

## THE HOUSES OF JARDIM FILHOS DA TERRA

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### ABSTRACT

Slums are no longer temporary solutions for the need for housing, but are becoming permanent. The phenomenon of this state of informality as a solution to the urgent need for housing in an exponential growing economy has been present in different ages and has been studied by architects and urbanists throughout the history of architecture. Slums are present in most developing countries. Yet given that slums are a consistent reality in the urban fabric they need to be studied individually during their development, as if they were cells of a unique entity - the contemporary city.

In the last two decades, there has been in-depth research on informal settlements. This research has focused both on the reasons for the phenomenon and on possible intervention methodologies. Research treats the slum as an integrated part of the contemporary city, studying it with the same tools as the formal ones. The research methodology used in "Jardim Filhos da Terra" combines the Saverio Muratori traditional survey method with modern tools of urban analysis. This was tested during a period of research in a favela of São Paulo in Brazil. São Paulo was chosen because the city has invested in in-depth research on this phenomenon and is making a strong effort to find a solution for the integration of the informal settlements into the urban fabric. From this survey it was finally possible to make a taxonomy of the 68 surveyed plots, and from there to hypothesize the informal urban development. The greatest result was the understanding of housing evolution within the plot throughout time. That is a tool enabling planners to make provisions for the development of this informal fabric.

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### Keywords

Informal settlements, favela, São Paulo, intangible heritage, urban survey, Saverio Muratori

### Defining informal settlements

An informal settlement consists of groups of people who occupy land for living purposes without having any legal claim to it and without conforming to codes and legal regulations.

Squatting can be a conscious or unconscious housing movement. It can be caused by the need for housing in poor contexts, but also by political movements (Neuwirth, 2004).

Slums are settlements which are characterized by informality and, according to UN-Habitat, lack at least of one of the following basic conditions for decent housing: adequate sanitation, water supply, durability, adequate living space.<sup>1</sup>



Figure 1.

### Urban survey research methods

The research methods used for this urban survey were the Saverio Muratori methodology on the one hand, and a multiplicity of studies on the society living in the neighbourhood on the other. The latter encompassed its socio-economic factors and the preserved cultural heritage. All of which were documented with drawings, a photo-essay, videos, interviews to the community and graphs.

Saverio Muratori was an Italian architect and historian. He was born in Modena in 1910 but spent most of his life in Rome, where he died in 1973. He was a teacher at the University of Rome, and for a period (1950-1954) also at the IUAV of Venice (1950-1954). He was the architect for several

urban projects for post World War II reconstructions, predominantly those of the INA-CASA plan for social housing. He was very important in defining a new methodology for urban studies. His research was in contrast with that of his colleagues at the University of Rome: the mistakes that he attributed to the Modern Movement were an absolute break with the past, and the consequent lack of understanding of the urban and environmental phenomena. From this perspective of the Modern Movement he identified the “*crisis of civilization*”. And to solve this “*crisis of civilization*” he proposed the application of a direct method aimed at understanding the existing fabric (Muratori, 1963). During the fifties, his investigations into the urban developments of Venice and Rome led to the formulation of his notions of typology. Whereby the building types were connected to the historical dimension of the developing city. Muratori's educational activities were the source of deep rifts and contention in his academic life (Muratori, 1963).

Muratori's theory on the types of buildings can be likened to a history of culture and values. As he wrote when referring to his work in Venice:

“ an organic study of urban units; [...] only in the neighbourhoods, surveyed house by house and phase by phase can one begin to grasp the indissoluble nexus which ties the individual to society, the individual world to the language, technology and economy of the time, and that structure of life, always perfectly described as everything and as the moment”(Muratori, 1960).

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His method on urban investigation follows four guide lines:

1. Hypothesis on the environment
2. Materials and techniques used
3. Socioeconomic analysis
4. Architectonical production and characteristics of the urban tissue (Muratori, 1960)

The urban form is an evolving process, that can not be stopped. A city complete in its evolutionary process is a city that has died. The typology can define the characteristics of an historical period (Aymonino & Rossi, 1970). A typology is the whole of the structural and organizational elements, which can be classified in an urban form of a particular historical period. Housing typology is one of the most coherent factors of the urban form. It can be used as a tool to identify the differences between parts of a city. The building type adapts to the topography, changing marginally its characteristics.

This is usually determined by the relationship with the socio-economic situation that the city and its inhabitants are passing through. New typologies are added to those which already exist, implementing and enriching them. Survey is a tool for the analysis of urban genesis.

Since “informal” is the main typology of housing in the city of São Paulo, the study deals with the precarious settlement phenomena giving it the right to be called “formal” because in terms of quantity it is the predominant typology of the city. The survey was carried out in order to understand the process of buildings’ sedimentation that generates the present urban structure.

