



BUILDING ETHIOPIA

SUSTAINABILITY AND INNOVATION IN ARCHITECTURE AND DESIGN



ZEGEYE CHERENET
HELAWI SEWNET



EiABC

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First Edition

Ethiopian Institute of Architecture, Building Construction and City Development , EiABC

Zegeye Cherenet, Helawi Sewnet (editors)

Building Ethiopia : Sustainability and Innovation in Architecture and Design, Vol. I, 2012

ISBN 978-99944-993-7-3

Digital Impressions, Printed in Ethiopia, 2012

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HOUSING TYPOLOGIES

A CASE STUDY IN ADDIS ABABA

>> FELIX HEISEL

Cover Image >>
Collection of floor plans found
from interviews conducted by the
students

What is a typical Ethiopian floor plan?

What is Addis Ababa's housing typology?

What are the reasons behind our design decisions?

These are some of the questions this research posed in its attempt to understand the dwelling typologies in the city of Addis Ababa. In total, 500 interviews were conducted in selected areas throughout the city. To be able to compare the results scientifically, questionnaires set the basis for discussions on the use of space, life in the city and personal matters of the inhabitants.

A typology, defined as a classification according to general type, especially in archaeology, psychology, or the social sciences (Oxford Dictionary), in architecture refers to a distinct spatial arrangement common for a certain time or social group. The way we enter our dwellings, which rooms we pass through and in which order; all these habits are not being questioned as long as we move in our accustomed cultural architecture.

Once leaving our homes, we encounter other distinct ways of living and housing. Usually we relate these differences to other building materials and climates. But, by only looking at the physical side of architecture, it is difficult to understand the whole picture. The fact that a building is constructed from brick or from mud does not necessarily determine the relationship between kitchen and living room, or how the house is entered. To understand those details, one has to study, for example, the specific qualities of the traditional food preparation process or the religion of the owner.

There are three reasons, why Addis Ababa is especially interesting for this research: Firstly, according to UN Definition, 70 – 80% of Ethiopia's citizens are living in "substandard, slum-like conditions"¹. Due to a very unique history and constant housing shortage over the last century, its citizens built most of the city informally without building permits. This makes Addis Ababa a showcase for architects who are willing to learn from the informal sector.

Secondly, as an indigenous urban settlement, Addis Ababa developed haphazardly around the king's palace and the camps of his generals. Over time, the vacant spaces started to fill in, resulting in an urban pattern where the wealthy and the poor lived side by side. Apart from some newly built satellites for the upper class, until today, this mixed residential structure has not changed. Addis Ababa fails to display the degree of separation between housing classes commonly featured in other major cities of the developing world².

Lastly, Addis Ababa is still more or less free from international influences. Not counting the five years of Italian occupation, Ethiopia was never colonized by a foreign power. The Italians did manage to build a lot, but 5 years are not sufficient to change the lifestyle or architectural awareness of a country's inhabitants. Unfortunately, during the last 10 years, Dubai's influence has invaded Addis Ababa. But as the research showed, Ethiopians still live, build and construct essentially Ethiopian.

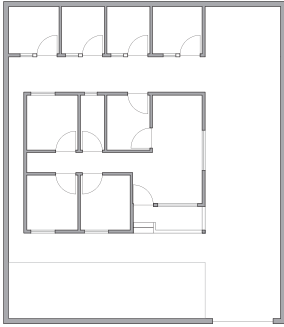
- 1 >> UN-HABITAT (2008) Ethiopia Urban Profile, UN-Habitat: Nairobi
- 2 >> UN-HABITAT (2010) The Integrated Housing Development Program, UN-Habitat: Nairobi
- 3 >> All following numbers and statistics according to EiABC Research, if not stated otherwise
- 4 >> UN-HABITAT (2010) The Integrated Housing Development Program, UN-Habitat: Nairobi
- 5 >> DERG or Dergue: Provisional Military Government of Socialist Ethiopia (1974 - 1987)
- 6 >> Ministry of Works and Urban Development: Integrated Housing Development Program, Addis Ababa, 2008
- 7 >> UN-HABITAT (2010) The Integrated Housing Development Program, UN-Habitat: Nairobi
- 8 >> Injera is the traditional Ethiopian yeast-risen flatbread made out of teff flour
- 9 >> A 'kebele' is the smallest administrative unit in Ethiopia, with a minimum of 500 families
- 10 >> further information, EiABC Movie: „Disappearing Spaces – A day in the informal city“, Felix Heisel / Bisrat Kifle, 2011
- 11 >> UN-HABITAT (2010) The Integrated Housing Development Program, UN-Habitat: Nairobi
- 12 >> UN-HABITAT (2008) Ethiopia Urban Profile, UN-Habitat: Nairobi
- 13 >> At the time of writing: 100 birr equivalent to 4.25 €
- 14 >> Ethiopia Population Census Commission: Summary and Statistical Report of the 2007, Addis Ababa, 2008

