# Construction Methods and Spatial Formations of Italian Colonial Residences and Divisional Formations of Italian Residential Areas in Gondar, Ethiopia

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I have studied Italian colonial buildings in Gondar, Ethiopia, continuously since 2003. In my previous research, I clarified the total number of Italian colonial buildings, the concept of the Italian urban master plan, and the distribution, height, construction materials, construction methods, current conditions, and ownership status of Italian colonial buildings. Here, I focus on the spatial formations of and construction methods for Italian colonial residences and the divisional formation of Italian residential areas. During the colonial period, four Italian residential areas were constructed. These areas were distinguished clearly by dweller type in terms of profession: high officials, officials, soldiers, and civilians. Italian colonial residences involved three types of construction methods, i.e., prefabrication, masonry, and reinforced concrete construction, which are subdivided into 10 types of principal structure. The use of each type of principal structure was distinguished by the dwellers' profession. Italian colonial residences involved three types of building, i.e., detached house, row house, and dormitory, and contained various rooms, e.g., living and dining rooms (L&D), bedrooms, kitchens, toilet and bathrooms, corridors, and verandas. Most residences had both verandas and corridors. Furthermore, Italian colonial residences involved seven types of layout; most were organized into three of the most common ("V→C→X, L&D", "V→L&D→C→X," and "V→L&D→X". corridor (C); living and dining room (L&D); veranda (V); and bedroom, kitchen, toilet and bathroom, or other space (X)).

**Key words:** colonial architecture, construction method, Ethiopia, Gondar, Italy, spatial formation

## 1. INTRODUCTION

### *1.1. Background*

Ethiopia was occupied by the Italian army from 1936 to 1941.[1] According to my previous fieldwork,[2] Italian colonial buildings that were constructed by Italian engineers during this occupation still exist in major towns such as Addis Ababa, Jinma, Harar, and Gondar. In Gondar, there are still 352 Italian colonial buildings, and 58% of these buildings are in good condition (Shitara 2006a: 20). In an opinion poll on the preservation of the area's Italian colonial buildings, 80 of the 100 people questioned said that they recognized these buildings as historical architecture that should be properly preserved (Shitara 2006b: 16–17).

However, since 2000, Gondar's economy has developed dramatically, and some of the buildings have already been lost to more lucrative investments. Therefore, the Ethiopian research team of Miyake

*Nilo-Ethiopian Studies* 12: 27-45 (2008)

Studio at Keio University, Fujisawa, Japan, began to research Italian colonial buildings in cooperation with Ethiopia's Authority for Research and Conservation of Cultural Heritage (ARCCH). In 2003, together with the Gondar City Service Office, Amhara National Regional State, and Addis Ababa University,[3] they launched a joint project in Gondar. The aim of this project was to clarify the architectural features of Italian colonial buildings and to formulate a preservation policy. In 2006, five historical Italian quarters were specified in Gondar, and building height regulations were developed for these quarters (Shitara 2006c: 3). In addition, a list of all Italian colonial buildings was made, and guidelines were proposed for the buildings' maintenance.

*1.2. Previous research on Italian colonial buildings*

I have studied Italian colonial buildings in Gondar continuously since 2003. I have examined the following:[4] the construction of Italian colonial buildings; the concept of the Italian urban master plan as drawn up by the Italian architect and town planner Gherardo Bosio; the total number of Italian colonial buildings (352); building distribution and height in relation to storey; construction materials and methods; existing condition; and ownership status (Shitara 2006a: 15–22; Shitara 2006d: 215–220). I also conducted an opinion poll on the preservation of Italian colonial buildings (Shitara 2006b: 16–17).

The researcher Mia Fuller studied the planning background and design features of Italian colonial buildings in two Italian colonies, i.e., Libya and Ethiopia, using documents published during the occupation (Fuller 1988). Fuller discussed differences in the design concepts used in the two countries' Italian colonial buildings and noted that most of the Italian colonial buildings that were designed by Italian architects and constructed in Ethiopia were based on the concept of adaptation to the indigenous environment (Fuller 1988: 455).

Another researcher, Brian McLaren, studied the concept and design features of Italian colonial buildings in Libya in relation to both vernacular and modern contexts (McLaren 2001). McLaren mentioned that these two different approaches to the construction of Italian colonial buildings were carried out in Libya by Italian architects: the vernacular contexts were used as abstract metaphors for contemporary architecture. In contrast, the modern contexts were referred to as harmonizing with pre-existing environments (McLaren 2001: 5).

In 1992, a group of Italian scholars published the magazine *Rassegna*, which introduced designs by several Italian architects who had been dispatched to Ethiopia (Zagnoni et al. 1992). This document mentioned that some architects attempted to copy the design models of colonial residences by using local techniques and materials. In 1993, an exhibition of Italian colonial buildings focusing on four Italian colonies, i.e., Ethiopia, Libya, Eritrea, and Somalia, was held in Bologna, Italy, and a catalogue was compiled that included a general explanation of Italian colonial buildings along with drawings and photographs (Gresleri, Massaretti and Zagnoni 1993). The l'Istituto Italiano per l'Africa e l'Oriente (IsIAO) published a similar document in 2005 that provided information on Italian colonial buildings in Italian colonies (Lo Sardo, Massaretti, Raffone and Talamona 2005: 9–75). Since 2004, the Laboratory of Architecture Aggregation Palermo (LAAP) has worked to investigate the present condition and distribution of Italian colonial architecture constructed in Asmara and to make a list of buildings that are candidates for a protective maintenance policy.

*1.3. Purpose and methods*

This paper is a continuation of my last thesis (Shitara 2006d). Here, I focus on the details of the spatial formations and construction methods of Italian colonial residences and the divisional formation of Italian residential areas in Gondar, Ethiopia. I examined the Italian colonial residences and Italian residential areas in Gondar with the following three objectives: to examine the housing lots and road plans and clarify the features of divisional formations; to classify the principal structures and construction materials of Italian colonial residences and clarify the features of construction methods; and to classify the building and layout types of Italian colonial residences and clarify the features of spatial formations. This report is based on fieldwork conducted between October 2003

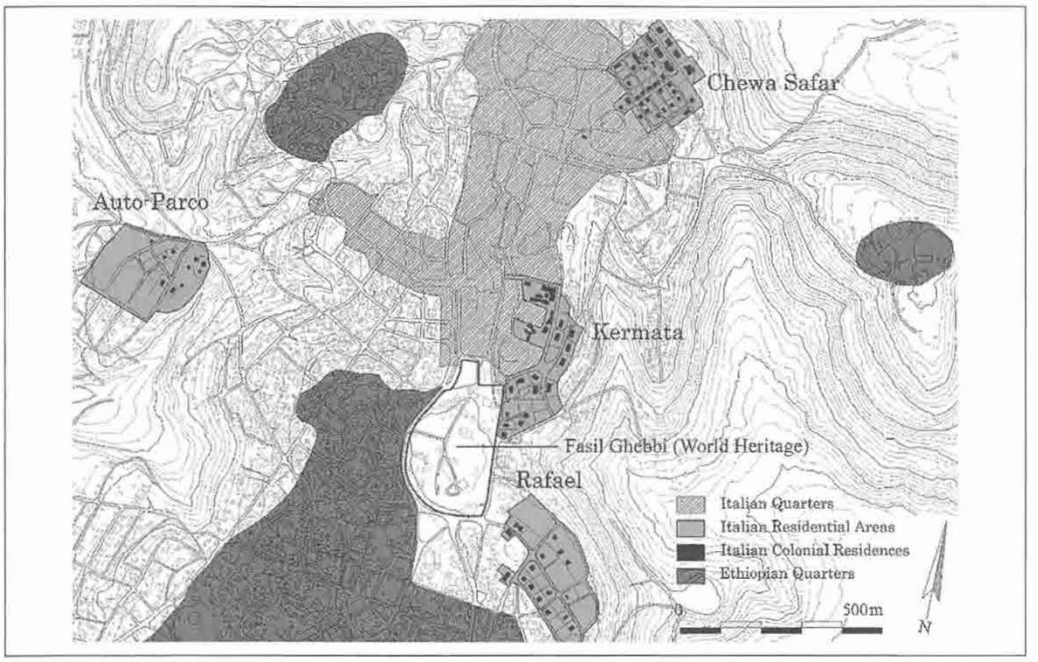



**Fig. 1.** Map of Italian residential areas and Italian colonial residences in Gondar, Ethiopia

and November 2006. I targeted four Italian residential areas and 91 Italian colonial residences in the center of Gondar (Fig. 1).