The survey carried out in this research covers only a small percentage of the favela phenomenon, which is why it can not be considered exhaustive. Yet, nevertheless, the dimensions and simple structure of the surveyed block make the urban evolution process well visible. And it is possible to extend the knowledge of the basic morphological rules to a wider portion of this informal city.



Figure 2.

### **The investigation of the neighbourhood lifestyle, business, and society**

Sao Paulo has 11 million inhabitants in its micro-metropolitan region. In this area, there are more than 5100 informal settlements. This informality includes “favelas”, “loteamentos”, “cortiços”, “nucleos urbanizados” and “conjuntos habitacionais” .

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. This phenomenon became extremely critical in the mid 80s and continues to be so.

The city is now dealing with the problem of regularizing urban housing and is trying to resolve the most high-risk situations. Yet still 30% of the city's population live in precarious settlements.

Since 2000, a new middle class is emerging and most of them are living in informal states.

From a social point of view, informal settlements usually have a strong community life conducted in public spaces, usually in the streets and community centres since all other public spaces are utilized for informal housing.

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 sound infrastructures.

The studied area was born at the end of the 90s. This favela, called Guapira II by the Municipality, is part of the informal neighbourhood of “Jardim Filhos da Terra”. The development of the sloped area was carried out all at once by a group of people that had tight relationships. Having arrived at Sao Paolo, mainly from the Bahia state, and the conditions of the area being difficult with regard to building, they acted in unison. Inhabitants divided the block between Boa Vista, Planalto and Davi street, in regular and equal plots which are still recognizable by shape.

The area is sloped. Its highest point being 835m above the sea level, and in one block (around 60m in length) it goes down to 810m. This exposes the area to the risk of landslides.

It is located in an important geographic basin where the river Cabuçu runs. The river divides the city of São Paulo from that of Guarulhos, and it is situated in the subregion of Jacuana and Tremembé. It is less than 2 km from the “Serra da Cantareira”, a mountain whose southern slope is part of the Cantareira State Park. This natural resource is highly exploited by the local inhabitants during their free time. On its East side, Cabuçu de Cima is delimited by the Fernão Diaz highway, and will be extremely close to the Northern part of the “Rodoanel”, a circular highway which is presently under construction.

From an industrial point of view, the area is characterized by the presence of the “Furnas” implant and its power lines, which strongly marks the territory. The municipality considers the areas where the lines are conducted risky; a project for a park, to be built below them, to prevent the construction of new buildings, is currently underway.

Small rivers, partly occupied by houses, and partly used as open sewers, risk becoming the source of pollution, flooding and erosion.

The region has recently grown a lot and now has more than one million inhabitants.

People are mainly catholic and evangelical and they actively pursue their faith.

Commerce is very important and is conducted throughout most of the day and part of the night.

The main activities performed at home are eating and sleeping.

Spending time in cafes is a very important social activity.

Most of those employed work in the city of São Paulo.

Dwellers follow Christian or Afro-Brazilian worship. Christian services follow a well defined weekly schedule, attendance is greater at weekends. Afro-Brazilian religious ceremonies take place according to the community's needs and don't have a predefined time or day. Religious observers usually meet for several hours in the afternoon or evening.

Inhabitants generally come from the state of Bahia. The area's religious heritage originated from the North-East of Brazil, being mainly divided by Christian and Afro-Brazilian cult believers, predominantly Christian, Catholic, and Evangelical, even though a small part of the population follows spiritualism. Afro-Brazilian religions are mainly practiced according to the Condomblé and Umbanda beliefs. A small percentage of people declare themselves as having “no religion”.<sup>2</sup>

### **History of the neighbourhood and social data**

The neighbourhood originated at the end of the 80s, and was known as “Primavera”. The occupation developed in a totally spontaneous way, without any popular movement or agreement with the public authorities. One of the features of this type of dwelling is the strong relationship between the inhabitants, families and friends who divided the area into equal plots. The block of “Rua Planalto”, “Rua Davi” and “Rua Boavista” came to be occupied between 1996 and 2000, during the neighbourhood's second great occupation.

In subsequent years, people started to fight for their rights to the land that they were occupying and in 2001 a movement for the regularization of the area began.

By 2002, the movement had achieved permission for the installation of electric implants, water and sewage systems, work which was completed in 2004. The installation of flooring in the area started in 2008 and today has almost been completed.

Usually only a very small number of people deal with the Municipality in order to obtain rights, without any form of organized movement from the area's dwellers. It is an on going struggle by the area's leaders to engage its inhabitants into caring about their area.

1821 people live in the favela Guapira II. Most of them are under 18 years of age. The 19 to 24 year olds are rather scarce, while the most prevalent groups are the 25 to 40 year olds, and the 41 to 59 year olds. There are very few elderly people.