Absolut Numbers

	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
Interviews	298	23	66	42	45	474



a>>



b>>



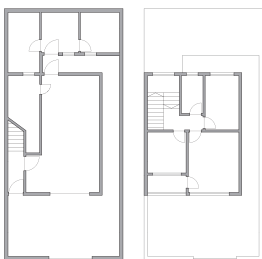
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HOUSING TYPOLOGIES IN ADDIS ABABA

The research was conducted over five different housing typologies in Addis Ababa:

Small Houses / Sheds, Apartments, Condominiums, Row Houses and Villas. Unlike Europe, where typologies usually depend on the time and the architectural style of the period, Ethiopia's typologies seem to vary much more according to the income of the owner. Comparing the floor plans of a 2-bedroom apartment from the time of Emperor Haile Selassie and one from the year 2010, one cannot find big differences. Where Europeans distinguish between, for example, a "Gründerzeit" and a modern floor plan typology, regardless of talking about a 10-story apartment building or a free standing villa, in Ethiopia, that alone is the main typological difference. Interestingly enough, the floor plan and typology of a villa in Addis Ababa does not seem to have changed during the last century.

VILLAS

A villa in Addis Ababa is considered as a freestanding structure within a compound of several buildings. The average plot size ranges between 200 and 300m²; the main house covering about 88m². 77% of villas are single-story, although newer structures can have up to 3 stories and significantly more square meters. According to our data, 98% of villas are fenced and 68% have additional security measures like guards or dogs.³

Traditionally the house is set back from the street to create a parking space and a small garden in front of the house. Sometimes a veranda overlooks this area. An average villa has 9 rooms and houses 6.6 persons. In stark contrast to all other typologies in Addis Ababa, here, every room is used for only one function throughout day and night. The front of the house consists out of a living and dining area with an adjacent closed kitchen. In the back, 3 bedrooms and a bathroom are connected to a small hallway.

Behind the house, one can find a service quarter with spaces for storage, the servants and a traditional kitchen. Although 90% of all villas have a modern kitchen nowadays, almost the same number has an additional traditional kitchen in the backyard. The preparation of Ethiopian dishes needs an open fire in most cases. Since the servant generally uses the traditional kitchen for food preparation, the modern kitchen is usually reduced to a show-case space and the location of the fridge for drinks.

86% of villa owners have at least one servant to help with the washing and cooking chores of the household. Not necessarily all of them live at their place of work. In many cases the servant quarters or even the villas are rented as an additional income source for the owner of the plot. But, regardless of their use, all villas are constructed with a second structure in the backyard, this so-called "servant's quarter".

ROW HOUSES

Row houses and villas in Addis Ababa show similar characteristics. Set on a fenced compound, the house separates the parking and garden spaces in the front from the service quarters in the back. The biggest difference is probably the height. 70% of row houses have two or three stories, whereas 70% of villas have only one. Row houses are generally built by housing associations and thus, like villas, predominantly privately owned.

The most popular unit is a 3-bedroom house. In most cases one enters these houses, just like villas, directly into the combined living and eating room, without the buffer of a hallway. The kitchen can be found underneath the stairs that are leading to the private rooms on the top floor. Upstairs three bedrooms share one common bathroom. The small hall in between is lit by means of the staircase.

Usually, the urban grid consists of 4 to 8 identical units in one row, multiplied along 2 or 3 parallel streets. Talking to the inhabitants of these units, the most common complaint is lack of space. An average of 6.55 persons shares the 3 bedrooms, which explains why most of the balconies are closed off and transformed into additional rooms.

