. The same applies to a chapter on the cities on the East African coast in *The kingdoms of Africa* (Garlake, 1978). *Lamu: a study in conservation* (Ghaidan, 1976) is also extremely valuable, but also confined to the early Swahili era.

Another popular source is Ronald Lewcock's *Zanj, the East African coast* (1971). Lewcock's description of the "great houses" of "the trading port" of Zanzibar – obviously the Omani houses – is deceptive. No mention is made of an Omani origin. In fact, when describing the plan and roof configurations of an Omani house, he alludes to the early Swahili house and to the influence of Husuni Kubwa, respectively (1971, p. 92):

> From a central courtyard, with clear water splashing in a raised pool, the wide staircase led up to the main living quarters on the first floor, which had **the typical long narrow rooms of the coastal plan**. Open terraces on the flat concrete roofs were reached up wooden staircases, and often **low arched openings were pierced below the balustradings** so that women could look out while preserving their privacy – a pattern which was used five hundred years earlier on the thirteenth century Husuni Kubwa [our emphasis].

The following issues are contentious:

- The "long narrow rooms" are inherent to the Lamu rather than Omani house, whose room width is the same due to similar construction techniques, but which, due to layout, is more conventionally rectangular (Fig. 2).
- This parapet configuration is not common in Zanzibar at all – the openings in the parapet referred to are mainly found on fortified buildings and seem to have a defensive function (Fig. 4).
- No other author mentions the flat roofs of Stone Town being used as terraces. In cultures where roofs are used as living spaces they generally feature some sort of screens for privacy.
- And, finally, the 13th century Husuni Kubwa conforms to the early Afro-Arab Swahili domestic schema and shares very few features – other than its courtyards – with the Omani houses (Fig. 5).

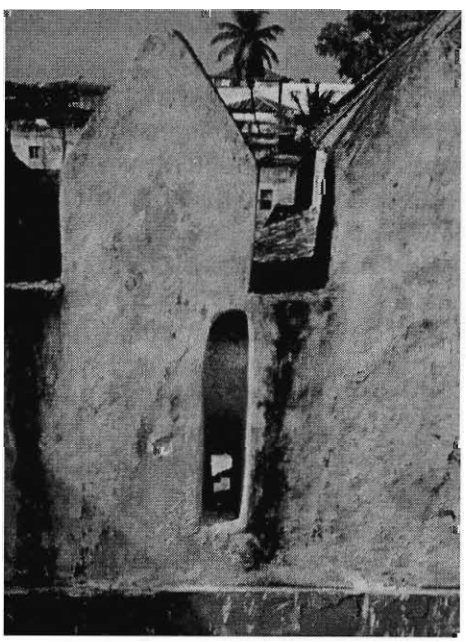


Figure 4 Battlements of the Oman-inspired Lamu Fort featuring pierced openings.

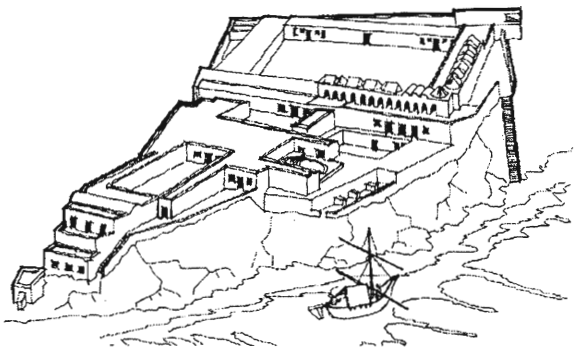


Figure 5 Isometric view of Husuni Kubwa.

Nnamdi Elleh's *African architecture: evolution and transformation* (1997) is a significant and recent book, and his bibliography includes most of the usual authors who have contributed to East African history and architecture, such as Garlake, Deneyer, Davidson, Allen and Sheriff. But some of hisstatements are wrong, for example (1997, pp. 165-166):

> The island of Zanzibar and Pemba have some of the best preserved classic architecture of Swahili middle ages and are distinguished by the art deco that garnishes the walls and notches of the buildings. As in Lamu, Kenya, the houses in Zanzibar were built in brick. They are self-contained one- and two-storey buildings with gardens, courtyards, servant quarters, walls of coral, and with a prioritized degree of privacy in the location of the master bedrooms, the wives' rooms, and the parlor or living space.

This paragraph is wrong on the following points:

- There is no preserved "classic architecture of Swahili middle ages" in either Zanzibar or Pemba (Garlake, 1966, p. 7).
- These houses were built of coral rag and certainly not in brick.
- All the houses are at least two storeys high.
- The houses in Lamu are fundamentally different from those in Stone Town (Fig. 2).

Elleh's theme is African architecture and the impact of external influences – but he fails to mention

the rise of Omani power in the Indian Ocean in the mid 18th century, as well as the resulting transfer of the Muscat-type Omani house to East African shores and the subsequent prominence of this type. This is a regrettable omission.

The most recent and comprehensive works on the architecture of Stone Town are both planning documents. The first is *The Stone Town of Zanzibar: a strategy for integrated development* by LaNier and McQuillan (1983), an unpublished working document. The other is *Zanzibar: a plan for the historic Stone Town*, by Francesco Siravo (1997).

LaNier and McQuillan's (1983, pp. 7.1-7.2) description of the stone-built houses of Stone Town is problematic. The "oblong rooms ... arranged parallel to the main façade" are reminiscent of the earlier Lamu houses, and not of the Omani houses prevalent in Stone Town. They make no mention at all of an Omani connection, although reference to the Ibadi sect could imply such a link.

Siravo, commissioned by the Aga Khan Trust for Culture, writes that "at the beginning of the 1830s, Stone Town was a mixture of mostly earthen and some scattered stone houses". We believe that these stone houses were most probably a mixture of Lamu-type and Omani-type houses. Only with Sultan Said's "permanent" move to the island did the stone houses spread rapidly, but then predominantly the Omani-type. Siravo emphasizes the Omani influence throughout. He describes these as the "most prominent of the traditional stone buildings in Zanzibar" (1997, p. 31). He also mentions the "austere precepts of the Ibadi sect, to which most of the Omanis in Zanzibar belonged" (1997, pp. 31-32). This reference begs a question – are not most Arab-Islamic courtyard houses characterized by austerity, externally, at least? Was the Ibadi impact really a determinant of form?

On the historical dimension, Oman officially seems to support a claim that trade with East Africa commenced about 3 000 years ago (Sultanate of Oman, 1999, p. 244). Another claim is that "Of all the seafaring Arabs, it was the Omanis who dominated the rich East African trade, introducing its hugely prized products into the economies of the Islamic Near East" (Insight, 1998, p. 32). But one also finds reference to Yemeni presence – Reader (using other sources as authority) states that the East African coast was by "ancient right" controlled by merchants from "present-day Yemen" (1999, p. 204). Is this apparent contradiction important? If one wants to trace the roots of an architectural phenomenon it certainly is!

Abdul Sheriff's *Zanzibar Stone Town: an architectural exploration* of 1998 is an eminently readable little book written by a recognized authority, and although it is not really scholarly – aiming at tourists – it offers significant statements and insight. Even so, some claims must be viewed with circumspection – for example, Sheriff claims that the regional building technology – using coral stone, lime, mud, and mangrove poles – was developed "on the East African coast itself" (1998, p. 10). Talib, however, claims that coral stone (*faroush* in Arabic) with mud or gypsum as a bonding material is a traditional technique in Saudi Arabia (1984, p. 62).