## 2. ITALIAN RESIDENTIAL AREAS

### *2.1. Bosio's urban master plan*

After the Italian army occupied Ethiopia, Gherardo Bosio was dispatched to Gondar by Africa Orientale Italiana (AOI) and began to formulate a master plan for Gondar's urban development. According to his submission to the architectural magazine *Urbanistica* (Bosio 1937:160–170), he referred to the concept of Italian residential areas and housing lots as follows:

1) Italian residential areas must be segregated from Ethiopian residential areas for the purpose of interrupting communication between Italians and Ethiopians;
2) The residential areas of government officials and soldiers should be distinguished from the residential areas of civilians because these residential areas are functionally different;
3) The residential areas for high officials and officials (both government and military) should be built on high and flat land and with a fine view of Lake Tana or the mountains. In contrast, the residential areas of civilians such as merchants and craftsmen should be constructed on low and flat land; and
4) All of the Italian housing lots must have sufficient areas for gardens, and the housing lots of high officials (both military and government) must have space for garages.

The urban development of Gondar based on Bosio's urban master plan continued until Italians left Ethiopia in 1941.

### *2.2. Housing lots and road plans of Italian residential areas*

A map dating from the occupation (Fig. 2) is found in *Gli Annali dell'Africa Italiana*, which was published in 1938, and shows four Italian residential areas at that time: Chewa Safar, Kermata, Rafael,

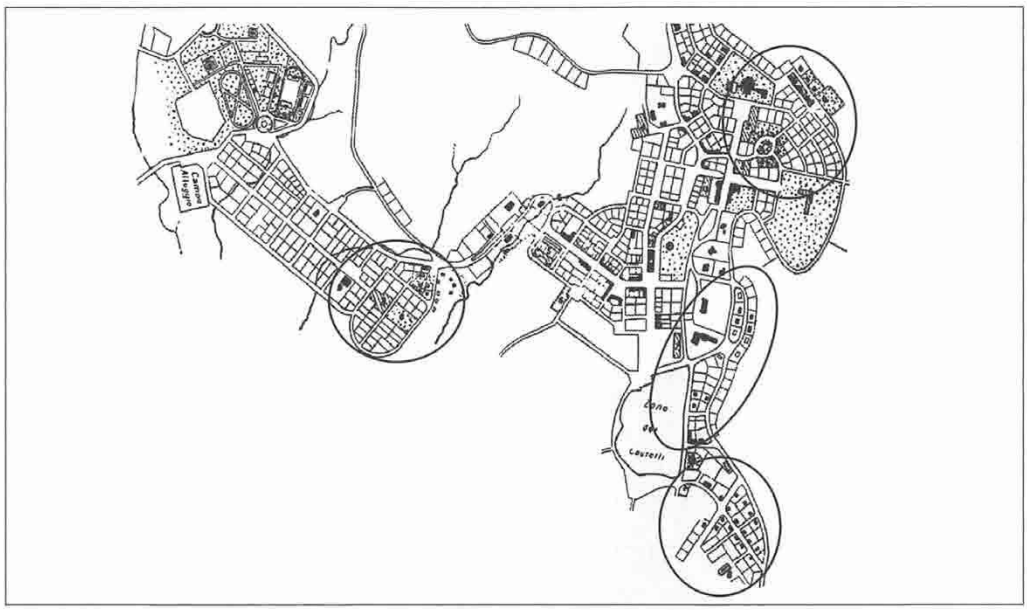


**Fig. 2.** Italian urban master plan of Gondar, Ethiopia (proposed by Gherardo Bosio)

and Auto-Parco (AOI 1938: 403). By comparing the old map with the current conditions of these Italian residential areas, the formations of each residential area and the housing lots were determined as follows:

**Chewa Safar:** "Chewa Safar" means "good land" in Amharic and is known as a high-end residential area in Gondar. This area, located at an altitude of 2020 m, was developed as a special Italian residential area for high officials and officials (both government and military) to the northeast of central Gondar. The villas for high officials were constructed at the east side of this area, and other residences for officials were also built at the west side. A total of 35 Italian colonial residences (seven villas and 28 residences) were built in this area; views of Lake Tana or the Angreb River can be seen from the first floor of the villas. The area of a housing lot for a villa is approximately 1000–1500 $m^2$, whereas that for other residences averages 500 $m^2$. Most roads are 6 m wide, except for the main roads, which are 8 m wide.

I compared the old and current maps of Chewa Safar (Fig. 3). Some housing plots differ between the two maps. However, seven villas are found in the same positions on both maps. Because high officials had priority for residential construction, the villas in Chewa Safar must have been the first residences to have been built.

**Kermata:** Kermata is located at an altitude of 2000 m to the east of central Gondar and was constructed as a residential area for both Italian soldiers and civilians. The soldiers' district and civilian district were divided clearly using the natural slope of the hill, and the housing lots were formed alongside the road that ran along the contour line. A total of 30 Italian colonial residences (15 soldiers' residences and 15 civilian residences) still exist in Kermata. The areas of housing lots for the soldier's district are unclear because there are no fences between residences, whereas the area of housing lots for civilians averages 1000 $m^2$. Most roads are 8 m in width.

I compared the old and current maps of Kermata (Fig. 4). There are no residences in the soldiers' district on the old map. However, seven residences in the civilian district are in the same position on both maps, and five residences that were under construction (black outline and blank inside) are shown on the old map. This indicates that the civilian residential area was developed earlier than that for soldiers.

