Special Session – Dynamics

Spontaneous Living Spaces – Dwellings and Settlements in Pemba (Mozambique)

A typo-morphological analysis in changing urban environments

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Abstract: Self-construction determines large parts of the urban landscape of cities in developing countries. Self-built houses born from need, haste and limited economical resources, with formal or informal methods, are often conceived as temporary when built but then become constituent parts of the urban fabric. Loosing the character of temporariness, it becomes necessary to consider them as an integral part of the city. This research is aimed at mapping the "spontaneous living spaces" of changing urban environments, in terms of dimensions, inhabitants, used technologies, etc. identifying a stage of development and analysing the characteristics of contemporary living in contexts not designed by professionals. The results produced by this research experience can be useful for the development of policies and projects respectful of local, contemporary ways of living. Up to 2019, the research has analysed three case studies: the favela Guapira II in Sao Paulo, Brazil (2012); Pok Fu Lam neighbourhood, Hong Kong (2013) and four selected neighbourhoods in Pemba, Mozambique (2016-2018). Focusing on the evolution of architectural and urban elements that characterize self-built urbanization in Pemba (Mozambique), this paper illustrates the main evolution lines that define the relationship among the house, the city and the main settlement trends, addressing how traditional self-built architecture is evolving and creating new forms of living within the city. Architectural and urban categories, as conceived in the western tradition, such as formal/informal or planned/unplanned are not applicable in developing contexts. Thanks to a typo-morphological on-site survey on, and analysis of, 50 houses in four selected neighbourhoods, this research gives its contribution to a critical understanding of their role, creating a more conscious background on living systems in Pemba. The analysis was integrated with schemes, architectural drawings, photographs, videos and interviews to the inhabitants.

Keywords: Development, Self-built architecture, Typo-morphological survey, Pemba (Mozambique), Sub-Saharan Africa, Living Spaces

Introduction

World population is increasing and cities are exponentially growing, especially in those countries that are now facing the industrialization process. Trends report that by 2100 the 70% of people will live in cities. If these trends will verify the world will have to face new dynamics of urbanization. Self-built houses constitute the main part of the urban landscape in developing countries. Their relevance requires a deep analysis of the present typologies and the comprehension of the characters of variance and permanence from the traditional living typology. Furthermore, globalization is influencing the living typology in terms of city investments, new economies (such as tourism) and architectural functions, elements and materials. Therefore, the research recognizes the importance of self-built architecture within the urban fabric analysing the houses linkage with the street and the city dynamics, looking at the urban morphology and typologies in their bottom up and top down implementations. Understanding different cultures is becoming crucial for a deeper comprehension of cultural diversity and *home* is a concept intrinsically connected to the culture of living, connecting the private to the social life. Self-built settlements are the spontaneous answer to the spatial need of home and represent an important expression of the local culture of living. In most of the cases, the number of people moving towards cities and the speed of this phenomenon are so high that the municipalities cannot really control it. This leads to several problematics among which is housing. New urban residents answer to the housing need with self-construction, and often, coming from the countryside, import rural typologies into the urban fabric[1]. The challenge of this research is to create a transversal knowledge of different cultures' way of living contributing to the cultural mapping (Pillai, 2013) of the nowadays-moving society. The research proposes tools and methodologies to:

1. contribute to the mapping of the contemporary cultural landscape;
2. increase the awareness on local cultural diversity, therefore, contribute to intercultural dialogue;
3. contribute to the cities' management in the transformation processes;
4. create the basis for the understanding of the living landscape of places (UNESCO, 2011);
5. inform designers and planners with preliminary studies on local contemporary spontaneous living.

Within this framework, since 2012, the research selected three case studies, belonging to the tropical climatic zone, in which the phenomenon was relevant. The first case study analysed a block in the *favela* Guapira II, within the area called *Jardim Filhos da Terra*[2], in 2013 the second case study took place in *Pok Fu Lam*, a traditional Hong Kong neighbourhood, then from 2015 the study focussed on the Mozambican coastal city of Pemba, with the survey of four selected city neighbourhoods[3].

The research tries not to use the terms formal/informal, planned/unplanned as often are not fitting the contexts that have completely different interpretative categories, both one case study from the other and

[1] It is not an exception to see that self-built houses have some rural materials, characters and functions, such as hen houses, kitchen gardens etc.
[2] The research found its origins in 2011 during the work at Stefano Boeri Architetti for the exhibition *São Paulo Calling*, and concluded in 2013 with the author's master thesis awarded *cum laude* at the Politecnico di Milano, supervisor Stefano Boeri and co-supervisor Pier Paolo Tamburelli. The research was then published by Pacini Editore in 2014 with the name *Jardim Filhos da Terra*.
[3] The case study represented the PhD research carried out at the Politecnico di Milano, Dipartimento di Architettura e Studi Urbani, supervisor Michele Ugolini and co-supervisor Michael Turner. The PhD was concluded *cum laude* in December 2018.

also from the western concept, as often there is a contamination between what is planned and what is not and what is formal and what is informal and both the categories could be used. In order to expand the point of view on the topic, in this paper the author tries to avoid these categorizations.