McCutchin and Jafferji's *Zanzibar: an essential guide* (1999) aims at the same audience, and is highly recommended reading as an introduction and orientation.

This review shows that there are some flaws in the available literature. A collaborative effort to assess and update the existing literature could enrich the existing body of knowledge.

Historical context – the Tanzania-Oman connection

Khoisan hunters and gatherers inhabited Tanzania from about 1000 BC, while Bantu-speaking agri-culturists started migrating into the area by the end of that millennium.

At that time, Arabs seem to have started trading in East Africa, travelling with the north-east monsoon winds down to the coast between November and February, and back up to the Arabian peninsula on the reversed south-west monsoon between June and September (Siravo, 1997, p. 11; Garlake, 1978, p. 96). These maritime merchants seem to have been mainly from Oman and Yemen. They referred to the East African coast as the *bar* of the *Zanj* – coast of the black people. Through the ages, not only Arabs, but also Persians and Indians, traded in the region, which included the harbour-towns of Mogadishu, Lamu, Malindi and Mombasa north of Zanzibar, and Kilwa and Sofala to the south (Siravo, 1997, p. 11). It seems significant that the history of Great Zimbabwe and that of Kilwa show close commercial interdependence (Garlake, 1978, p. 107).

About eight centuries later, Arab, and some 400 years after that, Persian (from present-day Iran) merchants started settling on coastal and offshore islands. By 1045 the indigenous people of these islands had adopted Islam. Contact and intermarriage with the indigenous population resulted in the Swahili culture, which flourished between 1300 and 1500 AD. Some centres, including Zanzibar, were ruled by Shirazi families from Persia during that time.

Zanzibar actually consists of a number of islands, of which Pemba and Unguja are the largest. The latter is known to Westerners as Zanzibar.

Portuguese domination of East Africa started in about 1502 and, from Fort Jesus in Mombasa, they controlled trade. The Portuguese also occupied Oman in 1507. Although they built a number of forts, for them Oman was a way station on the route to India and their influence on the built environment seems to have been negligible. They were driven out in 1650. Omani merchants subsequently expanded their interests aggressively towards India and 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 in effect 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 for a time and experienced internal and dynastic conflict. Even so, the Omanis built the first fortifications at Zanzibar some time before 1710, while the Old Fort, although subsequently much altered, was built in approximately 1780. In East Africa the new dynasty, the Al Bu Saidis, was in conflict with the Mazrui clan, also an Omani grouping. The Al Bu Saidis conquered Kilwa from their foothold in Zanzibar in 1785 and Mazrui-controlled Pemba in 1822, and by 1835 Sayyid Said bin Sultan had consolidated Omani power on the whole of the East African coast.

In the 1800s Zanzibar became the main slave-trading centre in East Africa. The trade in slaves, ivory, gold and other commodities was so lucrative that the Sultan of Oman transferred his capital from Muscat to Zanzibar in 1840 (some sources suggest 1832). From Zanzibar the Omani sultans ruled the East African seaboard. During that period Zanzibar was also the world's biggest producer of cloves. This booming economy also attracted many Indian merchants, financiers and professionals.

When Sayyid Said bin Sultan died in 1856, the Omani empire split into the Sultanate of Zanzibar and the Sultanate of Muscat and Oman.

Zanzibar became the commercial "capital" of East Africa in the late 1800s and remained so until Mombasa became the main East African port at the turn of the 20th century. The abolition of slavery and colonization also contributed to its economic decline.

This brief overview attempts to emphasize the intensity and duration of the involvement and influence of the Persian Gulf region on coastal East Africa. Garlake summarizes the

situation when he states succinctly: "Thus, East Africa was integrated into the commerce of the Muslim world ... The culture of the coast was urban, commercial and Islamic" (1978, p. 94).

Zanzibar – Stone Town

Stone Town may be found on Unguja's western coastline. Apparently this city is located on a peninsula and has been settled for at least three centuries, but it assumed its current urban character only after 1830 (Siravo, 1997, p. 28). A significant characteristic is the ward, or *mitaa*, namely, groups of buildings based on family and ethnic affinities. The wards apparently developed in a "haphazard" manner, which eventually determined the Stone Town's morphology (Siravo, 1997, p. 29). Siravo writes that "at the beginning of the 1830s, the town was a mixture of mostly earthen and some scattered stone houses". We have to assume that the earthen houses were traditional African homesteads, and those of stone, Lamu-type Swahili houses, then prevalent along the coast.

Figure 6 Stone Town is a functioning city.

Figure 7 Stone Town, Zanzibar. Nothing seems to have changed since the mid 19th century.

Stone Town is a functioning historical city (Fig. 6). It is a labyrinthine Arab-type town, similar to Lamu or the old town of Mombasa, but much larger. Thanks to economic decline caused by the end of Arab-Indian trade and 30 years of socialist rule, Stone Town was spared the disastrous effects of modern tourist-orientated development – evidently little has changed since the mid-nineteenth century (Figs. 7). Organizations such as the Aga Khan Trust for Culture campaigned successfully to have the town proclaimed a World Heritage Site. Considerable foreign assistance is preserving the main historic buildings, which are primarily institutional.

One author has claimed that 600 of Stone Town's 1 700 buildings have been restored (Mwalim, 1998). This contradicts Siravo's evidence that only 226 of the 1 706 structures were in a "good condition" in 1996 (1997, p. 97). In fact, most of the residential buildings, mainly Omani courtyard houses, and Indian-influenced houses and dormitory buildings (*musafarkhanas*), Indian shopfront buildings and contemporary Swahili houses, are deteriorating (Fig.8).

Figure 8 The old houses of Stone Town are deteriorating

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. (Sheriff, 1998, pp. 22-23; Siravo, 1997, p. 31; LaNier *et al*, p. 7.3). Towards the end

of the 19th century they were generally roofed over with corrugated iron sheeting as a protection against the tropical rain (Siravo, 1997, p. 34) and to reduce direct exposure to the sun (LaNier *et al*, p. 7.8). Regularly spaced shuttered windows face the street and any adjacent open space. The ornately carved *Zanzibar door* defines the main entrance.

These houses constitute the field of this investigation. Maybe they are of less historic value than the monumental landmarks, but collectively they contribute to give Stone Town its distinctive character (Fig. 9). Many are privately owned and their owners can simply not afford to restore them. Some have been converted into hotels, offices and even apartment buildings. Our reconstruction suggests that such conversions have inevitably (and regrettably) obscured the clarity and simplicity of the original designs.

Figure 9 The character of Stone Town, Zanzibar.

Our Case Study

Existing state

Our case study is identified as No. 2067, Kajificheni Area, an Omani house converted for multi-family occupation.

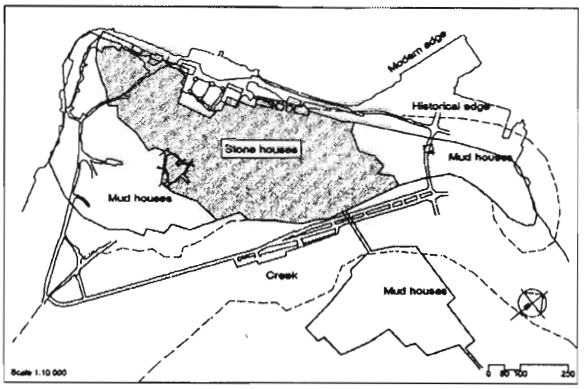


Figure. 10 A sketch map of Stone Town, Zanzibar showing the locality of the case study superimposed on the 1846 situation

A map of 1846 shows the areas occupied by stone houses and mud houses, respectively (Fig. 10). Since our case study falls within this "stone house" area, could we assume it predates the map? We believe so – early houses in a *mtaa* probably had a rectangular footprint, while subsequent constructions simply had to assume trapezoid footprints due to the irregular perimeter of a typical *mitaa*, and in order to fit in between existing buildings. Siravo's survey (1997) recognizes our case study as a residential building (map, p. 80) and classifies it as privately-owned (map, p. 83), Arab-influenced (map, p. 86), a significant building (map, p. 89) and regrettably, in a deteriorating condition (map, p. 96). Its façade is identified as a protected streetscape feature (map, p.127).