While it is possible to find villas built from traditional building materials like mud and wood, all row houses are constructed from brick or hollow concrete blocks. The reason is simple: Still today multi-story mud buildings are an experiment. At the time of construction, row houses could only be erected with more advanced building materials.

Rooms have several Functions

Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
77.52%	30.43%	34.85%	0.00%	0.00%	55.06%

APARTMENTS

Unlike Europe, the value of an apartment in Addis Ababa does not seem to increase with its height above street level. The view and the feeling of being above the rest of the city cannot outweigh the problems that appear with an increasing building height. Most apartment blocks do not feature elevators, although now the building code requires such for constructions above 5 stories. Much worse though is the low water pressure in Addis Ababa. The city loses 30% of its potable water every year due to leakage in the communal water system⁴. Besides this alarming fact, these holes in the system also cause daily water problems in buildings with more than 4 stories because of the low water pressure. Lastly, most inhabitants of Addis Ababa increase their income with micro-enterprises. These businesses highly depend on the relationship with the public realm and thus passing-by customers. Since most of the micro-entrepreneurs work from home, the level of their apartment correlates directly with the possibility to address these clients: the higher the apartment the fewer customers can be attracted.

The architecturally most interesting apartment buildings in Addis Ababa probably date back to the times of Emperor Haile Selassie (1940's-1960's). At that time, private investors had been constructing housing units for a free rental market. Ever since the nationalization of all urban land and rental units during the time of the socialistic DERG Regime⁵, apartment blocks seem to be considered as stacked small houses to meet the housing shortage. (80% of apartment units are rented by the Agency for the Administration of Rented Houses, short AARH.) Most of them consist of dark hallways, small units and a lack of connection between the inside and outside of the apartment. These missing social spaces and connections are the main problem of today's inner city residential high-rise buildings.

The average apartment size is 53.2 m² and houses 4.77 persons. These numbers do not necessarily show the reality. We found 2 categories of dwellers in Addis Ababa's apartments. On the one side, middle class singles and younger couples, some of them just welcomed their first child; on the other side, an equally big group of families with up to 10 members lives in the same size apartment in very cramped conditions. In the second situation, we found all the characteristics of a typical small house or shed, simply lifted to an upper floor. Due to the space shortage, rooms fulfill different functions during day and night and the hallways are made part of the private spaces as best as possible. It is not uncommon to find the inhabitants of these blocks cooking their traditional dishes in the halls and balconies due to the lack of a traditional kitchen. Public space is usually transformed into a living room during daylight hours and considered as storage space at night time. As discussed earlier, due to their height, the upper apartments cannot utilize the public realm in the same way a ground floor apartment might be able to. Because of that, these blocks usually feature a wide range of shops, restaurants and other services on the ground and first floors.

a>> Villa Typology Plan

b>> Picture of a Villa and its typical security measures

c>> Villa with veranda space

d>> Rowhouses near Atlas

e>> Row House Typology Plan

f>> Apartment Block

g>> Staircase of Apartment

Building, Public and Private Use

h>> Apartment Typology Plan

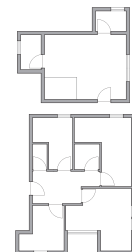
i>> Teklu Desta Apartment Bldg.



f>>



g>>



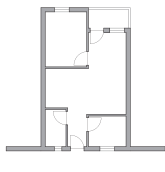
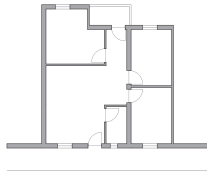
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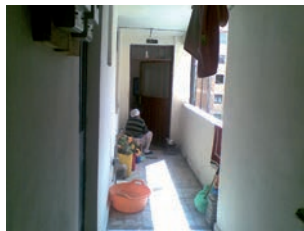
j >>



k >>



l >>



m >>

j >> Arial View Condominium Site

k >> Condominium Typology Plan

l >> Condominium Street View

m >> Condominium Circulation,

Public and Private Use

n >> Small House / Sheds Picture

o >> Student's Sketches of

Small Houses and Sheds

p >> Small House / Shed Picture

q >> Small Houses / Sheds

Typology Plan

CONDOMINIUMS

In 2004/05, the Addis Ababa municipal authority launched a massive urban renewal program⁶ in order to upgrade the inner parts of the city. The scheme is known as the 'Condominium Housing Project' and its objective was to build 170,000 units in Addis Ababa in just five years. Although this number has not been reached so far, a lot has been done. On 103 building sites all over the city, 51 of those in the very center, constructions have been or are currently going on.