**Rafael:** The Italian residential area referred to as "Rafael" by Ethiopians was constructed for Italian

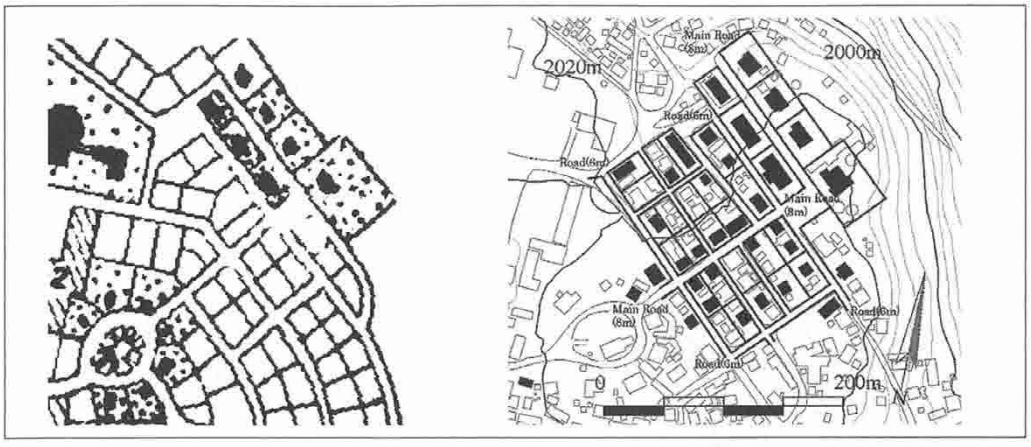



Fig. 3. Comparison of Bosio's proposal and current conditions in Chewa Safar

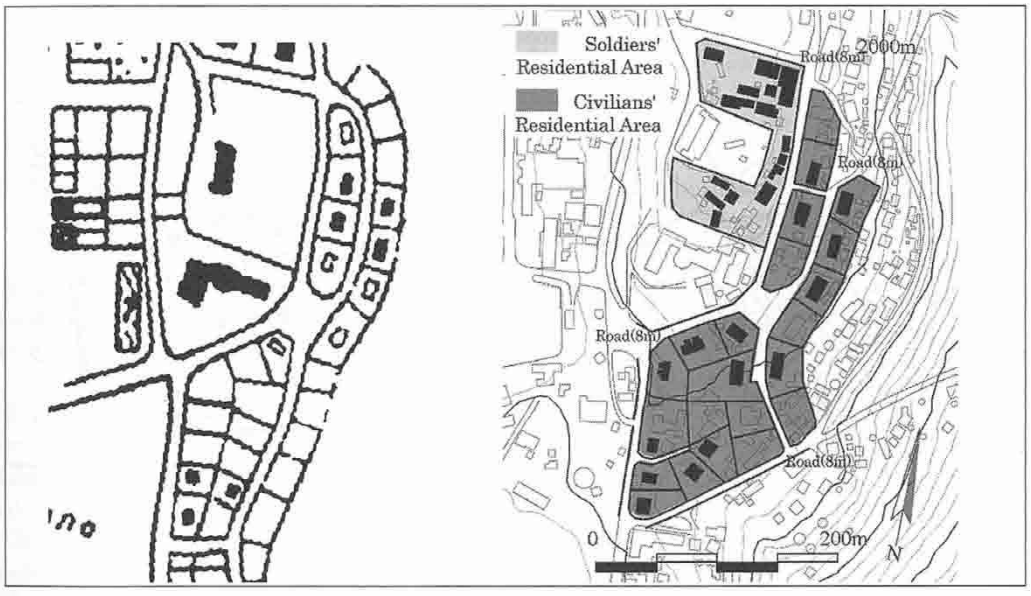



Fig. 4. Comparison of Bosio's proposal and current conditions in Kermata

civilians at an altitude of 2000 m, surrounding the Rafael church. Contradictory to Bosio's urban plan, this area is located near the Ethiopian residential area. A total of 16 civilian residences exist in this area at present; the housing lots are approximately 1000 m² in area. Most roads are 6 m wide.

I compared the old and current maps of Rafael (Fig. 5). There are 16 civilian residences on the current map and 10 of them are in the same position as in the old map, although some housing plots differ between the two maps.

**Auto-Parco:** The Italian residential area named Auto-Parco for the large parking area located in this area during the occupation was developed as a soldiers' residential area. Located at an altitude of 1920 m, this residential area is lower than the others. There were 10 soldiers' residences in this district, and the housing lots are approximately 500–750 m² in area. Most roads are 6 m wide, except for the main road (10 m wide).

I compared the old and current maps of Auto-Parco (Fig. 6). There are four soldiers' residences in the eastern area of the current map, and all of them are found in the same position as on the old map.

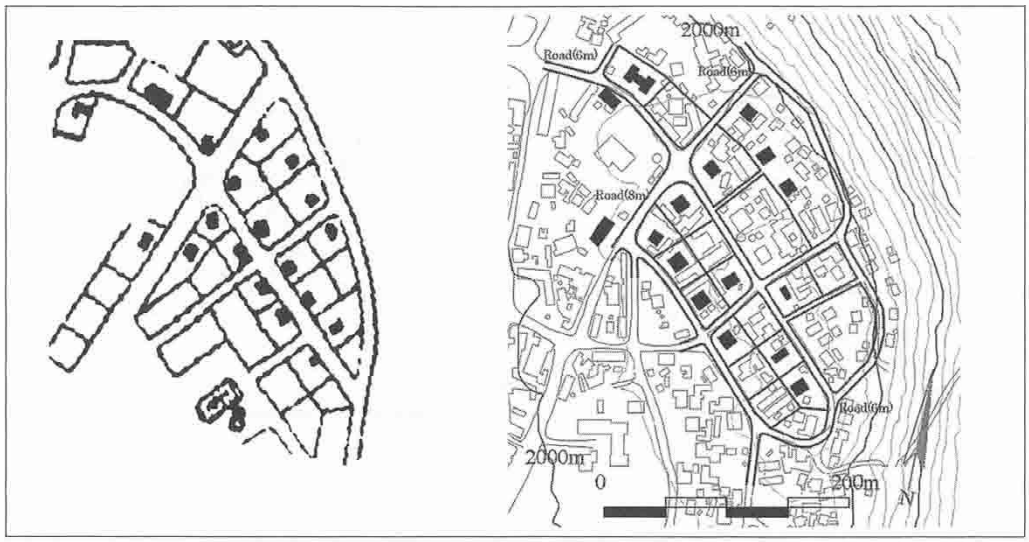



**Fig. 5.** Comparison of Bosio's proposal and current conditions in Rafael

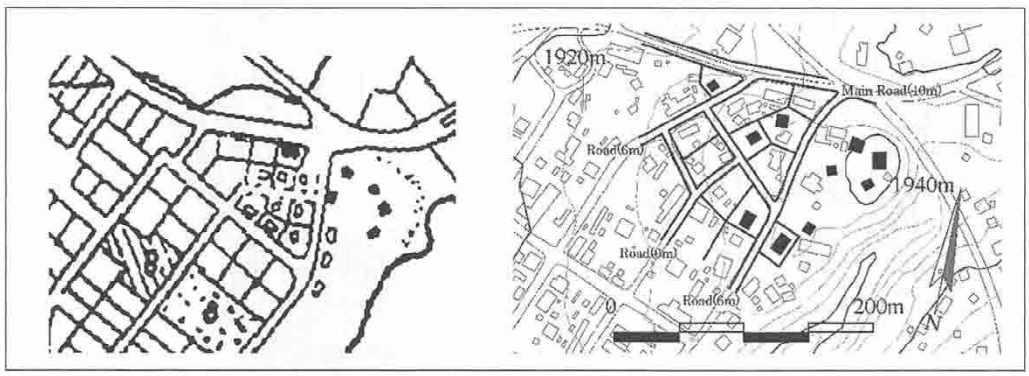



**Fig. 6.** Comparison of Bosio's proposal and current conditions in Auto-Parco

However, most housing plots differ between the two maps.

*2.3. Features of divisional formations of Italian residential areas*

According to a comparison of Bosio's urban master plan and my own fieldwork, the following features of the four Italian residential areas can be emphasized.

1) The housing lots and road plans were basically constructed using a grid system, which was adjusted according to contour line and slope.
2) The entrances of Italian colonial residences were typically built facing the road, and most residences had a gate and a fence. According to interviews with elderly Ethiopians who had worked with Italians, the reason is because Italians were conscious of home security and crime prevention.
3) Trees such as pines, eucalypts, and palms were planted in the gardens of high officials' villas, and shacks for Ethiopian guards were constructed inside housing lots and car parks. However, this was not common for other types of Italian residences.
4) A number of civilian residences were constructed earlier than the soldiers' residences; soldiers usually lived in tents until their residences were ready for habitation.

## 3. ITALIAN COLONIAL RESIDENCES

*3.1. Previous research on Italian colonial residences in Ethiopia*

As mentioned in Section 1.2, general information on Italian colonial residences constructed in Ethiopia was published in the 1992 catalogue, whereas the design and construction features were introduced in *Rassegna*. In *Rassegna*, Italian scholar Stefano Zagnoni referred to the following features of Italian colonial residences in Ethiopia, using official documents written by Italian architects during the occupation.

1) The prefabricated colonial residences were developed in Italy in the 1930s; these were transferred to Ethiopia after the occupation. However, it was difficult to transport many prefabricated colonial residences to Ethiopia because of the high cost (Zagnoni et al. 1992: 20).
2) The Istituto Nazionale per Case degli Impiegati delli Stato (INCIS), under the control of AOI, constructed the first model colonial residences in Addis Ababa. The residences of INCIS were designed by uniting Italian layout patterns and local construction methods; these were later constructed in many other cities (Zagnoni et al. 1992: 20).
3) At the beginning of the occupation, vernacular materials such as stone and wood were mainly used for the colonial residences; gradually, modern construction materials such as cement and steel bars were transported to Ethiopia (Zagnoni et al. 1992: 20).
4) Because of the availability of modern construction materials, INCIS residences were improved in terms of wall and slab materials. For example, instead of stones, bricks were used for wall construction; reinforced concrete (RC), rather than timber, was used as the slab material (Zagnoni et al. 1992: 23).
5) To adapt to the Ethiopian environment, Italian architects for INCIS analyzed verandas, passageways, and double ventilation systems with an inclined roof. The veranda was considered to be paramount in improving habitability (Zagnoni et al. 1992: 24).

Zagnoni's (1993) studies indicate the outline of construction methods and spatial formations of Italian colonial residences. However, they do not include specific details. Therefore, it is necessary to further investigate these residences.

*3.2. Classification of principal structures of and construction materials for Italian colonial residences*

Previously, I described the methods and materials used in the construction of 352 Italian colonial buildings in Gondar (Shitara 2006d). Here, I examine the construction methods of 91 Italian colonial residences in Gondar in greater detail.