A street vendor from an adjacent building negotiated access with all nine households occupying the building (for a steep fee for each party involved!).

Our case study occupies a site of just 204,4m² (15,6 x 13,1m) – small for a residential stand by most standards. It consists of a two-storey

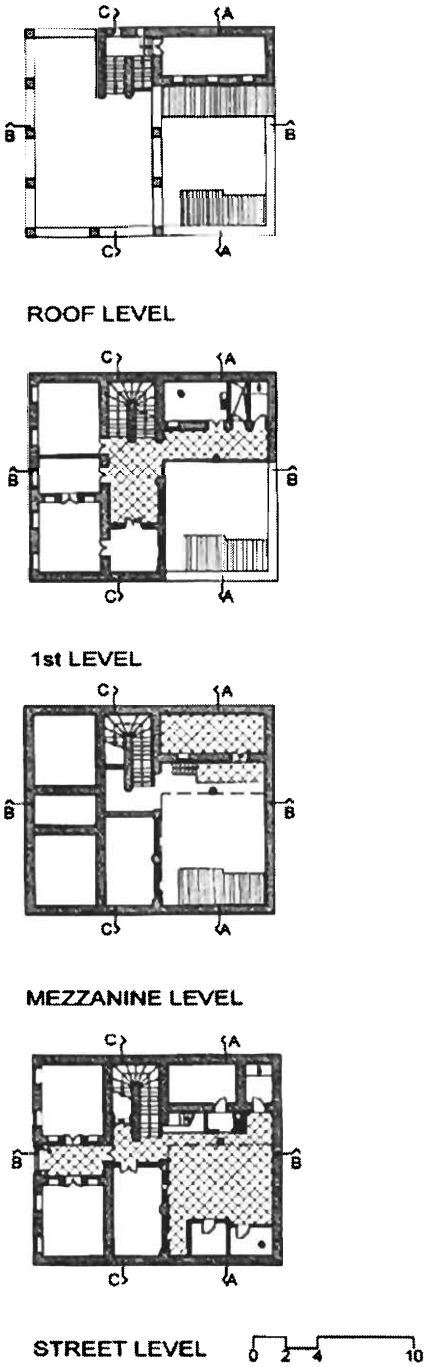


Figure. 11 The case study. Existing situation: floor plans

block facing the street, a four-storey wing at the side of the courtyard, and a single-storey shack inside the courtyard. These heights do not include the makeshift accommodation in the roof space, which is open to the sides, but has no windows. It currently offers nearly 450,0m² of covered space. The tenants occupy one room per household, except apartment No. 5, which consists of two rooms. The roof space is not enclosed, but constitutes apartment No. 9. A dilapidated lean-to shack in the courtyard serves as a kitchen and storage area.

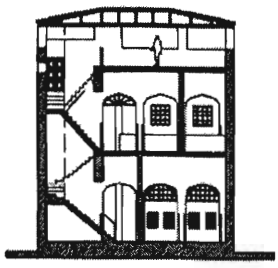
There are two squat toilets (one above the other) and one shower. Two rooms are used for cooking. This is done over open fires directly on the floor inside these rooms (Figs, 11, 12).

Reconstruction

Because of unsympathetic methods and materials it was easy to identify the alterations without special equipment or training – metal-framed windows to openings, cinder blocks for partitioning and reinforced concrete for recently added suspended floors. It was also obvious where arches had been filled in (Fig. 13). Except for the ubiquitous corrugated metal roof, called *mabati*, the street elevation fortunately appeared to be unchanged.

Removing these additions and alterations reduces the habitable space dramatically. Enclosed living space is now 78,0m², loggias and stairways 36,8m² and kitchen/bathroom about 14,4m². These spaces are arranged in an L-shape around a courtyard of 57,8m² (8,9 x 6,5m). We believe the house originally consisted of a two-storey block enfronting the street, one room and a loggia (containing the staircase) wide, arranged together with a single-storey utility wing around a courtyard (Figs. 14, 15).

In due course another storey was added to the side wing, using the same construction technique as the original house. How do we explain this as an addition? A 400 x 400mm column now supports the access balcony, rather than the colonnaded arches of the original block. The staircase is puzzling – it is basically simple and ergonomic and leads to a stair house on the roof complete with arched openings. A main staircase leading to the roof is not common in Stone Town. A secondary wooden staircase usually provides access. But the arched openings at the top of the



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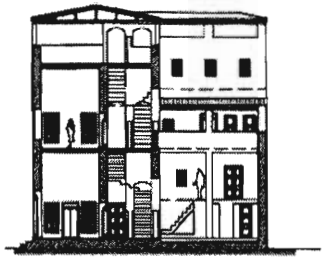

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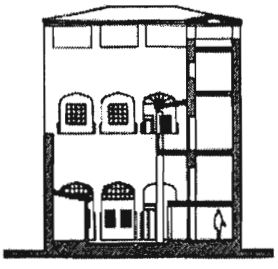

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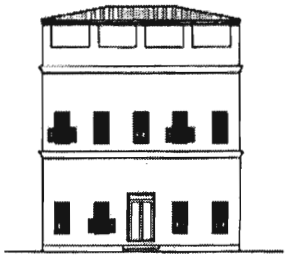


STREET ELEVATION

0 2 4 10

Fig. 12 The case study. Existing situation: sections and street elevation

stairs indicate that the work was done within the same aesthetic setting as the house, but probably related to the additional storey. The metal roofs could have been added then or a little later. The canopy over the access balcony abuts the arch leading to it in a most awkward manner and appears makeshift (Fig. 16).

Figure 13 Clumsy and incompatible materials make it possible to identify alterations

Much later, probably after independence, another floor was inserted into each storey of the side wing. Because of the use of cinder blocks and reinforced concrete, this is easy to detect. These suspended floors were made possible by floor-to-ceiling heights exceeding five metres! The new mezzanine floor has its own staircase and the new upper floor is accessed from a very clumsy and compromised modification to the main staircase. Parts of the loggia were enclosed, some interior partitioning added and the shack in the courtyard was possibly constructed at the same time.

How was this house put together and used? Layout is very obviously based on Islamic requirements for household privacy and is broadly compatible with the norm for Omani houses in Zanzibar. Through an intricately carved door, generally known as the *Zanzibar door*, one enters a reception hall called a *sebule*. The street front often features a built-in stone bench, called a *baraza*, which this house does not have. A carved interior door leads to a room called the *majlis* where the head of the household received and entertained male visitors. Another carved door led via a loggia (an arched colonnade) to a courtyard. (Sheriff, 1998, pp. 22-23; Siravo, 1997, p. 31; LaNier et al, p. 7.3).