Figure 1 location of the three case studies developed since 2012 and located in between the tropics

Methodology

Climatic and environmental conditions are crucial in the designing of the house and neighbourhood and also in the way of living in them. Therefore, the research carried out three case studies that belong to the tropical climatic zone: Sao Paulo (Brazil), Hong Kong (China), Pemba (Mozambique). The tropical zone was chosen as it allows a quite *easy* relationship between the human and the environment[4]. Further indicators for the choice of the study cases were

1. the economic growth of the country (GDP),
2. the size of the city,
3. the speed of growth of the city.

The studied typologies of spontaneous domiciles differ consistently and highlight the different cultures of living.

[4] The geographic zone is characterized by mainly two seasons (the humid and the dry one) with temperatures never severe and with days and night length of around 12 hours along the whole year.

In this research the survey of spaces and functions and the analysis of the houses, couples with a wider analysis of socio-economic factors, developed through a participant-observational approach, that is considered crucial instrument for mapping spontaneous cultures of living and providing guidance for policies in urban planning and for the architectural and urban design.

From the survey methodological point of view, the main references are related to the typo-morphological schools of urban and architectural analysis, both the Italian school, with Muratori's studies on Venice (Muratori, 1960) and the British school, with Conzen's work in Alnwick (Conzen, 2012). Other relevant surveys taken into account are those of Simounet in the *bidonvilles* of Algeri, the inquiry *Inquérito à Arquitectura Regional Portuguesa* on Portuguese popular architectural elements (AAP, 1988) and the studies of Bernard Rudofsky on architecture without architects. The architectural method is integrated with anthropological tools of analysis, pictures and videos to represent the diversity of cultures within the city with a synoptic picture even if with the consciousness that, as Lévi-Strauss affirms, no culture is capable of giving a true judgement on another one, and that it is only possible to give a representation of them (Lévì-Strauss, 2017).

Being aware of the complexity of the urban organism, the research tries to represent it with an analysis that is integrating the study on the urban morphology and houses typologies, with various scales of detail[5] and various tools[6]. Furthermore, the analysis is integrating the historical reconstruction of houses and settlements development through historical maps.

Finally, in this research the interaction with the local community is crucial, as there is the need of creating a relationship of trust in order to interview the inhabitants and builders and let them open their doors to the author in order to survey the spaces and functions of their houses and the neighbourhood's dynamics. According to the context different strategies were used to get in touch with locals[7].

Research Goals

The research is based on the idea that in order to work in developing contexts it is necessary to use context specific categories, therefore, the western categories and intervention methodologies whether should not be used or should be adapted. For this reason the research, in the framework of the *New Urban Agenda – Quito Declaration on Sustainable Cities and Human Settlements for All* – and of the *Sustainable Development Goals*, is aimed at giving its contribution to the comprehension of the urban issues related to self-built dwellings and settlements through:

1. acknowledging that popular self-built houses are a consistent part of the urban fabric of most of the changing urban environments and constitute their city landscape;

[5] From the regional framework at various scales (1), the territorial analysis usually at the scale of 1:5000 – looking at the selected layers that create the city, such as the main streets, secondary streets, street fronts (2), the neighbourhoods analysis at 1:1000 – through the layers: green, voids/built-up, infrastructures, public/private property, community functions - (3), the blocks survey analysis at the scale of 1:500, looking at the relationships between public and private and open and closed spaces and the connection elements among them (4), the houses spaces and functions at 1:200 (5) and the photographic survey of the elements and objects within the houses (6).
[6] Used tools, beside the traditional architectural maps and drawings, were geolocalized pictures and tracks, videos, pictures, sketches and interviews to inhabitants.
[7] Contacting the community leaders, the Municipality, the local associations or schools.

2. studying self-built houses, linking the house to the street and city dynamics and recording urban morphology and typologies in order to recreate the bottom up and top down implementations;
3. giving to self-built architecture the dignity of being studied as any other part of the city. Therefore, to acknowledge the cultural value of self-built urbanization and architecture;
4. address challenges for alternative solutions taking into account the spatial, social, economic and environmental factors.

The results of this research will enable planners and designers operating in the analysed contexts, or in similar urban environments, new tools to comprehend the city development and therefore, to design in respect of the local urban and architectural identity in order to preserve the diversity of its cultural expressions.

Furthermore, the research could give its contribution to Municipalities, GOs and NGOs working on site, in particular the research would be useful for the improvement of living conditions and building techniques and would encourage sustainable forms of tourism and increase the awareness of the relevance of traditional constructive methods and the preservation of the urban and cultural landscape.

Three case studies

Up to today three case studies were developed, belonging to three continents (South America, Africa and Asia) and the *atlas* is still under development. Comparing them, they have similar contexts in terms of economic resources and weather, with heavy seasonal rains and droughts, but cultural differences are highly differentiating living spaces and residential neighbourhoods.

Figure 2 the three case studies: from the left the neighbourhoods of Guapira II in Sao Paulo, Pok Fu Lam in Hong Kong and Natite in Pemba. Image Google Maps 2019.