There were three types of construction methods: prefabrication, masonry, and RC (Table 1). These methods were subdivided into 10 types of principal structure. Of 91 Italian colonial residences, 71 residences (77.9%) were built using the prefabrication method: steel pipe frame with walls of asbestos plate and plywood, steel bar frame with corrugated iron sheet walls, steel bar frame with walls of asbestos plate and plywood, timber frame with walls of asbestos plate and plywood, timber frame with wooden grating walls, and timber frame with wooden panel walls. Fourteen residences (15.5%) were constructed using the masonry method: brick walls, cement block walls, and stone walls. Six residences (6.6%) were made using the RC construction method: RC frame with brick walls. The proportions of these principal structures in the four residential areas are as follows (Fig. 7).

**Chewa Safar:** Of the 35 Italian colonial residences, 20 residences (57.1%) are timber frame structures with walls of asbestos plate and plywood, and six residences (17.1%) are RC frame structures with brick walls. In contrast, less than three residences each were built using: steel bar frames with corrugated iron sheet walls; timber frames with wooden grating walls; stone walls; brick walls; steel bar frames with walls of asbestos plate and plywood; and timber frames with wooden panel walls or brick walls. All residential buildings that were built of timber frames with walls of asbestos plate and plywood and those that were built of RC frames with brick walls are only found in this area; these were only used for officials' residences.

**Kermata:** Of the 30 Italian colonial residences, 15 residences (50.0%) are timber frame structures

**Table 1.** Classification of principal structures of Italian colonial residences in four residential areas

| Construction method | Principal structure | Area | | | | |
|---|---|---|---|---|---|---|
| | | Chewa Safar | Kermata | Rafael | Auto-Parco | Total |
| Prefabrication | Steel pipe frame with walls of asbestos plate and plywood | 0 (0%) | 4 (13.3%) | 15 (93.8%) | 0 (0%) | 19 (20.8%) |
| | Steel bar frame with corrugated iron sheet walls | 2 (5.7%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (2.2%) |
| | Steel bar frame with walls of asbestos plate and plywood | 1 (2.9%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (1.1%) |
| | Timber frame with walls of asbestos plate and plywood | 20 (57.1%) | 0 (0%) | 0 (0%) | 0 (0%) | 20 (21.9%) |
| | Timber frame with wooden grating walls | 2 (5.7%) | 0 (0%) | 0 (0%) | 10 (100%) | 12 (13.3%) |
| | Timber frame with wooden panel walls | 1 (2.9%) | 15 (50.0%) | 1 (6.2%) | 0 (0%) | 17 (18.6%) |
| Masonry | Brick walls | 1 (2.9%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (1.1%) |
| | Cement block walls | 0 (0%) | 1 (3.3%) | 0 (0%) | 0 (0%) | 1 (1.1%) |
| | Stone walls | 2 (5.7%) | 10 (33.4%) | 0 (0%) | 0 (0%) | 12 (13.3%) |
| RC | RC frame with brick walls | 6 (17.1%) | 0 (0%) | 0 (0%) | 0 (0%) | 6 (6.6%) |
| Total | | 35 (100%) | 30 (100%) | 16 (100%) | 10 (100%) | 91 (100%) |

with wooden panel walls, 10 residences (33.4%) are stone wall structures, four residences (13.3%) are steel pipe frame structures with walls of asbestos plate and plywood, and one residence (3.3%) is a cement block wall structure. Most residences of timber frames with wooden panel walls are found in this area; these were used only for soldiers' residences. Most residences of stone wall structures are also found in this area; these were used only for civilians' residences.

**Rafael:** Of the 16 Italian colonial residences, 15 residences (93.8%) are steel pipe frames with walls of asbestos plate and plywood and one residence (6.2%) is a timber frame with wooden panel walls. Most residences of steel pipe frames with walls of asbestos plate and plywood are found in this area; these were used only for civilians.

**Auto-Parco:** Of the 10 Italian colonial residences, all residences are timber frames with wooden grating walls for soldiers' residences. This type of structure is found only in this area.

The features of the principal structures of Italian colonial residences in these four residential areas are as follows.

1) The distribution of the types of principal structure differs among the residential areas because the areas were distinguished by the professions of the occupants: high officials, officials, soldiers, and civilians. All six of the high officials' villas are RC frame structures, and 69% of officials' residences (20 of 29 residences) are timber frame structures with walls of asbestos plate and plywood. In contrast, 96% of soldiers' residences (24 of 25) are timber frame structures with wooden grating walls (14 residences, 56.0%) and timber frame structures with wooden panel walls (10 residences, 40.0%). Of civilians' residences, 93.5% (29 of 31) are steel pipe frame structures with walls of asbestos plate and plywood (19 residences, 61.2%) and stone wall structures (10 residences, 32.3%).
2) Most of the Italian colonial residences were constructed using the prefabrication method. The masonry method was not popular, although it was one of the most prominent vernacular construction methods in Gondar.

*3.3. Features of the construction methods for Italian colonial residences*

The features of the principal structures and the construction materials for Italian colonial residences in Gondar are as follows.

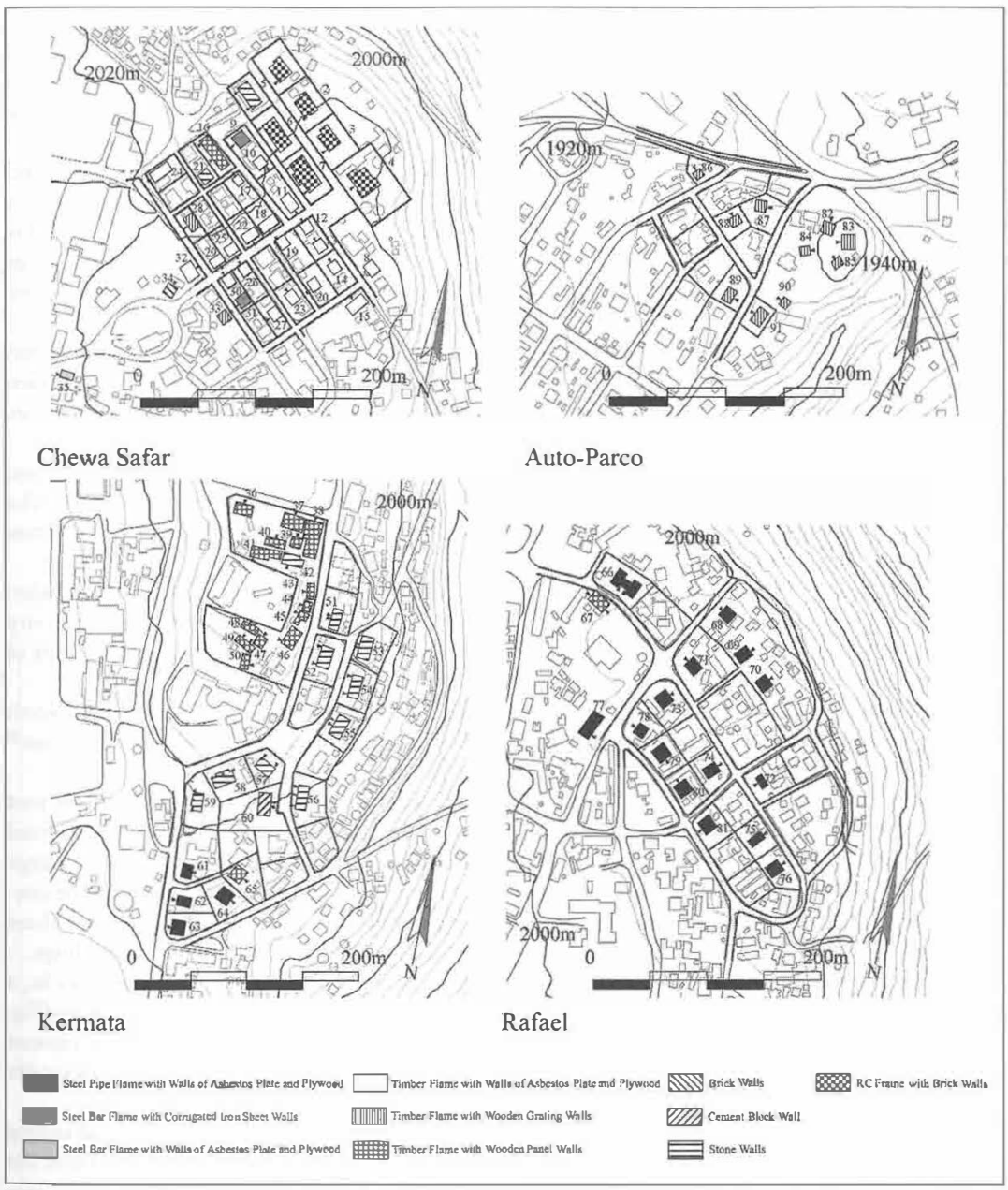



Fig. 7. Distribution of the types of principal structure of Italian colonial residences

**Prefabrication Method:** The prefabrication method had the advantages of both a shorter construction period and easy transportation. In addition, it was easy to ensure the quality of construction and to repair some parts of the residences.