Sheriff, Siravo and LaNier agree that the other ground-level rooms probably served for storage and other utilitarian functions, while upper levels were strictly for the household only. It is conceivable that slaves and guards also had their quarters at ground level.

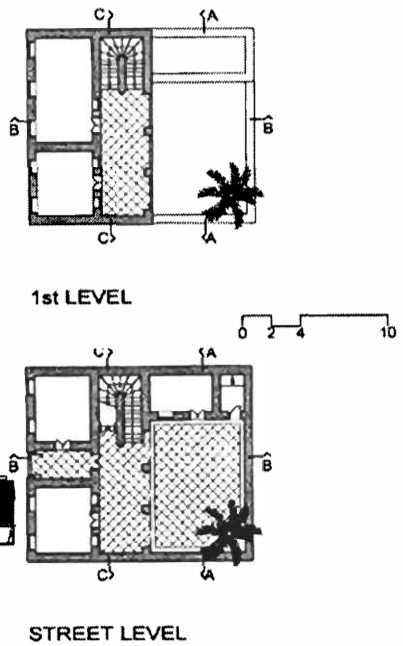


Figure 14 The case study. Proposed reconstruction: floor plans

Our references differ on the use of the courtyard. Lewcock's "clear water splashing in a raised pool" (1971, p. 92) is certainly an attractive proposition, but not all agree. According to Siravo, the explorer Burton described it as a storage area (1997, p. 32). Certainly some of the larger houses could have had water features.

Upper-level private rooms were apparently multi-functional and not identified by use (LaNier *et al*, 1983, p. 7.8). Such rooms could have served as living areas during the day and as bedrooms at night. This is in line with the way the Arab house has traditionally been used.

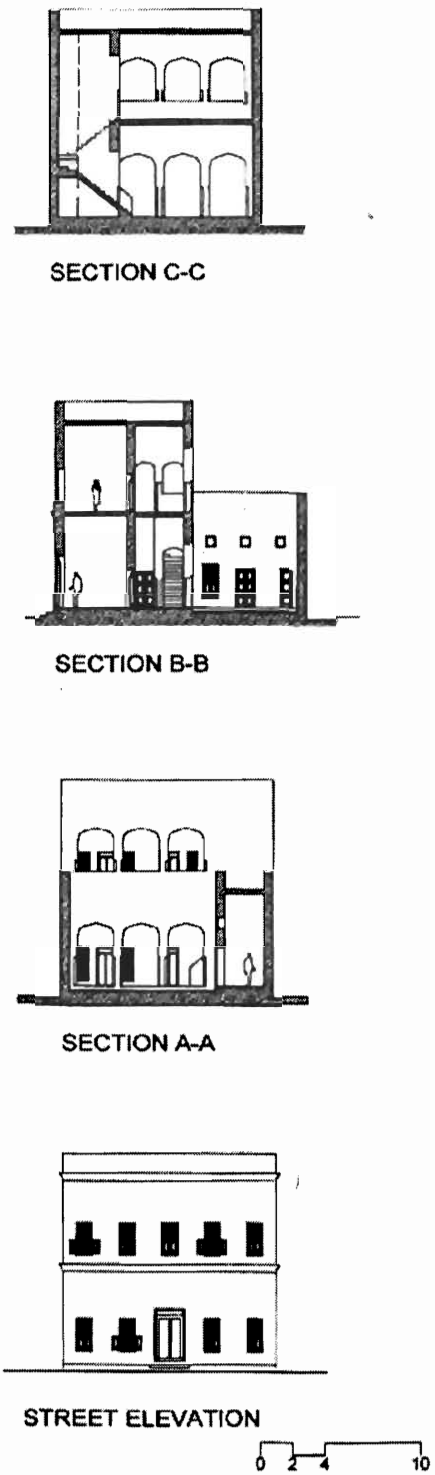


Figure 15 The case study. Proposed reconstruction: sections and street elevation

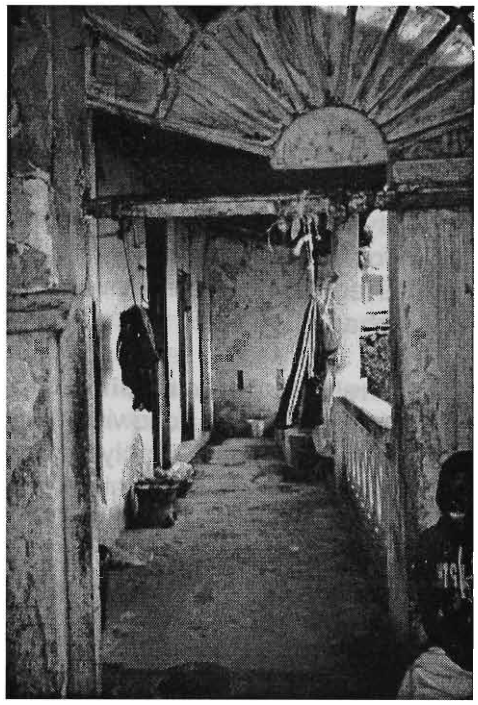


Figure 16 The make-shift canopy over the access balcony

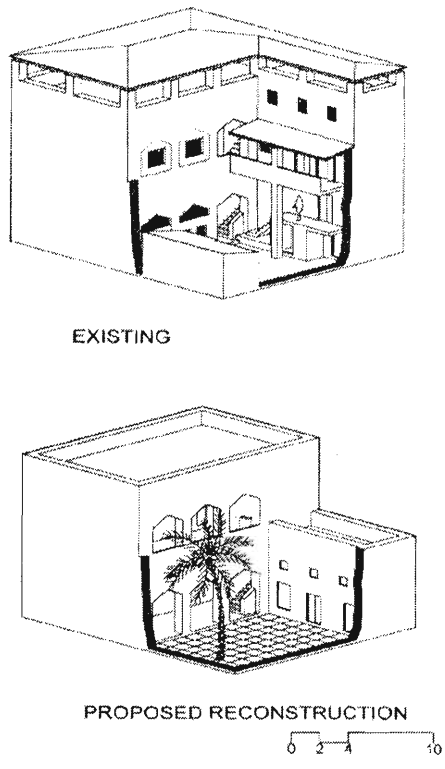


Figure 17 The case study. Isometric views comparing the existing situation with the proposed reconstruction

Arab houses usually accommodate extended families. But, in its stripped-down reconstructed shape, our case study is certainly not a mansion for a large household. It looks much more like seasonal accommodation for a regular visitor (Fig. 17). But possibly one with a wife and even children in this port, which was his home for part of the year.

The proposed concept

The schema is essentially that of a house organized in layers around a courtyard – a single layer, one room deep, along two, three or four sides of the perimeter, usually (but not always) enfronting a loggia. This loggia may occur on only one side of the courtyard, or on two or three sides, or may surround the courtyard on all four sides. For this reason the term "central courtyard", is actually misleading (as used by Sheriff, 1998, p. 24; Siravo, 1997, p. 31; LaNier *et al*, p. 7.3), simply since there are more **L** and **U** plan forms than truly centralized **O** shapes.

Many courtyard buildings in the Middle East and North Africa follow this pattern of a colonnade attached to the interior walls of the courtyard (Crouch *et al*, 2001, pp. 267-268).

As the plans and sections show, this progressively layered configuration (exterior-room-loggia-courtyard) allows light and air to penetrate all rooms, while the typical shuttered Zanzibar window allows cross-ventilation, except, ironically, to the men's *majlis*, which had windows to one side only. The repeated use of the term "introverted", therefore, seems slightly inappropriate (as used by Sheriff, 1998, p. 24; LaNier *et al*, p. 7.3). This is surely a term we should reserve for windowless courtyard houses.