Basically, condominiums can be considered as part of the apartment typology, with some very important differences due to the different inhabitant structure. The 'Condominium Housing Project' is a city-upgrading program. Accordingly, former slum areas are being demolished and rebuilt with condominium blocks. Naturally, this leads to major displacements of the former inhabitants living in these areas. But, the most important feature of Addis Ababa's informal sector is not the built environment, but the social network that developed within these communities. By displacing those people according to a lottery system (the idea was to be fair to everyone) throughout the city, all of these networks were scattered. Fortunately realizing this situation, the city is now changing the system in order to keep neighborhoods together.⁷

Square Meter per House						
	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
	23.83	49.71	53.17	76.19	88.20	39.91
Square Meter per Room						
	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
	9.24	11.30	11.50	9.97	10.21	9.77
Square Meter per Person						
	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
	5.11	14.58	14.38	13.49	15.08	8.51

Nonetheless, in regard to the relationship between units and the public realm, the same problems apply for condominiums as for apartments. Unfortunately, for condominiums, this creates a significantly bigger problem. In contrast to a family that moved into an apartment by choice, many inhabitants of the condominium blocks have been displaced or moved from their former life style where they depended on micro-enterprises.

Within an exemplary family in Addis Ababa's informal sector, the wife bakes and sells "injera"⁸ every day as the only income source for the family. After spending the last years on creating a network of clients in her neighborhood, she can now barely support her family. Operating her business inside a one-room "kebele"⁹ house, she is forced to open her private spaces towards the street and turn them into a public shop during the day.¹⁰

The described case does not represent a single incident, but the vast majority of families in Addis Ababa. By displacing families like these from their accustomed social networks, the physical aspects of their housing are indeed improved. On the other hand, in this process, they may lose their source of income, thus making a life in the upgraded conditions impossible. According to official figures, the new owners are renting out 70%¹¹ of all condominium units. The generated income is used to pay back loans from the down payment for the condominium, while the owners have to move back into the "slums" to restart a micro-enterprise for daily survival.

Typologically, in addition to all the discussed points for apartments, one very interesting change can be observed. Some condominiums are built with an open kitchen as part of the living and dining room. Because of the nature of Ethiopians' traditional dishes, in many cases, the new owner moves the kitchen into a bedroom to create a closed cooking space. The lost sleeping space will be compensated by a change in furniture in the living room, turning it into a bedroom for the night.

Ownership						
	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
Kebele	71.48%	0.00%	1.52%	2.38%	0.00%	45.36%
RHA	1.01%	0.00%	80.30%	2.38%	11.11%	13.08%
private	24.16%	100.00%	18.18%	95.24%	88.89%	39.45%
NGO	1.01%	0.00%	0.00%	0.00%	0.00%	0.63%
informal	2.35%	0.00%	0.00%	0.00%	0.00%	1.48%

SMALL HOUSES AND SHEDS

By UN standards, approximately 80%¹² of Addis Ababa's dwellings are considered below standard or worse. The dominating typology within these informal sectors of the city are the so called "small houses and sheds". It is impossible to separate these two, since most of the time, both appear together. More than 70% of small houses have an extension that would be categorized as a shed. Only a few sheds actually stand alone, and represent the poorest of the interviewed inhabitants.

After the nationalization of all urban land and housing in July 1975 by the socialist DERG Regime, all dwellings that used to collect more than 100 birr¹³ in rent were given to the management of AARH (see apartments), all units worth less than 100 birr per month were given to the 'kebeles'. According to the last Ethiopian Census in 2007, the 'kebeles' rent out 148,645¹⁴ housing units. This accounts to about 70% of all small houses and sheds in Addis Ababa; the rest belongs in some more or less legal way to the dweller himself. The rent for these dwellings was cut to 10% of the initial sum and stayed at that level ever since. It is not uncommon to pay between 5 to 10 birr per month rent for a 'kebele' house in Addis Ababa.