The majority of both women and men are employed. The most common employment for members of both sexes is manual labour. A large percentage of the population either has its own business (mainly commercial) or has occasional work. Many women are housewives.

An average man's monthly salary is around 696 R\$ (approx. €263), while an average women's is around 368 R\$ (€139). The majority of residents came from Bahia state at the end of the 90s .<sup>3</sup>

## Urban Typologies

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 and the predominant typology has adapted to it.

In the area of Guapira II surveyed, it was possible to identify three types of housing: the first and most diffused is the multi storey house, the second is that consisting of one floor, and the third is the wooden hut.

In terms of typology, there is only one rule when following the logic of a favela: bottom-upwards. The morphology of informal settlements is the opposite of common town planning. The slope of the terrain is crucial in the design of the housing units, and the development of a settlement usually follows this rule.

The resulting urban units are made of individual structures oriented along the topographic contours distributed in rows. Houses are gradually built upwards with rectangular units, by using whatever construction material is available: reinforced masonry, blocks, metal etc. Houses cantilever over streets and start to grow in height.

### *Multi storey house typology*

The multi storey typology is the most prevalent in the area.

Street spaces are conceived as public spaces for various neighbourhood activities.

The stairs, a feature of this topography, are usually semi private spaces, closed by a door or a gate (with or without a key), and partly or completely open at the roof level to allow for ventilation of the rooms. From the stairs area are distributed all the different apartments which are built in alignment with the slope of the hill. The property on each plot can either be for a single family or for multiple families. Apartments can be inhabited by relatives or tenants.

These houses are usually composed of: 2-4 bedrooms; 1 or 2 bathrooms, with at least one shower unit (never bathtubs); always a kitchen and a living room; and in most cases a garage at street level. Each apartment is around 65 square meters.

Houses are rapidly built by the intended inhabitants and can be improved by the addition of several upper floors, depending on the family's needs, built during the weekends and holidays. Materials and the workforce are provided both by the family and the “mutirões”, neighbourhood solidarity groups. This typology usually has from 2 to 4 floors, determined by the family.

The structure is always made of concrete: pillars of 10 cm per side, and floors 20 cm thick. The cladding is always of bricks and mortar.

The finishings are usually very rough: sometimes there is plaster on the cladding, and technical equipment is usually positioned outside the walls. The floors are usually finished in concrete.

The sensation when entering the staircase is one of disorder and noise, caused by the overlapping functions of the stair area. Although one can experience a sense of comfort from the dwellings, albeit in a space usually insufficient in size for the number of occupants.

### *Single storey house typology*

The single storey typology is usually found on those plots that follow the topography contour lines.

They are characterized by a single floor (though with the possibility of increasing the number of floors) and a roof terrace.

To enter the house, one usually has to climb a few steps to gain access to an open or partially open corridor. Although this may sometimes be accessible via a court.





Figure 3.

These corridors usually end with an open service space (laundry) and in some cases are open at the roof level to allow for ventilation. The width of the corridors usually ranges from 60 cm to 1,40 m, from which the rooms are distributed, measuring around 10 square meters each. Normally they consist of: 2 to 4 bedrooms; a bathroom; living room and kitchen. These houses are usually approximately 85 square meters.

The structure is made of concrete, with brick cladding. With this type of dwelling the vertical finishings can be really quite sophisticated, for example, with plaster and tiles. Predominantly, there is plaster on the roof and tiles on the floor.

Entering these spaces one may experience the sensation of a being closed-in, due to the lack of lighting and ventilation, while still experiencing comfort in the spaces, and from the finishings and appliances.



Figure 4.

### *Hut typology*

The hut typology represents the most rudimentary type of settlement and is made of wood. It is the poorest, riskiest, and most temporary one. This usually evolves into a concrete structure.

In most cases, it is composed of a 20/25 square meter single room, with a bathroom which may be either internal or external. All finishings are very rough.

Sometimes the foundation of the hut (around 30 cm from the ground) is protected by old tiles or bricks which lay on the external part of the wooden wall.

Sometimes, the ground is protected by a layer of rough concrete, and usually the roof by a metal sheet of "Eternit".

In these spaces one often senses a lack of ventilation and humidity.

The main functions of the inhabitants, such as sleeping and cooking, are conducted inside the room, while facilities for laundry and additional living spaces are provided outdoors.



Figure 5.

## Evolution hypothesis

The evolution and development of an informal settlement is usually a process involving relationships between inhabitants and the location.

The age of the house is representing the history of the family occupying it.

The process starts with the settlement of the first family, which tends to arrive through contacts with pre-existing friends or through common roots. The members of the first family group progressively increase as the family evolves (new born, marriages etc.) and other relatives arrive from the place of origin. At this point an enlargement of the house is necessary and this can occur either by occupying leftover land or by developing the house in height.