Street elevations

Elevations are plain, with the ubiquitous carved entrance door and regularly spaced full-length shuttered windows. Some houses feature horizontal mouldings, which identify the various storeys. Others show evidence of crenellations associated with defensive purposes and very much still part of the Omani architectural tradition. These openings are generally centred in modular bays roughly three metres wide, of which a façade is then assembled. Although many façades are symmetrically arranged, this is by no means the norm (Fig. 18).

The elevational treatment is reminiscent of neo-classicism, but comparison with the local Omani Fort, built ca 1780, and even the traditional architecture of Oman, clearly shows that the concept is essentially Omani. It should be emphasized that most house types in the Arab world are truly introverted courtyard buildings without windows in perimeter walls.

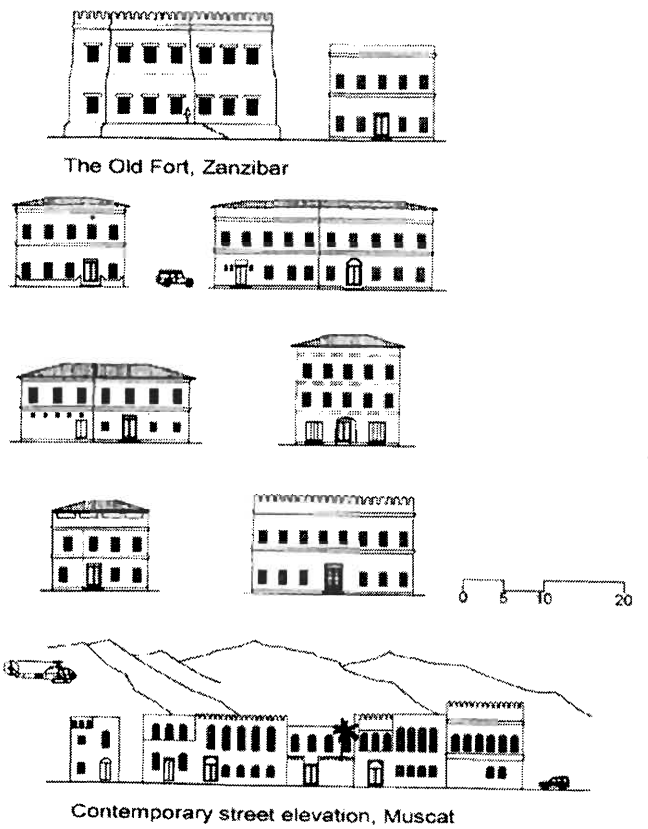


Figure 18 Street elevations in Stone Town

A significant aspect is that a street elevation does not reveal the size of the house behind it, which depends on the plan form – **L**, **U** or **O**.

Another aspect is that, while a façade might be perfectly symmetrical, the topology and footprint behind can be highly irregular, often even trapezoid-shaped.

Architectural composition

The following sequence describes very simply how an Omani house was figuratively speaking assembled in Zanzibar. The process and the building elements seem standardized (Fig. 19), but the result is not.

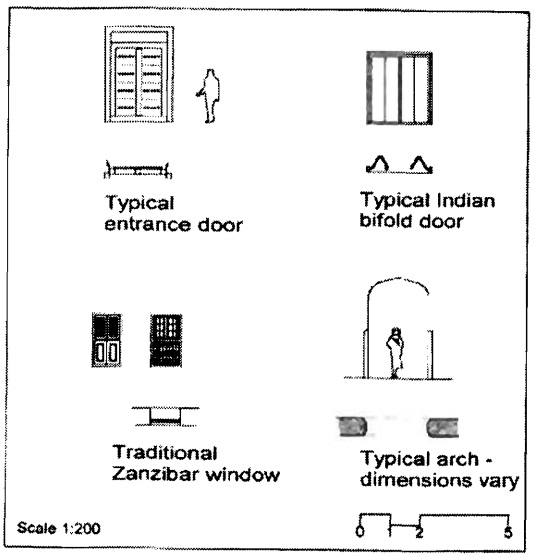


Figure 19 Elements of architecture used in the Omani houses of Stone Town

- A single layer of rooms, about three metres wide, determines the perimeter and defines the position of the courtyard. Where rooms do not adjoin this courtyard, a high perimeter wall is constructed. Walls are constructed of 580-600mm thick plastered coral rubble. Loggias (arched colonnades), also about three metres wide, are then inserted between the courtyard and some, or all, of the rooms. Such loggias can also be attached to perimeter walls adjoining the courtyard. The

profile of these pointed arches seems standardized although the height and width vary. Columns also have a standardized eight-sided footprint. Building height varies from two to three storeys enfronting the street, to one to three storeys for the remaining wings. Suspended floors and roofs are constructed of a coral-based concrete aggregate on mangrove poles. The same aggregate was used to construct stairways. The position and configuration of stairways were obviously based on individual choice and a huge range of solutions is found. The parapet could be either straight or crenellated. Sometimes an ogee-type moulding would define different storeys.

- The street façade and other exposed façades, too, are geometrically divided into bays roughly three metres wide. A carved Zanzibar entrance door is centred in such a bay as required. Although the general construction of these doors was standardized, the carving patterns and dimensions were not. Next, a *baraza* might be added on both sides of the entrance door. Finally, openings would be punched into the vertical centre lines of the remaining bays at every level for the standard 1,8 x 1,0m Zanzibar window. Internally, smaller carved doors or even more utilitarian ones would be used, while windows onto the courtyard would be the same as described, or smaller, but the range was limited.

Climatic effectiveness

The early Afro-Arab Swahili houses with their long rooms layered parallel to the courtyard had no external windows and therefore no cross-ventilation. In a hot, humid climate this is an inconceivable arrangement. But, by orienting the main entrance and courtyard to the north or east, the Swahili builders seem to have tried to trap the prevailing winds (Garlake, 1966, pp. 88-89).

The Omani houses, on the other hand, are cool and the loggias especially are wonderfully light and airy spaces. There is abundant cross-ventilation due to the full-length shuttered windows and the double-leaf doors. 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. The courtyard of our case study is, however, located in the south-western corner of the complex. We are now investigating this phenomenon.

If most Arab courtyard houses are truly inverted, with no external windows, how did the Omanis learn to cope with a hot, humid climate? Oman is hot and humid from May to September. Muscat rarely gets rain, but it is torrential when it does occur. In July and August temperatures sometimes rise to 50°C (Insight, 1998, p. 280). This issue will be investigated in the near future.

Aggregational characteristics

We suspect that the original Omani house was originally conceived as a freestanding unit. Our reasons are the following:

- This would partly explain the much looser settlement pattern (with more open space) when compared with the tightly aggregated fabric of other regions.

- This would also explain some very irregular, trapezoid-shaped plan forms. The *mitaa* was already an informal, irregular delimitation of space. The first stone houses on the block were rectangular and subsequent houses simply had to fit into the irregular spaces left between them.

- Where houses have collapsed or are being demolished and rebuilt, one can clearly see the evidence of old, filled-in windows in the lateral walls.

Streetscape

Barazas allow easy socializing and conversation at street level. These, together with small, intimate squares (Fig. 20) and places where people meet informally for coffee, keep the Stone Town streets alive. The neighbourhood mosques also contribute significantly to community interaction, since Muslims pray five times a day. External windows make the houses friendlier than blank walls would have done. The streets are generally only two to three metres wide, and this shields walls and people from direct sunshine, which adds to street-level comfort during most of the day.