The steel pipe frame structures with walls of asbestos plate and plywood involved steel pipe pillars and steel pipe beams, walls of asbestos plate and plywood, a wooden truss roof with plywood ceiling panel, a cement floor, and a stone masonry foundation (Fig. 8). The advantage of this structure was good thermal insulation. However, the disadvantage was weak durability. Asbestos plate was mostly used as a material for the outer walls and roof tiles. The asbestos plate used on the outer walls was

5 mm thick, 1 m wide, and 3 m long.

The steel bar frame structures with corrugated iron sheet walls involved steel pillars and steel beams, corrugated iron sheet walls, a steel truss roof with plywood ceiling panel, a wooden floor, and a steel footing and stone masonry foundation (Fig. 9). Although the construction period was the shortest of all of the principal structures, the thermal insulation was the worst.

The steel bar frame structures with walls of asbestos plate and plywood involved steel pillars and steel beams, walls of asbestos plate and plywood, a steel truss roof with plywood ceiling panel, a wooden floor, and a steel footing and stone masonry foundation (Fig. 10). The advantage of this structure is that it required the second shortest construction period. However, the disadvantage was low sustainability because of erosion. The lengths of steel pillar and steel beam were 3 and 2 m, respectively.

The timber frame structures with walls of asbestos plate and plywood were assembled using wooden pillars, walls of asbestos plate and plywood, a wooden truss roof with plywood ceiling panel, a wooden floor, and a stone masonry foundation (Fig. 11). This type of structure had good thermal insulation, but lacked durability.

The timber frame structures with wooden grating walls were assembled using wooden pillars, wooden grating partition walls, a wooden truss roof with plywood ceiling panel, a wooden floor, and a stone masonry foundation; the exterior wall was covered by plywood (Fig. 12). This type of structure had good thermal insulation, but lacked durability.

The timber frame structures with wooden panel walls were assembled using wooden pillars, wooden panel walls, a wooden truss roof with plywood ceiling panel, a wooden floor, and a stone masonry foundation; the exterior wall was covered by clapboard siding (Fig. 13). The durability of this type of structure was the worst.

**Masonry Method:** The masonry method, known as the vernacular construction method in North Ethiopia, is quite common in Gondar. Historical castles, palaces,[5] and traditional circular houses[6] were all built using stone masonry.

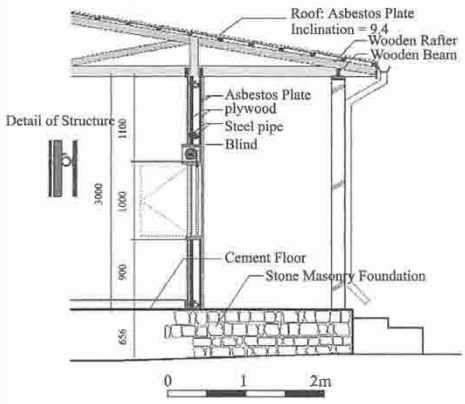
The brick structures involved the construction of walls using piled-up bricks, a wooden truss roof with plywood ceiling panel, a cement floor, and stone masonry foundation (Fig. 14). Bricks were fixed using mortar and are 6 cm thick, 24 cm long, and 12 cm wide. The Italian army manufactured a large number of bricks and constructed a brickyard near Che-Che-La, which is located 2 km from the central part of Gondar and was the first Italian settlement during the Italian occupation. However, these bricks were mostly used for partition walls, rather than for the principal structure of the buildings.

The cement block structures involved the construction of walls using piled-up cement blocks, a wooden truss roof with plywood ceiling panel, a cement floor, and a stone masonry foundation (Fig. 15). This structure is uncommon, with only one existing residence built in this way. The cement blocks are 10 cm thick, 30 cm long, and 15 cm wide. It was difficult to produce cement in Gondar during the occupation; thus, all cement was transported from Asmara.

The stone wall structures involved piling up local basalts, a wooden truss roof with plywood ceiling panel, a cement floor, and a stone masonry foundation (Fig. 16). Local basalts were mined from the quarry near Qusquam Complex[7] and came in lengths of 15–30 cm and widths of 5–10 cm. This structure had good thermal insulation and durability.

**RC Construction Method:** The RC construction method, which requires the concrete structure to be produced onsite, was not common for Italian colonial residences in Gondar. The advantage of this structure is its potential for creating a variety of shapes and attractive spaces. However, it was difficult to construct Italian residences in Gondar using this type of structure because of shortages of cement and reinforcing bars. The Italians collected most of the aggregates from the Angreb River.[8] This was the first trial of the RC structure in Gondar.

The RC frame structures with brick walls involved RC pillars, RC beams, and a RC floor plate, a wooden truss roof with plywood ceiling panel, and a stone masonry foundation (Fig. 17). This structure had good thermal insulation and strong durability.

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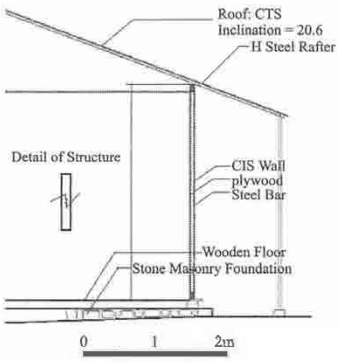


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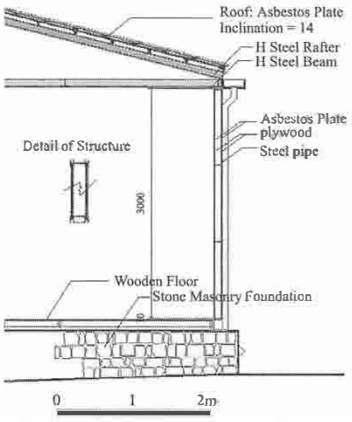


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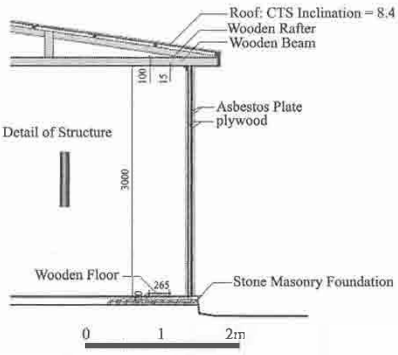


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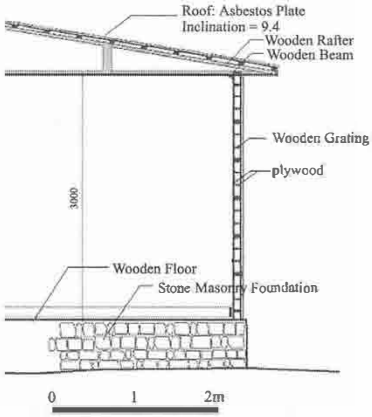


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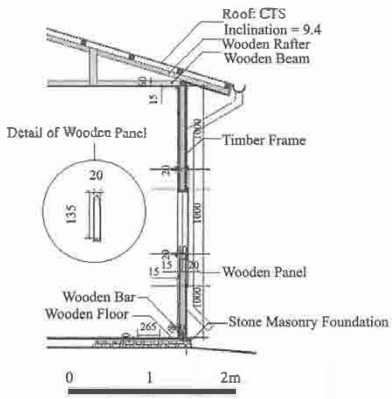


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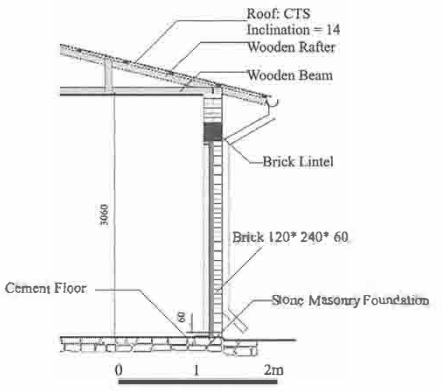


Fig.14.