The construction work is usually carried out by groups of relatives and friends called “mutirões”. House improvements provide the main motivation for saving money among the poorest classes.

Spaces for commerce (usually mixed with the function of houses) are very important on the ground floor. It may be supposed that the evolution of a plot starts with the arrival of the first family, which rapidly builds a temporary hut in wood (hut typology), and then, as time passes, the wooden structure is replaced by the first unit in concrete and bricks, usually of the same size as the wooden hut.

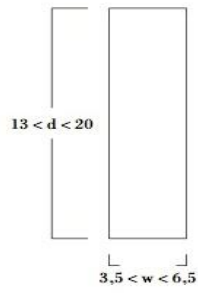
This unit then evolves into a complete one-storey house (single storey typology) and finally, as the family grows, becomes a house that has developed in height (multi storey typology).

Since plots have two different slope directions (up or down) one may observe that the first settlement rises from its lowest part. The regularity of the plots in the blocks leads one to assume both that the community acts in a regulated way among inhabitants, and that a further eventual distribution of spaces for living was already projected at the time of creation.

As a result, in most cases, we find a staircase of around 1 m and next to it a room of approximately 3,5 m wide. Stairs are the first element to be thought of and constructed.

The rest of the plot is then invaded by “evolutionary elements”: empty spaces, roofs, terraces etc.

It is important to note that each project is the result of the geographical features and the shape of the plot, and are very homogeneous.



Plot Average Dimensions

Plot 2

Plot 1

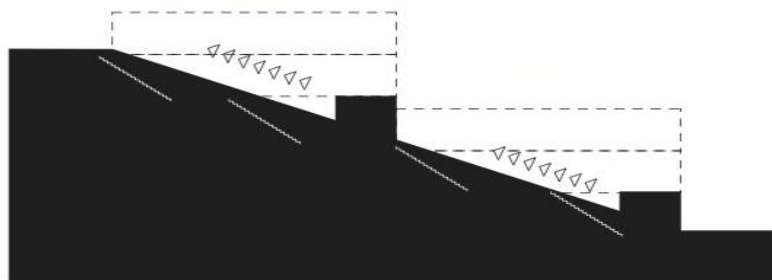


Figure 6.

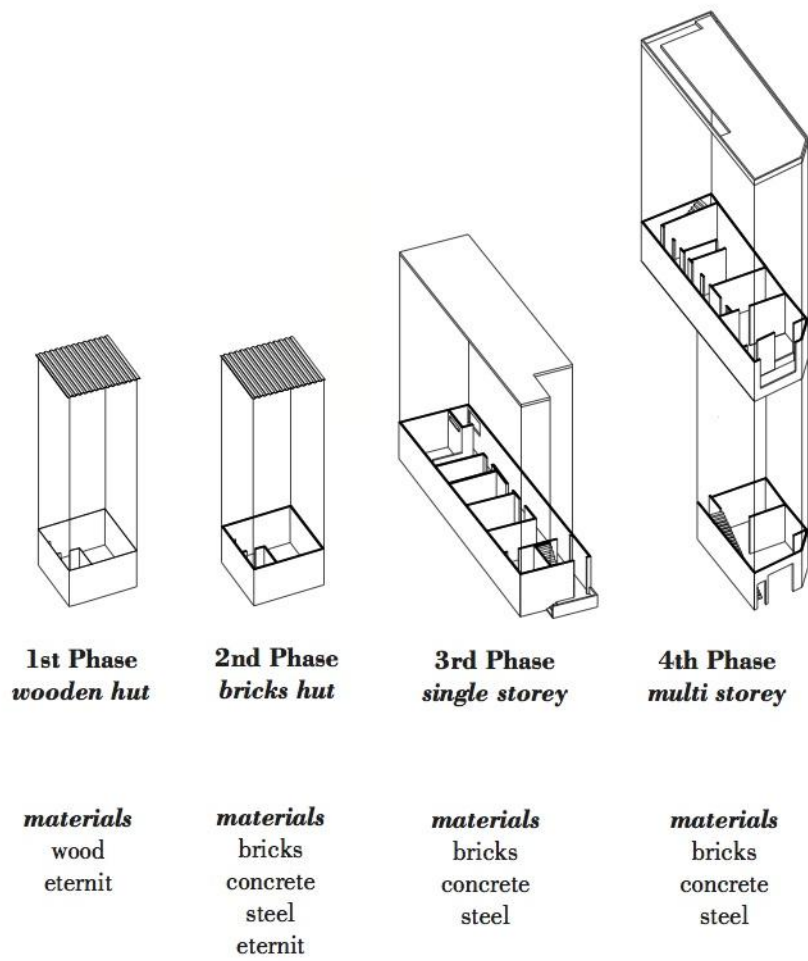


Figure 7.