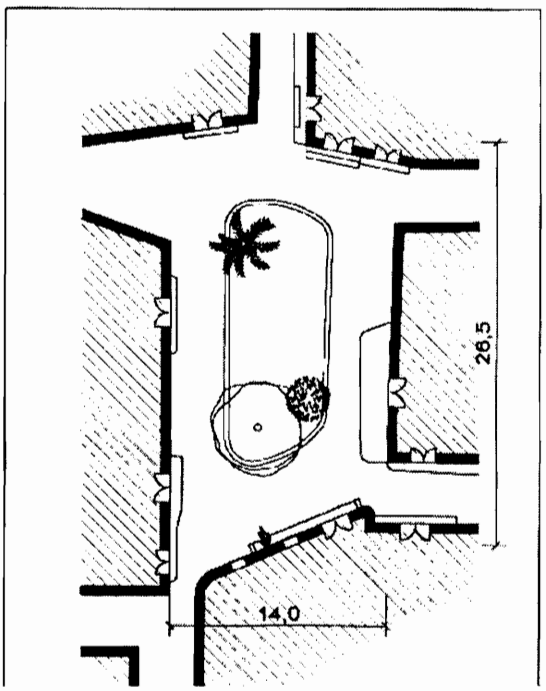


Figure 20 Plan of a typical small square in Stone Town (surveyed and drawn: Steyn).

Construction technique

The traditional walling technique is coral rag in lime mortar, with lime plaster on both sides and finished with a wash, with a total thickness of 580-600mm. Flat roofs and suspended floors consist of closely spaced mangrove poles supporting a coral and lime mortar slab with a cement screed over (Siravo, 1997, pp. 93-94; LaNier *et al*, p. 7.8). Mr Salum Mvita Juma, a local building inspector, claims that the optimal thickness of the slab (excluding the poles) should be about 250mm – thicker slabs reportedly sag after some time.

As already mentioned, Sheriff seems to suggest that this is a purely African technology (1998, p. 10), but it is also found in, for example, Saudi Arabia (Talib, 1984, p. 62). This is, however, the technology already applied in early mosques about a thousand years ago and in Swahili Lamu-type houses. Could this imply that the technology was imported from Africa?

The planning module is based on the span of the mangrove poles used as joists and is approximately three metres.

Zanzibar doors and windows

The Arab door in Zanzibar must not be confused with the Guyarat-style Indian door, which is a four-leaf bifold door in two sets used to secure shops. The Arab door, set in an otherwise plain façade, served to demonstrate the status and affluence of the owner (Sheriff, 1998, p. 45; Siravo, 1997, p. 32; LaNier et al, p. 7.15). Sheriff suggests that "the doors may be part of an old tradition of carving along the Swahili coast", which was already found, at Kilwa for example, in the 16th century (Fig. 21). He notes that a door dated AD 1700-1 could have served as a prototype for the current style. These doors are clearly a manifest of cultural exchange and interaction, since some doors were exported to Oman, while others were imported from India. Doors with semi-circular heads are also known to be Indian-inspired (1998, pp. 46-52).

Zanzibar widows are usually nearly door height (1 800mm) with inward-opening side-hung sashes and outward-opening adjustable wooden louvre shutters, over a wrought iron balustrade and outward-opening solid wooden shutters (Fig. 22). These windows are set in deep niches with display shelves and pointed arches over (LaNier *et al*, p. 7.15).

Tentative observations

Some inferences are submitted as tentative observations below. They refer to illustrations in the report. It should be emphasized that

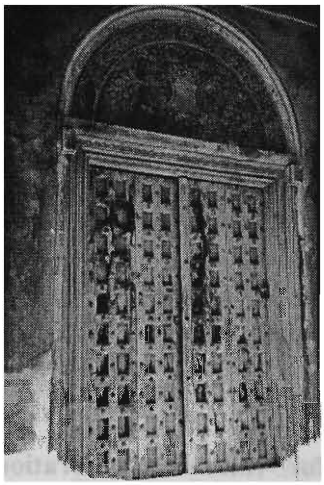


Figure 21 A typical "Zanzibar door"

examples copied from drawings in literature are often grossly misleading and can only be used for the most basic typological comparisons.

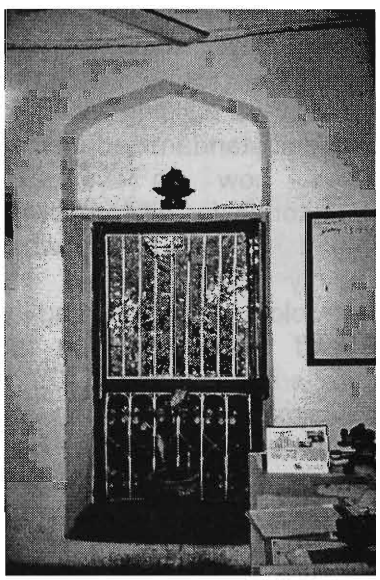
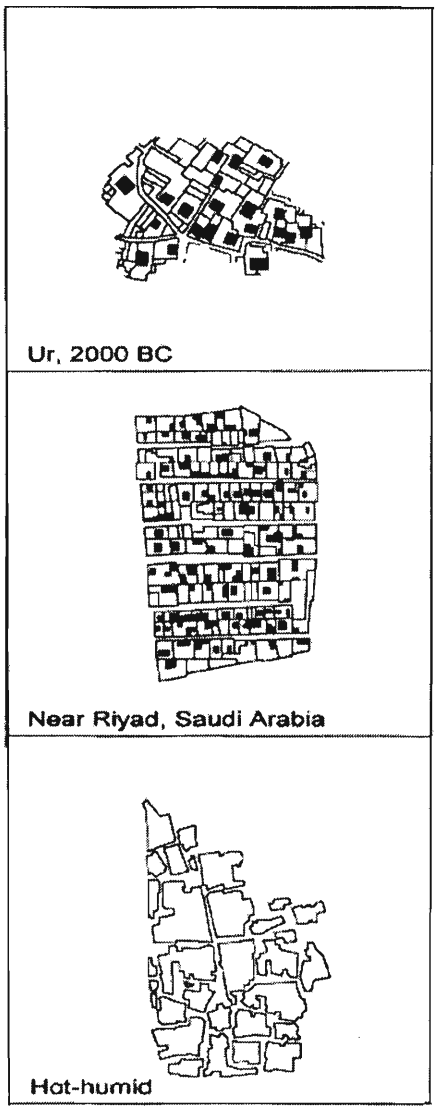


Figure 22 A typical "Zanzibar window"



- A comparison of settlement patterns illustrates that Stone Town largely conforms to Arabic town-planning principles for hot humid areas, compared with, say, Tunis Old Town, which is in a Mediterranean environment (Fig. 23).