The first case study that has been developed is the one of *Jardim Filhos da Terra*, an area in the northern region of Sao Paulo where the *favela* Guapira II, born at the end of the 90s is located. The "*favela* phenomenon" in São Paulo started at the beginning of the 70s, when the city began its economic growth, and summoned labour forces from all over the country without having the tools or the time to provide

sufficient housing to all. This phenomenon became extremely critical in the mid 80s and continues to be so[8]: the city is now dealing with the problem of regularization of urban housing and it is solving the most high-risk situations. Since 2000, a new middle class is emerging and an important number of its representatives is living in *favelas*.

From a social point of view, *favelas* usually have a strong community life that is conducted in houses, bars, commercial activities, streets and community centres. From a technical point of view, beyond the lack of transportation and sanitation, residents live in highly precarious conditions since houses are often without stable foundations, ventilation and basic infrastructures.

The development of the surveyed area was carried out all at once by a group of people that acted all together, and that divided the block between Boa Vista, Planalto and Davì street, in regular and equal plots which are still recognizable by shape. Here 68 plots were surveyed.

Looking at the *favelas* constructions around the city of São Paulo, it may be observed that there is quite a diffused typology. São Paulo is a city with a harsh topography that exposes the area to landslide risks, and the predominant typology has adapted to it. Houses are gradually built upwards in rectangular plots, by using several construction materials available: reinforced masonry, concrete blocks, metal sheets etc. A multi storey typology is the prevailing in the area with two to four floors[9]. The stairs, a key feature because of the topography, are usually semi private spaces, closed by a door or a gate (with or without a key or locker), for ventilation purposes they are partly or completely open at the roof level. The sensation when entering the staircase is of disorder and noise, caused by the overlapping functions of this area. Although one can experience a sense of comfort from the dwellings, the space usually is insufficient in size for the number of occupants. The stairs distribute the floors and, if separated, the apartments. In facts, the property on each plot can be either for a single family or for multiple families. Each apartment is usually made of two to four bedrooms, one to two bathrooms (with at least one shower but never bathtubs), a kitchen, a living room and in most of the cases a garage at the street level. Each apartment is around 65 square meters.

Houses are rapidly built by the inhabitants and can be improved by the addition of several upper floors, according to the the family's needs. People build them during weekends and holidays and the materials and the workforce are provided both by the family and by the *mutirões*[10].

The finishing is usually very rough even if sometimes plaster is used on the cladding. Technical equipment is usually positioned outside the walls and pavements are usually finished in concrete.

Home is a place open to everybody, with non exclusive bedrooms usage, it is a place for family and friends and the only place for being alone is the bathroom. Bathrooms are also generally very big spaces with good quality finishing. Invariably most showers do not have a base, though the floor is tiled. On the whole, each family member makes an intensive use of it taking around two showers per day. Courtyards represent the entrance to the houses and are used both for leisure activities and services.

[8] Sao Paolo has 11 million inhabitants in its micro-metropolitan region. In this area, the Municipality counts more than 5100 informal settlements. This informality includes a variety of settlements among which the *favelas*, the *loteamentos*, the *cortiços*, the *nucleos urbanizados* and the *conjuntos habitacionais*.
[9] In the surveyed area of Guapira II, it was possible to identify three types of housing: the most diffused is the multi storey house, then is the one consisting of one floor, finally is the wooden hut.
[10] Neighbourhood solidarity groups.

They usually follow the longitudinal axis, and as they incorporate various functions tend to be very large.

In terms of public space, at the neighbourhood scale, the only present and respected is the street space that is used for various neighbourhood activities. As a consequence, there is a generalized lack of “breath” in the urban fabric.

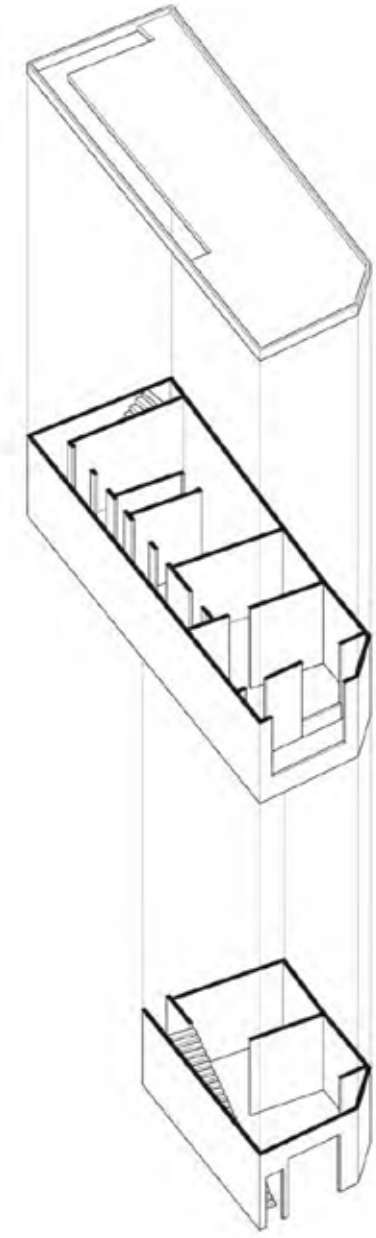

Figure 3 one of the houses of Guapira II in 2012. Drawing by the author.

Figure 4 the street front of one of the houses of Guapira II. Photograph by the author.