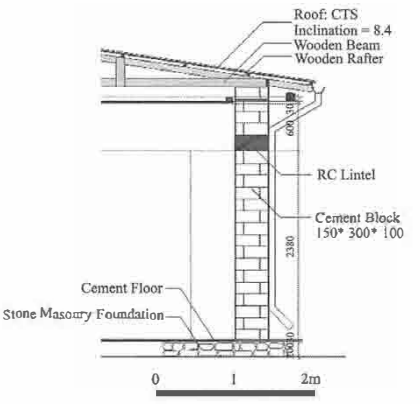


Fig.15.

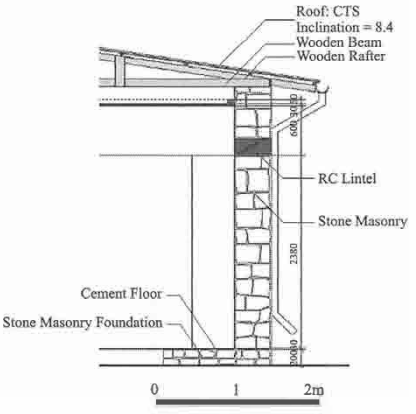


Fig.16.

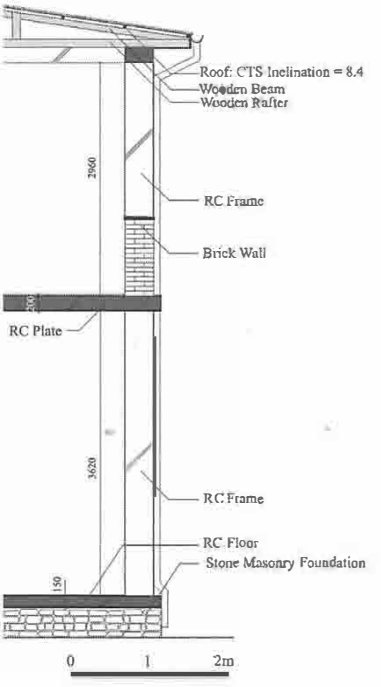


Fig.17.

| Principal Structures | Residence No. |
|---|---|
| Fig 8 Steel Pipe Flame with Walls of Asbestos and Plywood | No.61 |
| Fig 9 Steel Bar Flame with Corrugated Iron Sheet Walls | No.9 |
| Fig 10 Steel Bar Flame with Walls of Asbestos Plate and Plywood | No.35 |
| Fig 11 Timber Flame with Walls of Asbestos Plate and Plywood | No.12 |
| Fig 12 Timber Flame with Wooden Grating Walls | No.83 |
| Fig 13 Timber Flame with Wooden Panel Walls | No.46 |
| Fig 14 Brick Walls | No.34 |
| Fig 15 Cement Block Wall | No.60 |
| Fig 16 Stone Walls | No.52 |
| Fig 17 RC Frame with Brick Walls | No.1 |

*3.4. Classification of building types for Italian colonial residences*

The 91 Italian colonial residences in the four Italian residential areas in Gondar can be classified into three building types (Table 2). Of these, 65 residences (71.4%) are detached house style, 18 residences (19.8%) are row house style, and eight residences (8.8%) are dormitory style.

**Detached House Style:** The detached house style refers to one residence that is built on one housing lot. The living/dining room, kitchen, toilet/bathroom, and bedroom were typically included, and a veranda was often set around the entrance hall.

**Row House Style:** The row house style refers to two residences that share a wall that are built together on one housing lot. One household lived in each residence. The living/dining room, kitchen, toilet/bathroom, bedroom, and veranda were built in each residence in a manner similar to the detached house style.

**Dormitory Style:** The dormitory style means that some private rooms for several dwellers were installed in one building; the dwellers shared a common toilet/bathroom and kitchen.

The building types of residences in the four Italian residential areas are as follows.

**Chewa Safar:** Of 35 Italian colonial residences, 28 residences (80.0%) are detached house style, four residences (11.4%) are dormitory style, and three residences are row house style (8.6%). Most of the residences were constructed of the detached house style in this area. All dormitory style residences built in this area were for officials who were bachelors.

**Kermata:** Of 30 Italian colonial residences, 14 residences (46.7%) are detached house style, 12 residences (40.0%) are row house style, and four residences (13.3%) are dormitory style. Most of the row house style residences that were built in Gondar are located in this area (12 of 18 residences). Civilians mainly resided in the row house style of dwelling.

**Rafael:** Of 16 Italian colonial residences, 13 residences (81.3%) are detached house style and three residences (18.7%) are row house style. Most of the residences were built in detached house style for civilians in this area.

**Auto Parco:** Of 10 Italian colonial residences, all are detached house style and were inhabited by soldiers.

*3.5. Classification of layout types for Italian colonial residences*

It is possible to recognize the original internal functions of 60 of the 91 Italian colonial residences in the four Italian residential areas. The internal functions of the other 31 residences are difficult to recognize because of internal changes. Of the 60 Italian colonial residences with clearly recognizable original internal functions, 30 were civilians' residences (18 detached houses and 12 row houses), 14 were officials' residences (10 detached houses, three dormitories, and one row house), 11 were soldier's residences (10 detached houses and one dormitory), and five were high officials' villas (three detached houses and two row houses; Fig. 18).

There are many rooms inside Italian colonial residences: living and dining rooms, kitchens, bedrooms, corridors, toilet and bathrooms, verandas, and storage rooms and other spaces (Fig. 18). Table 3 indicates the average area of several rooms of Italian colonial residences according to the type of dweller. The features of several rooms are as follows.

**Table 2.** Classification of building type in four Italian residential areas

| Building type | Chewa Safar | | Kermata | | Rafael | Auto-Parco | Total |
|---|---|---|---|---|---|---|---|
| | High officials | Officials | Civilians | Soldiers | Civilians | Soldiers | |
| Detached house | 4 (11.4%) | 24 (68.6%) | 5 (16.7%) | 9 (30.0%) | 13 (81.3%) | 10 (100%) | 65 (71.4%) |
| Row house | 2 (5.7%) | 1 (2.9%) | 10 (33.3%) | 2 (6.7%) | 3 (18.7%) | 0 (0%) | 18 (19.8%) |
| Dormitory | 0 (0%) | 4 (11.4%) | 0 (0%) | 4 (13.3%) | 0 (0%) | 0 (0%) | 8 (8.8%) |
| Subtotal | 6 (17.1%) | 29 (82.9%) | 15 (50.0%) | 15 (50.0%) | | | |
| Total | 35 (100%) | | 30 (100.0%) | | 16 (100%) | 10 (100%) | 91 (100%) |