**Evolutions Elements**  
*stairs, roof terraces, empty spaces*

Figure 8.

## Prevailing Typology

The prevailing house typology in the area surveyed is the multi storey one. Since the plot sizes are very regular we mainly have three typologies based on variations in height, so while some houses do not have a vertical distribution reaching the roof, others already have a staircase but the use of the roof terrace is limited to drying clothes and storage. Whereas the third variation has a half built roof terrace. In addition, some perimetral walls already built, their height, being between 1 and 3 m, either as parapets or as open/unfinished rooms. These spaces may be used for barbecues, storage, laundry, living and many other functions besides before becoming new rooms. They are already a proper part of the house.

Guapira II houses are mainly composed of day and service areas. Circulation areas are also very important occupying 23% of the total square meters. On the other hand, night use is limited to only 11% of the total area. The family composition affects the house's distribution. Families often grow. Houses are temporarily open to host's relatives and friends. Workers may work during the day time and at night. Children often sleep with parents, all in the same bed. Most houses are equipped with bunk beds. Night time occupation is from around 9 p.m. until 4 a.m.

Home is a place open to everybody, with non exclusive bedrooms usage. It's a place for family and friends. The only place for solitude is the bathroom. Day areas are those allocated to activities with the family and community.

Kitchens are located within the living room. The custom is never to put the pot of food on the table but to leave it on the stove, where everyone serves their own portion of food. The stove is a sort of buffet. Lunchtime is around 11.30 a.m.

Courtyards are used both for leisure activities and services. They are also the entrance to the houses. They usually follow the longitudinal axis, and because they are utilized for various activities tend to be very large.

Bathrooms are also generally very big spaces with good quality finishings. Given that they are the only space where one can be alone, they have a particular role in the house. These never have a bathtub but always a shower. Invariably most showers do not have a base, though the floor is tiled. On the whole, each family member takes two showers per day.



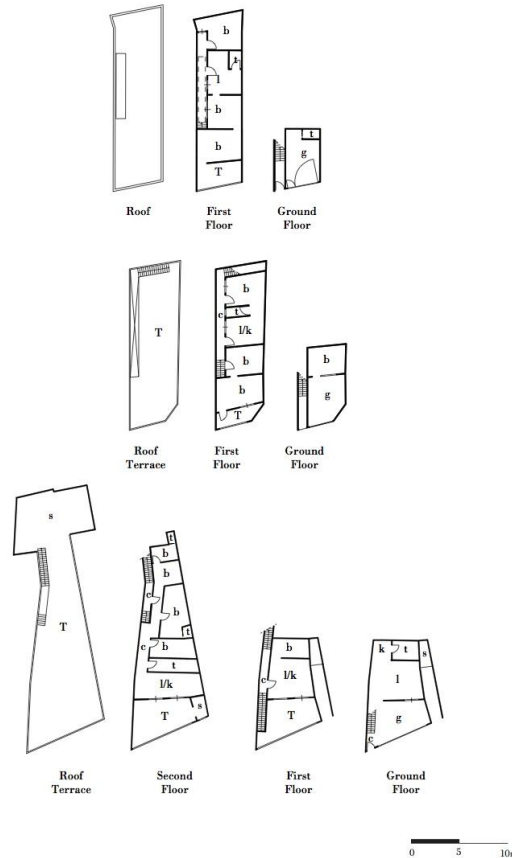


Figure 9

House typologies are one of the main factors of the urban morphology, which create, in large numbers, the urban fabric. Therefore, they are one of the predominant factors enabling us to detect differences between cities (Aymonino, 1970). As Leon Battista Alberti observed: "If we intend to classify in an appropriate way (...) the various types of buildings and the various internal parts of each type...the method for such a survey requires that in each case we fully clarify what differences there are between man; since the buildings are made for them and vary in relation to the functions they perform on their behalf". (Alberti, 2010).

The prevailing typology studied in Jardim Filhos da Terra represents a way of living, the culture and the history of a community, in facts despite the heterogeneous character of the individual dwelling, the hybridized mass as a whole is quite generic. The mixture of specific elements aggregated into random and temporary patterns creates the specificity of the area.

## Strategy

The survey on the different layers of the urban fabric helped the design process to be in continuity with the existing city as part of its evolution. The urban fabric lacks of public spaces. This is due to difficulties in keeping it and with a non-culture of common property. This is why there was the need to use other kind of values, strongly present in inhabitants' day-life, to give a chance to a kind of space. The strategy adopted was then to design two squares as open on air churches. They follow the urban fabric plot shape. Occupying two in-line plots in the surveyed area. The plots measures are the typical of the tissue: around 5x20 m. Slope is an important factor in the project: a staircase located between the two churches covers the difference in height. Two new squares cut the hill at 15 m of difference in height.