Three case studies

Shifting to Asia, in Hong Kong, due to the density of the city, often the "traditional" informality phenomenon develops in rooftop communities (Canham and Wu, 2015) but this is not the case of *Pok Fu Lam*, an ancient and unique neighbourhood in Hong Kong, one of the very few historical neighbourhoods and with low-density buildings left in the city. The first residents got to the *Pok Fu Lam* area in the 1660s but it is in the 1810s that the first descriptions of the neighbourhood are findable. In between the 60s and the 80s of the 19th century, because of the British colonization, the village, went through changes especially concerning building typologies and infrastructures. In these years the area turned from a rural area to a composition of commercial, residential and agricultural compound. After the end of the Second World War the important migration from China to Hong Kong increased the neighbourhood population from 20 to 100 families.

As in the 1980s Hong Kong economy rapidly grew, as multinational, globalized commercial activities and population increased[11] so land price. The population kept increasing until the 2000s

[11] The population increased from 76900 people in 1981 to 84500 people in 1985 (ref. Record from town planning notes – Outline Zoning Plan No.: S/H10/1, February 28 1998)

when the population had a small decrease[12]. High rise residential development started spreading around the neighbourhood (for example the nearby Chi Fu Garden). Up to 2006 redevelopment works were carried out but villagers still did not have a title guaranteeing them the right to live in those houses. Therefore, people were not improving their houses and the village was rapidly becoming a slum. With the title clarification in 2006, a boom in building started: in one year from 20 to 30 houses were rebuilt and mainly the typology increased both in section and plan as floors were added and the front was extended. This boom created a rapid and uncontrolled rebuilding process. After this first boom, in the middle of 2007, the land department made rectification orders with restrictions in height and in the use of rooftops[13]. For the purpose of this research in *Pok Fu Lam* ten houses were surveyed.

As Benjamin Sin Chiu Hang said in the interviews: "The area was an area of pig houses belonging to the *Hakka* main residential buildings (18 units) in the Wai Chai. As pigs were very valuable they were having the safest and therefore highest place in the village. The area is well repaired in case of typhoons, storms and landslide. These houses have an average of 100 years. Of course this is the age of the original ground floor level. Then the addition of further floors was starting during the 50s' and the 60s'. In 1960 the British Communities developed the community to involve people in the social community life, to facilitate people to get together and improve their life quality by themselves and not by the government. The plots' shape was so regular because land was partitioned by the owners of the *Hakka* houses for the pig houses. Within the village a company established within the community does the maintenance works. In 5 years the sewage system should be built. There are threats after the village because of the value of Hong Kong land. People stand up to be able to stay there but the Government power is very strong, CARITAS gives a help."

Entering in Pok Fu Lam the visitor has the perception of entering in a private, closed neighbourhood. The use of the streets and alleys, mainly pietonal and characterized by small steps going up and down the hill, is semi private. Often sinks are located along the alley, and with sinks also toothbrushes, kitchen pots and dishes and other private objects and often residents wash their face and hair in these sinks or in buckets along the alley. Furthermore, as residents take off their shoes in the house, usually these are tidily left in front of the door along the street.

Here the prevailing house typology is usually made of two parts: the "wet part" (kitchen and bathroom) and the "dry part" (living room and bedroom), here these two parts are often separated by the street on which two doors stand on the two sides of the alley, one for the wet and one for the dry part. While the wet part is one floor high, the dry part of the house can be of two or three floors and adapt to the topography of the area, especially on those plots that have a transversal double entrance. Staircases or just few steps distribute the multiple floors present inside the houses, which are mainly built in concrete blocks or in PVC sheets, and roof is usually in PVC sheets.

In this context the conception of public and private space is very different, the public space also includes neighbourhoods gardens, spaces where to sit and where private chairs are left all time long.

[12] From 86000 inhabitants in 1998 to 81900 in 2001.
[13] The information comes from Benjamin Sin Chiu Hang, team leader of the Community Development Service, Caritas Pokfulam Community Development Project, interviewed in September 2013.

Public and private deeply interact and contaminate one each other with their functions and the community life is highly affected as it is more difficult to be accepted but once physically entered the neighbourhood you are part of a community.

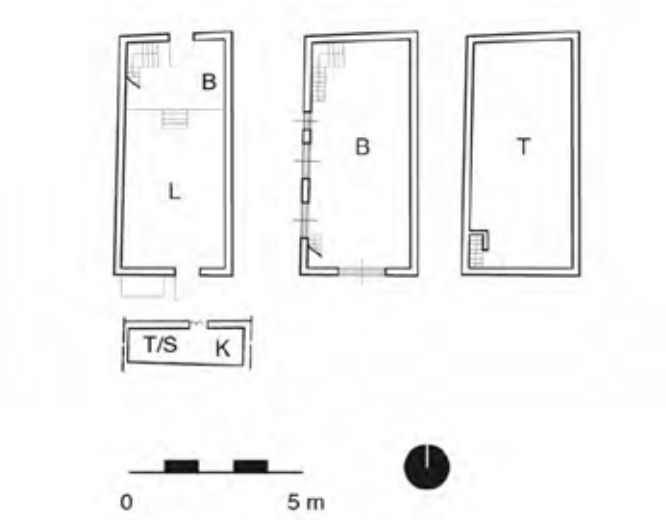

Figure 5 the plan of a house of *Pok Fu Lam*. Drawing by the author. Plan legend: B – bedroom, T – terrace, K – kitchen, L – living, T/S – Storage