Out of constant space problems, the owners developed a habit to extend their units whenever they could. This led to a very distinctive law: It is forbidden to renovate or repair a 'kebele' house unless the situation is life threatening. Unfortunately, this regulation did not stop the constant extension of living space in 'kebele' houses; but it did worsen the condition of Addis Ababa's housing units a lot. Considering the small amount of rent, it is not surprising that most 'kebele' houses are short of collapsing these days. Due to the unsecure situation of most tenants and a constant fear of displacement, as well as the strict regulation on renovation, this is not about to change any time soon. If at all, it will change for the worse.

Material Main Building

	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
Mud	81.54%	0.00%	1.52%	0.00%	26.67%	54.01%
CIS	8.72%	0.00%	0.00%	0.00%	0.00%	5.49%
HCB	2.35%	100.00%	57.58%	69.05%	64.44%	26.58%
Ply Wood	1.68%	0.00%	0.00%	0.00%	0.00%	1.05%

Constructor

	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
self-built	85.57%	0.00%	0.00%	4.76%	11.11%	55.27%
contractor	13.76%	100.00%	51.52%	59.52%	73.33%	32.91%
Architect	0.67%	0.00%	48.48%	35.71%	15.56%	11.81%

The average small house or shed is 24m² and houses an average of 5.7 persons. Because of space limitations, 77% of all rooms serve several different functions, whereas the most common combination is a change from living to bedroom during the course of the day. In the day, 33% of the dwellers turn their private spaces into public functions- such as shops, bars or restaurants. In the hunt for some privacy, most of these owners divided their one room 'kebele' house into several compartments. Most of the time this separation is temporary and changes between day and night, for example by means of a curtain. Although you can also find walls from mud or plywood as dividers.

88% of all small houses and sheds are constructed from "chika", the traditional mud and wood construction technique. This figure, in combination with the fact, that 60% of these buildings are older than 50 years and 80%¹⁴ have rammed earth floors, paints a good image of the housing standard in the informal sector of Addis Ababa. The first owners, together with some of their friends, have constructed the vast majority of these buildings. In a sector that covers 80% of the city, 85% of the buildings are self-built. Basically none of these buildings have been designed by an architect. A very interesting phenomenon architecturally is the extension of space within the 'kebele' houses.



n >>



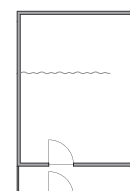
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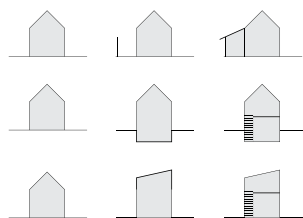
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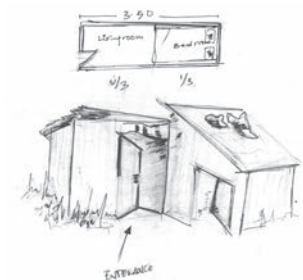
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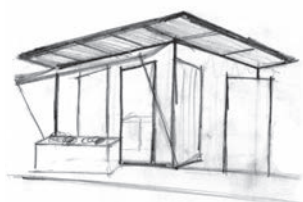
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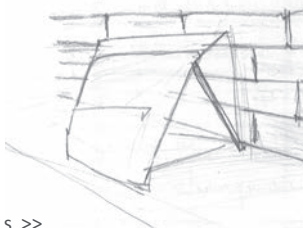
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Since it is forbidden to make adjustments, the house owners found several different ways to double the space without making it visible from the outside. One method is to dig down and create a second level within the house. This creates floor heights of usually not more than 1.60m or less. Generally, the first floor will be used as a living quarter, while beds and storage are moved to the new first floor. In some cases, the vertical extension is done simply by extending the roof. This new first floor has the Amharic name “kot” and is most commonly seen in the dense merkato area, where the ground floor is needed for business activities of all kinds.

The most common extension though is horizontal. Over the course of a few years, the house grows into the public realm of the streets. First, a small fence is put up to protect the house owner from the flow of people while cooking. Most of the time, this space is used as a display area to showcase products as an income source. After a certain amount of time, when no one questions the fact anymore that this space once used to be a part of the public street, the fence is fortified into a wall. The new space is semi private and still open to the sky but closed off from the street. Business activities and the kitchen usually find their home here, and sometimes during the day it turns into a semi-private living room. After a few more months, a roof and door appear and the small ‘kebele’ house has grown by 6 m². This process dominates the streetscape of most inner “slum” streets in Ethiopia’s capital.