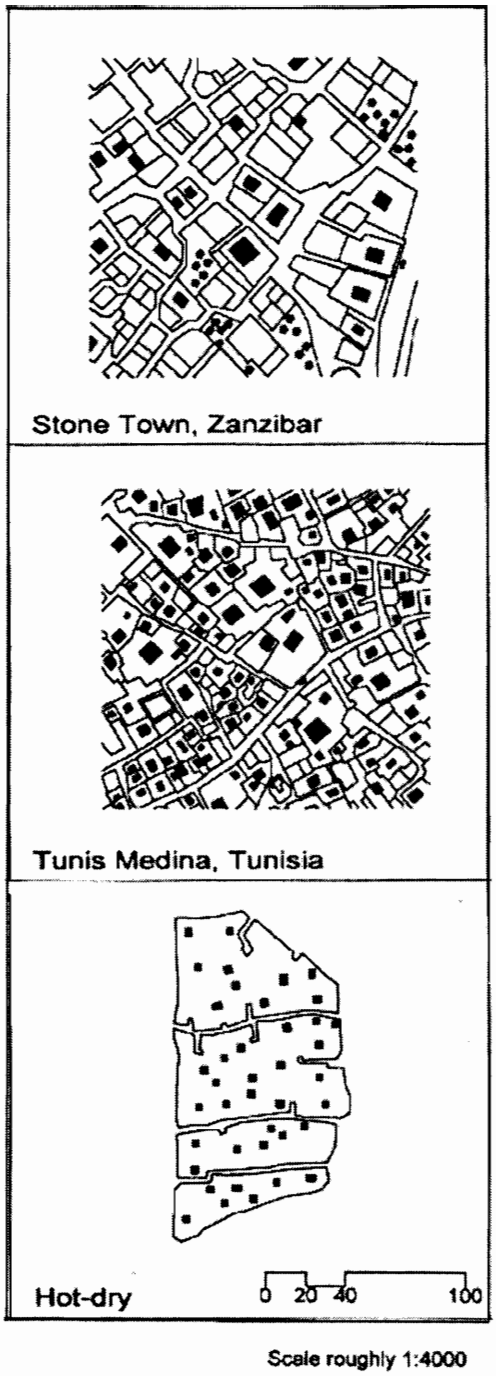


Figure 23 A comparison of Arabic settlement patterns

- Two of the other surveyed houses (Shangani and Dhow Palace) follow the same pattern as the case study and are compatible with our proposed concept. They also show only a conceptual consistency of plan form among Omani houses. It clearly shows that individual houses responded differently within the schema, in spite of very rigid and standardiszd treatment of street elevations. The Gizenga building has not been analysed yet, but seems to have been transformed from a Lamu-type house. The *daka* entrance porch confirms this suspicion. It is now a commercial building at street level with two domestic levels over (Fig. 24).

- Conceptually, the Omani house shows considerable resemblance to a number of examples from the Middle East and North Africa found in the literature (Fig. 25). The formalism of our case study is, however, rare among the examples shown. Also, none of these have windows to the exterior.

Issues for future consideration and discourse

Origin of the concept

We now have a neat hypothesis – a building concept that originated more than a millennium ago in Arab Oman travels with settlers to the East African coast. It is consistently applied and given substance using a familiar and established building technology and a range of standardized elements.

Then, how do we explain the dormitories for visitors owned by the Indian Ismaili sect, which utilize exactly the same principles, technology and building elements? Sheriff refers to these facilities as *caravanserai* (1998, p. 42), but Siravo explains quite clearly why that term is not wholly appropriate. He uses the term *musafarkhana*, which he explains as a Swahili-Persian word for "house of travellers" (1997, pp. 38-40). Both refer, with illustrations, to the Khoja complex in the Malindi quarter of the town, completed in 1892. There could be two explanations.

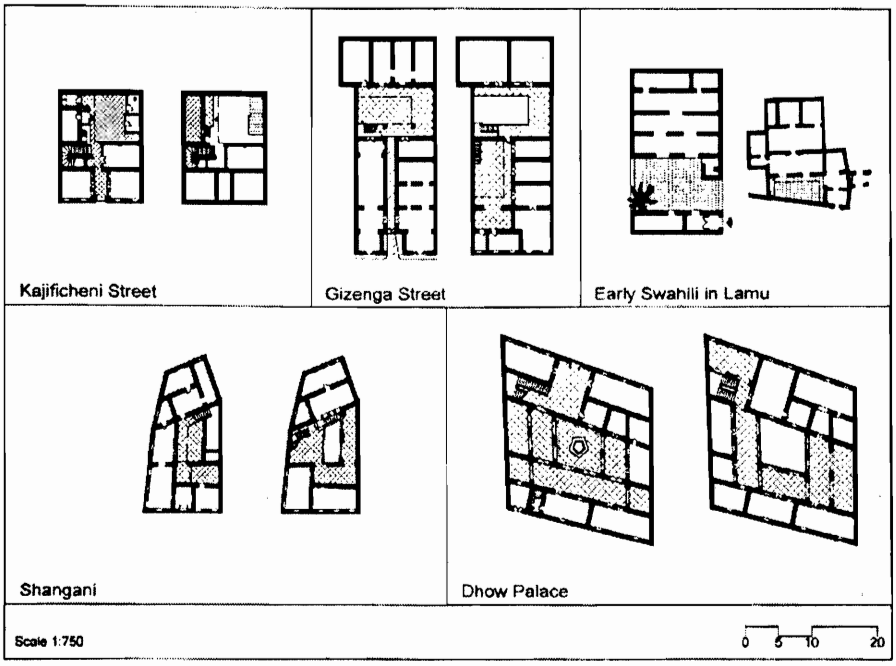


Fig. 24 A comparison of the four buildings surveyed in Stone Town with two Lamu houses.

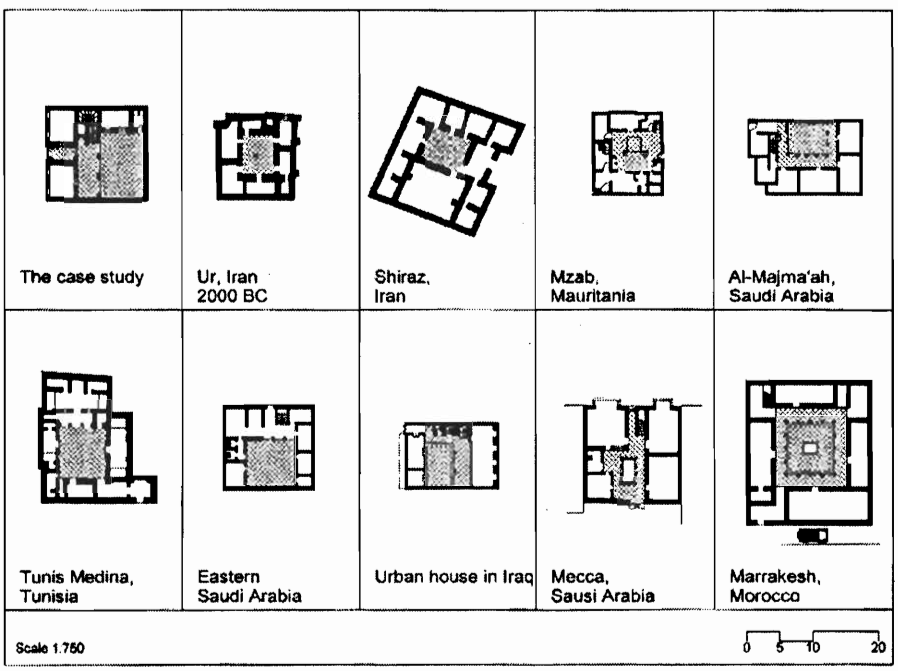


Fig. 25 A comparison of the case study with examples of courtyard houses from the Middle East and North Africa.

Firstly, that the Omani style could have been the formal style of a conquering elite in the beginning, but gradually became the vernacular of the area, without significant physical mutations. Wealthy Indians often modified existing Omani houses (Siravo, 1997, p. 36). What had originally been an imported technology became the accepted norm toward the end of the 19th century, and builders and users felt comfortable with it. Even when storeys were added to shopfront buildings, the same pattern was inevitably used to develop the elevations.