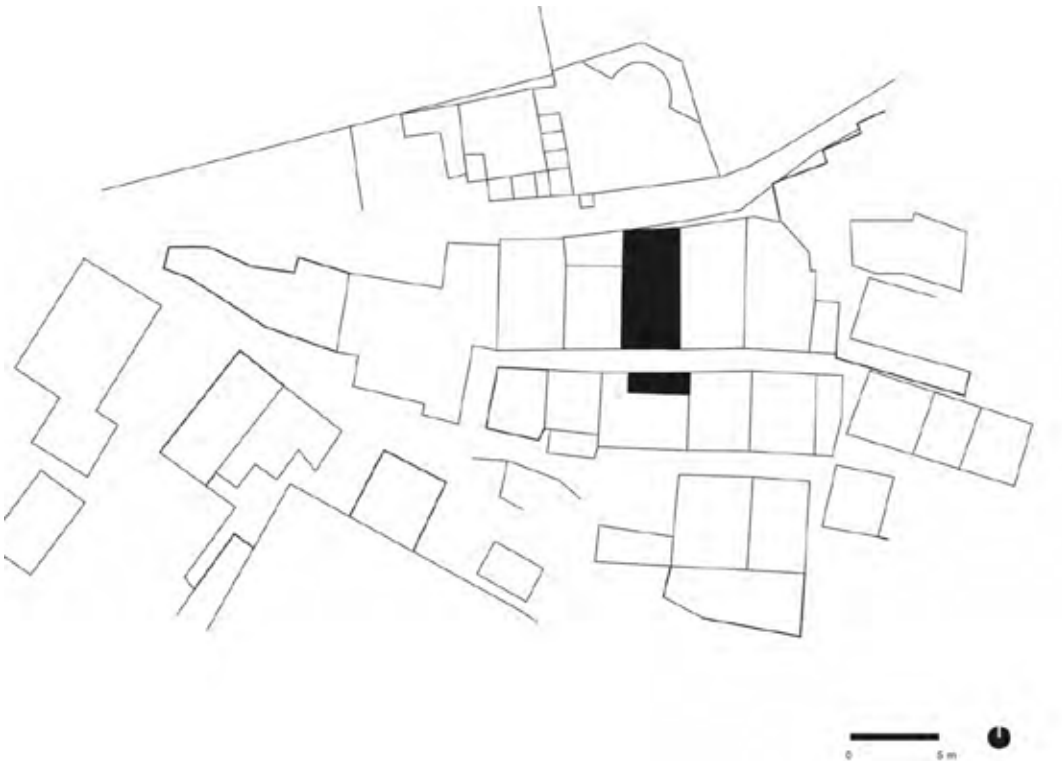

Figure 6 localization of the house in Figure 5 in *Pok Fu Lam* neighbourhood. Drawing by the author.

Figure 7 street fronts and alleys of *Pok Fu Lam*. Photographs by the author.

Pemba is a coastal city in the northern region of Cabo Delgado in Mozambique. Being located on a natural bay it was born as a harbour during the Swahili time and kept its vocation during the Portuguese colonization and up to today.

Here four neighbourhoods were selected for the analysis: Alto Gingone, Paquitequete, Chuiba and Natite. In these four 56 houses were surveyed. These neighbourhoods have different morphological and architectural features as they represent the popular living in different periods of the city expansion.

In terms of age of the settlement the first one is Paquitequete, belonging to the pre-colonial period, then Natite represents the colonial settlement, the independence period generated the neighbourhood of Alto Gingone and Chuiba represents the actual expansion[14].

The four neighbourhoods have similar topographic conditions. The geographical homogeneity of the settlements was crucial to allow the comparative analysis of the house typologies, therefore, all the areas are settled on a plane area of Pemba and even though all the neighbourhoods are close to the coastline, Paquitequete, Natite and Chuiba are directly facing the sea.

The selection of the neighbourhoods also took into account the feasibility and safety of the survey operations, the disposability of community leaders to participate in the research and to create the connection with the local inhabitants. According to the statistics, Pemba is a safe environment, however the main threats documented by the *Plano de Desenvolvimento Municipal 2014-2018* (PEDM) are corruption, malaria and cholera. Generally, the population is open to dialogue with foreigners, however,

[14] Paquitequete <1857, Natite 1934-1960, Alto Gingone 1960-1975, Chuiba 2000<.

the delicacy of the survey, asking people to enter in their private space and to collect information on it, needed to be introduced and prepared by locals[15].

Furthermore, the choice of the neighbourhoods took into account the number and ethnicity of people living in it[16]. In spite of the homogeneity in the number of people, all the areas differ significantly in terms of ethnic provenance. In fact, Mozambique hosts a plurality of ethnicities and Pemba is well representing this mixture. The main ethnic groups in the four neighbourhoods are the Mwanì, Macua and Maconde[17].

Figure 8 prevailing ethnic groups per neighbourhood. Photographs by the author.