The area is mainly compound by people coming both from the North-East of the country and from the Sao Paulo state. The great majority of the population strongly believe in religion, but religions are many and different in Brazil. People are divided in Christians and Afro-Brazilians. Above all Catholics, Protestants and Spiritists have a great number of followers. Protestants are usually belonging to the Evangelic worship and they are mixed between Baptists, Adventists and of the Reino do Deus churches. Every single person chooses its own belief, no matter of its family origin. Afro-Brazilian worships are mainly Condomblé and Umbanda. The spaces for these two religious branches are different as the worship completely differs. In the Condomblé religion the rite is done through the adoration of the Orixá, divinities associated to colours and natural phenomena. During the rite people offer - as presents to the Gods – food, drinks, chanting plays, dances on drums rhythms (called Atabaque), smoke. All these offers are aimed to nullify the negative energies surrounding the person. These ceremonies can take place several times a week.

The Umbanda worship joins the Condomblé with the Spiritism doctrine of the French philosopher Kardec. Cerimonies of both these religions take place in the “terreiros”. These places are usually a simple room that may be decorated with African artefacts. Christian churches are usually more representative spaces. They need a strong direction to the Crucifix and the place where the religious guide stands and talks to the assembly. A Crucifix, a pulpit, a lectern, an altar and a place where people taking part of the ceremony can sit are important elements.

Attitude to the religious behaviour is very different and the times in which rites are performed as well. These are the reasons that drove to the design of two ecumenical temples: one for Afro-Brazilian religions and another one for Christian worships.

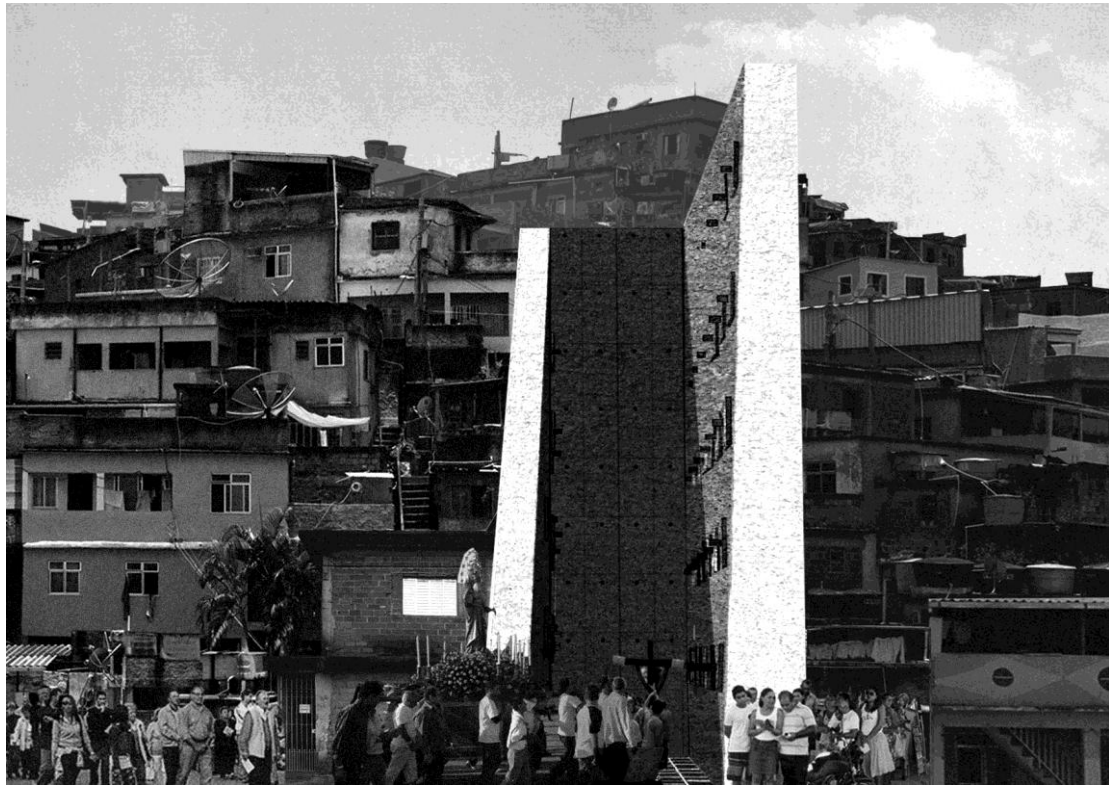


Figure 10.



Figure 11.