Inhabitants per House

	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
1	4.36%	4.35%	7.58%	0.00%	0.00%	4.01%
2	7.05%	26.09%	7.58%	2.38%	2.22%	7.17%
3	10.07%	17.39%	15.15%	4.76%	2.22%	9.92%
4	16.11%	8.70%	16.67%	7.14%	17.78%	15.19%
5	15.44%	13.04%	24.24%	16.67%	8.89%	16.03%
6	12.08%	21.74%	7.58%	28.57%	22.22%	14.35%
7	11.07%	0.00%	9.09%	21.43%	15.56%	11.60%
8	6.04%	4.35%	9.09%	2.38%	6.67%	6.12%
9	9.40%	4.35%	0.00%	11.90%	15.56%	8.65%
Average	5.74	4.13	4.77	6.55	6.60	5.68

The density of construction in these parts of town is incredible. ‘Kebele’ houses usually cannot open windows to allow light into the buildings, since on a minimum of three facades the window would simply open into the neighbor’s house. The only source of light in small houses is a single, constantly burning light bulb in the middle of the room. Only 7%¹⁴ of small houses and sheds have a private toilet and access to water. The rest either shares one within a compound or uses the common toilet and kitchen for the district. The sanitary conditions are terrible. Usually, an open sewage channel in front of the house serves as dump site for everything disposable. Wooden bridges over these water bodies allow access to the houses.

Although it is hard to show within a typology, the most distinct feature of small houses and sheds is the social network of its inhabitants. The close-knit relationship between these single housing units creates one big social community “building” where each unit cannot survive without the other. Without understanding the underlying network of these dwellings, one cannot understand the typology of the single small house or shed.

Rooms per House

	Small Houses / Sheds	Condominium	Apartment	Row House	Villa	Total
1	21.14%	0.00%	1.52%	0.00%	0.00%	13.50%
2	27.18%	17.39%	1.52%	0.00%	0.00%	18.14%
3	26.85%	4.35%	19.70%	0.00%	0.00%	19.83%
4	14.77%	21.74%	19.70%	2.38%	6.67%	13.08%
5	5.03%	39.13%	25.76%	33.33%	13.33%	9.49%
6	2.01%	17.39%	25.76%	9.52%	8.89%	9.92%
7	1.68%	0.00%	6.06%	19.05%	20.00%	3.59%
8	1.01%	0.00%	0.00%	19.05%	17.78%	4.22%
9	0.34%	0.00%	0.00%	9.52%	4.44%	3.59%
10	0.00%	0.00%	0.00%	4.76%	11.11%	1.27%
Average	2.75	4.35	4.68	7.79	8.98	4.14

CONCLUSION

At this very moment, the city of Addis Ababa is undergoing one of the biggest building booms in its history. But, as this study showed, the newly constructed buildings do not vary significantly from their century old predecessors. In fact, most architectural jewels in the capital are 70 years old. Today's situation raises two complex sets of questions:

1. Why are century old floor plans being built right now?

The way of life, the culture, the work and the view of the world changed during the past century. So why should Ethiopia's architecture not change as well. Although new materials are being used, the facades have changed, taller buildings are being constructed; still the buildings' typology does not seem to have been influenced by these advancements. Instead of aiming for solutions that are already questionable in the oil-rich deserts of Dubai, Ethiopia now has the chance to use its thousands of years old architectural history to create a new, custom made solution for the needs and wishes of each building's time, place and user. Even now, when fast construction is needed to meet an ever-rising demand, architects have to develop a unique concept for each building task. Only then can these buildings last and change with its users to offer a sustainable solution over time.

2. Is architecture not more than physical construction?

In an indigenous city that grew mostly unplanned since its foundation, architects can learn not only a great deal about city planning, but even more about social networks, interaction of space and cultural habits. Granted, a trip into the informal city to study only its architecture might not be worth it. But this is not the lesson to be learned here: The informal settlements allow a study on the way spaces interact with each other, how problems are solved in the most feasible way and how communities are constructed. A building is not just a shell, but mostly an inside and outside space for human interaction. To build and construct in a city, architects have to understand the city and its inhabitants first. Only then are they qualified to add buildings to or subtract from its growing fabric. And Addis Ababa is not a city you can understand from books and computers - it has to be experienced. >>

r >> Possible Extensions of
Kebele Houses
s >> Student's Sketches of
Small Houses / Sheds

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