Secondly, we could of course search for Indian roots for our concept and elements. After all, some elements – such as the pointed arch – are also found in Mughal architecture. It has been claimed that artisans from the Indian subcontinent worked in the eastern part of Saudi Arabia (Talib, 1984, p. 67). A look at a map and it becomes clear that Indian craftsmen (probably from present-day Pakistan) could also have worked in Oman. In fact, Sheriff writes, "...Indian artisans were brought to Zanzibar" (1998, p. 50). Whether these artisans – surely also working as designers – influenced both the concept and the detailing, we do not know yet.

We are interested in the practical potential of history. As such, we are not obsessed with a neatly packaged and sanitized version of history. The term "Omani house" has been used throughout this report, but does a scientific approach not require that this genealogy be checked? Contemporary literature is of very little help in this respect.

Presence of Lamu-type houses before Omani occupation

Abdul Sheriff writes that "sometime in the seventeenth century" the royal Swahili palace was located where of the House of Wonders and the Old Fort are now. Sheriff claims that, also about then, Yemenis accompanied by Swahili families from other parts of the East African coast settled in Zanzibar town and "perpetuated the Swahili planning and architectural tradition that is seen most fully developed in the Lamu archipelago" (1998, pp. 14-15). In other words, there must have been a number of Lamu-type houses before the advent of the Omani houses.

Siravo states that there are now only five "exterior entrance porches", called *daka*, left in Stone Town. A *daka* is an entrance porch with stone benches and an ogee arch facing the street. These porches are associated with the Lamu-type houses. Also, the house surveyed on Gizenga Street features a *daka* and the plan form shows signs of being a converted Lamu-type house.

According to Siravo (1997, p. 48), American and European agencies occupied existing buildings along or just behind the seafront, but adapted them to suit their requirements and solve climatic problems. "In particular, they tried to overcome the lack of light and ventilation in the old Arab houses by opening up the introverted buildings." In 1841, a British official described the necessity to insert large windows in an Omani house rented from the Sultan. Early illustrations of that period show all the houses with windows to all floors (Siravo, 1997, pp. 13-15). It is suggested that Siravo's English official rented an early Swahili house from the Sultan.

Our theory is that the Omani settlers of the early 19th century not surprisingly found the early Afro-Arab Swahili houses uncomfortable, and, without the cultural attachment of their Swahili neighbours, rapidly replaced the indigenous architecture with their own house types, which they suspected would work in that climate.

Conclusions and recommendations

Stone Town in general, and Omani houses in particular, offer many lessons that can be applied to residential and neighbourhood planning in both Southern and East Africa:

- The Stone Town morphology merits more research for general implementation, even if only at neighbourhood level. Apart from the potential of higher densities, it creates a much friendlier and safer landscape at street level than our suburban malls with their forbidding fasades, for example.

- Motor vehicles are largely excluded from Stone Town, but, to exploit the potential of the neighbourhood fabric fully, it would be essential to investigate the integration of vehicular traffic while keeping the neighbourhood as "walkable" as it is now.

- A patio or courtyard building is an eminently appropriate urban house type. Apart from offering privacy in a crowded environment, it is climatically very responsive. It also allows relatively high densities to be achieved and thereby reduces urban sprawl, the cost of infrastructure and waste of land. Much more research and development are needed to develop parameters and guidelines for appropriate design.

- The basic concept of the Omani house in Zanzibar has much potential for contemporary application in the region. Even if there were more measured drawings available to researchers – which we doubt – to fully analyse and appreciate the geometry, a field survey to record a representative spectrum of topological solutions seems meaningful. The reconstruction of these into their various developmental stages could yield the formative ideas we seek.

- We need to exploit the benefits of multinational and trans-disciplinary collaboration to audit and expand the existing body of knowledge – we need a much broader and more ordered historical and typological framework against which to develop these formative ideas.

In conclusion – Oman left an indelible mark on East Africa, but the contribution of that small country to African history and architecture is not properly recognized in literature. Omani history is also irreversibly tied to that of Southern Africa due to ancient trade links with the Limpopo valley. The Omani house is a prominent feature in the East African cultural landscape and it now seems meaningful to reconsider its architectural legacy.

List of figures

Fig. 1 A sketch map of ancient Indian Ocean trade (drawn: Steyn).

Fig. 2 Vernacular Tanzanian house types (drawn: Steyn).

Fig. 3 A schematic map of Stone Town, Zanzibar. The numbered circles identify the surveyed houses (drawn: Steyn).

Fig. 4 Battlements of the Omani-influenced Lamu Fort, featuring pierced openings (photograph: Steyn).

Fig. 5 Isometric view of Husuni Kubwa (sketch by Steyn, after a drawing in Garlake, 1978, p. 101).

Fig. 6 Stone Town is a functioning city (photograph: Steyn).

Fig. 7 Stone Town, Zanzibar. Nothing seems to have changed since the mid-nineteenth century (photograph: Steyn).

Fig. 8 The old houses of Stone Town are deteriorating (photograph: Steyn).

Fig. 9 The character of Stone Town, Zanzibar (photograph: Steyn).

Fig. 10 A sketch map of Stone Town, Zanzibar showing the locality of the case study superimposed on the 1846 situation (drawn: Steyn).

Fig. 11 The case study. Existing situation: floor plans (surveyed and drawn: Steyn).

Fig. 12 The case study. Existing situation: sections and street elevation (surveyed and drawn: Steyn).

Fig. 13 Clumsy workmanship and incompatible materials make it easy to identify recent additions (photograph: Steyn).

Fig. 14 The case study. Proposed reconstruction: floor plans (surveyed and drawn: Steyn).

Fig. 15 The case study. Proposed reconstruction: sections and street elevation (surveyed and drawn: Steyn).

Fig. 16 The make-shift canopy over the access balcony (photograph: Steyn).

Fig. 17 The case study. Isometric views comparing the existing situation with the proposed reconstruction (drawn: Steyn).

Fig. 18 Street elevations in Stone Town (drawn: Steyn).

Fig. 19 Elements of architecture used in the Omani houses of Stone Town (surveyed and drawn: Steyn).

Fig. 20 Plan of a typical small square in Stone Town (surveyed and drawn: Steyn).

Fig. 21 A typical "Zanzibar door" (photograph: Steyn).

Fig. 22 A typical "Zanzibar window" (photograph: Steyn).

Fig. 23 A comparison of Arabic settlement patterns (drawn: Steyn).

Fig. 24 A comparison of the four buildings surveyed in Stone Town with a typical Lamu house (drawn: Steyn).

Fig. 25 A comparison of the case study with examples of courtyard houses from the Middle East and North Africa (drawn: Steyn).

Glossary

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

Daka – An entrance porch with stone benches and an ogee arch facing the street. These porches are associated with the Lamu-type houses.

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

Majlis – The main reception room of an Arab house where the head of the household received and entertained male visitors.

Mtaa (pl Mitaa) – Groups of buildings forming a cluster or a ward, based on family and ethnic affinities. Several such wards make up a neighbourhood.

Musafarkhana – A Swahili-Persian word for "house of travellers". A building surrounding a courtyard and originally dormitories for visitors owned by the Indian Ismaili sect. Today these buildings are mostly apartments for poor families.

Sebule – The entrance or informal reception hall.

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