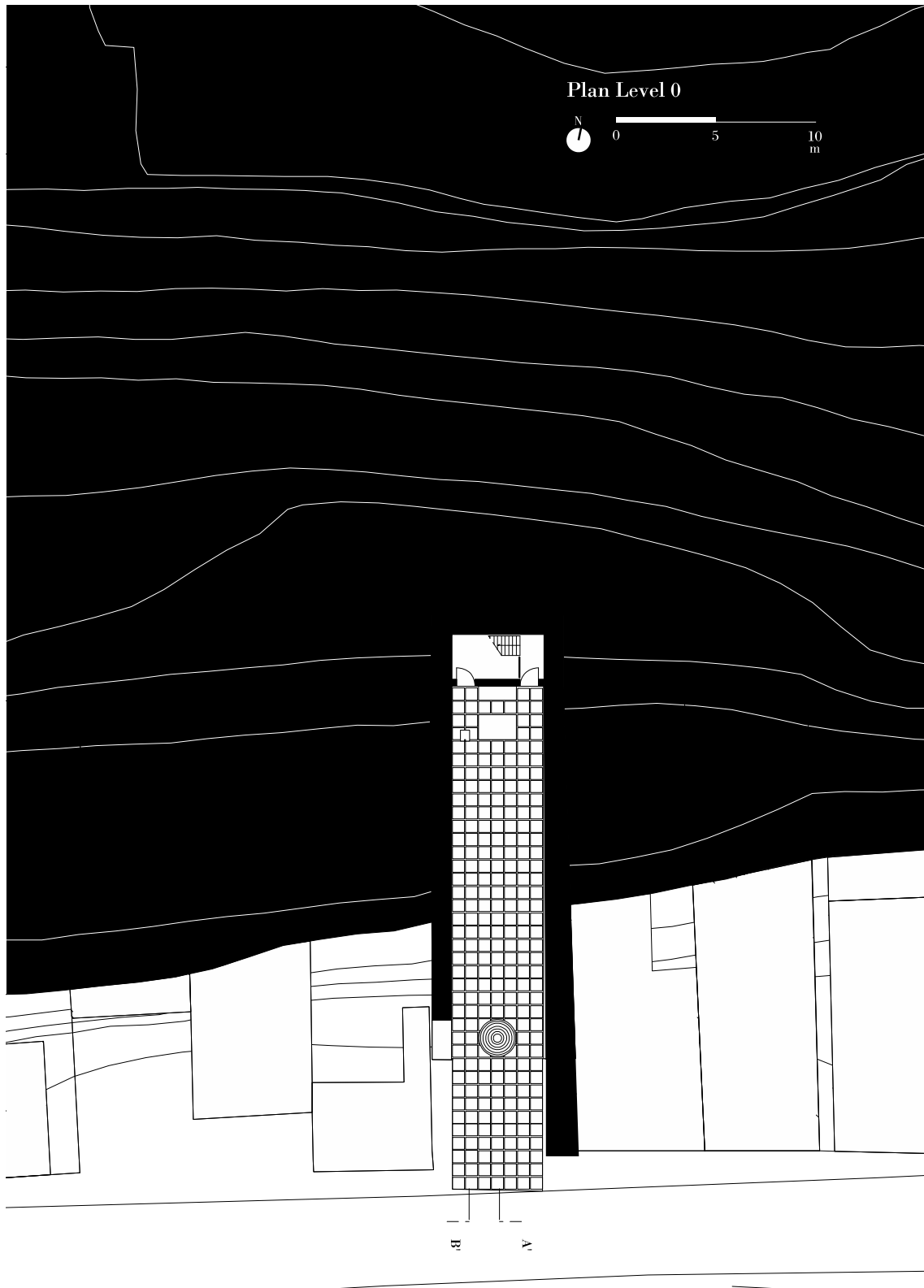


Figure 12.



Figure 13.