The house typology of Alto Gingone neighbourhood is findable in all the city neighbourhoods, and its presence is due to the fact that people have the competences for self-building it and its general construction rules are clear and diffused. Furthermore, people recognize themselves in the life-style generated by this typology, being part of their cultural identity.

Here, the house is conceived as a sequence of open and covered spaces within the plot. In most of the neighbourhoods the plot is delimited by a physical boundary that increases in thickness and material durability as the density of the area increases. The prevailing materials used for the boundaries are bamboo sticks, interlaced or simply aligned and fixed together to wooden bars with nails and cement blocks. The constructions within the courtyards are at least two: the main building and the hygienic services, such as bathroom and latrine. The main building is usually made of a wooden structure, often simply leaning on the sand or in other cases on a concrete slab of about 10 cm thick. Walls, internal and

[15] The only neighbourhood in which several inhabitants refused to be part of the research was Natite, a neighbourhood that is very diversified in terms of ethnic groups, and that is a commercial area where usually foreigners pass through and in which the sense of community is not as strong as in the others. In that case some plots were not surveyed and are reported as “not surveyable” in the integrated analysis.

[16] Concerning the number of inhabitants, just Chuiba differs, with a number between 4,000 and 9,000 people, while the other three neighbourhoods host between 9,000 and 22,000 people.

[17] Mwanì, Arab provenance, mainly of Islamic religion. Historically they were considered servants and submitted. This ethnic group was always devoted to fishing and commercial activities. Paquitequete hosts a big community of Mwanì people; however, they are living also in the other neighbourhoods in family cells. Macua, is an African tribe, believing mainly in Islamic and African beliefs. Groups of these people can be found in Natite, Alto Gingone and Chuiba. This is a gentle population living in respect with nature. Both women and men wear a beauty white mask made from wood. Their society is traditionally patrilinear. Maconde, is an African tribe, they were the warriors who fought for the independence of Mozambique. Their people usually had their faces covered with tattoos, a tradition that is being lost by the latest generations. Maconde speak ChiMakonde (or Makonde language) that has Bantu origins. Their society is traditionally matrilineal. Traditionally they believe in animistic beliefs, even though many of them are now Catholic or Muslim. They are famous for their artworks in carved blackwood. In Pemba they live mainly in Alto Gingone and Natite.

external, are usually made in *pau à pique*: a local constructive technique in which two layers of bamboo sticks are filled with stones and mud. Vertical finishing is often absent and if it is present it is in *matope* (Swahili word for mud) that can be of different colours, from light brown to red. The roof is made of a wooden structure and covered in vegetal materials or in metal sheets.

Regarding the functions and their distribution within the house, the main building is used for sleeping, resting and for storage. The interiors of the building are usually distributed by a central corridor that is linking one entrance to the symmetrical one, and it is distributing four rooms of similar dimensions, two on one side and two on the other. One of these rooms, usually the one facing the street side, is used as living room, the others are used as bedrooms. The other always-present construction within the yard, is hosting the hygienic functions of bathroom and latrine. This construction is made to be moved within the yard, as there is no sewage system, therefore it is considered temporary and it is located in the furthest point from the house, on the back side of the yard. Its surrounding walls are or in bamboo, or in plastic materials, or in fabric. Often, they have no over-head covering. Waste of every type is usually buried or left at the edges of the neighbourhoods or buried in the courtyards. The courtyard is usually hosting vegetal elements, decorative and/or productive, such as a kitchen garden or fruit trees and in most cases a hen house. The type of paving inside the house embraces a wide range of varieties, from concrete with decorations, to concrete without decorations, to plastic coverings, to clean sand. Clean sand characterizes the flooring of all the surveyed courtyards, and this makes the distinction from the street paving that is usually in dirty sand. This distinction occurs also in those houses that do not have a physical plot boundary.

The openings often are obscured for privacy and security reasons. As a consequence, the interiors are usually dark and not properly ventilated. Windows can be voids within the wooden structure without obscuration or obscured by metal sheets or by fabrics. The artisanal window frames are always framed in wood and can be decorated and have a mosquito net. Doors are framed and delimited within the structure and are made of wood, industrial or handmade, or of iron. Usually the openings are symmetrical both on the street side and on the courtyard. Most of the elements of the houses are made of local materials, which make the houses environmentally friendly and cheaper. The insertion of industrial elements is today perceived as wealth recognition, but still the purchased elements, such as window or door frames, are often not properly employed (often used just as decorations or for symbolic and religious purposes). These elements are affecting the typology; today the main change is represented by PVC roofs, replacing the vegetal ones, often modify the whole structure and distribution of the house.

Among the architectural and spatial elements of the typology, two are the main ones that increase the quality of life, in its interior/exterior and public/private relationships: the courtyard and the veranda. The courtyards of the houses are empty spaces that are used for multiple purposes among which the family food production, mainly poultry and kitchen gardens. The courtyard, as it is conceived, creates the possibility of a green productive space that is a resource for families. The veranda is the architectural element that creates a powerful interaction between the public and the private space, increasing the quality of the streets through permeable street fronts. It is present in all the houses of Alto Gingone and it is deriving directly from the Swahili typology. The veranda stands on the two larger sides of the main building and it is used for several functions such as cooking, working and resting.