**Fig. 18.** Plan of Italian colonial residences in four Italian residential areas

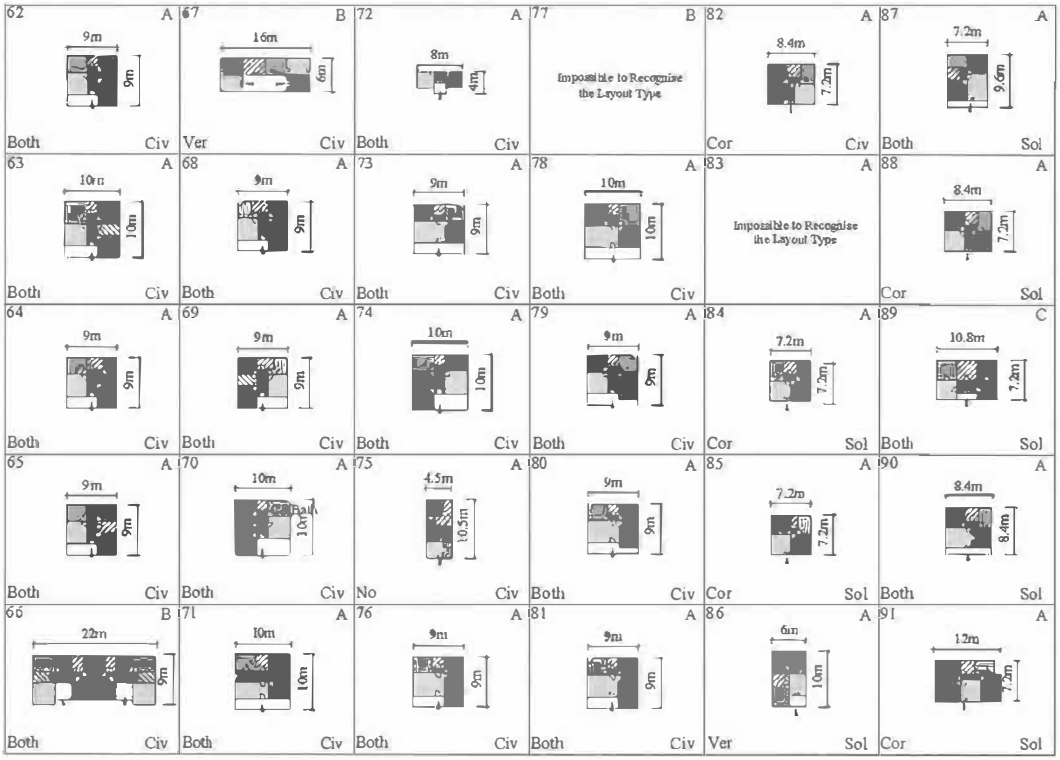


**Fig. 18.** (Continued)

**Table 3.** Average areas of several rooms of Italian colonial residences by dweller type

| Dweller type | Building type | Living and dining room | Bed room | Kitchen | Toilet and bath room | Corridor | Veranda | Storage | Other space | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| High officials | Detached house | 37.4 (16.8%) | 71.5 (32.1%) | 14.5 (6.5%) | 9.3 (4.2%) | 29.1 (13.1%) | 50.5 (22.6%) | 8.2 (3.7%) | 2.1 (1.0%) | 222.6 (100%) |
| | Row house | 27 (12.9%) | 64.4 (30.9%) | 14 (6.7%) | 8 (3.8%) | 17 (8.2%) | 74.3 (35.6%) | 2.5 (1.2%) | 1.5 (0.7%) | 208.7 (100%) |
| Officials | Detached house | 14.6 (24.5%) | 20.5 (34.5%) | 10 (16.8) | 5.4 (9.1%) | 2.7 (4.5%) | 6.2 (10.4%) | 0 (0%) | 0 (0%) | 59.4 (100%) |
| | Row house | 28.3 (37.9%) | 30 (40.2%) | 2.5 (3.4%) | 6 (8.0%) | 6.5 (8.7%) | 1.3 (1.8%) | 0 (0%) | 0 (0%) | 74.6 (100%) |
| | Dormitory | No | 66 (64.9%) | No | 6.3 (6.2%) | 22.7 (22.3%) | 5.3 (5.2%) | 0.7 (0.7%) | 0.7 (0.7%) | 101.7 (100%) |
| Soldiers | Detached house | 14.6 (20.8%) | 30.1 (42.9%) | 9.7 (13.8%) | 6.3 (9.0%) | 4.9 (7.0%) | 4.5 (6.5%) | 0 (0%) | 0 (0%) | 70.1 (100%) |
| | Dormitory | No | 112 (70.0%) | 8 (5.0%) | 5 (3.1%) | 35 (21.9%) | 0 (0%) | 0 (0%) | 0 (0%) | 160 (100%) |
| Civilians | Detached house | 16.3 (20.0%) | 27.7 (34.1%) | 10.2 (12.6%) | 4.9 (6.0%) | 8.8 (10.8%) | 12.6 (15.5%) | 0.8 (1.0%) | 0 (0%) | 81.3 (100%) |
| | Row house | 16.9 (22.1%) | 32.5 (42.6%) | 9.2 (12.1%) | 5.2 (6.7%) | 2.7 (3.5%) | 9.4 (12.3%) | 0.5 (0.7%) | 0 (0%) | 76.4 (100%) |

Detached House and Row House: m²/household, Dormitory: m²/building No: there is no room of this function.

**Living and Dining Room:** All detached houses and row houses used this room for the purpose of dining and togetherness. This room was mostly positioned near the entrance. In high officials' villas, the room consisted of two rooms joined together. The average area of the living and dining rooms for high officials (27–37.4 $m^2$) was approximately twice that for officials, soldiers, and civilians (14.6–28.3 $m^2$).

**Bedroom:** This room was usually used for sleeping in both detached houses and row houses. However, in dormitories, it had multiple purposes. High officials' villas contained three to five bedrooms (64.4–71.5 $m^2$). In contrast, residences for officials, soldiers, and civilians (with the exception of dormitories) contained one to two bedrooms (20.5–32.5 $m^2$).

**Kitchen:** Almost all detached houses and row houses had kitchens that were normally positioned next to the living and dining room. Italians transported cooking equipment to Gondar from Italy and installed it in the kitchen. The average area of the kitchen for residences of high officials was somewhat greater than for residences of officials, soldiers, and civilians.

**Toilet and Bathroom:** Almost all of the residences contained this room. All equipment such as toilet seats, bathtubs with showers, and water heaters were transported to Gondar from Italy. Some dormitories contained only showers without bathtubs. High officials had two toilets in their residences.

**Corridor:** This space was set between a room and the main entrance or between two rooms. The corridor was functional for ventilation and to maintain privacy.

**Veranda:** Most residences had this space next to the living and dining room or the bedroom; its function was to block out the sunshine. Dwellers could spend time reading or drinking coffee in this leisure space. High officials' residences had wide verandas, as well as upstairs verandas.

1) The area of detached houses and row houses for high officials was >200 $m^2$ (208.7–222.6 $m^2$). In contrast, the area of detached houses and row houses for officials, soldiers, and civilians was <100 $m^2$ (59.4–81.3 $m^2$).
2) The comparative relations between the areas of the various rooms in detached houses and row houses for high officials, officials, soldiers, and civilians are: living and dining room > bedroom > kitchen > toilet and bathroom.
3) The proportion of the total area that comprised verandas and corridors in high officials' detached houses and row houses was 35.7% and 43.8%, respectively. The proportion of the total area that comprised verandas and corridors in civilians' detached houses and row houses was 26.3% and 15.8%, respectively.
4) The layout of dormitories is different from that of detached houses and row houses. Approximately 85% of the area of the dormitory is occupied by bedrooms and corridors (officials' dormitory: 87.2%, soldiers' dormitory: 91.9%).

### *3.6. Features of spatial formations for Italian colonial residences*

I classified the presence of verandas and corridors in Italian colonial residences according to type of dweller and building type as follows (Table 4):

1) Of 60 Italian colonial residences that have recognizable original internal functions, 49 (81.7%) have verandas, 45 (75.0%) have corridors, and 36 (60.0%) have both verandas and corridors. Only two (3.3%) residences have no veranda or corridor.
2) All residences for high officials (five villas) and 88.8% (16 residences) of detached houses for civilians have both verandas and corridors. All row houses for civilians (12 residences) have verandas. However, only 25.0% of these have corridors.

I classified the layout of Italian colonial residences according to dweller type and building type (Table 5 and Fig. 19). Seven layout types were classified by the organization of rooms: corridor (C); living and dining room (L&D); veranda (V); and bedroom, kitchen, toilet and bathroom, or other space (X). The seven layout types are as follows, where an arrow indicates the spatial direction of entrance to interior: "C→X," "L&D→C→X," "L&D→X," "V→C→L&D→X," "V→C→X, L&D," "V→L&D→C→X," and "V→L&D→X."

**C→X:** There is no veranda or L&D in this layout type; this was mainly used for the dormitory style

**Table 4.** Classification of presences of veranda and corridor of Italian colonial residences by dweller type & building type

| Dweller type | Building type | Both | Veranda | Corridor | Neither | Total |
|---|---|---|---|---|---|---|
| High officials | Detached house | 3 (100%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (100%) |
| | Row house | 2 (100%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (100%) |
| Officials | Detached house | 6 (60.0%) | 2 (20.0%) | 1 (10.0%) | 1 (10.0%) | 10 (100%) |
| | Dormitory | 1 (33.3%) | 0 (0%) | 2 (66.7%) | 0 (0%) | 3 (100%) |
| | Row house | 1 (100%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (100%) |
| Soldiers | Detached house | 4 (40.0%) | 1 (10.0%) | 5 (50.0%) | 0 (0%) | 10 (100%) |
| | Dormitory | 0 (0%) | 0 (0%) | 1 (100%) | 0 (0%) | 1 (100%) |
| Civilians | Detached house | 16 (88.8%) | 1 (5.6%) | 0 (0%) | 1 (5.6%) | 18 (100%) |
| | Row house | 3 (25.0%) | 9 (75.0%) | 0 (0%) | 0 (0%) | 12 (100%) |
| Total | | 36 (60.0%) | 13 (21.7%) | 9 (15.0%) | 2 (3.3%) | 60 (100%) |

Both: both the veranda and corridor. Neither: the residence has neither veranda nor corridor.