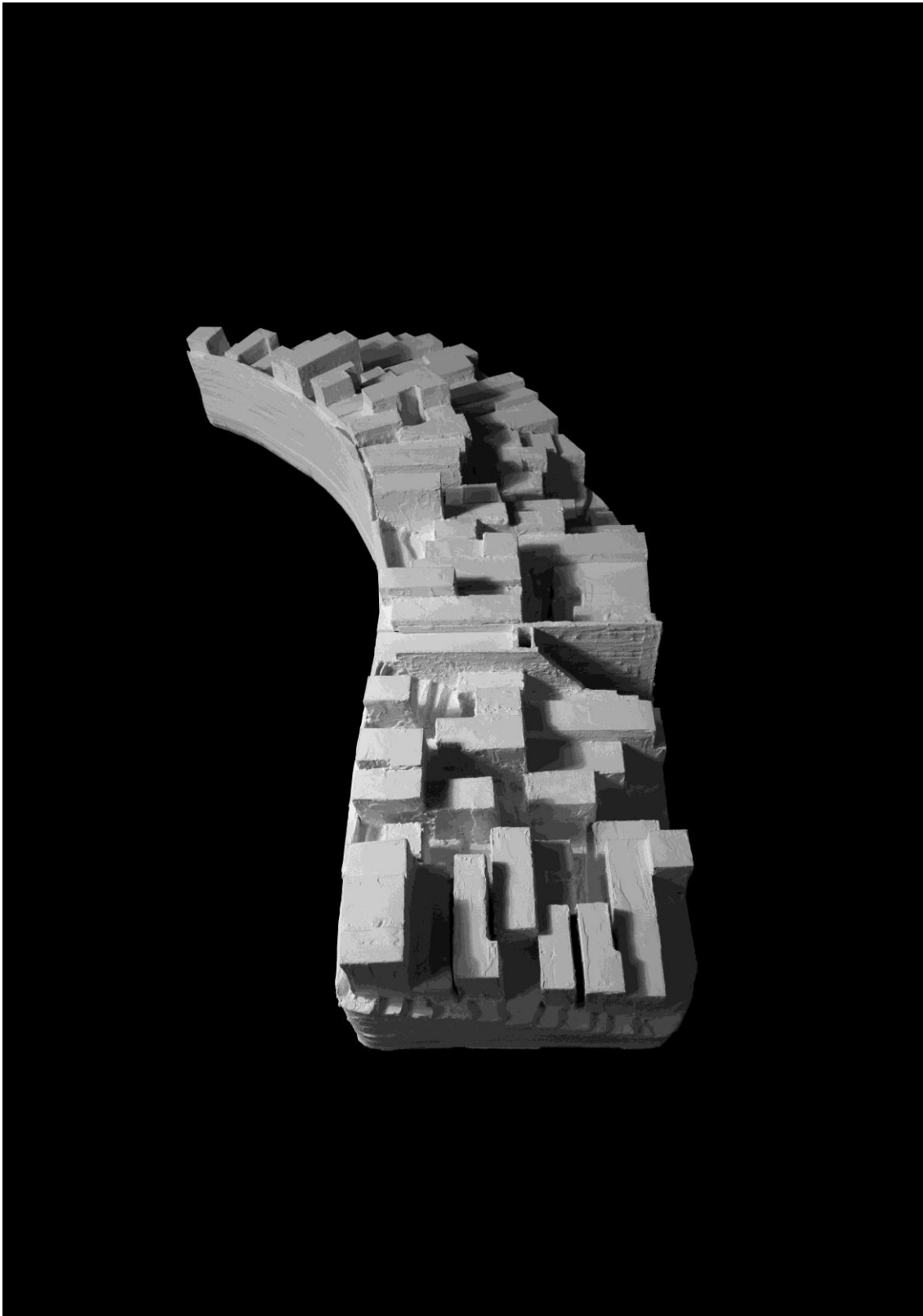


Figure 14.



Figure 15.

## Appendix

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### Caption for Figures

Caption for Figure 1: Del Bianco, C. View of the neighbourhood from a rooftop.

Caption for Figure 2: Del Bianco, C. Ground floor plan of the surveyed block.

Caption for Figure 3: Del Bianco, C. The multi-storey house typology.

Caption for Figure 4: Del Bianco, C. The single-storey house typology.

Caption for Figure 5: Del Bianco, C. The wooden hut typology.

Caption for Figure 6: Del Bianco, C. Scheme of the plots' average dimensions and evolution in plan (above) and section (below).

Caption for Figure 7: Del Bianco, C. Scheme of the phases in the evolution of typology: 1<sup>st</sup> wooden hut in wood and eternit, 2<sup>nd</sup> brick hut in brick, concrete, steel and eternit, 3<sup>rd</sup> single-storey house in brick, concrete and steel, 4<sup>th</sup> multi-store house in brick, concrete and steel.

Caption for Figure 8: Del Bianco, C. The evolutionary elements: stairs, roof terraces, empty spaces.

Caption for Figure 9: Del Bianco, C. Prevailing typology plan variations.

Caption for Figure 10: Del Bianco, C. View of the Christian Ecumenical Church.

Caption for Figure 11: Del Bianco, C. View of the Afro-Brazilian Ecumenical Church.

Caption for Figure 12: Del Bianco, C. Plan of the Christian Ecumenical Church.

Caption for Figure 13: Del Bianco, C. Plan of the Afro-Brazilian Ecumenical Church.

Caption for Figure 14: Del Bianco, C. Model of the surveyed block.

Caption for Figure 15: Del Bianco, C. Model top view detail.