At the neighbourhood scale, the typology is easily aggregable and independent from the urban structure. Public space is present, respected and perceived as important by the community.

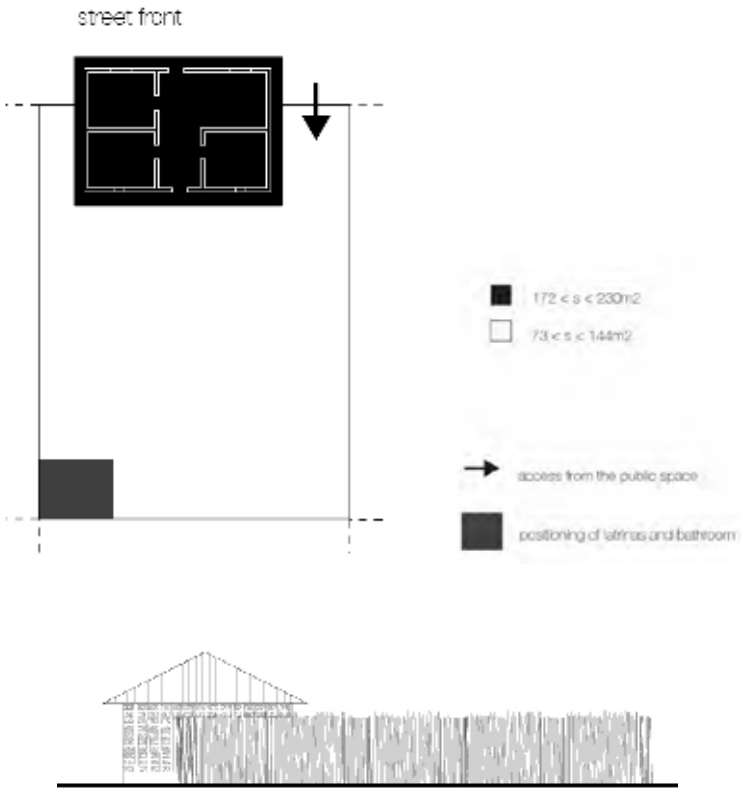

Figure 9 prevailing house typology derived by the superposition of the houses surveyed in the Alto Gingone neighbourhood. Schemes of the plan and of the side elevation. Drawings by the author.

Figure 10 street front of a house in one Paquitequete neighbourhood. Photograph by the author.

Conclusions

Self-built houses are a powerful answer to the urbanization phenomenon in all the contexts as they represent the local culture of living and should be studied for the implementation of new local projects. They represent the social, economic, cultural background of a place, highlighting the intangible and tangible culture of living.

The morpho-typological surveys, accompanied by the study of the bibliographical sources, leads to context specific conclusions at the architecture and at the city scale.

Assuming the fact that some contexts cannot afford substantial public investments, it is important to plan a development that can use alternative resources such as the creativity of the local inhabitants and their productive and building capabilities.

In spite of the differences, the self-built houses of Sao Paulo, Hong Kong and Pemba represent a stage of the evolution of the local living typology mixing the rural and the urban one with a cross-fertilization process. The bottom up construction rises the possibility of improving them much easier providing information tools to the citizens, to improve their living quality.

The spontaneous characters of living relate to the local cultural identity and represent a strength for the local development and could innovate the existing urbanization models.

As Lévi-Strauss stresses, each culture has its own path of evolution inscribed in a peculiar system of criteria that determine the process (Lévì-Strauss, 2017).

It is precisely in contexts in which urbanization has not already verified, where there are no existing infrastructures of the industrial sector and where the urban culture is created almost *ex-novo*, from the rural culture, that a new concept of city can evolve and be developed.

Changing the spatial hierarchies through the implementation of the local self-built typology and enriching it with a diffuse production, the possibility of creating a new type of city is generated, in which the need of transportation, time of commuting and the related economy of scale change their meaning. A city in which the strict division between the urban and the rural does not occur and in which it is possible to get the advantages of a diffused production and of a process of urban forestry[18]. This would be possible only if it is intended as a natural evolution by the citizens, and this is a further reason why local typologies should be employed, so that their vernacular building knowledge is not lost.