**Table 5.** Classification of layout type of Italian colonial residences by dweller type & building type

| Dweller type | Building type | C→X | L&D →C→X | L&D →X | V→C→ LD→X | V→C→ X, L&D | V→L&D →C→X | V→LD →N | Total |
|---|---|---|---|---|---|---|---|---|---|
| High officials | Detached house | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (100%) | 0 (0%) | 0 (0%) | 3 (100%) |
| | Row house | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 2 (100%) | 0 (0%) | 2 (100%) |
| Officials | Detached house | 0 (0%) | 1 (10.0%) | 0 (0%) | 0 (0%) | 3 (30.0%) | 2 (20.0%) | 4 (40.0%) | 10 (100%) |
| | Dormitory | 2 (66.7%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (33.3%) | 0 (0%) | 0 (0%) | 3 (100%) |
| | Row house | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (100%) | 0 (0%) | 0 (0%) | 1 (100%) |
| Soldiers | Detached house | 3 (30.0%) | 2 (20.0%) | 0 (0%) | 0 (0%) | 2 (20.0%) | 2 (20.0%) | 1 (10.0%) | 10 (100%) |
| | Dormitory | 1 (100%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 0 (0%) | 1 (100%) |
| Civilians | Detached house | 0 (0%) | 0 (0%) | 1 (5.6%) | 0 (0%) | 11 (61.1%) | 6 (33.3%) | 0 (0%) | 18 (100%) |
| | Row house | 0 (0%) | 0 (0%) | 1 (8.3%) | 2 (16.7%) | 1 (8.3%) | 0 (0%) | 8 (66.7%) | 12 (100%) |
| Total | | 6 (10.0%) | 3 (5.0%) | 2 (3.3%) | 2 (3.3%) | 22 (36.7%) | 12 (20.0%) | 13 (21.7%) | 60 (100%) |

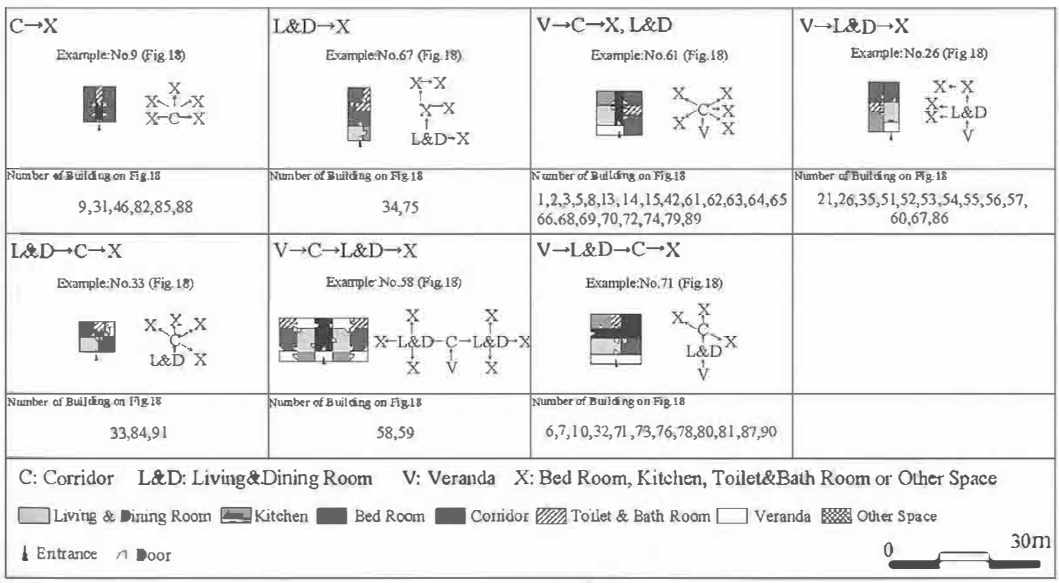


**Fig. 19.** Classification of the layout type of Italian colonial residences

(three of four dormitories).
**L&D→C→X:** This layout type has no veranda and was used only for detached houses.
**L&D→X:** There is no veranda or corridor in this layout type; this was used only for soldiers' residences.
**V→C→L&D→X:** This layout type was used only for civilians' row houses.
**V→C→X, L&D:** A total of 36.7% (22 residences) of the Italian colonial residences were of this layout type, which constitutes the highest number of any type. Of these, 50.0% were used for civilians' detached houses (11 of 22 residences).
**V→L&D→C→X:** This layout type was used for 20.0% (12 residences) of the Italian colonial residences; this type was used only for detached houses, with the exception of high officials' row houses.
**V→L&D→X:** This layout type was used for 21.7% (13 residences) of the Italian colonial residences. It was used in 66.7% of civilians' row houses (8 of 12 residences).

## 4. CONCLUSION

In sections 2 and 3, I highlighted the importance of both Italian residential areas and Italian colonial buildings in Gondar. First, Italian residential areas were segregated from Ethiopian residential areas during the occupation. Four Italian residential areas were constructed in Gondar at that time, and these areas were clearly distinguished by dweller type: high officials, officials, soldiers, and civilians. Second, Italian colonial residences involved three types of construction method, i.e., prefabrication, masonry, and RC, which I subdivided into 10 types of principal structure. The use of each type of principal structure was distinguished by the type of occupant, i.e., high official, official, soldier, and civilian. High officials' villas and civilians' residences were constructed before residences for others, and the above three types of construction methods were recognized in these villas and residences. Third, Italian colonial residences were classified into three building types: detached house, row house, and dormitory. Italian colonial residences also contained various rooms such as living and dining rooms, bedrooms, kitchens, toilet and bathrooms, corridors, and verandas. Most Italian colonial residences had both verandas and corridors, and all of the high officials' villas and most of the detached houses for civilians had both spaces. Furthermore, Italian colonial residences had seven types of layout, and most were organized as "V→C→X, L&D," "V→L&D→C→X," or "V→L&D→X." Fourth, it can be said that Bosio's proposal for the Gondar urban master plan, which I outlined in 1) to 4) of section 2.1, was accomplished. There is no major discrepancy between my assessment and that of Zagnoni, which I noted in 1) to 5) of section 3.1.

## ACKNOWLEDGEMENTS

I express my appreciation to the colleagues at Gondar City Service Office who cooperated with my research and to the Japan Society for the Promotion of Science, which gave me the opportunity to research Ethiopian historical architecture as a special research fellow. This paper is based on the results of fieldwork funded by Grants-in-Aid for Scientific Research by the Ministry of Education, Culture, Sports, Science and Technology of Japan.

## NOTES

(1) Ethiopia was occupied by the Italian army for five years; however, it was not colonized. The Italian Colonies were Libya, Italian Somalia, and Eritrea.
(2) I conducted nine periods of fieldwork in Ethiopia: five in Gondar (October 2003, February–March 2003, March 2004, February 2005, and December 2005), one in Jinma (March 2005), one in Harar (August

2005), and one in Addis Ababa (September 2005 and December 2005).

(3) Department of Architecture and Urban Planning, Addis Ababa University, Addis Ababa, Ethiopia.

(4) "*Present Condition of Historical Italian colonial buildings in Gondar*" and "*A Study on the Methods and Materials used in the Construction of Italian Buildings in Gondar.*"

(5) There are many historical castles and palaces in Gondar that were constructed during the Gondarine Period (1632–1769). The main compound, "Fasil Ghebbi," which was built in the central part of Gondar during this time, was registered with the UNESCO World Heritage in 1979. Two other compounds still exist in Gondar: "Fasiladas' Bath" and "Qusquam Complex."

(6) According to the results of my fieldwork, there are 52 traditional circular houses in Gondar, and most of these houses were constructed at least 80 years ago.

(7) The Qusquam Complex consists of "Qusquam Mariam Church" and "Empress Mentewab's Palace." It is located 2.5 km from the central part of Gondar.

(8) The Angreb River flows on the east side of Gondar along Gondar's boundary; the aggregates were collected at the riverbank.

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