[18] World Forum on Urban Forestry, Mantova, 30 November – 1 December 2019

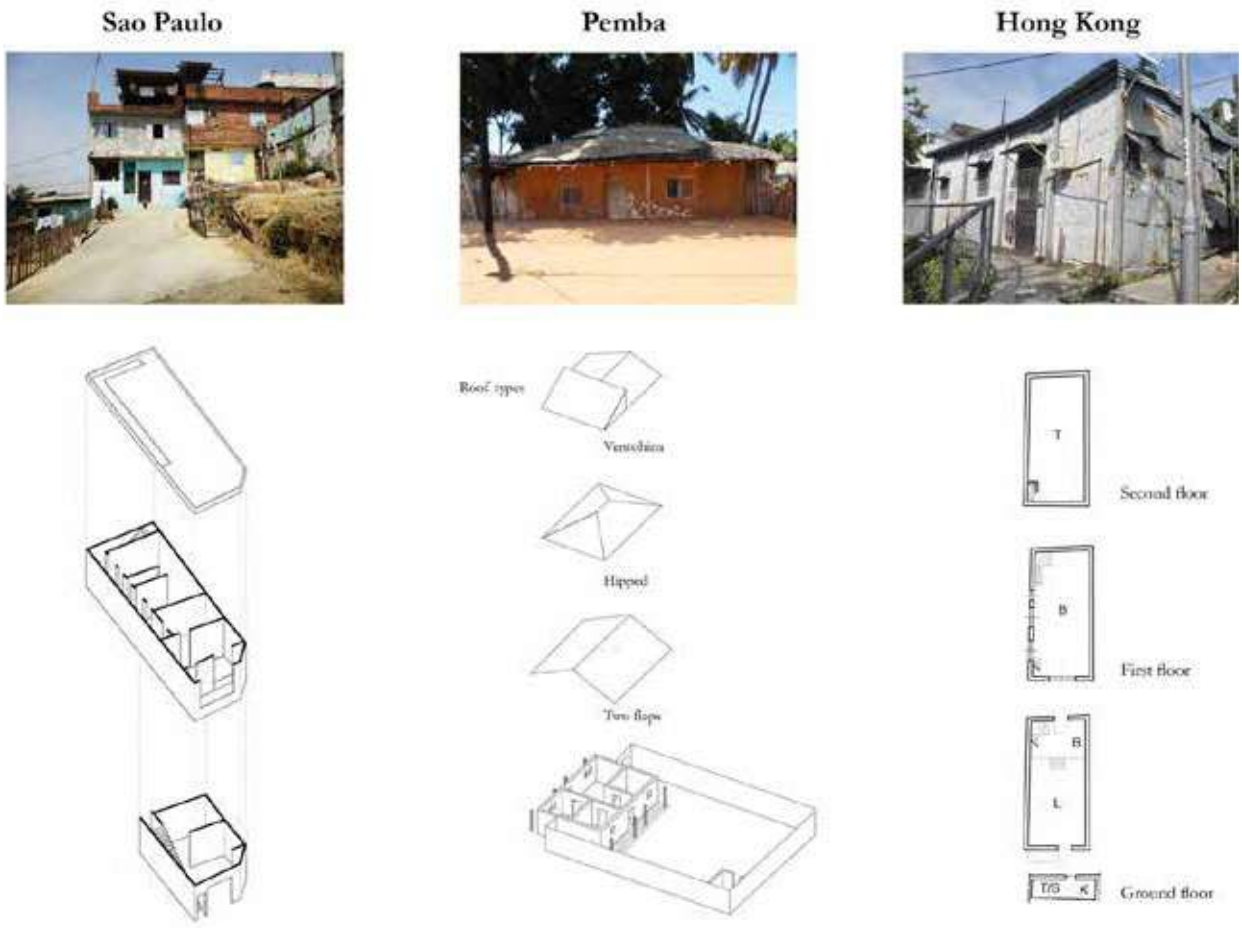

Figure 11 comparison of the houses prevailing typologies in the three analysed case studies. Photographs and drawings by the author.

References

AAP, 1988, *Arquitectura Popular em Portugal* (Lisboa, Portugal).

Bruschi, S., Lage, L., 2005, *O Desenho Das Cidades. Moçambique Até O Seculo XXI* (Maputo, Mozambique: FAPF).

Canham, S., Wu, R., 2015, *Portraits from Above – Hong Kong's Informal Rooftop Communities* (Berlin, Germany: Peperoni Books).

Conselho Municipal Da Cidade De Pemba E Micoa/Dnapot, 2014, Diagnóstico da situação actual do plano de estrutura urbana, Pemba, Mozambique, 2014.

Conzen, M. R. G., 2012, *L'analisi della forma urbana Alnwick, Northumberland* (Milano, Italy: Franco Angeli).

Del Bianco, C., 2014, *Jardim Filhos da Terra* (Pisa, Italy: Pacini Editore).

Pillai, J., 2013, *Cultural Mapping: A Guide to Understanding Place, Community and Continuity* (Selangor, Malaysia: Strategic Information and Research Development Centre).

Lévì-Strauss, C., 2017, *L'Antropologia di fronte ai problemi del mondo moderno* (Firenze, Italy: Bompiani).

Lorgen, C., 1999, *The Experience of Villagisation: Lessons from Ethiopia, Mozambique, and Tanzania* (Oxford, U.K.: Oxfam).

Muratori, S., 1960, *Studi per una Operante Storia Urbana di Venezi*a (Rome, Italy: Istituto Poligrafico dello Stato).

Rudofsky, B., 1987, *Architecture Without Architects: A Short Introduction to Non-Pedigreed Architecture* (Univ of New Mexico Pr. Albuquerque: Reprint edition).

UNESCO, 2011, Recommendation on Historic Urban Landscape.

UN Habitat, US Aid, Conselho Municipal da Cidade de Pemba, 2016, Avaliação Rápida da Situação de Infra-estruturas habitacional na Cidade de Pemba no contexto de adaptação as mudanças climáticas Bairros de Paquitequete, Cariacó (Chibuabuari), Josina Machel, Chuiba e Eduardo Mondlane.

UN-Habitat, 2006/2007, State of the Worlds' Cities.